

MASTER

PRODUCT CATALOG



**ALLIED MACHINE
& ENGINEERING**

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DRILLING

PRODUCT CATALOG



ALLIED MACHINE
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Drilling Overview Guide

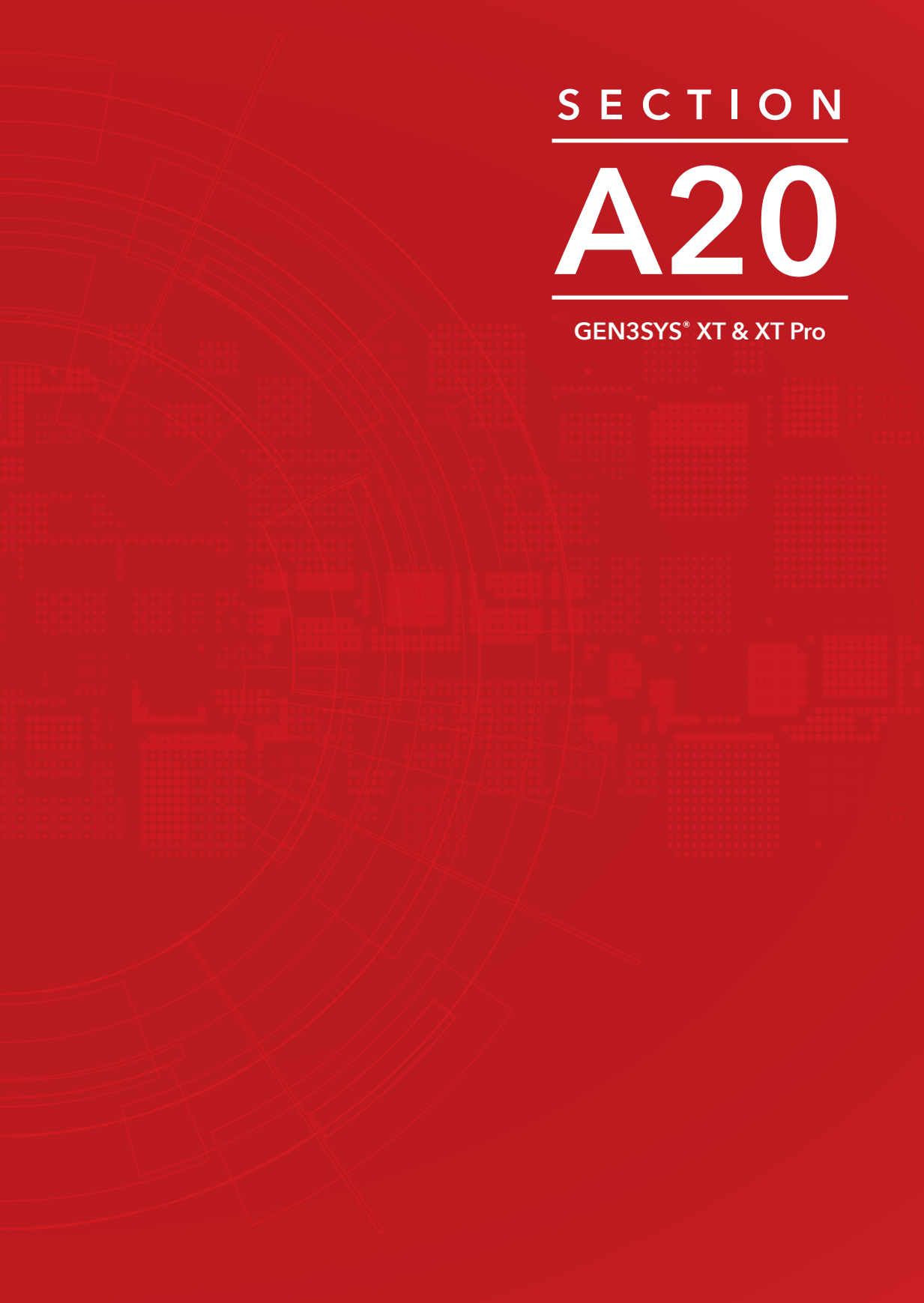
Product		Length-to-Diameter Ratio	Material					
			P	M	K	N	S	H
GEN3SYS® XT Pro	11.00 mm - 35.00 mm 0.4331" - 1.3780"	3xD, 5xD, 7xD, 10xD, 12xD	●	●	●	●		
GEN3SYS® XT	11.00 mm - 35.00 mm 0.4331" - 1.3780"	Stub, 3xD, 5xD, 7xD	●	●	●	●	●	○
T-A Pro®	9.50 mm - 47.80 mm 0.3739" - 1.8820"	Stub, 3xD, 5xD, 7xD, 10xD, 12xD, 15xD	●	●	●	●	●	
GEN2 T-A®	9.50 mm - 114.48 mm 0.3739" - 4.5070"	1xD to 28xD	●	●	●	●	●	
T-A®	9.50 mm - 114.48 mm 0.3739" - 4.5070"	1xD to 28xD	●	●	●	●	●	●
High Performance	24.60 mm - 127.00 mm 0.9688" - 5.0000"	—	●	●	●	●	●	
Universal	24.60 mm - 215.90 mm 0.9688" - 8.5000"	—	○	○	○	○	○	
APX™ Drill	33.00 mm - 101.60 mm 1.2991" - 4.0000"	3xD, 5xD, 8xD, 10xD	●	●	●	●	○	
4TEX® Drill	12.00 mm - 47.00 mm 0.4724" - 1.8504"	2xD, 3xD, 4xD	●	●	●	●	●	●
Revolution Drill®	47.63 mm - 101.60 mm 1.8750" - 4.0000"	1xD, 2.2xD, 2.5xD, 3.5xD, 4.5xD,	●	●	●	●		○
Opening Drill®	50.80 mm - 142.75 mm 2.0000" - 5.6200"	—	●	●	●	●		○
BT-A Drill	12.98 mm - 47.80 mm 0.5110" - 1.8820"	—	●	●	●	●	○	

● Best ● Better ○ Good

Drilling Overview Guide

General Purpose	Machining Application				Industry Specific
	High Penetration	Deep Hole	Large Diameter		
●	●	●			
●	●				
○	●	●	○		
●	○	●	●		
●	○	●	●		
●		◐	●		
●		◐	●		
◐		●	●		
●	◐				
○	◐		●		
○	◐		●		
	◐	●		●	

● Best ◐ Better ○ Good



SECTION

A20

GEN3SYS® XT & XT Pro

GEN3SYS® XT AND XT PRO

11.00 mm - 35.00 mm (0.4331" - 1.3780")



GEN3SYS® XT and XT Pro

The GEN3SYS XT and XT Pro replaceable insert high penetration drilling system has been designed to provide high-speed production machining beyond the capabilities of the T-A® drilling system. The product offering consists of various grades, geometries, and coatings available to suit the most demanding applications.

Conceived from the outset as the ultimate high performance drilling solution, the GEN3SYS XT drill range is incredibly versatile. Incorporating both straight and helical fluted tool holder options across the range, as well as through coolant for maximum material removal, GEN3SYS XT not only gives outstanding performance from day one, but it can also be reground for extended life and economy.

The Next Generation of Drilling

- ▶ Excellent chip control.
- ▶ Improves hole quality and surface finish.
- ▶ Provides maximum durability and stability.

Applicable Industries

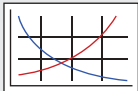
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Drill Series

11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")	13
12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")	17
13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")	21
14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")	25
15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")	29
16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")	33
17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")	37
18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")	41
20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")	45
22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")	49
24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")	53
26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")	57
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")	61
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")	63
32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")	65

Recommended Drilling Data

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WHY SHOULD YOU GO WITH THE **PRO?**

GEN3SYS® XT **Pro**



- ✓ Increase your penetration rates
- ✓ ISO-specific geometries
- ✓ Improved chip evacuation
- ✓ Increased coolant flow to the cutting zone
- ✓ AM420 coating increases heat resistance
- ✓ AM440 coating increases abrasion resistance

THAT'S WHY YOU SHOULD GO WITH THE **PRO.**



Case Studies

XT Pro: P (steel)

Project Profile: Forged 8640
Tooling Solution: GEN3SYS XT Pro: P (steel) Geometry

The Problem:

Previously, the customer was using a competitor drill running at the following parameters:

- 127 m/min (415 SFM)
- 0.23 mm/rev (0.009 IPR)
- The tool drilled a 17.25 mm diameter hole to a 20 mm depth
- Tool life = **1,000 holes**

The Solution:

Allied Machine recommended the GEN3SYS XT Pro with P (steel) geometry.

- **Insert** = XTP17-17.25

The tool ran at the following parameters:

- 127 m/min (415 SFM)
- 0.23 mm/rev (0.009 IPR)
- The tool drilled a 17.25 mm diameter hole to a 20 mm depth
- Tool life = **2,100 holes**

The Advantage:

The GEN3SYS XT Pro increased the tool life from 1,000 holes to 2,100 holes.

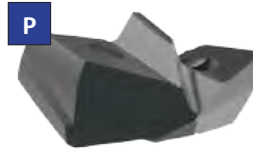
Bottom Line: *Doubled the tool life*

The PROOF is in the NUMBERS

Competitor Insert Tool Life
 (number of holes = 1,000)



XT Pro Insert Tool Life
 (number of holes = 2,100)



2x
INCREASE
 in tool life

HOLDER DESIGN



Drill deeper holes

The XT Pro holders are available up to 12xD.

- ▶ **This lets you take advantage of the XT Pro insert benefits in deep hole applications.**

Increase your tool life

The coolant configuration increases coolant flow and directs additional coolant to the cutting zone.

- ▶ **This increases tool life with all XT Pro inserts.**



Case Studies

Competitive Test

TEST RESULTS

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Project Profile: Competitive Testing in 4150 Steel
Tooling Solution: GEN3SYS XT Pro: (P) steel geometry

The Parameters:

- Hole Diameter = 19 mm (0.748")
- Depth of Cut = 38.1 mm (1-1/2")
- Coolant = 300 PSI
- Speed = 1583 RPM
- Feed = 563 mm/min (22.16 IPM)

The Results:

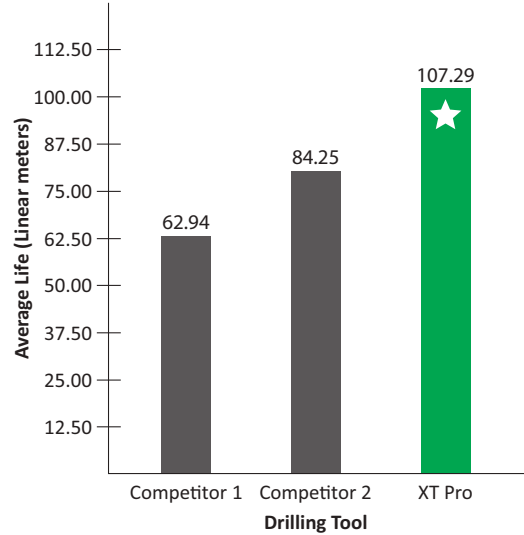
When run at the listed parameters, here is how the three different tooling solutions performed:

Competitor 1 = 2478 total linear inches
Competitor 2 = 3317 total linear inches
GEN3SYS XT Pro = 4224 total linear inches



Average Tool Life

Test Results Drilling in 4150 Steel





Case Studies

XT Pro: K (cast iron)

CASE STUDY

Project Profile: Ductile/Nodular Iron

Tooling Solution: GEN3SYS XT Pro: K (cast iron) geometry

The Problem:

Previously, the customer was using a competitor drill:

- Solid carbide drill
- Tool life = **65 holes**

The Solution:

Allied Machine recommended the GEN3SYS XT Pro with K (cast iron) geometry.

The tool ran at the following parameters:

- Hole Diameter = 9/16"
- Coolant = None
- Speed = 117 m/min (390 SFM)
- Feed = 0.20 mm/rev (0.008 IPR)
- Tool life = **390 holes**

The Advantage:

The GEN3SYS XT Pro increased the tool life from 65 holes to 390 holes.

Bottom Line: *6x the tool life*



There's More to the Advantage Than Tool Life

The XT Pro replaceable tip system provides other benefits in addition to the increase in tool life over the solid carbide drill:

- Because only the insert needs changed when it reaches the end of its life, the XT Pro eliminates the need to re-establish tool lengths, which reduces setup times.
- Further benefit in setup is also seen as the tool only needs changed one time for every six of the customer's current method.
- Without the need for regrinds, the customer's stock of tooling is reduced by eliminating the need for float inventory to cover regrind lead time.

The **PROOF** is in the **NUMBERS**

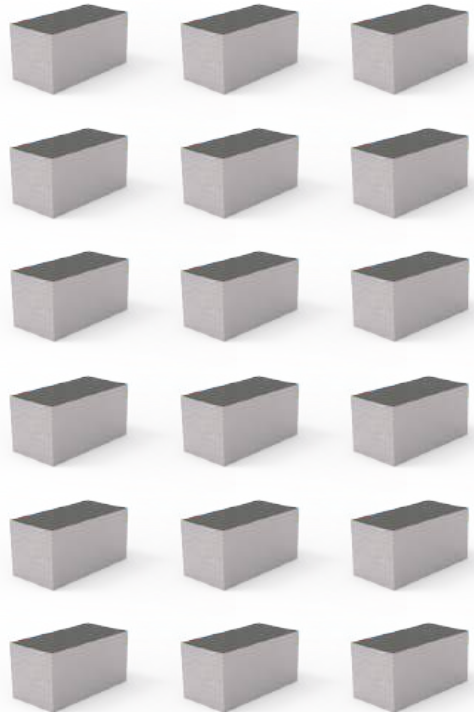
Competitor Tool Life

(number of holes = 65)



XT Pro Tool Life

(number of holes = 390)



INCREASE in
6x tool life

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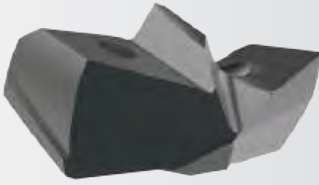


Drilling System Information

GEN3SYS XT Pro

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GEN3SYS XT Pro Drill Inserts



Advanced Design Capabilities

The advanced XT Pro insert combines a coating and geometry specifically designed to achieve optimal results in ISO material drilling applications. With quick connectivity to existing GEN3SYS drill insert holders, the XT Pro insert can be interchanged with previous XT inserts with ease, resulting in minimal setup times so you can immediately increase your productivity.

XT Pro Inserts Connect with:



XT Pro holders



GEN3SYS holders

P - Steels

- Designed to provide increased penetration rates and tool life in steel applications.
- Superior geometry and edge provides excellent chip control.
- Allied's multilayer AM420 coating increases heat resistance and improves tool life.



K - Cast Irons

- Uniquely designed for cast/nodular iron applications.
- Geometry includes a corner radius for improved hole finish and heat dispersion.
- Allied's multilayer AM440 coating provides increased abrasion resistance and tool life.



M - Stainless Steels*

- Designed for all 300 series, 400 series, super duplex stainless steels, and other hard-to-machine materials in the ISO M group.
- Geometry optimized for improved chip formation while drilling at high penetration rates.
- Substrate chosen to provide balance of toughness and wear resistance in difficult applications.
- Allied's AM460 coating provides industry-leading tool life in stainless steels.

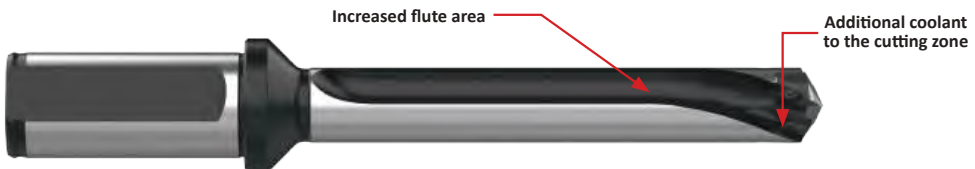


N - Nonferrous Materials

- Designed for applications in aluminum, brass, and copper.
- The geometry yields excellent chip control in these softer materials.
- TiN coating gives the versatility to run in a variety of materials while reducing buildup.



*Available in 12-32 series only.



XT Pro Drill Holders

			3xD, 5xD, 7xD, 10xD, 12xD
Straight flutes	Enhanced coolant inlets improve the coolant flow	Provides increased insert life	Available in 3xD, 5xD, 7xD, 10xD, and 12xD



Drilling System Information

GEN3SYS XT

GEN3SYS XT Drill Inserts



High Penetration Drilling Solutions

The unique geometry of the XT inserts provides excellent chip control. They are designed to increase hole quality, surface finish, and true position when compared to other competitive products. The helical margin design provides maximum durability and stability.

XT Inserts Connect with:



XT Pro holders



GEN3SYS holders

Standard Geometry

- Designed with corner and cutting edge enhancements to deliver more reliability, durability, and productivity.
- Increases penetration rates and tool life.
- Available in K35 (C1) or K20 (C2) carbide.



LR - Low Rake Geometry

- The toughest XT geometry available.
- Designed for harder steels and less than ideal machining applications.
- Available in K35 (C1) or K20 (C2) carbide.



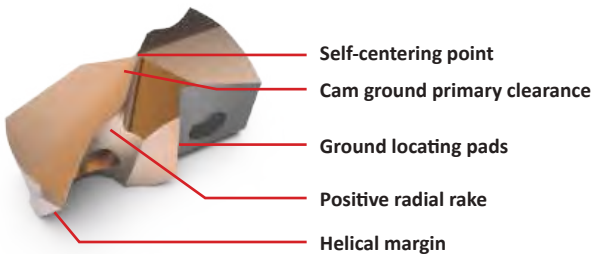
CI - Cast Iron Geometry

- Increases durability and tool life in ductile, nodular, and grey cast irons.
- Available in K20 (C2) carbide.



AS - Stainless Steel Geometry

- Designed with a specific geometry to provide unmatched chip control and tool life in austenitic and PH stainless steels, as well as high temperature alloys such as Inconel®, Hastelloy®, and titanium alloys.
- Available in K20 (C2) carbide.



Coating	Features / Benefits
AM300®	<ul style="list-style-type: none"> Increased heat resistance over AM200® coating. Up to 20% increased tool life over AM200 coating. Provides superior tool life at high penetration rates.



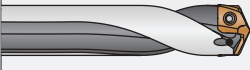
GEN3SYS Holders

			Stub, 3xD, 5xD, 7xD
Straight flutes	Helical flutes	Drill / chamfer style	Available in stub, 3xD, 5xD, and 7xD



Insert Comparison and Assembly Information

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		 XT Pro Inserts	 XT Inserts
Recommended for increased productivity			
ISO-specific geometry/coating combination			
Connects with XT Pro holders			
Connects with GEN3SYS holders			



Step 1:
Align the flats on the GEN3SYS XT insert with the flats on the ears of the holder.



Step 2:
Slide the insert into the precision ground locating pocket on the holder. The insert should not be turned, rotated, or twisted for locking purposes. The holder pocket and locating pads on the insert assure optimum fit and repeatability.

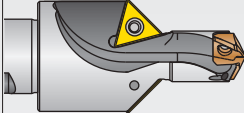
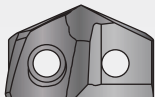
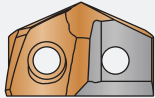


Step 3:
Apply a generous amount of E-Z Break® (provided in the packaging) onto the supplied TORX® Plus screws.

Tighten the TORX Plus screws to the recommended torque value specified in the catalog by series. A preset torx driver is available to assure that the proper torque is applied.



Holder Comparison and Overview

		 XT Pro Holders	 GEN3SYS Holders
Recommended for increased productivity		☒	
Straight flute		☒	☒
Helical flute			☒
Drill/chamfer option			☒
Available in 12xD length	12XD	☒	
Connects with XT Pro inserts		☒	☒
Connects with XT inserts		☒	☒

XT Pro Holders



Straight Flute

GEN3SYS Holders



Straight Flute



Helical Flute



Drill/Chamfer

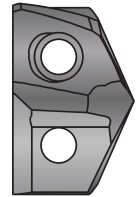


Product Nomenclature

GEN3SYS XT Pro Drill Inserts

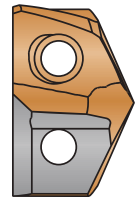
XT	P	11			—	11.00
	ISO Material	Series				Diameter (mm)
	P = Steel	11	16	24		For complete list of ranges by series, see table below.
	M = Stainless steel*	12	17	26		
	K = Cast iron	13	18	29		
N = Nonferrous	14	20	32			
		15	22			

*Available in 12-32 series only.



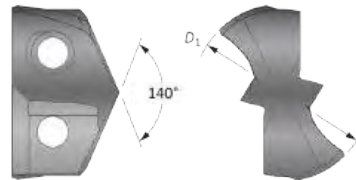
GEN3SYS XT Drill Inserts

7	C2	12			P	—	.484	CI
	Material	Series			Coating		Diameter	Geometry
	C1 = K35 (C1) C2 = K20 (C2)	11	16	24	P = AM300®		13 = Metric (mm) .515 = Decimal (in) 0017 = Fractional (in)	Blank = Standard CI = Cast iron LR = Low rake AS = Stainless steel
		12	17	26				
		13	18	29				
		14	20	32				
		15	22					



Reference Key

Symbol	Attribute
D_1	Insert diameter



Regrinding and Recoating

The GEN3SYS XT and XT Pro drilling system is so cost efficient that it eliminates the need for regrinding and recoating. However, if you choose to have your drill inserts reground, it is critical that it be done by Allied Machine. Any slight deviation in performance due to an improperly reground drill insert will more than offset any benefit from regrinding. Using our service ensures that the best tool performance is maintained in your production process. When returning tools for regrinding, please package tools carefully to avoid damage during shipment. Returning drill inserts for regrinding in their original packaging will help avoid damage during shipment. Drill inserts reground by Allied Machine are repackaged and clearly identified as “Allied Regrind” to avoid any confusion with new tools.

Series & Body Diameters

Series		11 Series	12 Series	13 Series	14 Series	15 Series	16 Series	17 Series
Insert Ø								
	mm	11.00 - 11.99	12.00 - 12.99	13.00 - 13.99	14.00 - 14.99	15.00 - 15.99	16.00 - 16.99	17.00 - 17.99
	inch	0.4331 - 0.4723	0.4724 - 0.5117	0.5118 - 0.5511	0.5512 - 0.5905	0.5906 - 0.6298	0.6299 - 0.6692	0.6693 - 0.7086
Holder								
Shank Ø	mm	16.00	20.00	20.00	20.00	20.00	20.00	20.00
	inch	0.625	0.750	0.750	0.750	0.750	0.750	0.750



Product Nomenclature

GEN3SYS XT and XT Pro Drill Holders

HXT	03	12	S	—	20	FM
Holder	Drill Length	Series	Flute		Shank Diameter	Shank Style
6 = XT standard	01 = Stub (XT standard only.)	11 22	S = Straight		Metric (mm)	FM = Flanged metric (with flat)
HXT = XT Pro	03 = 3xD	12 24	H = Helical		16 = 16 mm	063 = 0.625"
	05 = 5xD	13 26	C45 = Drill/Chamfer*		20 = 20 mm	075 = 0.750"
	07 = 7xD	14 29			25 = 25 mm	100 = 1.000"
	10 = 10xD ⚠ (XT Pro only.)	15 32	(Both helical and drill/ chamfer options available for XT standard only.)		32 = 32 mm	125 = 1.250"
	12 = 12xD ⚠ (11-26 series - XT Pro only.)	16	*Drill/chamfer is available in stub length only.		40 = 40 mm	150 = 1.500"
		17				
		18				
		20				

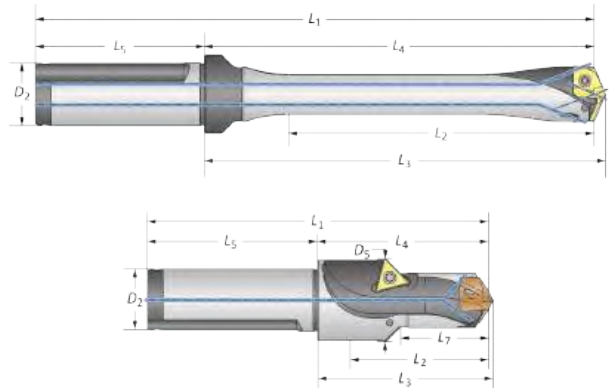
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Holder Ordering Information

The series designator (11 series, 12 series, etc.) in the top corner of each page is for your reference when ordering. Please refer to these series designators when placing an order. For example, a 12 series drill insert only fits into a 12 series holder.

Reference Key

Symbol	Attribute
D_2	Shank diameter
D_5	Step diameter (drill/chamfer)
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder body length
L_5	Shank length
L_7	Step length (drill/chamfer)
P_1	Rear pipe tap (GEN3SYS)



⚠ WARNING

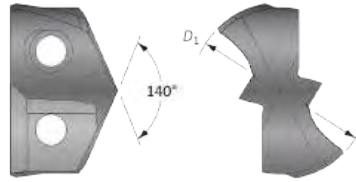
Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 89** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

Series	18 Series	20 Series	22 Series	24 Series	26 Series	29 Series	32 Series
Insert Ø	mm	18.00 - 19.99	20.00 - 21.99	22.00 - 23.99	24.00 - 25.99	26.00 - 28.99	29.00 - 31.99
	inch	0.7087 - 0.7873	0.7874 - 0.8660	0.8661 - 0.9448	0.9449 - 1.0235	1.0236 - 1.1416	1.1417 - 1.2597
Holder							
Shank Ø	mm	25.00	25.00	25.00	25.00	32.00	32.00
	inch	1.000	1.000	1.000	1.000	1.250	1.250

**11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")**

GEN3SYS XT Pro Inserts

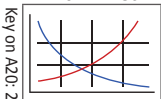
A20



Insert			Carbide		
D_1 mm	D_1 inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			P	K	N
11.00	0.4331	—	XTP11-11.00	XTK11-11.00	XTN11-11.00
11.11	0.4374	7/16	XTP11-11.11	XTK11-11.11	XTN11-11.11
11.20	0.4409	—	XTP11-11.20	XTK11-11.20	XTN11-11.20
11.30	0.4449	—	XTP11-11.30	XTK11-11.30	XTN11-11.30
11.40	0.4488	—	XTP11-11.40	XTK11-11.40	XTN11-11.40
11.50	0.4528	—	XTP11-11.50	XTK11-11.50	XTN11-11.50
11.51	0.4531	29/64	XTP11-11.51	XTK11-11.51	XTN11-11.51
11.60	0.4567	—	XTP11-11.60	XTK11-11.60	XTN11-11.60
11.70	0.4606	—	XTP11-11.70	XTK11-11.70	XTN11-11.70
11.80	0.4646	—	XTP11-11.80	XTK11-11.80	XTN11-11.80
11.91	0.4689	15/32	XTP11-11.91	XTK11-11.91	XTN11-11.91

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10

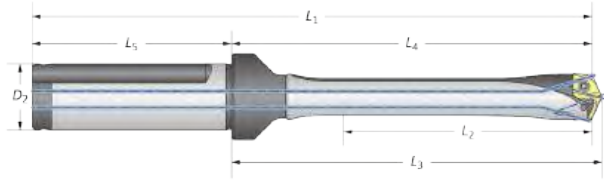
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	11.25 mm, steel, 11 series = use Part No. XTP11-11.25
Imperial:	0.4430", steel, 11 series = use Part No. XTP11-11.25



11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	36.0	62.6	64.7	112.7	48.0	16		HXT0311S-16FM	HXT0311S-16CM
		5xD	60.0	86.6	88.6	136.7	48.0	16		HXT0511S-16FM	HXT0511S-16CM
		7xD	83.9	110.6	112.6	160.6	48.0	16		HXT0711S-16FM	HXT0711S-16CM
		10xD	119.9	146.6	148.6	196.6	48.0	16	⚠	HXT1011S-16FM	HXT1011S-16CM
		12xD	143.9	170.5	172.6	220.6	48.0	16	⚠	HXT1211S-16FM	HXT1211S-16CM
i	Straight	3xD	1.416	2.457	2.537	4.412	1.875	5/8		HXT0311S-063F	HXT0311S-063C
		5xD	2.361	3.401	3.481	5.356	1.875	5/8		HXT0511S-063F	HXT0511S-063C
		7xD	3.305	4.345	4.425	6.300	1.875	5/8		HXT0711S-063F	HXT0711S-063C
		10xD	4.721	5.761	5.841	7.716	1.875	5/8	⚠	HXT1011S-063F	HXT1011S-063C
		12xD	5.665	6.705	6.785	8.660	1.875	5/8	⚠	HXT1211S-063F	HXT1211S-063C

Connection Accessories

				Admissible Tightening Torque*
Insert Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
71843-IP6-1	8IP-6	8IP-6TL	8IP-6B	50 N-cm (4.4 in-lbs)

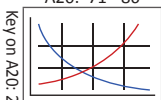
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)
i = Imperial (in)

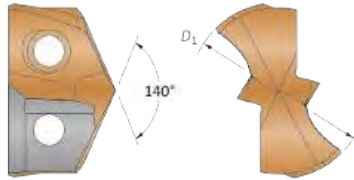
Screws sold in multiples of 10.



11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS XT Inserts

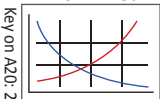
A20



Substrate	Insert			Carbide			
							
	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	11.00	0.4331	—	7C111P-11	7C111P-11LR	—	—
	11.11	0.4375	7/16	7C111P-0014	7C111P-0014LR	—	—
	11.50	0.4528	—	7C111P-11.5	7C111P-11.5LR	—	—
	11.51	0.4531	29/64	7C111P-.453	7C111P-.453LR	—	—
	11.91	0.4688	15/32	7C111P-0015	7C111P-0015LR	—	—
K20 (C2)	11.00	0.4331	—	7C211P-11	7C211P-11LR	7C211P-11CI	7C211P-11AS
	11.11	0.4375	7/16	7C211P-0014	7C211P-0014LR	7C211P-0014CI	7C211P-0014AS
	11.50	0.4528	—	7C211P-11.5	7C211P-11.5LR	7C211P-11.5CI	7C211P-11.5AS
	11.51	0.4531	29/64	7C211P-.453	7C211P-.453LR	7C211P-.453CI	7C211P-.453AS
	11.91	0.4688	15/32	7C211P-0015	7C211P-0015LR	7C211P-0015CI	7C211P-0015AS

Inserts sold in multiples of 1.

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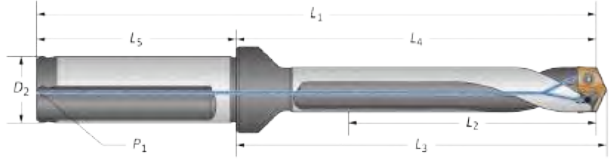
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	11.25 mm, C2, cast iron, 11 series = use Part No. 7C211P-11.25CI
Imperial:	0.4430", C2, stainless, 11 series = use Part No. 7C211P-.4430AS



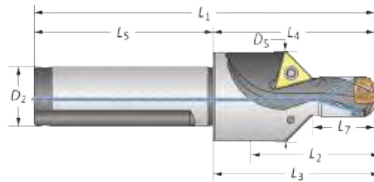
11 Series: 11.00 mm - 11.99 mm (0.4331" - 0.4723")

GEN3SYS Holders



A20

	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	35.9	62.6	64.7	112.7	48.0	16	1/16 BSPT		60311S-16FM	—
		5xD	59.9	86.6	88.6	136.7	48.0	16	1/16 BSPT		60511S-16FM	—
		7xD	83.9	110.6	112.6	160.6	48.0	16	1/16 BSPT		60711S-16FM	—
	Helical	Stub	15.9	42.6	44.7	92.7	48.0	16	1/16 BSPT		60111H-16FM	—
		3xD	35.9	62.6	64.7	112.7	48.0	16	1/16 BSPT		60311H-16FM	60311H-16CM
		5xD	59.9	86.6	88.6	136.7	48.0	16	1/16 BSPT		60511H-16FM	60511H-16CM
i	Straight	7xD	83.9	110.6	112.6	160.6	48.0	16	1/16 BSPT		60711H-16FM	60711H-16CM
	Helical	3xD	1.414	2.457	2.537	4.412	1.875	5/8	1/16 NPT		60311S-063F	—
		5xD	2.358	3.401	3.481	5.356	1.875	5/8	1/16 NPT		60511S-063F	—
		7xD	3.302	4.345	4.425	6.300	1.875	5/8	1/16 NPT		60711S-063F	—
	Helical	Stub	0.623	1.666	1.746	3.621	1.875	5/8	1/16 NPT		60111H-063F	—
		3xD	1.414	2.457	2.537	4.412	1.875	5/8	1/16 NPT		60311H-063F	60311H-063C
		5xD	2.358	3.401	3.481	5.356	1.875	5/8	1/16 NPT		60511H-063F	60511H-063C
		7xD	3.302	4.345	4.425	6.300	1.875	5/8	1/16 NPT		60711H-063F	60711H-063C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	11	24.13	16.5	14.1	42.3	44.3	92.4	48.0	16	60111C45-16FM	TCMT-110204
i	11	0.9500	0.650	0.554	1.666	1.746	3.621	1.875	5/8	60111C45-063F	TCMT-110204

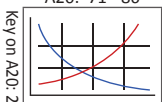
Connection Accessories

				Admissible Tightening Torque* 50 N-cm (4.4 in-lbs)
Insert Screws 71843-IP6-1	Insert Driver 8IP-6	Preset Torque Hand Driver 8IP-6TL	Replacement Tips 8IP-6B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

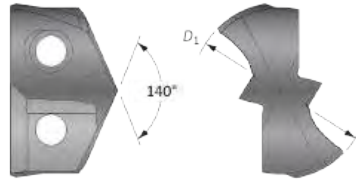
i = Imperial (in)

Screws sold in multiples of 10.

**12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")**

GEN3SYS XT Pro Inserts

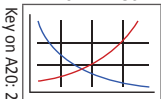
A20



Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
12.00	0.4724	—	XTP12-12.00	XTM12-12.00	XTK12-12.00	XTN12-12.00
12.10	0.4764	—	XTP12-12.10	XTM12-12.10	XTK12-12.10	XTN12-12.10
12.20	0.4803	—	XTP12-12.20	XTM12-12.20	XTK12-12.20	XTN12-12.20
12.30	0.4843	31/64	XTP12-12.30	XTM12-12.30	XTK12-12.30	XTN12-12.30
12.40	0.4882	—	XTP12-12.40	XTM12-12.40	XTK12-12.40	XTN12-12.40
12.50	0.4921	—	XTP12-12.50	XTM12-12.50	XTK12-12.50	XTN12-12.50
12.60	0.4961	—	XTP12-12.60	XTM12-12.60	XTK12-12.60	XTN12-12.60
12.70	0.5000	1/2	XTP12-12.70	XTM12-12.70	XTK12-12.70	XTN12-12.70
12.80	0.5039	—	XTP12-12.80	XTM12-12.80	XTK12-12.80	XTN12-12.80
12.90	0.5079	—	XTP12-12.90	XTM12-12.90	XTK12-12.90	XTN12-12.90

Inserts sold in multiples of 1.

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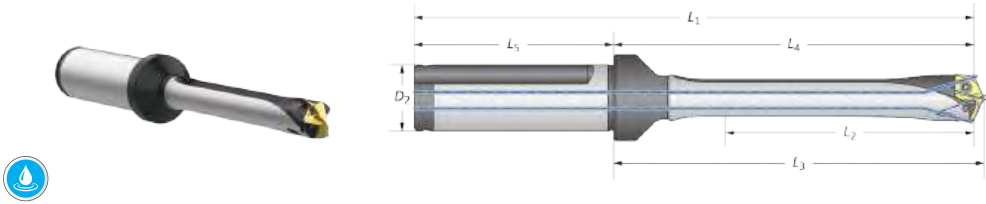
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	12.25 mm, steel, 12 series = use Part No. XTP12-12.25
Imperial:	0.4823", steel, 12 series = use Part No. XTP12-12.25



12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	39.0	66.6	68.8	118.8	50.0	20		HXT0312S-20FM	HXT0312S-20CM
		5xD	64.9	92.6	94.8	144.8	50.0	20		HXT0512S-20FM	HXT0512S-20CM
		7xD	90.9	118.5	120.8	170.8	50.0	20		HXT0712S-20FM	HXT0712S-20CM
		10xD	129.9	157.5	159.7	209.7	50.0	20	⚠	HXT1012S-20FM	HXT1012S-20CM
		12xD	155.9	183.5	185.7	235.7	50.0	20	⚠	HXT1212S-20FM	HXT1212S-20CM
i	Straight	3xD	1.534	2.619	2.706	4.736	2.030	3/4		HXT0312S-075F	HXT0312S-075C
		5xD	2.557	3.642	3.729	5.759	2.030	3/4		HXT0512S-075F	HXT0512S-075C
		7xD	3.580	4.665	4.752	6.782	2.030	3/4		HXT0712S-075F	HXT0712S-075C
		10xD	5.114	6.200	6.287	8.317	2.030	3/4	⚠	HXT1012S-075F	HXT1012S-075C
		12xD	6.137	7.223	7.310	9.340	2.030	3/4	⚠	HXT1212S-075F	HXT1212S-075C

Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

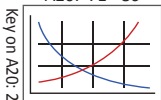
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

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m = Metric (mm)

i = Imperial (in)

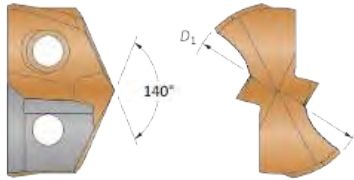
Screws sold in multiples of 10.



12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

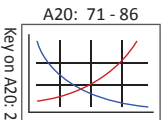
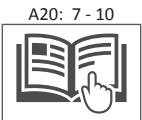
GEN3SYS XT Inserts

A20



Substrate	Insert			Carbide			
							
	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	12.00	0.4724	—	7C112P-12	7C112P-12LR	—	—
	12.30	0.4844	31/64	7C112P-.484	7C112P-.484LR	—	—
	12.50	0.4921	—	7C112P-12.5	7C112P-12.5LR	—	—
K20 (C2)	12.70	0.5000	1/2	7C112P-0016	7C112P-0016LR	—	—
	12.00	0.4724	—	7C212P-12	7C212P-12LR	7C212P-12CI	7C212P-12AS
	12.30	0.4844	31/64	7C212P-.484	7C212P-.484LR	7C212P-.484CI	7C212P-.484AS
	12.50	0.4921	—	7C212P-12.5	7C212P-12.5LR	7C212P-12.5CI	7C212P-12.5AS
	12.70	0.5000	1/2	7C212P-0016	7C212P-0016LR	7C212P-0016CI	7C212P-0016AS

Inserts sold in multiples of 1.

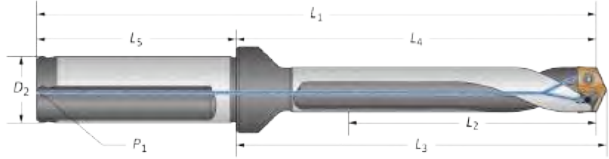


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	12.25 mm, C2, cast iron, 12 series = use Part No. 7C212P-12.25CI
Imperial:	0.4823", C2, stainless, 12 series = use Part No. 7C212P-.4823AS



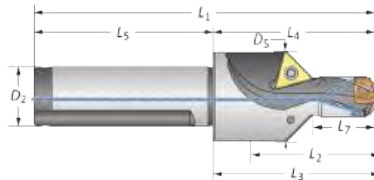
12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")

GEN3SYS Holders



A20

	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	39.0	66.6	68.8	118.8	50.0	20	1/8 BSPT		60312S-20FM	—
		5xD	65.0	92.6	94.8	144.8	50.0	20	1/8 BSPT		60512S-20FM	—
		7xD	91.0	118.5	120.8	170.8	50.0	20	1/8 BSPT		60712S-20FM	—
	Helical	Stub	15.7	43.2	45.4	95.5	50.0	20	1/8 BSPT		60112H-20FM	—
		3xD	39.0	66.6	68.8	118.8	50.0	20	1/8 BSPT		60312H-20FM	60312H-20CM
		5xD	65.0	92.6	94.8	144.8	50.0	20	1/8 BSPT		60512H-20FM	60512H-20CM
i	Straight	3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT		60312S-075F	—
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT		60512S-075F	—
		7xD	3.581	4.665	4.752	6.782	2.030	3/4	1/8 NPT		60712S-075F	—
	Helical	Stub	0.618	1.702	1.789	3.819	2.030	3/4	1/8 NPT		60112H-075F	—
		3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT		60312H-075F	60312H-075C
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT		60512H-075F	60512H-075C
i	Straight	3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT		60312H-075F	60312H-075C
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT		60512H-075F	60512H-075C
		7xD	3.581	4.665	4.752	6.782	2.030	3/4	1/8 NPT		60712H-075F	60712H-075C
	Helical	Stub	0.618	1.702	1.789	3.819	2.030	3/4	1/8 NPT		60112H-075F	—
		3xD	1.535	2.619	2.706	4.736	2.030	3/4	1/8 NPT		60312H-075F	60312H-075C
		5xD	2.558	3.642	3.729	5.759	2.030	3/4	1/8 NPT		60512H-075F	60512H-075C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	12	24.77	18.0	15.5	43.2	45.4	95.5	50.0	20	60112C45-20FM	TCMT-110204
i	12	0.9750	0.709	0.610	1.702	1.789	3.819	2.030	3/4	60112C45-075F	TCMT-110204

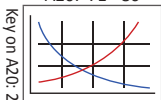
Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

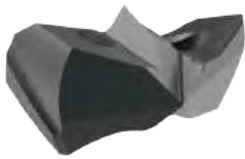
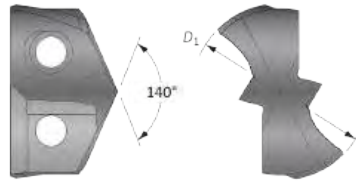
i = Imperial (in)

Screws sold in multiples of 10.

**13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")**

GEN3SYS XT Pro Inserts

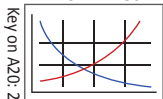
A20



Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
P	M	K	N			
13.00	0.5118	—	XTP13-13.00	XTM13-13.00	XTK13-13.00	XTN13-13.00
13.10	0.5157	33/64	XTP13-13.10	XTM13-13.10	XTK13-13.10	XTN13-13.10
13.20	0.5197	—	XTP13-13.20	XTM13-13.20	XTK13-13.20	XTN13-13.20
13.30	0.5236	—	XTP13-13.30	XTM13-13.30	XTK13-13.30	XTN13-13.30
13.40	0.5276	—	XTP13-13.40	XTM13-13.40	XTK13-13.40	XTN13-13.40
13.49	0.5311	17/32	XTP13-13.49	XTM13-13.49	XTK13-13.49	XTN13-13.49
13.50	0.5315	—	XTP13-13.50	XTM13-13.50	XTK13-13.50	XTN13-13.50
13.60	0.5354	—	XTP13-13.60	XTM13-13.60	XTK13-13.60	XTN13-13.60
13.70	0.5394	—	XTP13-13.70	XTM13-13.70	XTK13-13.70	XTN13-13.70
13.80	0.5433	—	XTP13-13.80	XTM13-13.80	XTK13-13.80	XTN13-13.80
13.89	0.5469	35/64	XTP13-13.89	XTM13-13.89	XTK13-13.89	XTN13-13.89

Inserts sold in multiples of 1.

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A20: 7 - 10

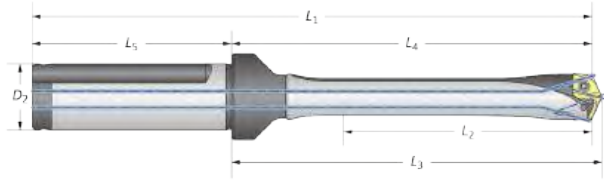
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.25 mm, steel, 13 series = use Part No. XTP13-13.25
Imperial:	0.5217", steel, 13 series = use Part No. XTP13-13.25



13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS XT Pro Holders



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	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	42.0	69.3	71.5	121.5	50.0	20		HXT0313S-20FM	HXT0313S-20CM
		5xD	70.0	97.3	99.5	149.5	50.0	20		HXT0513S-20FM	HXT0513S-20CM
		7xD	97.9	125.3	127.5	177.5	50.0	20		HXT0713S-20FM	HXT0713S-20CM
		10xD	139.9	167.3	169.5	219.5	50.0	20	⚠	HXT1013S-20FM	HXT1013S-20CM
		12xD	167.9	195.2	197.4	247.4	50.0	20	⚠	HXT1213S-20FM	HXT1213S-20CM
i	Straight	3xD	1.652	2.725	2.812	4.842	2.030	3/4		HXT0313S-075F	HXT0313S-075C
		5xD	2.754	3.827	3.914	5.944	2.030	3/4		HXT0513S-075F	HXT0513S-075C
		7xD	3.855	4.929	5.016	7.046	2.030	3/4		HXT0713S-075F	HXT0713S-075C
		10xD	5.508	6.582	6.669	8.699	2.030	3/4	⚠	HXT1013S-075F	HXT1013S-075C
		12xD	6.609	7.684	7.771	9.801	2.030	3/4	⚠	HXT1213S-075F	HXT1213S-075C

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

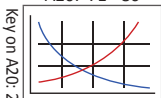
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)
i = Imperial (in)

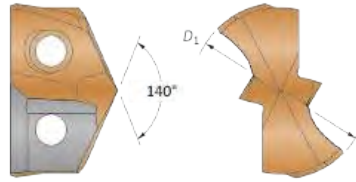
Screws sold in multiples of 10.



13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS XT Inserts

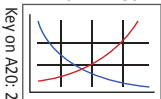
A20



Substrate	Insert			Carbide			
							
	D_1 mm	D_1 inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	13.00	0.5118	—	7C113P-13	7C113P-13LR	—	—
	13.10	0.5156	33/64	7C113P-.515	7C113P-.515LR	—	—
	13.50	0.5313	17/32	7C113P-0017	7C113P-0017LR	—	—
	13.50	0.5315	—	7C113P-13.5	7C113P-13.5LR	—	—
K20 (C2)	13.89	0.5469	35/64	7C113P-.546	7C113P-.546LR	—	—
	13.00	0.5118	—	7C213P-13	7C213P-13LR	7C213P-13CI	7C213P-13AS
	13.10	0.5156	33/64	7C213P-.515	7C213P-.515LR	7C213P-.515CI	7C213P-.515AS
	13.50	0.5313	17/32	7C213P-0017	7C213P-0017LR	7C213P-0017CI	7C213P-0017AS
	13.50	0.5315	—	7C213P-13.5	7C213P-13.5LR	7C213P-13.5CI	7C213P-13.5AS
	13.89	0.5469	35/64	7C213P-.546	7C213P-.546LR	7C213P-.546CI	7C213P-.546AS

Inserts sold in multiples of 1.

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Sizes not shown are available upon request.
When ordering, please follow the example below:

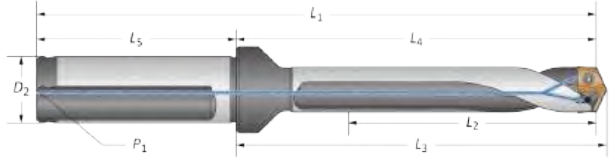
Metric:	13.25 mm, C2, cast iron, 13 series = use Part No. 7C213P-13.25CI
Imperial:	0.5217", C2, stainless, 13 series = use Part No. 7C213P-.5217AS



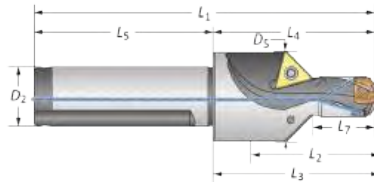
13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS Holders

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		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	42.0	69.3	71.5	121.5	50.0	20	1/8 BSPT	60313S-20FM	—
		5xD	70.0	97.3	99.5	149.5	50.0	20	1/8 BSPT	60513S-20FM	—
		7xD	98.0	125.3	127.5	177.5	50.0	20	1/8 BSPT	60713S-20FM	—
		Stub	15.7	43.0	45.2	95.2	50.0	20	1/8 BSPT	60113H-20FM	—
		3xD	42.0	69.3	71.5	121.5	50.0	20	1/8 BSPT	60313H-20FM	60313H-20CM
		5xD	70.0	97.3	99.5	149.5	50.0	20	1/8 BSPT	60513H-20FM	60513H-20CM
		7xD	98.0	125.3	127.5	177.5	50.0	20	1/8 BSPT	60713H-20FM	60713H-20CM
i		3xD	1.653	2.725	2.812	4.842	2.030	3/4	1/8 NPT	60313S-075F	—
		5xD	2.755	3.827	3.914	5.944	2.030	3/4	1/8 NPT	60513S-075F	—
		7xD	3.857	4.929	5.016	7.046	2.030	3/4	1/8 NPT	60713S-075F	—
		Stub	0.619	1.691	1.778	3.808	2.030	3/4	1/8 NPT	60113H-075F	—
		3xD	1.653	2.725	2.812	4.842	2.030	3/4	1/8 NPT	60313H-075F	60313H-075C
		5xD	2.755	3.827	3.914	5.944	2.030	3/4	1/8 NPT	60513H-075F	60513H-075C
		7xD	3.857	4.929	5.016	7.046	2.030	3/4	1/8 NPT	60713H-075F	60713H-075C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D ₅	L ₇	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂			
m	13	25.78	19.5	15.7	43.0	45.2	95.2	50.0	20	60113C45-20FM	TCMT-110204
i	13	1.0150	0.768	0.618	1.691	1.778	3.808	2.030	3/4	60113C45-075F	TCMT-110204

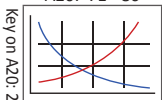
Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

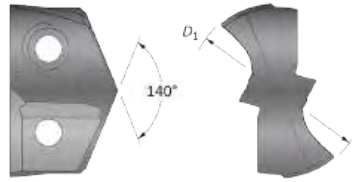
i = Imperial (in)

Screws sold in multiples of 10.

**14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")**

GEN3SYS XT Pro Inserts

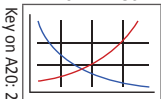
A20



Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
14.00	0.5512	—	XTP14-14.00	XTM14-14.00	XTK14-14.00	XTN14-14.00
14.10	0.5551	—	XTP14-14.10	XTM14-14.10	XTK14-14.10	XTN14-14.10
14.20	0.5591	—	XTP14-14.20	XTM14-14.20	XTK14-14.20	XTN14-14.20
14.29	0.5626	9/16	XTP14-14.29	XTM14-14.29	XTK14-14.29	XTN14-14.29
14.40	0.5669	—	XTP14-14.40	XTM14-14.40	XTK14-14.40	XTN14-14.40
14.50	0.5709	—	XTP14-14.50	XTM14-14.50	XTK14-14.50	XTN14-14.50
14.60	0.5748	—	XTP14-14.60	XTM14-14.60	XTK14-14.60	XTN14-14.60
14.68	0.5780	37/64	XTP14-14.68	XTM14-14.68	XTK14-14.68	XTN14-14.68
14.80	0.5827	—	XTP14-14.80	XTM14-14.80	XTK14-14.80	XTN14-14.80
14.90	0.5866	—	XTP14-14.90	XTM14-14.90	XTK14-14.90	XTN14-14.90

Inserts sold in multiples of 1.

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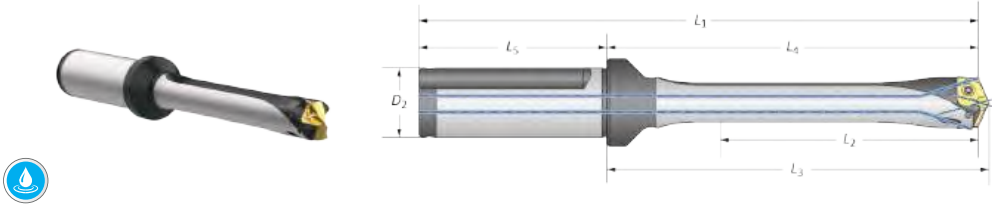
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	14.25 mm, steel, 14 series = use Part No. XTP14-14.25
Imperial:	0.5610", steel, 14 series = use Part No. XTP14-14.25



14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS XT Pro Holders



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	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	45.0	72.4	75.0	125.0	50.0	20		HXT0314S-20FM	HXT0314S-20CM
		5xD	74.9	102.4	104.9	154.9	50.0	20		HXT0514S-20FM	HXT0514S-20CM
		7xD	104.9	132.3	134.9	184.9	50.0	20		HXT0714S-20FM	HXT0714S-20CM
		10xD	149.9	177.2	179.8	229.8	50.0	20	⚠	HXT1014S-20FM	HXT1014S-20CM
		12xD	179.9	207.2	209.8	259.8	50.0	20	⚠	HXT1214S-20FM	HXT1214S-20CM
i	Straight	3xD	1.770	2.847	2.948	4.978	2.030	3/4		HXT0314S-075F	HXT0314S-075C
		5xD	2.950	4.028	4.129	6.159	2.030	3/4		HXT0514S-075F	HXT0514S-075C
		7xD	4.131	5.208	5.309	7.339	2.030	3/4		HXT0714S-075F	HXT0714S-075C
		10xD	5.901	6.979	7.080	9.110	2.030	3/4	⚠	HXT1014S-075F	HXT1014S-075C
		12xD	7.081	8.160	8.261	10.291	2.030	3/4	⚠	HXT1214S-075F	HXT1214S-075C

Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

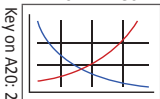
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)

i = Imperial (in)

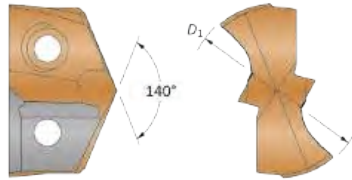
Screws sold in multiples of 10.



14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS XT Inserts

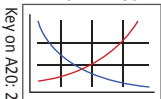
A20



Substrate	Insert			Carbide			
							
	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	14.00	0.5512	—	7C114P-14	7C114P-14LR	—	—
	14.29	0.5625	9/16	7C114P-0018	7C114P-0018LR	—	—
	14.50	0.5709	—	7C114P-14.5	7C114P-14.5LR	—	—
	14.68	0.5781	37/64	7C114P-.578	7C114P-.578LR	—	—
	14.80	0.5827	—	7C114P-14.8	7C114P-14.8LR	—	—
K20 (C2)	14.00	0.5512	—	7C214P-14	7C214P-14LR	7C214P-14CI	7C214P-14AS
	14.29	0.5625	9/16	7C214P-0018	7C214P-0018LR	7C214P-0018CI	7C214P-0018AS
	14.50	0.5709	—	7C214P-14.5	7C214P-14.5LR	7C214P-14.5CI	7C214P-14.5AS
	14.68	0.5781	37/64	7C214P-.578	7C214P-.578LR	7C214P-.578CI	7C214P-.578AS
	14.80	0.5827	—	7C214P-14.8	7C214P-14.8LR	7C214P-14.8CI	7C214P-14.8AS

Inserts sold in multiples of 1.

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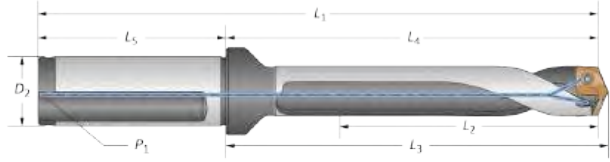
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	14.25 mm, C2, cast iron, 14 series = use Part No. 7C214P-14.25CI
Imperial:	0.5610", C2, stainless, 14 series = use Part No. 7C214P-.5610AS



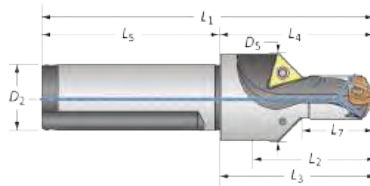
14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")

GEN3SYS Holders



A20

		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	45.0	72.4	75.0	125.0	50.0	20	1/8 BSPT	60314S-20FM	—
		5xD	75.0	102.4	104.9	154.9	50.0	20	1/8 BSPT	60514S-20FM	—
		7xD	105.0	132.4	134.9	184.9	50.0	20	1/8 BSPT	60714S-20FM	—
		Stub	17.3	44.6	47.2	97.2	50.0	20	1/8 BSPT	60114H-20FM	—
		3xD	45.0	72.4	75.0	125.0	50.0	20	1/8 BSPT	60314H-20FM	60314H-20CM
		5xD	75.0	102.4	104.9	154.9	50.0	20	1/8 BSPT	60514H-20FM	60514H-20CM
	7xD	105.0	132.4	134.9	184.9	50.0	20	1/8 BSPT	60714H-20FM	60714H-20CM	
i		3xD	1.772	2.847	2.948	4.978	2.030	3/4	1/8 NPT	60314S-075F	—
		5xD	2.952	4.027	4.128	6.158	2.030	3/4	1/8 NPT	60514S-075F	—
		7xD	4.133	5.208	5.309	7.339	2.030	3/4	1/8 NPT	60714S-075F	—
		Stub	0.681	1.756	1.857	3.887	2.030	3/4	1/8 NPT	60114H-075F	—
		3xD	1.772	2.847	2.948	4.978	2.030	3/4	1/8 NPT	60314H-075F	60314H-075C
		5xD	2.952	4.027	4.128	6.158	2.030	3/4	1/8 NPT	60514H-075F	60514H-075C
		7xD	4.133	5.208	5.309	7.339	2.030	3/4	1/8 NPT	60714H-075F	60714H-075C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	14	26.67	21.0	17.1	44.6	47.2	97.2	50.0	20	60114C45-20FM	TCMT-110204
i	14	1.0500	0.827	0.672	1.756	1.857	3.887	2.030	3/4	60114C45-075F	TCMT-110204

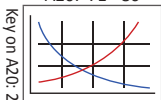
Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

i = Imperial (in)

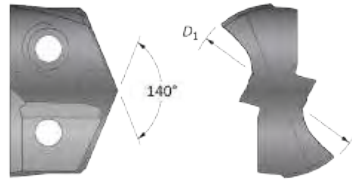
Screws sold in multiples of 10.



15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS XT Pro Inserts

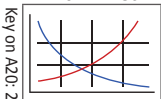
A20



Insert			Carbide			
			 Part No.	 Part No.	 Part No.	 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N
15.00	0.5906	—	XTP15-15.00	XTM15-15.00	XTK15-15.00	XTN15-15.00
15.08	0.5937	19/32	XTP15-15.08	XTM15-15.08	XTK15-15.08	XTN15-15.08
15.20	0.5984	—	XTP15-15.20	XTM15-15.20	XTK15-15.20	XTN15-15.20
15.30	0.6024	—	XTP15-15.30	XTM15-15.30	XTK15-15.30	XTN15-15.30
15.40	0.6063	—	XTP15-15.40	XTM15-15.40	XTK15-15.40	XTN15-15.40
15.48	0.6094	39/64	XTP15-15.48	XTM15-15.48	XTK15-15.48	XTN15-15.48
15.50	0.6102	—	XTP15-15.50	XTM15-15.50	XTK15-15.50	XTN15-15.50
15.60	0.6142	—	XTP15-15.60	XTM15-15.60	XTK15-15.60	XTN15-15.60
15.70	0.6181	—	XTP15-15.70	XTM15-15.70	XTK15-15.70	XTN15-15.70
15.80	0.6220	—	XTP15-15.80	XTM15-15.80	XTK15-15.80	XTN15-15.80
15.88	0.6252	5/8	XTP15-15.88	XTM15-15.88	XTK15-15.88	XTN15-15.88

Inserts sold in multiples of 1.

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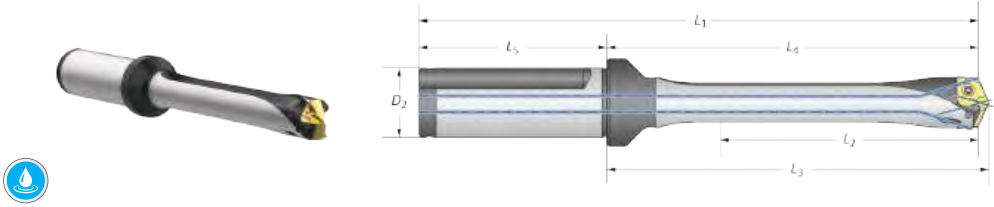
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	15.25 mm, steel, 15 series = use Part No. XTP15-15.25
Imperial:	0.6280", steel, 15 series = use Part No. XTP15-15.95



15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	48.0	75.1	77.6	127.6	50.0	20		HXT0315S-20FM	HXT0315S-20CM
		5xD	79.9	107.0	109.6	159.6	50.0	20		HXT0515S-20FM	HXT0515S-20CM
		7xD	111.9	139.0	141.6	191.6	50.0	20		HXT0715S-20FM	HXT0715S-20CM
		10xD	159.9	187.0	189.6	239.6	50.0	20		HXT1015S-20FM	HXT1015S-20CM
		12xD	191.9	219.0	221.5	271.6	50.0	20		HXT1215S-20FM	HXT1215S-20CM
i	Straight	3xD	1.889	2.952	3.053	5.083	2.030	3/4		HXT0315S-075F	HXT0315S-075C
		5xD	3.148	4.211	4.312	6.342	2.030	3/4		HXT0515S-075F	HXT0515S-075C
		7xD	4.407	5.470	5.571	7.601	2.030	3/4		HXT0715S-075F	HXT0715S-075C
		10xD	6.296	7.359	7.460	9.490	2.030	3/4		HXT1015S-075F	HXT1015S-075C
		12xD	7.555	8.618	8.719	10.749	2.030	3/4		HXT1215S-075F	HXT1215S-075C

Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

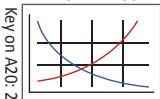
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)

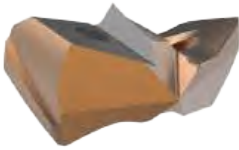
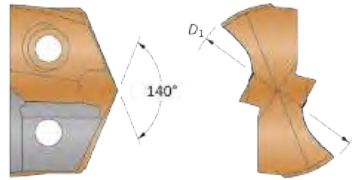
i = Imperial (in)

Screws sold in multiples of 10.

**15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")**

GEN3SYS XT Inserts

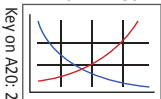
A20



Substrate	Insert			Carbide			
							
	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	15.00	0.5906	—	7C115P-15	7C115P-15LR	—	—
	15.08	0.5938	19/32	7C115P-0019	7C115P-0019LR	—	—
	15.25	0.6004	—	7C115P-15.25	7C115P-15.25LR	—	—
	15.48	0.6094	39/64	7C115P-.609	7C115P-.609LR	—	—
	15.50	0.6102	—	7C115P-15.5	7C115P-15.5LR	—	—
	15.70	0.6180	—	7C115P-.618	7C115P-.618LR	—	—
K20 (C2)	15.88	0.6250	5/8	7C115P-0020	7C115P-0020LR	—	—
	15.00	0.5906	—	7C215P-15	7C215P-15LR	7C215P-15CI	7C215P-15AS
	15.08	0.5938	19/32	7C215P-0019	7C215P-0019LR	7C215P-0019CI	7C215P-0019AS
	15.25	0.6004	—	7C215P-15.25	7C215P-15.25LR	7C215P-15.25CI	7C215P-15.25AS
	15.48	0.6094	39/64	7C215P-.609	7C215P-.609LR	7C215P-.609CI	7C215P-.609AS
	15.50	0.6102	—	7C215P-15.5	7C215P-15.5LR	7C215P-15.5CI	7C215P-15.5AS
	15.70	0.6180	—	7C215P-.618	7C215P-.618LR	7C215P-.618CI	7C215P-.618AS
	15.88	0.6250	5/8	7C215P-0020	7C215P-0020LR	7C215P-0020CI	7C215P-0020AS

Inserts sold in multiples of 1.

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A20: 7 - 10

Sizes not shown are available upon request.
When ordering, please follow the example below:

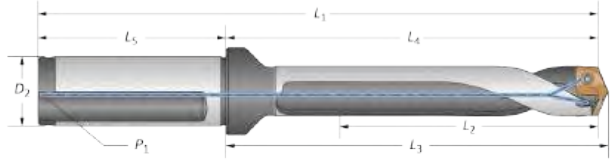
Metric:	15.95 mm, C2, cast iron, 15 series = use Part No. 7C215P-15.95CI
Imperial:	0.6280", C2, stainless, 15 series = use Part No. 7C215P-.6280AS



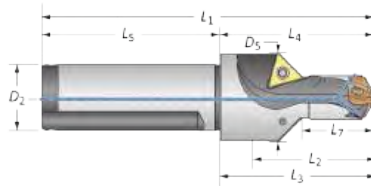
15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS Holders

A20



	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	48.0	75.1	77.6	127.6	50.0	20	1/8 BSPT		60315S-20FM	—
		5xD	80.0	107.0	109.6	159.6	50.0	20	1/8 BSPT		60515S-20FM	—
		7xD	112.0	139.0	141.6	191.6	50.0	20	1/8 BSPT		60715S-20FM	—
	Helical	Stub	17.3	44.3	46.8	96.9	50.0	20	1/8 BSPT		60115H-20FM	—
		3xD	48.0	75.1	77.6	127.6	50.0	20	1/8 BSPT		60315H-20FM	60315H-20CM
		5xD	80.0	107.0	109.6	159.6	50.0	20	1/8 BSPT		60515H-20FM	60515H-20CM
i	Straight	3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT		60315S-075F	—
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT		60515S-075F	—
		7xD	4.408	5.470	5.571	7.601	2.030	3/4	1/8 NPT		60715S-075F	—
	Helical	Stub	0.681	1.743	1.844	3.874	2.030	3/4	1/8 NPT		60115H-075F	—
		3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT		60315H-075F	60315H-075C
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT		60515H-075F	60515H-075C
i	Straight	3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT		60315H-075F	60315H-075C
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT		60515H-075F	60515H-075C
		7xD	4.408	5.470	5.571	7.601	2.030	3/4	1/8 NPT		60715H-075F	60715H-075C
	Helical	Stub	0.681	1.743	1.844	3.874	2.030	3/4	1/8 NPT		60115H-075F	—
		3xD	1.890	2.952	3.053	5.083	2.030	3/4	1/8 NPT		60315H-075F	60315H-075C
		5xD	3.149	4.211	4.312	6.342	2.030	3/4	1/8 NPT		60515H-075F	60515H-075C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m 15	26.99	22.5	17.2	44.3	46.8	96.9	50.0	20		60115C45-20FM	TCMT-110204
i 15	1.0625	0.886	0.679	1.743	1.844	3.874	2.030	3/4		60115C45-075F	TCMT-110204

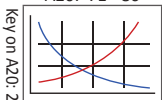
Connection Accessories

					Admissible Tightening Torque*
Insert Screws 7247-IP7-1	Nylon Locking Screws 7247N-IP7-1	Insert Driver 8IP-7	Preset Torque Hand Driver 8IP-7TL	Replacement Tips 8IP-7B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

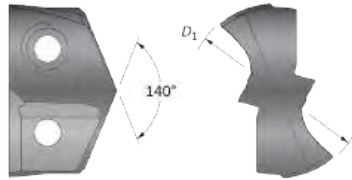
i = Imperial (in)

Screws sold in multiples of 10.

**16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")**

GEN3SYS XT Pro Inserts

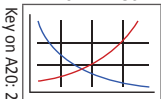
A20



Insert			Carbide			
						
D_1 mm	D_1 inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.
			P	M	K	N
16.00	0.6299	—	XTP16-16.00	XTM16-16.00	XTK16-16.00	XTN16-16.00
16.08	0.6331	—	XTP16-16.08	XTM16-16.08	XTK16-16.08	XTN16-16.08
16.20	0.6378	—	XTP16-16.20	XTM16-16.20	XTK16-16.20	XTN16-16.20
16.27	0.6406	41/64	XTP16-16.27	XTM16-16.27	XTK16-16.27	XTN16-16.27
16.40	0.6457	—	XTP16-16.40	XTM16-16.40	XTK16-16.40	XTN16-16.40
16.50	0.6496	—	XTP16-16.50	XTM16-16.50	XTK16-16.50	XTN16-16.50
16.60	0.6535	—	XTP16-16.60	XTM16-16.60	XTK16-16.60	XTN16-16.60
16.67	0.6563	21/32	XTP16-16.67	XTM16-16.67	XTK16-16.67	XTN16-16.67
16.80	0.6614	—	XTP16-16.80	XTM16-16.80	XTK16-16.80	XTN16-16.80
16.90	0.6654	—	XTP16-16.90	XTM16-16.90	XTK16-16.90	XTN16-16.90

Inserts sold in multiples of 1.

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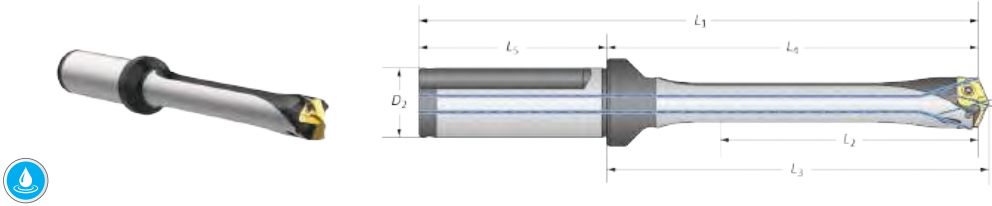
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	16.25 mm, steel, 16 series = use Part No. XTP16-16.25
Imperial:	0.6398", steel, 16 series = use Part No. XTP16-16.25



16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS XT Pro Holders



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	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	51.0	81.3	84.2	134.2	50.0	20		HXT0316S-20FM	HXT0316S-20CM
		5xD	85.0	115.3	118.2	168.2	50.0	20		HXT0516S-20FM	HXT0516S-20CM
		7xD	118.9	149.3	152.2	202.2	50.0	20		HXT0716S-20FM	HXT0716S-20CM
		10xD	169.9	200.3	203.2	253.2	50.0	20		HXT1016S-20FM	HXT1016S-20CM
		12xD	203.9	234.3	237.2	287.2	50.0	20		HXT1216S-20FM	HXT1216S-20CM
i	Straight	3xD	2.007	3.200	3.314	5.344	2.030	3/4		HXT0316S-075F	HXT0316S-075C
		5xD	3.345	4.538	4.652	6.682	2.030	3/4		HXT0516S-075F	HXT0516S-075C
		7xD	4.682	5.876	5.990	8.020	2.030	3/4		HXT0716S-075F	HXT0716S-075C
		10xD	6.689	7.883	7.997	10.027	2.030	3/4		HXT1016S-075F	HXT1016S-075C
		12xD	8.027	9.221	9.335	11.365	2.030	3/4		HXT1216S-075F	HXT1216S-075C

Connection Accessories

					Admissible Tightening Torque*
72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

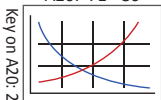
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

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m = Metric (mm)

i = Imperial (in)

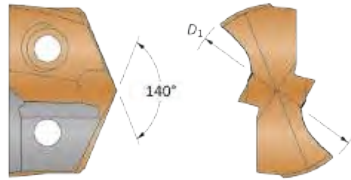
Screws sold in multiples of 10.



16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS XT Inserts

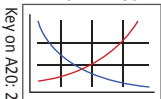
A20



Substrate	Insert			Carbide			
							
	D_1 mm	D_1 inch	Fractional Equivalent	Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	16.00	0.6299	—	7C116P-16	7C116P-16LR	—	—
	16.08	0.6331	—	7C116P-16.08	7C116P-16.08LR	—	—
	16.27	0.6406	41/64	7C116P-.640	7C116P-.640LR	—	—
	16.50	0.6496	—	7C116P-16.5	7C116P-16.5LR	—	—
	16.67	0.6563	21/32	7C116P-0021	7C116P-0021LR	—	—
K20 (C2)	16.00	0.6299	—	7C216P-16	7C216P-16LR	7C216P-16CI	7C216P-16AS
	16.08	0.6331	—	7C216P-16.08	7C216P-16.08LR	7C216P-16.08CI	7C216P-16.08AS
	16.27	0.6406	41/64	7C216P-.640	7C216P-.640LR	7C216P-.640CI	7C216P-.640AS
	16.50	0.6496	—	7C216P-16.5	7C216P-16.5LR	7C216P-16.5CI	7C216P-16.5AS
	16.67	0.6563	21/32	7C216P-0021	7C216P-0021LR	7C216P-0021CI	7C216P-0021AS

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10



Sizes not shown are available upon request.
When ordering, please follow the example below:

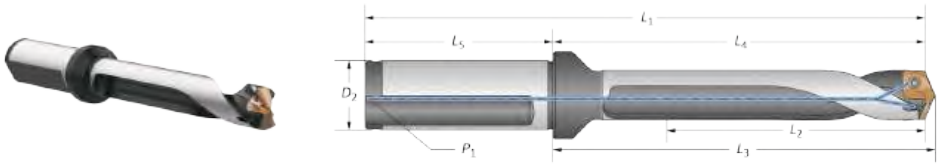
Metric:	16.25 mm, C2, cast iron, 16 series = use Part No. 7C216P-16.25CI
Imperial:	0.6398", C2, stainless, 16 series = use Part No. 7C216P-.6398AS



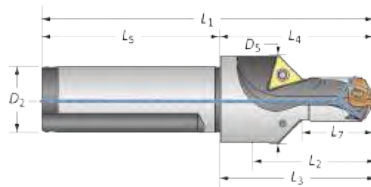
16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS Holders

A20



		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	51.0	81.3	84.2	134.2	50.0	20	1/8 BSPT	60316S-20FM	—
		5xD	85.0	115.3	118.2	168.2	50.0	20	1/8 BSPT	60516S-20FM	—
		7xD	118.9	149.3	152.2	202.2	50.0	20	1/8 BSPT	60716S-20FM	—
		Stub	20.5	50.8	53.7	103.7	50.0	20	1/8 BSPT	60116H-20FM	—
		3xD	51.0	81.3	84.2	134.2	50.0	20	1/8 BSPT	60316H-20FM	60316H-20CM
		5xD	85.0	115.3	118.2	168.2	50.0	20	1/8 BSPT	60516H-20FM	60516H-20CM
		7xD	118.9	149.3	152.2	202.2	50.0	20	1/8 BSPT	60716H-20FM	60716H-20CM
i		3xD	2.007	3.200	3.314	5.344	2.030	3/4	1/8 NPT	60316S-075F	—
		5xD	3.345	4.538	4.652	6.682	2.030	3/4	1/8 NPT	60516S-075F	—
		7xD	4.682	5.876	5.990	8.020	2.030	3/4	1/8 NPT	60716S-075F	—
		Stub	0.806	2.000	2.114	4.144	2.030	3/4	1/8 NPT	60116H-075F	—
		3xD	2.007	3.200	3.314	5.344	2.030	3/4	1/8 NPT	60316H-075F	60316H-075C
		5xD	3.345	4.538	4.652	6.682	2.030	3/4	1/8 NPT	60516H-075F	60516H-075C
		7xD	4.682	5.876	5.990	8.020	2.030	3/4	1/8 NPT	60716H-075F	60716H-075C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	16	26.99	24.0	20.2	50.8	53.7	103.7	50.0	20	60116C45-20FM	TCMT-110204
i	16	1.0625	0.945	0.797	2.000	2.114	4.144	2.030	3/4	60116C45-075F	TCMT-110204

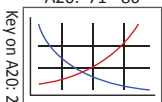
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

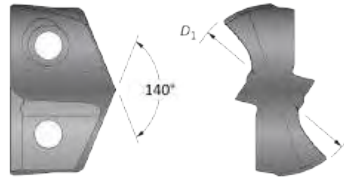
i = Imperial (in)

Screws sold in multiples of 10.

**17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")**

GEN3SYS XT Pro Inserts

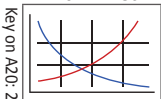
A20



Insert			Carbide			
			 Part No.	 Part No.	 Part No.	 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	P	M	K	N
17.00	0.6693	—	XTP17-17.00	XTM17-17.00	XTK17-17.00	XTN17-17.00
17.07	0.6720	43/64	XTP17-17.07	XTM17-17.07	XTK17-17.07	XTN17-17.07
17.10	0.6732	—	XTP17-17.10	XTM17-17.10	XTK17-17.10	XTN17-17.10
17.20	0.6772	—	XTP17-17.20	XTM17-17.20	XTK17-17.20	XTN17-17.20
17.30	0.6811	—	XTP17-17.30	XTM17-17.30	XTK17-17.30	XTN17-17.30
17.40	0.6850	—	XTP17-17.40	XTM17-17.40	XTK17-17.40	XTN17-17.40
17.46	0.6874	11/16	XTP17-17.46	XTM17-17.46	XTK17-17.46	XTN17-17.46
17.50	0.6890	—	XTP17-17.50	XTM17-17.50	XTK17-17.50	XTN17-17.50
17.60	0.6929	—	XTP17-17.60	XTM17-17.60	XTK17-17.60	XTN17-17.60
17.70	0.6969	—	XTP17-17.70	XTM17-17.70	XTK17-17.70	XTN17-17.70
17.80	0.7008	—	XTP17-17.80	XTM17-17.80	XTK17-17.80	XTN17-17.80
17.86	0.7031	45/64	XTP17-17.86	XTM17-17.86	XTK17-17.86	XTN17-17.86
17.90	0.7047	—	XTP17-17.90	XTM17-17.90	XTK17-17.90	XTN17-17.90

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10

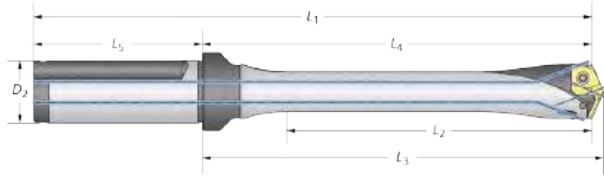
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	17.25 mm, steel, 17 series = use Part No. XTP17-17.25
Imperial:	0.6790", steel, 17 series = use Part No. XTP17-17.25



17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

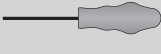
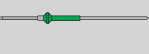
GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m		3xD	54.0	84.1	87.0	137.0	50.0	20		HXT0317S-20FM	HXT0317S-20CM
		5xD	89.9	120.0	122.9	172.9	50.0	20		HXT0517S-20FM	HXT0517S-20CM
		7xD	125.9	156.0	158.9	208.9	50.0	20		HXT0717S-20FM	HXT0717S-20CM
		10xD	179.9	210.0	212.9	262.9	50.0	20	⚠	HXT1017S-20FM	HXT1017S-20CM
		12xD	215.9	246.0	248.9	298.9	50.0	20	⚠	HXT1217S-20FM	HXT1217S-20CM
i		3xD	2.125	3.307	3.421	5.451	2.030	3/4		HXT0317S-075F	HXT0317S-075C
		5xD	3.541	4.724	4.838	6.868	2.030	3/4		HXT0517S-075F	HXT0517S-075C
		7xD	4.958	6.140	6.254	8.284	2.030	3/4		HXT0717S-075F	HXT0717S-075C
		10xD	7.083	8.265	8.379	10.409	2.030	3/4	⚠	HXT1017S-075F	HXT1017S-075C
		12xD	8.499	9.682	9.796	11.826	2.030	3/4	⚠	HXT1217S-075F	HXT1217S-075C

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

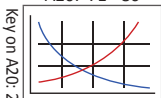
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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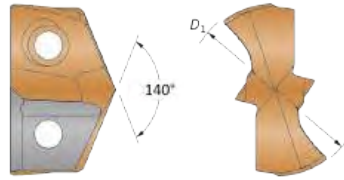
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")**

GEN3SYS XT Inserts

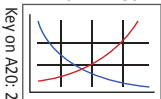
A20



Substrate	Insert			Carbide			
							
	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No. Standard	Part No. Low Rate	Part No. Cast Iron	Part No. Stainless
K35 (C1)	17.00	0.6693	—	7C117P-17	7C117P-17LR	—	—
	17.07	0.6719	43/64	7C117P-.671	7C117P-.671LR	—	—
	17.10	0.6732	—	7C117P-17.1	7C117P-17.1LR	—	—
	17.20	0.6772	—	7C117P-17.2	7C117P-17.2LR	—	—
	17.46	0.6875	11/16	7C117P-0022	7C117P-0022LR	—	—
	17.50	0.6890	—	7C117P-17.5	7C117P-17.5LR	—	—
K20 (C2)	17.86	0.7031	45/64	7C117P-.703	7C117P-.703LR	—	—
	17.00	0.6693	—	7C217P-17	7C217P-17LR	7C217P-17CI	7C217P-17AS
	17.07	0.6719	43/64	7C217P-.671	7C217P-.671LR	7C217P-.671CI	7C217P-.671AS
	17.10	0.6732	—	7C217P-17.1	7C217P-17.1LR	7C217P-17.1CI	7C217P-17.1AS
	17.20	0.6772	—	7C217P-17.2	7C217P-17.2LR	7C217P-17.2CI	7C217P-17.2AS
	17.46	0.6875	11/16	7C217P-0022	7C217P-0022LR	7C217P-0022CI	7C217P-0022AS
	17.50	0.6890	—	7C217P-17.5	7C217P-17.5LR	7C217P-17.5CI	7C217P-17.5AS
	17.86	0.7031	45/64	7C217P-.703	7C217P-.703LR	7C217P-.703CI	7C217P-.703AS

Inserts sold in multiples of 1.

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Sizes not shown are available upon request.
When ordering, please follow the example below:

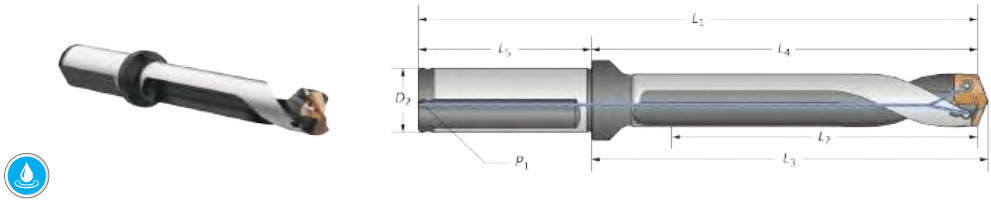
Metric:	17.25 mm, C2, cast iron, 17 series = use Part No. 7C217P-17.25CI
Imperial:	0.6790", C2, stainless, 17 series = use Part No. 7C217P-.6790AS



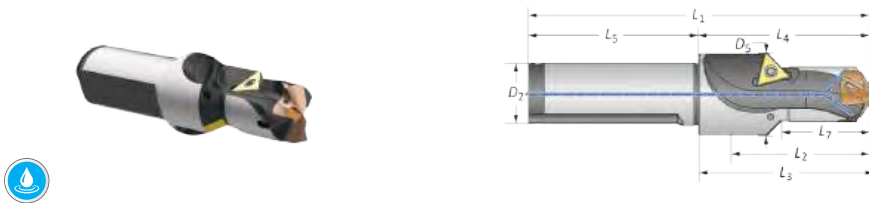
17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS Holders

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		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	54.0	84.1	87.0	137.0	50.0	20	1/8 BSPT	60317S-20FM	—
		5xD	90.0	120.0	122.9	172.9	50.0	20	1/8 BSPT	60517S-20FM	—
		7xD	125.9	156.0	158.9	208.9	50.0	20	1/8 BSPT	60717S-20FM	—
		Stub	20.5	50.5	53.4	103.4	50.0	20	1/8 BSPT	60117H-20FM	—
		3xD	54.0	84.1	87.0	137.0	50.0	20	1/8 BSPT	60317H-20FM	60317H-20CM
		5xD	90.0	120.0	122.9	172.9	50.0	20	1/8 BSPT	60517H-20FM	60517H-20CM
		7xD	125.9	156.0	158.9	208.9	50.0	20	1/8 BSPT	60717H-20FM	60717H-20CM
i		3xD	2.126	3.307	3.421	5.451	2.030	3/4	1/8 NPT	60317S-075F	—
		5xD	3.542	4.723	4.837	6.867	2.030	3/4	1/8 NPT	60517S-075F	—
		7xD	4.959	6.140	6.254	8.284	2.030	3/4	1/8 NPT	60717S-075F	—
		Stub	0.806	1.987	2.101	4.131	2.030	3/4	1/8 NPT	60117H-075F	—
		3xD	2.126	3.307	3.421	5.451	2.030	3/4	1/8 NPT	60317H-075F	60317H-075C
		5xD	3.542	4.723	4.837	6.867	2.030	3/4	1/8 NPT	60517H-075F	60517H-075C
		7xD	4.959	6.140	6.254	8.284	2.030	3/4	1/8 NPT	60717H-075F	60717H-075C

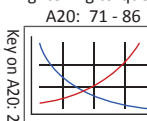
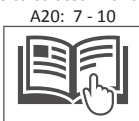


Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	17	25.40	25.5	20.4	50.5	53.4	103.4	50.0	20	60117C45-20FM	TCMT-110204
i	17	1.0000	1.004	4.017	1.987	2.101	4.131	2.030	3/4	60117C45-075F	TCMT-110204

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)
i = Imperial (in)

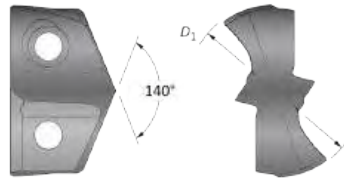
Screws sold in multiples of 10.



18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS XT Pro Inserts

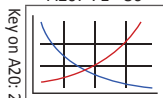
A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No. P	Part No. M	Part No. K	Part No. N
18.00	0.7087	—	XTP18-18.00	XTM18-18.00	XTK18-18.00	XTN18-18.00
18.10	0.7126	—	XTP18-18.10	XTM18-18.10	XTK18-18.10	XTN18-18.10
18.20	0.7165	—	XTP18-18.20	XTM18-18.20	XTK18-18.20	XTN18-18.20
18.26	0.7189	23/32	XTP18-18.26	XTM18-18.26	XTK18-18.26	XTN18-18.26
18.30	0.7205	—	XTP18-18.30	XTM18-18.30	XTK18-18.30	XTN18-18.30
18.40	0.7244	—	XTP18-18.40	XTM18-18.40	XTK18-18.40	XTN18-18.40
18.50	0.7283	—	XTP18-18.50	XTM18-18.50	XTK18-18.50	XTN18-18.50
18.60	0.7323	—	XTP18-18.60	XTM18-18.60	XTK18-18.60	XTN18-18.60
18.65	0.7343	47/64	XTP18-18.65	XTM18-18.65	XTK18-18.65	XTN18-18.65
18.70	0.7362	—	XTP18-18.70	XTM18-18.70	XTK18-18.70	XTN18-18.70
18.80	0.7402	—	XTP18-18.80	XTM18-18.80	XTK18-18.80	XTN18-18.80
18.90	0.7441	—	XTP18-18.90	XTM18-18.90	XTK18-18.90	XTN18-18.90
19.00	0.7480	—	XTP18-19.00	XTM18-19.00	XTK18-19.00	XTN18-19.00
19.05	0.7500	3/4	XTP18-19.05	XTM18-19.05	XTK18-19.05	XTN18-19.05
19.10	0.7520	—	XTP18-19.10	XTM18-19.10	XTK18-19.10	XTN18-19.10
19.20	0.7559	—	XTP18-19.20	XTM18-19.20	XTK18-19.20	XTN18-19.20
19.25	0.7579	—	XTP18-19.25	XTM18-19.25	XTK18-19.25	XTN18-19.25
19.30	0.7598	—	XTP18-19.30	XTM18-19.30	XTK18-19.30	XTN18-19.30
19.40	0.7638	—	XTP18-19.40	XTM18-19.40	XTK18-19.40	XTN18-19.40
19.45	0.7657	49/64	XTP18-19.45	XTM18-19.45	XTK18-19.45	XTN18-19.45
19.50	0.7677	—	XTP18-19.50	XTM18-19.50	XTK18-19.50	XTN18-19.50
19.60	0.7717	—	XTP18-19.60	XTM18-19.60	XTK18-19.60	XTN18-19.60
19.70	0.7756	—	XTP18-19.70	XTM18-19.70	XTK18-19.70	XTN18-19.70
19.80	0.7795	—	XTP18-19.80	XTM18-19.80	XTK18-19.80	XTN18-19.80
19.84	0.7811	25/32	XTP18-19.84	XTM18-19.84	XTK18-19.84	XTN18-19.84
19.90	0.7835	—	XTP18-19.90	XTM18-19.90	XTK18-19.90	XTN18-19.90

Inserts sold in multiples of 1.

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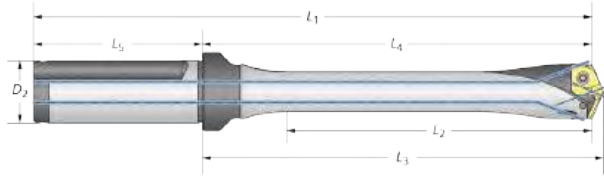
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	18.25 mm, steel, 18 series = use Part No. XTP18-18.25
Imperial:	0.7185", steel, 18 series = use Part No. XTP18-18.25



18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

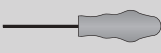
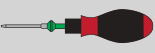
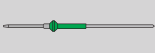
GEN3SYS XT Pro Holders



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	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	60.0	94.0	96.8	152.8	56.0	25		HXT0318S-25FM	HXT0318S-25CM
		5xD	100.0	134.0	136.8	192.8	56.0	25		HXT0518S-25FM	HXT0518S-25CM
		7xD	139.9	174.0	176.8	232.8	56.0	25		HXT0718S-25FM	HXT0718S-25CM
		10xD	199.9	233.9	236.7	292.7	56.0	25	⚠	HXT1018S-25FM	HXT1018S-25CM
		12xD	239.9	273.9	276.7	332.7	56.0	25	⚠	HXT1218S-25FM	HXT1218S-25CM
i	Straight	3xD	2.362	3.701	3.811	6.091	2.280	1		HXT0318S-100F	HXT0318S-100C
		5xD	3.936	5.275	5.385	7.665	2.280	1		HXT0518S-100F	HXT0518S-100C
		7xD	5.510	6.849	6.959	9.239	2.280	1		HXT0718S-100F	HXT0718S-100C
		10xD	7.871	9.210	9.320	11.600	2.280	1	⚠	HXT1018S-100F	HXT1018S-100C
		12xD	9.445	10.784	10.894	13.174	2.280	1	⚠	HXT1218S-100F	HXT1218S-100C

Connection Accessories

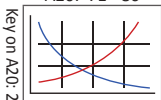
					Admissible Tightening Torque*
Insert Screws 7375-IP9-1	Nylon Locking Screws 7375N-IP9-1	Insert Driver 8IP-9	Preset Torque Hand Driver 8IP-9TL	Replacement Tips 8IP-9B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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A20: 7 - 10



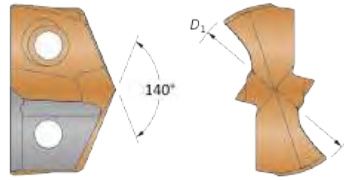
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")**

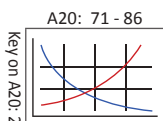
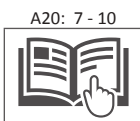
GEN3SYS XT Inserts

A20



Substrate	Insert			Carbide			
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	18.00	0.7087	—	7C118P-18	7C118P-18LR	—	—
	18.26	0.7188	23/32	7C118P-0023	7C118P-0023LR	—	—
	18.50	0.7283	—	7C118P-18.5	7C118P-18.5LR	—	—
	18.65	0.7344	47/64	7C118P-.734	7C118P-.734LR	—	—
	19.00	0.7480	—	7C118P-19	7C118P-19LR	—	—
	19.05	0.7500	3/4	7C118P-0024	7C118P-0024LR	—	—
	19.25	0.7580	—	7C118P-.758	7C118P-.758LR	—	—
	19.45	0.7656	49/64	7C118P-.765	7C118P-.765LR	—	—
	19.50	0.7677	—	7C118P-19.5	7C118P-19.5LR	—	—
K20 (C2)	18.00	0.7087	—	7C218P-18	7C218P-18LR	7C218P-18CI	7C218P-18AS
	18.26	0.7188	23/32	7C218P-0023	7C218P-0023LR	7C218P-0023CI	7C218P-0023AS
	18.50	0.7283	—	7C218P-18.5	7C218P-18.5LR	7C218P-18.5CI	7C218P-18.5AS
	18.65	0.7344	47/64	7C218P-.734	7C218P-.734LR	7C218P-.734CI	7C218P-.734AS
	19.00	0.7480	—	7C218P-19	7C218P-19LR	7C218P-19CI	7C218P-19AS
	19.05	0.7500	3/4	7C218P-0024	7C218P-0024LR	7C218P-0024CI	7C218P-0024AS
	19.25	0.7580	—	7C218P-.758	7C218P-.758LR	7C218P-.758CI	7C218P-.758AS
	19.45	0.7656	49/64	7C218P-.765	7C218P-.765LR	7C218P-.765CI	7C218P-.765AS
	19.50	0.7677	—	7C218P-19.5	7C218P-19.5LR	7C218P-19.5CI	7C218P-19.5AS
	19.80	0.7795	—	7C218P-19.8	7C218P-19.8LR	7C218P-19.8CI	7C218P-19.8AS
	19.85	0.7813	25/32	7C218P-0025	7C218P-0025LR	7C218P-0025CI	7C218P-0025AS

Inserts sold in multiples of 1.



Sizes not shown are available upon request.
When ordering, please follow the example below:

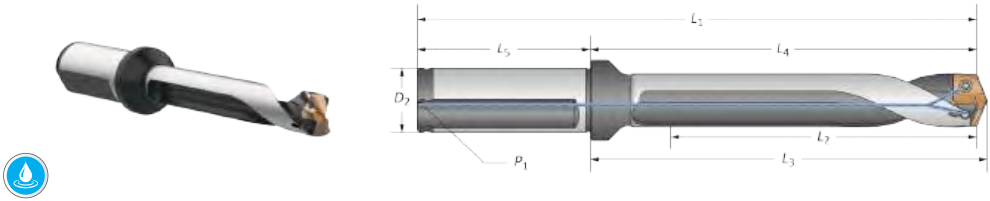
Metric:	18.25 mm, C2, cast iron, 18 series = use Part No. 7C218P-18.25CI
Imperial:	0.7185", C2, stainless, 18 series = use Part No. 7C218P-.7185AS



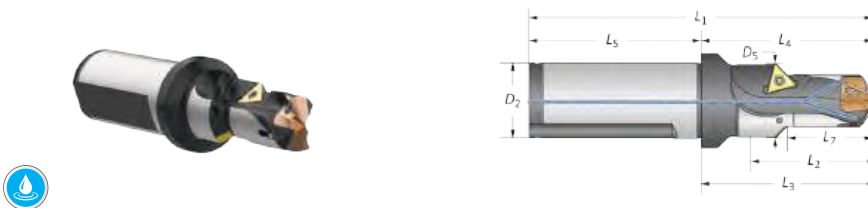
18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS Holders

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	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	60.0	94.0	96.8	152.8	56.0	25	1/8 BSPT		60318S-25FM	—
		5xD	99.9	134.0	136.8	192.8	56.0	25	1/8 BSPT		60518S-25FM	—
		7xD	139.9	174.0	176.8	232.8	56.0	25	1/8 BSPT		60718S-25FM	—
	Helical	Stub	21.9	56.0	58.8	114.8	56.0	25	1/8 BSPT		60118H-25FM	—
		3xD	60.0	94.0	96.8	152.8	56.0	25	1/8 BSPT		60318H-25FM	60318H-25CM
		5xD	99.9	134.0	136.8	192.8	56.0	25	1/8 BSPT		60518H-25FM	60518H-25CM
i	Straight	7xD	139.9	174.0	176.8	232.8	56.0	25	1/8 BSPT		60718H-25FM	60718H-25CM
	Helical	3xD	2.360	3.701	3.811	6.091	2.280	1	1/8 NPT		60318S-100F	—
		5xD	3.934	5.275	5.385	7.665	2.280	1	1/8 NPT		60518S-100F	—
		7xD	5.508	6.849	6.959	9.239	2.280	1	1/8 NPT		60718S-100F	—
	Helical	Stub	0.862	2.203	2.313	4.593	2.280	1	1/8 NPT		60118H-100F	—
		3xD	2.360	3.701	3.811	6.091	2.280	1	1/8 NPT		60318H-100F	60318H-100C
		5xD	3.934	5.275	5.385	7.665	2.280	1	1/8 NPT		60518H-100F	60518H-100C
		7xD	5.508	6.849	6.959	9.239	2.280	1	1/8 NPT		60718H-100F	60718H-100C

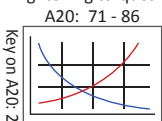
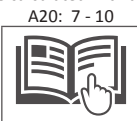


Series	Step		Body				Shank		Part No.		
	D_s	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	18	25.15	27.0	21.8	56.0	58.8	114.8	56.0	25	60118C45-25FM	TCMT-110204
i	18	0.9900	1.063	0.857	2.203	2.313	4.593	2.280	1	60118C45-100F	TCMT-110204

Connection Accessories

Insert Screws 7375-IP9-1	Nylon Locking Screws 7375N-IP9-1	Insert Driver 8IP-9	Preset Torque Hand Driver 8IP-9TL	Replacement Tips 8IP-9B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

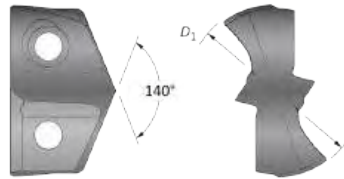
Screws sold in multiples of 10.



20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS XT Pro Inserts

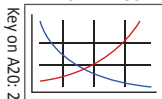
A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
P	M	K	N			
20.00	0.7874	—	XTP20-20.00	XTM20-20.00	XTK20-20.00	XTN20-20.00
20.10	0.7913	—	XTP20-20.10	XTM20-20.10	XTK20-20.10	XTN20-20.10
20.20	0.7953	—	XTP20-20.20	XTM20-20.20	XTK20-20.20	XTN20-20.20
20.24	0.7969	51/64	XTP20-20.24	XTM20-20.24	XTK20-20.24	XTN20-20.24
20.30	0.7992	—	XTP20-20.30	XTM20-20.30	XTK20-20.30	XTN20-20.30
20.40	0.8031	—	XTP20-20.40	XTM20-20.40	XTK20-20.40	XTN20-20.40
20.50	0.8071	—	XTP20-20.50	XTM20-20.50	XTK20-20.50	XTN20-20.50
20.60	0.8110	—	XTP20-20.60	XTM20-20.60	XTK20-20.60	XTN20-20.60
20.64	0.8126	13/16	XTP20-20.64	XTM20-20.64	XTK20-20.64	XTN20-20.64
20.70	0.8150	—	XTP20-20.70	XTM20-20.70	XTK20-20.70	XTN20-20.70
20.80	0.8189	—	XTP20-20.80	XTM20-20.80	XTK20-20.80	XTN20-20.80
20.90	0.8228	—	XTP20-20.90	XTM20-20.90	XTK20-20.90	XTN20-20.90
21.00	0.8268	—	XTP20-21.00	XTM20-21.00	XTK20-21.00	XTN20-21.00
21.10	0.8307	—	XTP20-21.10	XTM20-21.10	XTK20-21.10	XTN20-21.10
21.20	0.8346	—	XTP20-21.20	XTM20-21.20	XTK20-21.20	XTN20-21.20
21.30	0.8386	—	XTP20-21.30	XTM20-21.30	XTK20-21.30	XTN20-21.30
21.40	0.8425	—	XTP20-21.40	XTM20-21.40	XTK20-21.40	XTN20-21.40
21.43	0.8437	27/32	XTP20-21.43	XTM20-21.43	XTK20-21.43	XTN20-21.43
21.50	0.8465	—	XTP20-21.50	XTM20-21.50	XTK20-21.50	XTN20-21.50
21.60	0.8504	—	XTP20-21.60	XTM20-21.60	XTK20-21.60	XTN20-21.60
21.70	0.8543	—	XTP20-21.70	XTM20-21.70	XTK20-21.70	XTN20-21.70
21.80	0.8583	—	XTP20-21.80	XTM20-21.80	XTK20-21.80	XTN20-21.80
21.83	0.8594	55/64	XTP20-21.83	XTM20-21.83	XTK20-21.83	XTN20-21.83
21.90	0.8622	—	XTP20-21.90	XTM20-21.90	XTK20-21.90	XTN20-21.90

Inserts sold in multiples of 1.

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A20: 7 - 10



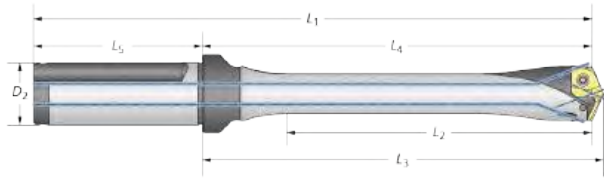
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	20.25 mm, steel, 20 series = use Part No. XTP20-20.25
Imperial:	0.7974", steel, 20 series = use Part No. XTP20-20.25



20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	66.0	100.1	102.9	158.9	56.0	25		HXT0320S-25FM	HXT0320S-25CM
		5xD	110.0	144.1	146.9	202.9	56.0	25		HXT0520S-25FM	HXT0520S-25CM
		7xD	153.9	188.1	190.9	246.9	56.0	25		HXT0720S-25FM	HXT0720S-25CM
		10xD	219.9	254.0	256.8	312.8	56.0	25	⚠	HXT1020S-25FM	HXT1020S-25CM
		12xD	263.9	298.0	300.8	356.8	56.0	25	⚠	HXT1220S-25FM	HXT1220S-25CM
i	Straight	3xD	2.597	3.941	4.051	6.331	2.280	1		HXT0320S-100F	HXT0320S-100C
		5xD	4.329	5.673	5.783	8.063	2.280	1		HXT0520S-100F	HXT0520S-100C
		7xD	6.060	7.404	7.514	9.794	2.280	1		HXT0720S-100F	HXT0720S-100C
		10xD	8.658	10.002	10.112	12.392	2.280	1	⚠	HXT1020S-100F	HXT1020S-100C
		12xD	10.389	11.733	11.843	14.123	2.280	1	⚠	HXT1220S-100F	HXT1220S-100C

Connection Accessories

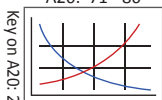
					Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

A20: 71 - 86

A20: 7 - 10



m = Metric (mm)

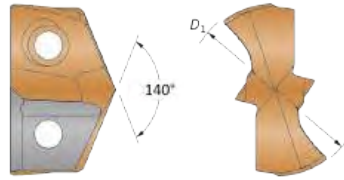
i = Imperial (in)

Screws sold in multiples of 10.

**20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")**

GEN3SYS XT Inserts

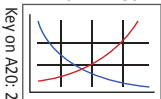
A20



Substrate	Insert			Carbide			
	D_1 mm	D_1 inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	20.00	0.7874	—	7C120P-20	7C120P-20LR	—	—
	20.24	0.7969	51/64	7C120P-.796	7C120P-.796LR	—	—
	20.50	0.8071	—	7C120P-20.5	7C120P-20.5LR	—	—
	20.64	0.8125	13/16	7C120P-0026	7C120P-0026LR	—	—
	21.00	0.8268	—	7C120P-21	7C120P-21LR	—	—
	21.43	0.8438	27/32	7C120P-0027	7C120P-0027LR	—	—
	21.50	0.8465	—	7C120P-21.5	7C120P-21.5LR	—	—
K20 (C2)	21.83	0.8594	55/64	7C120P-.859	7C120P-.859LR	—	—
	20.00	0.7874	—	7C220P-20	7C220P-20LR	7C220P-20CI	7C220P-20AS
	20.24	0.7969	51/64	7C220P-.796	7C220P-.796LR	7C220P-.796CI	7C220P-.796AS
	20.50	0.8071	—	7C220P-20.5	7C220P-20.5LR	7C220P-20.5CI	7C220P-20.5AS
	20.64	0.8125	13/16	7C220P-0026	7C220P-0026LR	7C220P-0026CI	7C220P-0026AS
	21.00	0.8268	—	7C220P-21	7C220P-21LR	7C220P-21CI	7C220P-21AS
	21.43	0.8438	27/32	7C220P-0027	7C220P-0027LR	7C220P-0027CI	7C220P-0027AS
	21.50	0.8465	—	7C220P-21.5	7C220P-21.5LR	7C220P-21.5CI	7C220P-21.5AS
	21.83	0.8594	55/64	7C220P-.859	7C220P-.859LR	7C220P-.859CI	7C220P-.859AS

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10

Sizes not shown are available upon request.
When ordering, please follow the example below:

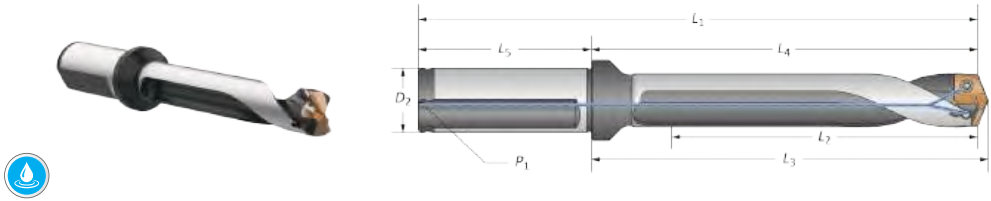
Metric:	20.25 mm, C2, cast iron, 20 series = use Part No. 7C220P-20.25CI
Imperial:	0.7974", C2, stainless, 20 series = use Part No. 7C220P-.7974AS



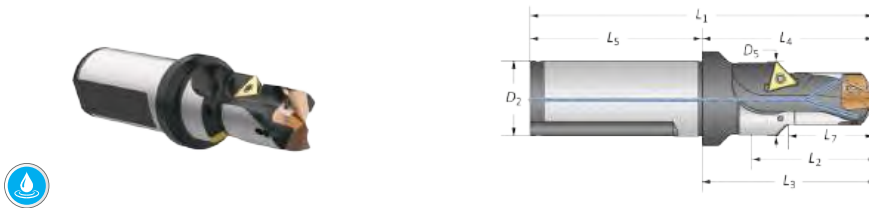
20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS Holders

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	Flute	Length	Body					Shank			Part No.	
			L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁		With Flat	Cylindrical
m	Straight	3xD	65.9	100.1	102.9	158.9	56.0	25	1/8 BSPT		60320S-25FM	—
		5xD	109.9	144.1	146.9	202.9	56.0	25	1/8 BSPT		60520S-25FM	—
		7xD	153.9	188.1	190.9	246.9	56.0	25	1/8 BSPT		60720S-25FM	—
	Helical	Stub	23.5	57.6	60.4	116.4	56.0	25	1/8 BSPT		60120H-25FM	—
		3xD	65.9	100.1	102.9	158.9	56.0	25	1/8 BSPT		60320H-25FM	60320H-25CM
		5xD	109.9	144.1	146.9	202.9	56.0	25	1/8 BSPT		60520H-25FM	60520H-25CM
i	Straight	3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT		60320S-100F	—
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT		60520S-100F	—
		7xD	6.058	7.404	7.514	9.794	2.280	1	1/8 NPT		60720S-100F	—
	Helical	Stub	0.924	2.269	2.379	4.659	2.280	1	1/8 NPT		60120H-100F	—
		3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT		60320H-100F	60320H-100C
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT		60520H-100F	60520H-100C
i	Straight	3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT		60320H-100F	60320H-100C
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT		60520H-100F	60520H-100C
		7xD	6.058	7.404	7.514	9.794	2.280	1	1/8 NPT		60720H-100F	60720H-100C
	Helical	Stub	0.924	2.269	2.379	4.659	2.280	1	1/8 NPT		60120H-100F	—
		3xD	2.596	3.941	4.051	6.331	2.280	1	1/8 NPT		60320H-100F	60320H-100C
		5xD	4.327	5.672	5.782	8.062	2.280	1	1/8 NPT		60520H-100F	60520H-100C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D ₅	L ₇	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂			
m	20	27.18	30.0	21.9	57.6	60.4	116.4	56.0	25	60120C45-25FM	TCMT-110204
i	20	1.0700	1.181	0.862	2.269	2.379	4.659	2.280	1	60120C45-100F	TCMT-110204

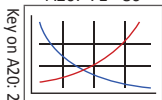
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

i = Imperial (in)

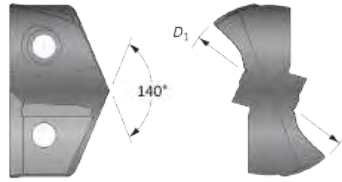
Screws sold in multiples of 10.



22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

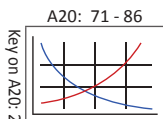
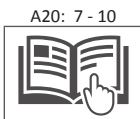
GEN3SYS XT Pro Inserts

A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No. P	Part No. M	Part No. K	Part No. N
22.00	0.8661	—	XTP22-22.00	XTM22-22.00	XTK22-22.00	XTN22-22.00
22.10	0.8701	—	XTP22-22.10	XTM22-22.10	XTK22-22.10	XTN22-22.10
22.20	0.8740	—	XTP22-22.20	XTM22-22.20	XTK22-22.20	XTN22-22.20
22.23	0.8752	7/8	XTP22-22.23	XTM22-22.23	XTK22-22.23	XTN22-22.23
22.30	0.8780	—	XTP22-22.30	XTM22-22.30	XTK22-22.30	XTN22-22.30
22.40	0.8819	—	XTP22-22.40	XTM22-22.40	XTK22-22.40	XTN22-22.40
22.50	0.8858	—	XTP22-22.50	XTM22-22.50	XTK22-22.50	XTN22-22.50
22.62	0.8906	57/64	XTP22-22.62	XTM22-22.62	XTK22-22.62	XTN22-22.62
22.70	0.8937	—	XTP22-22.70	XTM22-22.70	XTK22-22.70	XTN22-22.70
22.80	0.8976	—	XTP22-22.80	XTM22-22.80	XTK22-22.80	XTN22-22.80
22.90	0.9016	—	XTP22-22.90	XTM22-22.90	XTK22-22.90	XTN22-22.90
23.00	0.9055	—	XTP22-23.00	XTM22-23.00	XTK22-23.00	XTN22-23.00
23.02	0.9063	29/32	XTP22-23.02	XTM22-23.02	XTK22-23.02	XTN22-23.02
23.10	0.9094	—	XTP22-23.10	XTM22-23.10	XTK22-23.10	XTN22-23.10
23.20	0.9134	—	XTP22-23.20	XTM22-23.20	XTK22-23.20	XTN22-23.20
23.30	0.9173	—	XTP22-23.30	XTM22-23.30	XTK22-23.30	XTN22-23.30
23.42	0.9220	59/64	XTP22-23.42	XTM22-23.42	XTK22-23.42	XTN22-23.42
23.50	0.9252	—	XTP22-23.50	XTM22-23.50	XTK22-23.50	XTN22-23.50
23.60	0.9291	—	XTP22-23.60	XTM22-23.60	XTK22-23.60	XTN22-23.60
23.70	0.9331	—	XTP22-23.70	XTM22-23.70	XTK22-23.70	XTN22-23.70
23.81	0.9374	15/16	XTP22-23.81	XTM22-23.81	XTK22-23.81	XTN22-23.81
23.90	0.9409	—	XTP22-23.90	XTM22-23.90	XTK22-23.90	XTN22-23.90

Inserts sold in multiples of 1.



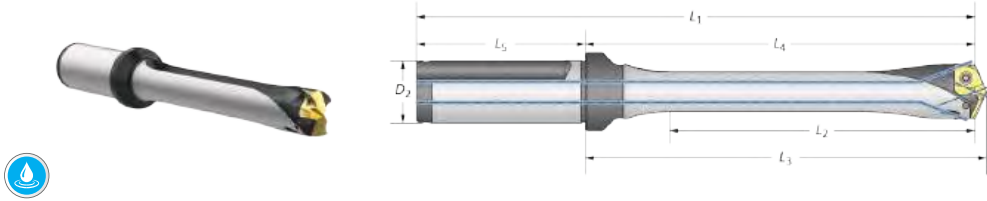
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	22.25 mm, steel, 22 series = use Part No. XTP22-22.25
Imperial:	0.8760", steel, 22 series = use Part No. XTP22-22.25



22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

GEN3SYS XT Pro Holders



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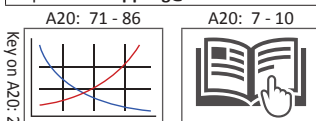
	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	72.0	105.3	108.3	164.3	56.0	25		HXT0322S-25FM	HXT0322S-25CM
		5xD	119.9	153.3	156.2	212.2	56.0	25		HXT0522S-25FM	HXT0522S-25CM
		7xD	167.9	201.3	204.2	260.2	56.0	25		HXT0722S-25FM	HXT0722S-25CM
		10xD	239.9	273.3	276.2	332.2	56.0	25	⚠	HXT1022S-25FM	HXT1022S-25CM
		12xD	287.9	321.2	324.2	380.2	56.0	25	⚠	HXT1222S-25FM	HXT1222S-25CM
i	Straight	3xD	2.833	4.147	4.262	6.542	2.280	1		HXT0322S-100F	HXT0322S-100C
		5xD	4.722	6.036	6.151	8.431	2.280	1		HXT0522S-100F	HXT0522S-100C
		7xD	6.611	7.925	8.040	10.320	2.280	1		HXT0722S-100F	HXT0722S-100C
		10xD	9.444	10.759	10.874	13.154	2.280	1	⚠	HXT1022S-100F	HXT1022S-100C
		12xD	11.334	12.648	12.763	15.043	2.280	1	⚠	HXT1222S-100F	HXT1222S-100C

Connection Accessories

					Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



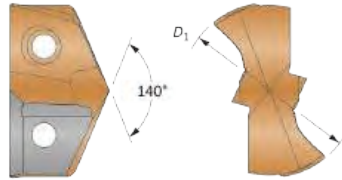
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")**

GEN3SYS XT Inserts

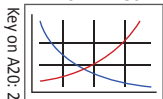
A20



Substrate	Insert			Carbide			
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	22.00	0.8661	—	7C122P-22	7C122P-22LR	—	—
	22.23	0.8750	7/8	7C122P-0028	7C122P-0028LR	—	—
	22.62	0.8906	57/64	7C122P-.890	7C122P-.890LR	—	—
	23.00	0.9055	—	7C122P-23	7C122P-23LR	—	—
	23.02	0.9063	29/32	7C122P-0029	7C122P-0029LR	—	—
	23.42	0.9219	59/64	7C122P-.921	7C122P-.921LR	—	—
K20 (C2)	23.81	0.9375	15/16	7C122P-0030	7C122P-0030LR	—	—
	22.00	0.8661	—	7C222P-22	7C222P-22LR	7C222P-22CI	7C222P-22AS
	22.23	0.8750	7/8	7C222P-0028	7C222P-0028LR	7C222P-0028CI	7C222P-0028AS
	22.62	0.8906	57/64	7C222P-.890	7C222P-.890LR	7C222P-.890CI	7C222P-.890AS
	23.00	0.9055	—	7C222P-23	7C222P-23LR	7C222P-23CI	7C222P-23AS
	23.02	0.9063	29/32	7C222P-0029	7C222P-0029LR	7C222P-0029CI	7C222P-0029AS
	23.42	0.9219	59/64	7C222P-.921	7C222P-.921LR	7C222P-.921CI	7C222P-.921AS
	23.81	0.9375	15/16	7C222P-0030	7C222P-0030LR	7C222P-0030CI	7C222P-0030AS

Inserts sold in multiples of 1.

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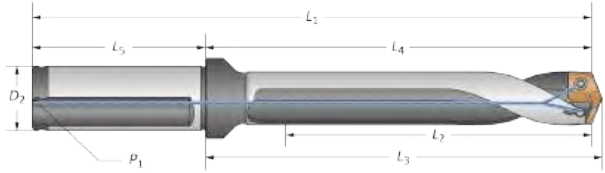
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	22.25 mm, C2, cast iron, 22 series = use Part No. 7C222P-22.25CI
Imperial:	0.8760", C2, stainless, 22 series = use Part No. 7C222P-.8760AS



22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

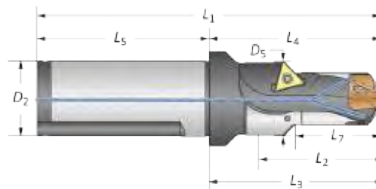
GEN3SYS Holders



A20



	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	71.9	105.3	108.2	164.2	56.0	25	1/8 BSPT		60322S-25FM	—
		5xD	119.9	153.3	156.2	212.2	56.0	25	1/8 BSPT		60522S-25FM	—
		7xD	167.9	201.3	204.2	260.2	56.0	25	1/8 BSPT		60722S-25FM	—
	Helical	Stub	26.6	60.1	63.0	119.0	56.0	25	1/8 BSPT		60122H-25FM	—
		3xD	71.9	105.3	108.2	164.2	56.0	25	1/8 BSPT		60322H-25FM	60322H-25CM
		5xD	119.9	153.3	156.2	212.2	56.0	25	1/8 BSPT		60522H-25FM	60522H-25CM
i	Straight	7xD	167.9	201.3	204.2	260.2	56.0	25	1/8 BSPT		60722H-25FM	60722H-25CM
	Helical	3xD	2.831	4.147	4.261	6.541	2.280	1	1/8 NPT		60322S-100F	—
		5xD	4.720	6.036	6.150	8.430	2.280	1	1/8 NPT		60522S-100F	—
		7xD	6.609	7.925	8.039	10.319	2.280	1	1/8 NPT		60722S-100F	—
	Helical	Stub	1.049	2.365	2.479	4.759	2.280	1	1/8 NPT		60122H-100F	—
		3xD	2.831	4.147	4.261	6.541	2.280	1	1/8 NPT		60322H-100F	60322H-100C
		5xD	4.720	6.036	6.150	8.430	2.280	1	1/8 NPT		60522H-100F	60522H-100C
		7xD	6.609	7.925	8.039	10.319	2.280	1	1/8 NPT		60722H-100F	60722H-100C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	22	28.96	33.0	27.4	60.1	63.0	119.0	56.0	25	60122C45-25FM	TCMT-110204
i	22	1.1400	1.299	1.080	2.365	2.479	4.759	2.280	1	60122C45-100F	TCMT-110204

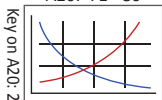
Connection Accessories

					Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A20: 71 - 86

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m = Metric (mm)

i = Imperial (in)

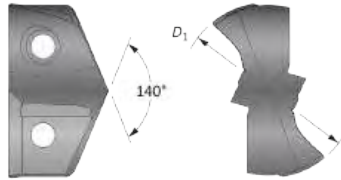
Screws sold in multiples of 10.



24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS XT Pro Inserts

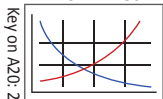
A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No. P	Part No. M	Part No. K	Part No. N
24.00	0.9449	—	XTP24-24.00	XTM24-24.00	XTK24-24.00	XTN24-24.00
24.10	0.9488	—	XTP24-24.10	XTM24-24.10	XTK24-24.10	XTN24-24.10
24.20	0.9528	—	XTP24-24.20	XTM24-24.20	XTK24-24.20	XTN24-24.20
24.30	0.9567	—	XTP24-24.30	XTM24-24.30	XTK24-24.30	XTN24-24.30
24.40	0.9606	—	XTP24-24.40	XTM24-24.40	XTK24-24.40	XTN24-24.40
24.50	0.9646	—	XTP24-24.50	XTM24-24.50	XTK24-24.50	XTN24-24.50
24.61	0.9689	31/32	XTP24-24.61	XTM24-24.61	XTK24-24.61	XTN24-24.61
24.70	0.9724	—	XTP24-24.70	XTM24-24.70	XTK24-24.70	XTN24-24.70
24.80	0.9764	—	XTP24-24.80	XTM24-24.80	XTK24-24.80	XTN24-24.80
24.90	0.9803	—	XTP24-24.90	XTM24-24.90	XTK24-24.90	XTN24-24.90
25.00	0.9843	63/64	XTP24-25.00	XTM24-25.00	XTK24-25.00	XTN24-25.00
25.10	0.9882	—	XTP24-25.10	XTM24-25.10	XTK24-25.10	XTN24-25.10
25.20	0.9921	—	XTP24-25.20	XTM24-25.20	XTK24-25.20	XTN24-25.20
25.30	0.9961	—	XTP24-25.30	XTM24-25.30	XTK24-25.30	XTN24-25.30
25.40	1.0000	1	XTP24-25.40	XTM24-25.40	XTK24-25.40	XTN24-25.40
25.50	1.0039	—	XTP24-25.50	XTM24-25.50	XTK24-25.50	XTN24-25.50
25.60	1.0079	—	XTP24-25.60	XTM24-25.60	XTK24-25.60	XTN24-25.60
25.70	1.0118	—	XTP24-25.70	XTM24-25.70	XTK24-25.70	XTN24-25.70
25.78	1.0150	—	XTP24-25.78	XTM24-25.78	XTK24-25.78	XTN24-25.78
25.90	1.0197	—	XTP24-25.90	XTM24-25.90	XTK24-25.90	XTN24-25.90

Inserts sold in multiples of 1.

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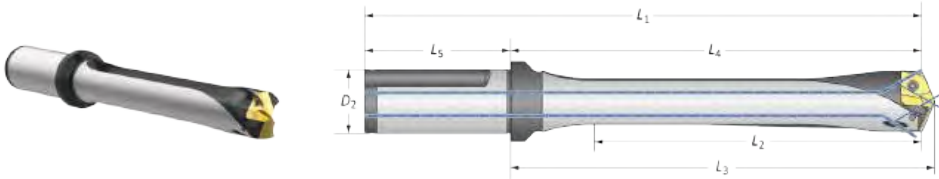
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	24.25 mm, steel, 24 series = use Part No. XTP24-24.25
Imperial:	0.9548", steel, 24 series = use Part No. XTP24-24.25



24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

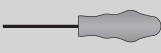
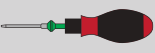
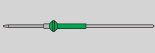
GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	78.0	113.8	116.8	172.8	56.0	25		HXT0324S-25FM	HXT0324S-25CM
		5xD	129.9	165.8	168.7	224.7	56.0	25		HXT0524S-25FM	HXT0524S-25CM
		7xD	181.9	217.8	220.7	276.7	56.0	25		HXT0724S-25FM	HXT0724S-25CM
		10xD	259.9	295.7	298.7	354.7	56.0	25	⚠	HXT1024S-25FM	HXT1024S-25CM
		12xD	311.9	347.7	350.6	406.7	56.0	25	⚠	HXT1224S-25FM	HXT1224S-25CM
i	Straight	3xD	3.070	4.482	4.597	6.877	2.280	1		HXT0324S-100F	HXT0324S-100C
		5xD	5.116	6.528	6.643	8.923	2.280	1		HXT0524S-100F	HXT0524S-100C
		7xD	7.163	8.574	8.689	10.969	2.280	1		HXT0724S-100F	HXT0724S-100C
		10xD	10.232	11.643	11.758	14.038	2.280	1	⚠	HXT1024S-100F	HXT1024S-100C
		12xD	12.279	13.689	13.804	16.084	2.280	1	⚠	HXT1224S-100F	HXT1224S-100C

Connection Accessories

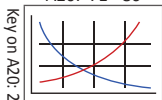
					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)

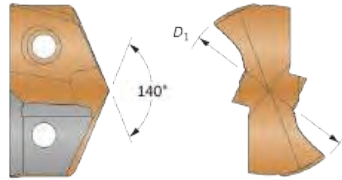
i = Imperial (in)

Screws sold in multiples of 10.

**24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")**

GEN3SYS XT Inserts

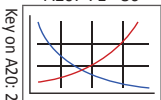
A20



Substrate	Insert			Carbide			
	D_1 mm	D_1 inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	24.00	0.9449	—	7C124P-24	7C124P-24LR	—	—
	24.61	0.9688	31/32	7C124P-0031	7C124P-0031LR	—	—
	25.00	0.9843	—	7C124P-25	7C124P-25LR	—	—
	25.40	1.0000	1	7C124P-0100	7C124P-0100LR	—	—
	25.60	1.0080	—	7C124P-1.008	7C124P-1.008LR	—	—
K20 (C2)	25.80	1.0156	1-1/64	7C124P-1.015	7C124P-1.015LR	—	—
	24.00	0.9449	—	7C224P-24	7C224P-24LR	7C224P-24CI	7C224P-24AS
	24.61	0.9688	31/32	7C224P-0031	7C224P-0031LR	7C224P-0031CI	7C224P-0031AS
	25.00	0.9843	—	7C224P-25	7C224P-25LR	7C224P-25CI	7C224P-25AS
	25.40	1.0000	1	7C224P-0100	7C224P-0100LR	7C224P-0100CI	7C224P-0100AS
	25.60	1.0080	—	7C224P-1.008	7C224P-1.008LR	7C224P-1.008CI	7C224P-1.008AS
	25.80	1.0156	1-1/64	7C224P-1.015	7C224P-1.015LR	7C224P-1.015CI	7C224P-1.015AS

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10

Sizes not shown are available upon request.
When ordering, please follow the example below:

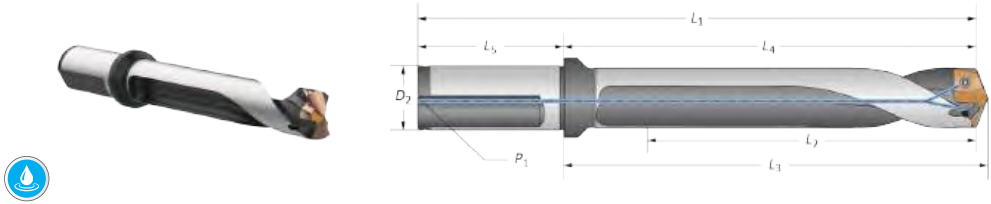
Metric:	24.25 mm, C2, cast iron, 24 series = use Part No. 7C224P-24.25CI
Imperial:	0.9548", C2, stainless, 24 series = use Part No. 7C224P-.9548AS



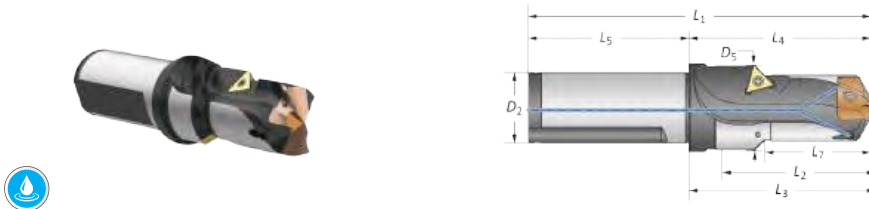
24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS Holders

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		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	80.2	113.8	116.3	172.3	56.0	25	1/8 BSPT	60324S-25FM	—
		5xD	132.2	165.8	168.2	224.2	56.0	25	1/8 BSPT	60524S-25FM	—
		7xD	184.1	217.8	220.2	276.2	56.0	25	1/8 BSPT	60724S-25FM	—
		Stub	30.5	64.2	66.6	122.6	56.0	25	1/8 BSPT	60124H-25FM	—
		3xD	80.2	113.8	116.3	172.3	56.0	25	1/8 BSPT	60324H-25FM	60324H-25CM
		5xD	132.2	165.8	168.2	224.2	56.0	25	1/8 BSPT	60524H-25FM	60524H-25CM
		7xD	184.1	217.8	220.2	276.2	56.0	25	1/8 BSPT	60724H-25FM	60724H-25CM
i		3xD	3.156	4.482	4.577	6.857	2.280	1	1/8 NPT	60324S-100F	—
		5xD	5.203	6.528	6.623	8.903	2.280	1	1/8 NPT	60524S-100F	—
		7xD	7.249	8.574	8.669	10.949	2.280	1	1/8 NPT	60724S-100F	—
		Stub	1.200	2.526	2.621	4.901	2.280	1	1/8 NPT	60124H-100F	—
		3xD	3.156	4.482	4.577	6.857	2.280	1	1/8 NPT	60324H-100F	60324H-100C
		5xD	5.203	6.528	6.623	8.903	2.280	1	1/8 NPT	60524H-100F	60524H-100C
		7xD	7.249	8.574	8.669	10.949	2.280	1	1/8 NPT	60724H-100F	60724H-100C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	24	30.99	36.0	31.6	64.2	66.6	122.6	56.0	25	60124C45-25FM	TCMT-110204
i	24	1.2200	1.417	1.243	2.526	2.621	4.901	2.280	1	60124C45-100F	TCMT-110204

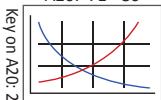
Connection Accessories

					Admissible Tightening Torque*
739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A20: 71 - 86

A20: 7 - 10



m = Metric (mm)

i = Imperial (in)

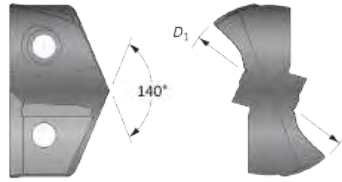
Screws sold in multiples of 10.



26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

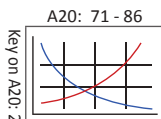
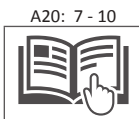
GEN3SYS XT Pro Inserts

A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No. P	Part No. M	Part No. K	Part No. N
26.00	1.0236	—	XTP26-26.00	XTM26-26.00	XTK26-26.00	XTN26-26.00
26.10	1.0276	—	XTP26-26.10	XTM26-26.10	XTK26-26.10	XTN26-26.10
26.20	1.0315	1-1/32	XTP26-26.20	XTM26-26.20	XTK26-26.20	XTN26-26.20
26.30	1.0354	—	XTP26-26.30	XTM26-26.30	XTK26-26.30	XTN26-26.30
26.40	1.0394	—	XTP26-26.40	XTM26-26.40	XTK26-26.40	XTN26-26.40
26.50	1.0433	—	XTP26-26.50	XTM26-26.50	XTK26-26.50	XTN26-26.50
26.59	1.0469	1-3/64	XTP26-26.59	XTM26-26.59	XTK26-26.59	XTN26-26.59
26.60	1.0472	—	XTP26-26.60	XTM26-26.60	XTK26-26.60	XTN26-26.60
26.70	1.0512	—	XTP26-26.70	XTM26-26.70	XTK26-26.70	XTN26-26.70
26.80	1.0551	—	XTP26-26.80	XTM26-26.80	XTK26-26.80	XTN26-26.80
26.90	1.0591	—	XTP26-26.90	XTM26-26.90	XTK26-26.90	XTN26-26.90
26.99	1.0626	1-1/16	XTP26-26.99	XTM26-26.99	XTK26-26.99	XTN26-26.99
27.00	1.0630	—	XTP26-27.00	XTM26-27.00	XTK26-27.00	XTN26-27.00
27.10	1.0669	—	XTP26-27.10	XTM26-27.10	XTK26-27.10	XTN26-27.10
27.20	1.0709	—	XTP26-27.20	XTM26-27.20	XTK26-27.20	XTN26-27.20
27.30	1.0748	—	XTP26-27.30	XTM26-27.30	XTK26-27.30	XTN26-27.30
27.40	1.0787	—	XTP26-27.40	XTM26-27.40	XTK26-27.40	XTN26-27.40
27.50	1.0827	—	XTP26-27.50	XTM26-27.50	XTK26-27.50	XTN26-27.50
27.60	1.0866	—	XTP26-27.60	XTM26-27.60	XTK26-27.60	XTN26-27.60
27.70	1.0906	—	XTP26-27.70	XTM26-27.70	XTK26-27.70	XTN26-27.70
27.78	1.0937	1-3/32	XTP26-27.78	XTM26-27.78	XTK26-27.78	XTN26-27.78
27.90	1.0984	—	XTP26-27.90	XTM26-27.90	XTK26-27.90	XTN26-27.90
28.00	1.1024	—	XTP26-28.00	XTM26-28.00	XTK26-28.00	XTN26-28.00
28.10	1.1063	—	XTP26-28.10	XTM26-28.10	XTK26-28.10	XTN26-28.10
28.17	1.1091	1-7/64	XTP26-28.17	XTM26-28.17	XTK26-28.17	XTN26-28.17
28.20	1.1102	—	XTP26-28.20	XTM26-28.20	XTK26-28.20	XTN26-28.20
28.30	1.1142	—	XTP26-28.30	XTM26-28.30	XTK26-28.30	XTN26-28.30
28.40	1.1181	—	XTP26-28.40	XTM26-28.40	XTK26-28.40	XTN26-28.40
28.50	1.1220	—	XTP26-28.50	XTM26-28.50	XTK26-28.50	XTN26-28.50
28.58	1.1252	1-1/8	XTP26-28.58	XTM26-28.58	XTK26-28.58	XTN26-28.58
28.70	1.1299	—	XTP26-28.70	XTM26-28.70	XTK26-28.70	XTN26-28.70
28.80	1.1339	—	XTP26-28.80	XTM26-28.80	XTK26-28.80	XTN26-28.80
28.90	1.1378	—	XTP26-28.90	XTM26-28.90	XTK26-28.90	XTN26-28.90

Inserts sold in multiples of 1.



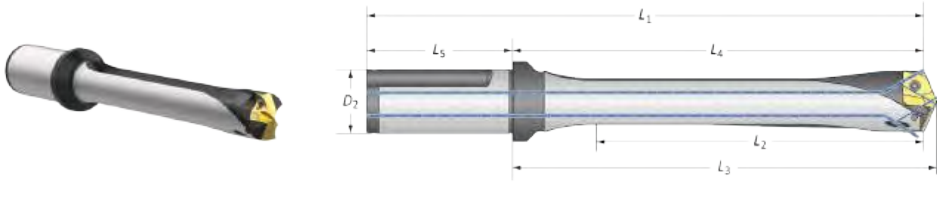
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	27.25 mm, steel, 26 series = use Part No. XTP26-27.25
Imperial:	1.0730", steel, 26 series = use Part No. XTP26-27.25



26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

GEN3SYS XT Pro Holders



A20

	Flute	Length	Body					Shank		Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2		With Flat	Cylindrical
m	Straight	3xD	87.0	128.1	130.9	190.9	60.0	32		HXT0326S-32FM	HXT0326S-32CM
		5xD	144.9	186.1	188.8	248.8	60.0	32		HXT0526S-32FM	HXT0526S-32CM
		7xD	202.9	244.0	246.8	306.8	60.0	32		HXT0726S-32FM	HXT0726S-32CM
		10xD	289.9	331.0	333.8	393.8	60.0	32		⚠ HXT1026S-32FM	⚠ HXT1026S-32CM
		12xD	347.9	389.0	391.8	451.8	60.0	32		⚠ HXT1226S-32FM	⚠ HXT1226S-32CM
i	Straight	3xD	3.425	5.064	5.174	7.454	2.280	1-1/4		HXT0326S-125F	HXT0326S-125C
		5xD	5.707	7.347	7.457	9.737	2.280	1-1/4		HXT0526S-125F	HXT0526S-125C
		7xD	7.990	9.630	9.740	12.020	2.280	1-1/4		HXT0726S-125F	HXT0726S-125C
		10xD	11.414	13.055	13.165	15.445	2.280	1-1/4		⚠ HXT1026S-125F	⚠ HXT1026S-125C
		12xD	13.697	15.338	15.448	17.728	2.280	1-1/4		⚠ HXT1226S-125F	⚠ HXT1226S-125C

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

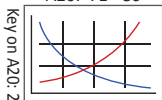
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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m = Metric (mm)
i = Imperial (in)

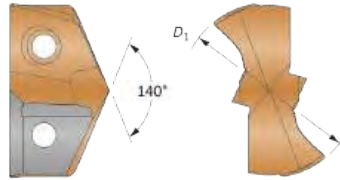
Screws sold in multiples of 10.



26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

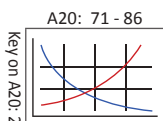
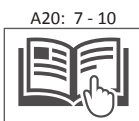
GEN3SYS XT Inserts

A20



Substrate	Insert			Carbide			
	D_1 mm	D_1 inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	26.00	1.0236	—	7C126P-26	7C126P-26LR	—	—
	26.20	1.0313	1-1/32	7C126P-0101	7C126P-0101LR	—	—
	26.59	1.0469	1-3/64	7C126P-1.046	7C126P-1.046LR	—	—
	26.99	1.0625	1-1/16	7C126P-0102	7C126P-0102LR	—	—
	27.00	1.0630	—	7C126P-27	7C126P-27LR	—	—
	27.78	1.0938	1-3/32	7C126P-0103	7C126P-0103LR	—	—
	28.00	1.1024	—	7C126P-28	7C126P-28LR	—	—
	28.18	1.1094	1-7/64	7C126P-1.109	7C126P-1.109LR	—	—
K20 (C2)	28.58	1.1250	1-1/8	7C126P-0104	7C126P-0104LR	—	—
	26.00	1.0236	—	7C226P-26	7C226P-26LR	7C226P-26CI	7C226P-26AS
	26.20	1.0313	1-1/32	7C226P-0101	7C226P-0101LR	7C226P-0101CI	7C226P-0101AS
	26.59	1.0469	1-3/64	7C226P-1.046	7C226P-1.046LR	7C226P-1.046CI	7C226P-1.046AS
	26.99	1.0625	1-1/16	7C226P-0102	7C226P-0102LR	7C226P-0102CI	7C226P-0102AS
	27.00	1.0630	—	7C226P-27	7C226P-27LR	7C226P-27CI	7C226P-27AS
	27.78	1.0938	1-3/32	7C226P-0103	7C226P-0103LR	7C226P-0103CI	7C226P-0103AS
	28.00	1.1024	—	7C226P-28	7C226P-28LR	7C226P-28CI	7C226P-28AS
	28.18	1.1094	1-7/64	7C226P-1.109	7C226P-1.109LR	7C226P-1.109CI	7C226P-1.109AS
	28.58	1.1250	1-1/8	7C226P-0104	7C226P-0104LR	7C226P-0104CI	7C226P-0104AS

Inserts sold in multiples of 1.

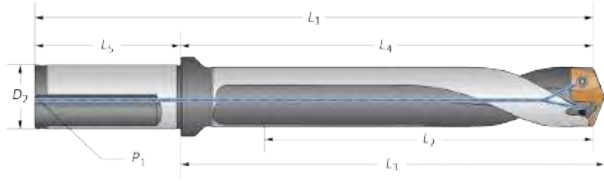


Sizes not shown are available upon request. When ordering, please follow the example below:	
Metric:	27.25 mm, C2, cast iron, 26 series = use Part No. 7C226P-27.25CI
Imperial:	1.0730", C2, stainless, 26 series = use Part No. 7C226P-1.0730AS



26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

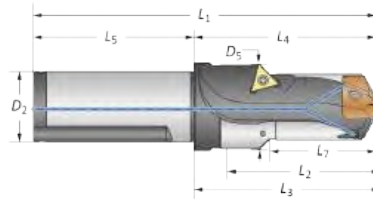
GEN3SYS Holders



A20



	Flute	Length	Body					Shank			Part No.	
			L_2	L_4	L_3	L_1	L_5	D_2	P_1		With Flat	Cylindrical
m	Straight	3xD	91.9	128.1	131.1	191.1	60.0	32	1/4 BSPT		60326S-32FM	—
		5xD	149.9	186.1	189.1	249.1	60.0	32	1/4 BSPT		60526S-32FM	—
		7xD	207.9	244.0	247.1	307.1	60.0	32	1/4 BSPT		60726S-32FM	—
		Stub	36.3	72.9	76.0	136.0	60.0	32	1/4 BSPT		60126H-32FM	—
	Helical	3xD	91.9	128.1	131.1	191.1	60.0	32	1/4 BSPT		60326H-32FM	60326H-32CM
		5xD	149.9	186.1	189.1	249.1	60.0	32	1/4 BSPT		60526H-32FM	60526H-32CM
		7xD	207.9	244.0	247.1	307.1	60.0	32	1/4 BSPT		60726H-32FM	60726H-32CM
i	Straight	3xD	3.620	5.064	5.184	7.464	2.280	1-1/4	1/4 NPT		60326S-125F	—
		5xD	5.903	7.347	7.467	9.747	2.280	1-1/4	1/4 NPT		60526S-125F	—
		7xD	8.185	9.630	9.750	12.030	2.280	1-1/4	1/4 NPT		60726S-125F	—
		Stub	1.428	2.872	2.992	5.272	2.280	1-1/4	1/4 NPT		60126H-125F	—
	Helical	3xD	3.620	5.064	5.184	7.464	2.280	1-1/4	1/4 NPT		60326H-125F	60326H-125C
		5xD	5.903	7.347	7.467	9.747	2.280	1-1/4	1/4 NPT		60526H-125F	60526H-125C
		7xD	8.185	9.630	9.750	12.030	2.280	1-1/4	1/4 NPT		60726H-125F	60726H-125C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	26	34.04	39.0	35.6	72.9	76.0	136.0	60.0	32	60126C45-32FM	TCMT-110204
i	26	1.3400	1.535	1.403	2.872	2.992	5.272	2.280	1-1/4	60126C45-125F	TCMT-110204

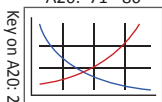
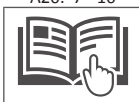
Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

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m = Metric (mm)

i = Imperial (in)

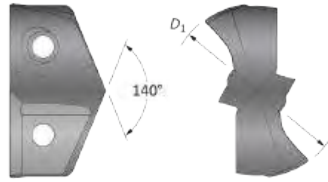
Screws sold in multiples of 10.



29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

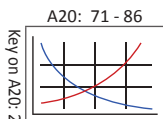
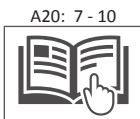
GEN3SYS XT Pro Inserts

A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
P	M	K	N			
29.00	1.1417	—	XTP29-29.00	XTM29-29.00	XTK29-29.00	XTN29-29.00
29.10	1.1457	—	XTP29-29.10	XTM29-29.10	XTK29-29.10	XTN29-29.10
29.20	1.1496	—	XTP29-29.20	XTM29-29.20	XTK29-29.20	XTN29-29.20
29.30	1.1535	—	XTP29-29.30	XTM29-29.30	XTK29-29.30	XTN29-29.30
29.37	1.1563	1-5/32	XTP29-29.37	XTM29-29.37	XTK29-29.37	XTN29-29.37
29.40	1.1575	—	XTP29-29.40	XTM29-29.40	XTK29-29.40	XTN29-29.40
29.50	1.1614	—	XTP29-29.50	XTM29-29.50	XTK29-29.50	XTN29-29.50
29.60	1.1654	—	XTP29-29.60	XTM29-29.60	XTK29-29.60	XTN29-29.60
29.70	1.1693	—	XTP29-29.70	XTM29-29.70	XTK29-29.70	XTN29-29.70
29.80	1.1732	—	XTP29-29.80	XTM29-29.80	XTK29-29.80	XTN29-29.80
29.90	1.1772	—	XTP29-29.90	XTM29-29.90	XTK29-29.90	XTN29-29.90
30.00	1.1811	—	XTP29-30.00	XTM29-30.00	XTK29-30.00	XTN29-30.00
30.10	1.1850	—	XTP29-30.10	XTM29-30.10	XTK29-30.10	XTN29-30.10
30.16	1.1874	1-3/16	XTP29-30.16	XTM29-30.16	XTK29-30.16	XTN29-30.16
30.20	1.1890	—	XTP29-30.20	XTM29-30.20	XTK29-30.20	XTN29-30.20
30.30	1.1929	—	XTP29-30.30	XTM29-30.30	XTK29-30.30	XTN29-30.30
30.40	1.1969	—	XTP29-30.40	XTM29-30.40	XTK29-30.40	XTN29-30.40
30.50	1.2008	—	XTP29-30.50	XTM29-30.50	XTK29-30.50	XTN29-30.50
30.60	1.2047	—	XTP29-30.60	XTM29-30.60	XTK29-30.60	XTN29-30.60
30.70	1.2087	—	XTP29-30.70	XTM29-30.70	XTK29-30.70	XTN29-30.70
30.80	1.2126	—	XTP29-30.80	XTM29-30.80	XTK29-30.80	XTN29-30.80
30.90	1.2165	—	XTP29-30.90	XTM29-30.90	XTK29-30.90	XTN29-30.90
30.96	1.2189	1-7/32	XTP29-30.96	XTM29-30.96	XTK29-30.96	XTN29-30.96
31.00	1.2205	—	XTP29-31.00	XTM29-31.00	XTK29-31.00	XTN29-31.00
31.10	1.2244	—	XTP29-31.10	XTM29-31.10	XTK29-31.10	XTN29-31.10
31.20	1.2283	—	XTP29-31.20	XTM29-31.20	XTK29-31.20	XTN29-31.20
31.30	1.2323	—	XTP29-31.30	XTM29-31.30	XTK29-31.30	XTN29-31.30
31.40	1.2362	—	XTP29-31.40	XTM29-31.40	XTK29-31.40	XTN29-31.40
31.50	1.2402	—	XTP29-31.50	XTM29-31.50	XTK29-31.50	XTN29-31.50
31.60	1.2441	—	XTP29-31.60	XTM29-31.60	XTK29-31.60	XTN29-31.60
31.70	1.2480	—	XTP29-31.70	XTM29-31.70	XTK29-31.70	XTN29-31.70
31.75	1.2500	1-1/4	XTP29-31.75	XTM29-31.75	XTK29-31.75	XTN29-31.75
31.80	1.2520	—	XTP29-31.80	XTM29-31.80	XTK29-31.80	XTN29-31.80
31.90	1.2559	—	XTP29-31.90	XTM29-31.90	XTK29-31.90	XTN29-31.90

Inserts sold in multiples of 1.



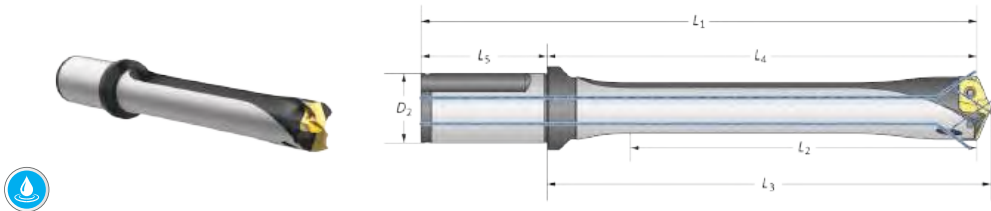
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	29.25 mm, steel, 29 series = use Part No. XTP29-29.25
Imperial:	1.1515", steel, 29 series = use Part No. XTP29-29.25



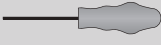
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS XT Pro Holders



		Body					Shank		Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
	Straight	3xD	96.0	136.2	139.1	199.1	60.0	32	HXT0329S-32FM	HXT0329S-32CM
		5xD	159.9	200.1	203.1	263.1	60.0	32	HXT0529S-32FM	HXT0529S-32CM
		7xD	223.9	264.1	267.1	327.1	60.0	32	HXT0729S-32FM	HXT0729S-32CM
		10xD	319.9	360.1	363.0	423.0	60.0	32	 HXT1029S-32FM	 HXT1029S-32CM
	Straight	3xD	3.778	5.382	5.499	7.779	2.280	1-1/4	HXT0329S-125F	HXT0329S-125C
		5xD	6.297	7.901	8.018	10.298	2.280	1-1/4	HXT0529S-125F	HXT0529S-125C
		7xD	8.816	10.420	10.537	12.817	2.280	1-1/4	HXT0729S-125F	HXT0729S-125C
		10xD	12.594	14.199	14.316	16.596	2.280	1-1/4	 HXT1029S-125F	 HXT1029S-125C

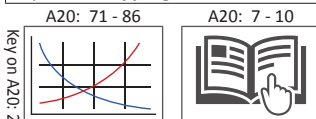
Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



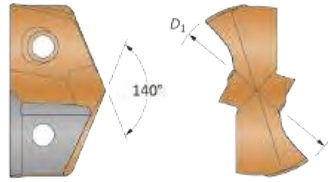
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")**

GEN3SYS XT Inserts

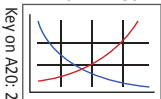
A20



Substrate	Insert			Carbide			
	D_1 mm	D_1 inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rake	Part No. Cast Iron	Part No. Stainless
K35 (C1)	29.00	1.1417	—	7C129P-29	7C129P-29LR	—	—
	29.37	1.1563	1-5/32	7C129P-0105	7C129P-0105LR	—	—
	30.00	1.1811	—	7C129P-30	7C129P-30LR	—	—
	30.16	1.1875	1-3/16	7C129P-0106	7C129P-0106LR	—	—
	30.50	1.2008	—	7C129P-30.5	7C129P-30.5LR	—	—
	30.96	1.2188	1-7/32	7C129P-0107	7C129P-0107LR	—	—
	31.00	1.2205	—	7C129P-31	7C129P-31LR	—	—
K20 (C2)	31.75	1.2500	1-1/4	7C129P-0108	7C129P-0108LR	—	—
	29.00	1.1417	—	7C229P-29	7C229P-29LR	7C229P-29CI	7C229P-29AS
	29.37	1.1563	1-5/32	7C229P-0105	7C229P-0105LR	7C229P-0105CI	7C229P-0105AS
	30.00	1.1811	—	7C229P-30	7C229P-30LR	7C229P-30CI	7C229P-30AS
	30.16	1.1875	1-3/16	7C229P-0106	7C229P-0106LR	7C229P-0106CI	7C229P-0106AS
	30.50	1.2008	—	7C229P-30.5	7C229P-30.5LR	7C229P-30.5CI	7C229P-30.5AS
	30.96	1.2188	1-7/32	7C229P-0107	7C229P-0107LR	7C229P-0107CI	7C229P-0107AS
	31.00	1.2205	—	7C229P-31	7C229P-31LR	7C229P-31CI	7C229P-31AS
	31.75	1.2500	1-1/4	7C229P-0108	7C229P-0108LR	7C229P-0108CI	7C229P-0108AS

Inserts sold in multiples of 1.

A20: 71 - 86



A20: 7 - 10

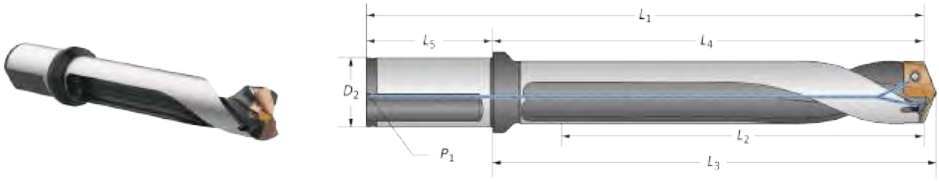
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	29.25 mm, C2, cast iron, 29 series = use Part No. 7C229P-29.25CI
Imperial:	1.1515", C2, stainless, 29 series = use Part No. 7C229P-1.1515AS



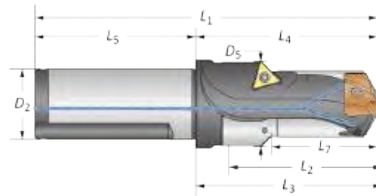
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS Holders



A20

		Body					Shank			Part No.		
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical	
m		Straight	3xD	100.1	136.2	139.1	199.1	60.0	32	1/4 BSPT	60329S-32FM	—
			5xD	164.0	200.1	203.1	263.1	60.0	32	1/4 BSPT	60529S-32FM	—
			7xD	228.0	264.1	267.1	327.1	60.0	32	1/4 BSPT	60729S-32FM	—
		Helical	Stub	38.6	75.2	78.2	138.2	60.0	32	1/4 BSPT	60129H-32FM	—
			3xD	100.1	136.2	139.1	199.1	60.0	32	1/4 BSPT	60329H-32FM	60329H-32CM
			5xD	164.0	200.1	203.1	263.1	60.0	32	1/4 BSPT	60529H-32FM	60529H-32CM
		7xD	228.0	264.1	267.1	327.1	60.0	32	1/4 BSPT	60729H-32FM	60729H-32CM	
i		Straight	3xD	3.939	5.382	5.499	7.779	2.280	1-1/4	1/4 NPT	60329S-125F	—
			5xD	6.458	7.901	8.018	10.298	2.280	1-1/4	1/4 NPT	60529S-125F	—
			7xD	8.977	10.420	10.537	12.817	2.280	1-1/4	1/4 NPT	60729S-125F	—
		Helical	Stub	1.518	2.961	3.078	5.358	2.280	1-1/4	1/4 NPT	60129H-125F	—
			3xD	3.939	5.382	5.499	7.779	2.280	1-1/4	1/4 NPT	60329H-125F	60329H-125C
			5xD	6.458	7.901	8.018	10.298	2.280	1-1/4	1/4 NPT	60529H-125F	60529H-125C
			7xD	8.977	10.420	10.537	12.817	2.280	1-1/4	1/4 NPT	60729H-125F	60729H-125C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	29	37.08	43.5	35.4	75.2	78.2	138.2	60.0	32	60129C45-32FM	TCMT-16T304
i	29	1.4600	1.713	1.393	2.961	3.078	5.358	2.280	1-1/4	60129C45-125F	TCMT-16T304

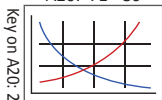
Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A20: 71 - 86

A20: 7 - 10



m = Metric (mm)

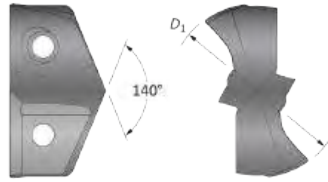
i = Imperial (in)

Screws sold in multiples of 10.

**32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")**

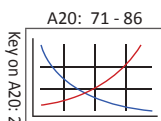
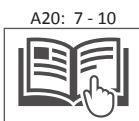
GEN3SYS XT Pro Inserts

A20



Insert			Carbide			
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No. P	Part No. M	Part No. K	Part No. N
32.00	1.2598	—	XTP32-32.00	XTM32-32.00	XTK32-32.00	XTN32-32.00
32.10	1.2638	—	XTP32-32.10	XTM32-32.10	XTK32-32.10	XTN32-32.10
32.15	1.2657	1-17/64	XTP32-32.15	XTM32-32.15	XTK32-32.15	XTN32-32.15
32.20	1.2677	—	XTP32-32.20	XTM32-32.20	XTK32-32.20	XTN32-32.20
32.30	1.2717	—	XTP32-32.30	XTM32-32.30	XTK32-32.30	XTN32-32.30
32.40	1.2756	—	XTP32-32.40	XTM32-32.40	XTK32-32.40	XTN32-32.40
32.50	1.2795	—	XTP32-32.50	XTM32-32.50	XTK32-32.50	XTN32-32.50
32.55	1.2815	1-9/32	XTP32-32.55	XTM32-32.55	XTK32-32.55	XTN32-32.55
32.60	1.2835	—	XTP32-32.60	XTM32-32.60	XTK32-32.60	XTN32-32.60
32.70	1.2874	—	XTP32-32.70	XTM32-32.70	XTK32-32.70	XTN32-32.70
32.80	1.2913	—	XTP32-32.80	XTM32-32.80	XTK32-32.80	XTN32-32.80
32.90	1.2953	—	XTP32-32.90	XTM32-32.90	XTK32-32.90	XTN32-32.90
33.00	1.2992	—	XTP32-33.00	XTM32-33.00	XTK32-33.00	XTN32-33.00
33.10	1.3031	—	XTP32-33.10	XTM32-33.10	XTK32-33.10	XTN32-33.10
33.20	1.3071	—	XTP32-33.20	XTM32-33.20	XTK32-33.20	XTN32-33.20
33.30	1.3110	—	XTP32-33.30	XTM32-33.30	XTK32-33.30	XTN32-33.30
33.34	1.3126	1-5/16	XTP32-33.34	XTM32-33.34	XTK32-33.34	XTN32-33.34
33.40	1.3150	—	XTP32-33.40	XTM32-33.40	XTK32-33.40	XTN32-33.40
33.50	1.3189	—	XTP32-33.50	XTM32-33.50	XTK32-33.50	XTN32-33.50
33.60	1.3228	—	XTP32-33.60	XTM32-33.60	XTK32-33.60	XTN32-33.60
33.70	1.3268	—	XTP32-33.70	XTM32-33.70	XTK32-33.70	XTN32-33.70
33.80	1.3307	—	XTP32-33.80	XTM32-33.80	XTK32-33.80	XTN32-33.80
33.90	1.3346	—	XTP32-33.90	XTM32-33.90	XTK32-33.90	XTN32-33.90
34.00	1.3386	—	XTP32-34.00	XTM32-34.00	XTK32-34.00	XTN32-34.00
34.10	1.3425	—	XTP32-34.10	XTM32-34.10	XTK32-34.10	XTN32-34.10
34.13	1.3437	1-11/32	XTP32-34.13	XTM32-34.13	XTK32-34.13	XTN32-34.13
34.20	1.3465	—	XTP32-34.20	XTM32-34.20	XTK32-34.20	XTN32-34.20
34.30	1.3504	—	XTP32-34.30	XTM32-34.30	XTK32-34.30	XTN32-34.30
34.40	1.3543	—	XTP32-34.40	XTM32-34.40	XTK32-34.40	XTN32-34.40
34.50	1.3583	—	XTP32-34.50	XTM32-34.50	XTK32-34.50	XTN32-34.50
34.60	1.3622	—	XTP32-34.60	XTM32-34.60	XTK32-34.60	XTN32-34.60
34.70	1.3661	—	XTP32-34.70	XTM32-34.70	XTK32-34.70	XTN32-34.70
34.80	1.3701	—	XTP32-34.80	XTM32-34.80	XTK32-34.80	XTN32-34.80
34.90	1.3740	—	XTP32-34.90	XTM32-34.90	XTK32-34.90	XTN32-34.90
34.93	1.3752	1-3/8	XTP32-34.93	XTM32-34.93	XTK32-34.93	XTN32-34.93
35.00	1.3780	—	XTP32-35.00	XTM32-35.00	XTK32-35.00	XTN32-35.00

Inserts sold in multiples of 1.



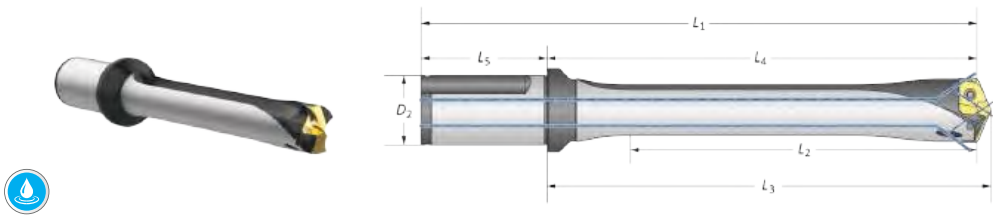
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	33.25 mm, steel, 32 series = use Part No. XTP32-33.25
Imperial:	1.3090", steel, 32 series = use Part No. XTP32-33.25



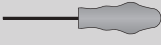
32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

GEN3SYS XT Pro Holders



		Body					Shank		Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
	Straight	3xD	105.0	150.7	154.3	214.3	60.0	32	HXT0332S-32FM	HXT0332S-32CM
		5xD	175.0	220.8	224.3	284.3	60.0	32	HXT0532S-32FM	HXT0532S-32CM
		7xD	244.9	290.7	294.3	354.3	60.0	32	HXT0732S-32FM	HXT0732S-32CM
		10xD	349.9	395.7	399.3	459.3	60.0	32	 HXT1032S-32FM	 HXT1032S-32CM
	Straight	3xD	4.133	6.210	6.350	9.038	2.688	1-1/2	HXT0332S-150F	HXT0332S-150C
		5xD	6.888	8.966	9.106	11.794	2.688	1-1/2	HXT0532S-150F	HXT0532S-150C
		7xD	9.643	11.721	11.861	14.549	2.688	1-1/2	HXT0732S-150F	HXT0732S-150C
		10xD	13.776	15.855	15.995	18.683	2.688	1-1/2	 HXT1032S-150F	 HXT1032S-150C

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

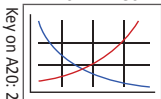
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A20: 86** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

A20: 71 - 86

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m = Metric (mm)
i = Imperial (in)

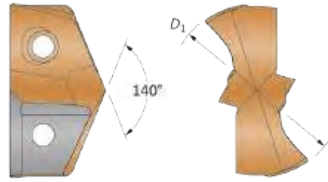
Screws sold in multiples of 10.



32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

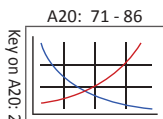
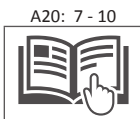
GEN3SYS XT Inserts

A20



Substrate	Insert			Carbide			
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No. Standard	Part No. Low Rate	Part No. Cast Iron	Part No. Stainless
K35 (C1)	32.00	1.2598	—	7C132P-32	7C132P-32LR	—	—
	32.15	1.2657	—	7C132P-32.15	7C132P-32.15LR	—	—
	32.50	1.2795	—	7C132P-32.5	7C132P-32.5LR	—	—
	32.55	1.2813	1-9/32	7C132P-0109	7C132P-0109LR	—	—
	33.00	1.2992	—	7C132P-33	7C132P-33LR	—	—
	33.34	1.3125	1-5/16	7C132P-0110	7C132P-0110LR	—	—
	33.50	1.3189	—	7C132P-33.5	7C132P-33.5LR	—	—
	34.00	1.3386	—	7C132P-34	7C132P-34LR	—	—
	34.13	1.3438	1-11/32	7C132P-0111	7C132P-0111LR	—	—
	34.50	1.3583	—	7C132P-34.5	7C132P-34.5LR	—	—
	34.93	1.3750	1-3/8	7C132P-0112	7C132P-0112LR	—	—
	35.00	1.3780	—	7C132P-35	7C132P-35LR	—	—
K20 (C2)	32.00	1.2598	—	7C232P-32	7C232P-32LR	7C232P-32CI	7C232P-32AS
	32.15	1.2657	—	7C232P-32.15	7C232P-32.15LR	7C232P-32.15CI	7C232P-32.15AS
	32.50	1.2795	—	7C232P-32.5	7C232P-32.5LR	7C232P-32.5CI	7C232P-32.5AS
	32.55	1.2813	1-9/32	7C232P-0109	7C232P-0109LR	7C232P-0109CI	7C232P-0109AS
	33.00	1.2992	—	7C232P-33	7C232P-33LR	7C232P-33CI	7C232P-33AS
	33.34	1.3125	1-5/16	7C232P-0110	7C232P-0110LR	7C232P-0110CI	7C232P-0110AS
	33.50	1.3189	—	7C232P-33.5	7C232P-33.5LR	7C232P-33.5CI	7C232P-33.5AS
	34.00	1.3386	—	7C232P-34	7C232P-34LR	7C232P-34CI	7C232P-34AS
	34.13	1.3438	1-11/32	7C232P-0111	7C232P-0111LR	7C232P-0111CI	7C232P-0111AS
	34.50	1.3583	—	7C232P-34.5	7C232P-34.5LR	7C232P-34.5CI	7C232P-34.5AS
	34.93	1.3750	1-3/8	7C232P-0112	7C232P-0112LR	7C232P-0112CI	7C232P-0112AS
	35.00	1.3780	—	7C232P-35	7C232P-35LR	7C232P-35CI	7C232P-35AS

Inserts sold in multiples of 1.

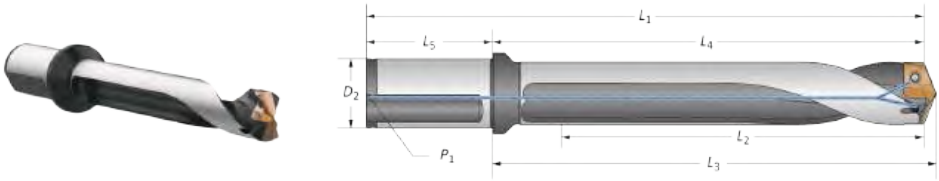


<p>Sizes not shown are available upon request. When ordering, please follow the example below:</p>	
Metric:	33.25 mm, C2, cast iron, 32 series = use Part No. 7C232P-33.25CI
Imperial:	1.3090", C2, stainless, 32 series = use Part No. 7C232P-1.3090AS



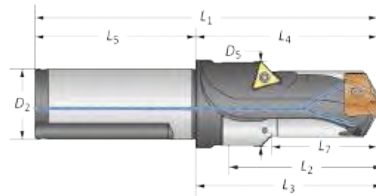
32 Series: 32.00 mm - 35.00 mm (1.2598" - 1.3780")

GEN3SYS Holders



A20

		Body					Shank			Part No.	
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	Cylindrical
m		3xD	111.2	157.7	161.3	231.3	70.0	40	1/4 BSPT	60332S-40FM	—
		5xD	181.2	227.7	231.3	301.3	70.0	40	1/4 BSPT	60532S-40FM	—
		7xD	251.2	297.7	301.3	371.3	70.0	40	1/4 BSPT	60732S-40FM	—
		Stub	44.1	90.7	94.2	164.2	70.0	40	1/4 BSPT	60132H-40FM	—
		3xD	111.2	157.7	161.3	231.3	70.0	40	1/4 BSPT	60332H-40FM	60332H-40CM
		5xD	181.2	227.7	231.3	301.3	70.0	40	1/4 BSPT	60532H-40FM	60532H-40CM
	7xD	251.2	297.7	301.3	371.3	70.0	40	1/4 BSPT	60732H-40FM	60732H-40CM	
i		3xD	4.377	6.210	6.350	9.038	2.688	1-1/2	1/4 NPT	60332S-150F	—
		5xD	7.133	8.965	9.105	11.793	2.688	1-1/2	1/4 NPT	60532S-150F	—
		7xD	9.888	11.721	11.861	14.549	2.688	1-1/2	1/4 NPT	60732S-150F	—
		Stub	1.737	3.570	3.710	6.398	2.688	1-1/2	1/4 NPT	60132H-150F	—
		3xD	4.377	6.210	6.350	9.038	2.688	1-1/2	1/4 NPT	60332H-150F	60332H-150C
		5xD	7.133	8.965	9.105	11.793	2.688	1-1/2	1/4 NPT	60532H-150F	60532H-150C
		7xD	9.888	11.721	11.861	14.549	2.688	1-1/2	1/4 NPT	60732H-150F	60732H-150C



Series	Step		Body					Shank		Part No.	Chamfer Insert
	D_5	L_7	L_2	L_4	L_3	L_1	L_5	D_2			
m	32	40.13	48.0	43.9	90.7	94.2	164.2	70.0	40	60132C45-40FM	TCMT-16T304
i	32	1.5800	1.890	1.727	3.570	3.710	6.398	2.688	1-1/2	60132C45-150F	TCMT-16T304

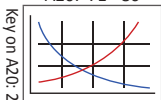
Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A20: 71 - 86

A20: 7 - 10



m = Metric (mm)

i = Imperial (in)

Screws sold in multiples of 10.



Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	168	0.28	0.30	0.33	0.36
		150 - 200	145	0.25	0.28	0.30	0.33
		200 - 250	130	0.20	0.23	0.25	0.28
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	158	0.28	0.3	0.33	0.36
		125 - 175	137	0.25	0.28	0.30	0.33
		175 - 225	125	0.23	0.25	0.28	0.30
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	107	0.18	0.20	0.23	0.25
		125 - 175	137	0.25	0.28	0.30	0.33
		175 - 225	125	0.23	0.25	0.28	0.30
		225 - 275	107	0.20	0.23	0.25	0.28
	Alloy Steel 4140, 5140, 8640, etc.	275 - 325	91	0.18	0.20	0.23	0.25
		125 - 175	126	0.25	0.28	0.30	0.33
		175 - 225	116	0.23	0.25	0.28	0.30
		225 - 275	104	0.20	0.23	0.25	0.28
	High-Strength Alloy 4340, 4330V, 300M, etc.	275 - 325	94	0.15	0.18	0.20	0.23
		325 - 375	85	0.15	0.15	0.18	0.20
		225 - 300	76	0.20	0.23	0.25	0.28
	Structural Steel A36, A285, A516, etc.	300 - 350	69	0.15	0.18	0.20	0.23
		350 - 400	61	0.13	0.18	0.18	0.20
		100 - 150	125	0.25	0.28	0.30	0.33
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	101	0.20	0.23	0.25	0.28
		250 - 350	93	0.18	0.20	0.23	0.25
M	Stainless Steel 400 Series 416, 420, etc.	150 - 200	81	0.15	0.18	0.18	0.20
		200 - 250	62	0.13	0.15	0.15	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	185 - 275	73	0.15	0.18	0.18	0.20
		275 - 350	56	0.13	0.15	0.15	0.18
	Super Duplex Stainless Steel	135 - 185	64	0.10	0.13	0.13	0.15

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
61 m/min • 0.70	= 42.7 m/min
0.20 mm/rev • 0.70	= 0.14 mm/rev

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO									
Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.38	0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.41	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.38	0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.61
0.33	0.36	0.38	0.42	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.38	0.41	0.42	0.46	0.48	0.51	0.53
0.36	0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.38	0.41	0.43	0.46	0.48	0.51	0.53
0.36	0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61
0.30	0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58
0.25	0.28	0.30	0.36	0.38	0.41	0.43	0.46	0.48	0.51
0.23	0.25	0.28	0.33	0.36	0.38	0.41	0.43	0.46	0.48
0.28	0.30	0.33	0.36	0.38	0.41	0.43	0.46	0.48	0.51
0.25	0.28	0.28	0.30	0.33	0.36	0.38	0.41	0.43	0.46
0.23	0.25	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.33	0.38	0.38	0.43	0.48	0.53	0.56	0.58	0.61	0.64
0.30	0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.33	0.36	0.38	0.43	0.48	0.51	0.53	0.56
0.20	0.23	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.18	0.20	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38
0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25	0.25	0.28
0.13	0.15	0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25
0.10	0.13	0.13	0.15	0.15	0.18	0.20	0.20	0.20	0.25
0.10	0.10	0.13	0.13	0.15	0.15	0.18	0.18	0.20	0.20

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76



Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
K	SG / Nodular Cast Iron	120 - 150	168	0.27	0.30	0.33	0.36
		150 - 200	159	0.25	0.28	0.30	0.33
		200 - 220	141	0.22	0.25	0.28	0.30
		220 - 260	124	0.20	0.23	0.25	0.28
	Grey / White Iron	260 - 320	112	0.20	0.21	0.23	0.25
		120 - 150	175	0.30	0.33	0.36	0.38
		150 - 200	168	0.28	0.30	0.33	0.36
		200 - 220	151	0.25	0.28	0.30	0.33
N	Cast Aluminum	220 - 260	130	0.23	0.25	0.28	0.30
		260 - 320	116	0.23	0.25	0.28	0.30
	Wrought Aluminum	30	351	0.30	0.33	0.36	0.38
		180	262	0.28	0.30	0.33	0.36
	Aluminum Bronze	30	488	0.33	0.38	0.41	0.43
		180	351	0.30	0.36	0.38	0.41
	Brass	100 - 200	126	0.26	0.28	0.30	0.32
		200 - 250	103	0.22	0.24	0.26	0.28
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	230	0.29	0.30	0.33	0.36
		60	149	0.07	0.08	0.09	0.11
	Titanium Alloy	140 - 220	40	0.15	0.18	0.18	0.20
		220 - 310	30	0.13	0.15	0.15	0.18
	Aerospace Alloy S82	140 - 220	43	0.13	0.15	0.18	0.20
		220 - 310	34	0.10	0.13	0.15	0.18
	Wear Plate Hardox®, AR400, T-1, etc.	185 - 275	50	0.10	0.10	0.12	0.14
		275 - 350	41	0.09	0.09	0.10	0.12
H	Hardened Steel	400	50	0.13	0.13	0.15	0.17
		500	40	0.11	0.11	0.13	0.15
		600	27	0.10	0.10	0.11	0.13
	Hardened Steel	300 - 400	51	0.13	0.13	0.15	0.17
		400 - 500	40	0.11	0.11	0.13	0.15

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
61 m/min • 0.70	= 42.7 m/min
0.20 mm/rev • 0.70	= 0.14 mm/rev

⚠ WARNING Tool failure can cause serious injury. To prevent:

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Recommended Drilling Data | Metric (mm)

GEN3SYS XT PRO									
Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.43	0.48	0.51	0.53	0.56	0.58	0.61	0.63
0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.60
0.30	0.33	0.38	0.43	0.46	0.48	0.51	0.53	0.56	0.58
0.28	0.30	0.36	0.38	0.43	0.46	0.48	0.51	0.53	0.55
0.41	0.43	0.48	0.53	0.56	0.58	0.61	0.64	0.66	0.69
0.38	0.41	0.46	0.51	0.53	0.56	0.58	0.61	0.64	0.66
0.36	0.38	0.43	0.51	0.51	0.53	0.56	0.58	0.61	0.64
0.33	0.36	0.41	0.46	0.48	0.51	0.53	0.56	0.58	0.61
0.33	0.36	0.38	0.43	0.46	0.48	0.51	0.53	0.56	0.58
0.41	0.43	0.46	0.48	0.51	0.53	0.56	0.58	0.61	0.64
0.38	0.41	0.43	0.46	0.48	0.51	0.53	0.56	0.58	0.58
0.46	0.48	0.51	0.53	0.56	0.61	0.66	0.69	0.74	0.76
0.43	0.46	0.48	0.53	0.56	0.58	0.64	0.66	0.71	0.74
0.34	0.36	0.38	0.40	0.42	0.44	0.46	0.48	0.48	0.50
0.30	0.32	0.34	0.36	0.38	0.42	0.46	0.46	0.46	0.48
0.38	0.41	0.43	0.48	0.53	0.56	0.60	0.63	0.66	0.66
0.13	0.15	0.16	0.18	0.20	0.20	0.22	0.25	0.25	0.28
0.20	0.23	0.23	0.25	0.28	0.28	0.30	0.30	0.33	0.36
0.18	0.20	0.20	0.23	0.25	0.25	0.28	0.28	0.30	0.33
0.20	0.23	0.23	0.25	0.28	0.28	0.30	0.30	0.33	0.33
0.18	0.20	0.20	0.23	0.25	0.25	0.28	0.28	0.30	0.30
0.15	0.16	0.18	0.18	0.20	0.22	0.24	0.26	0.28	0.31
0.14	0.15	0.16	0.16	0.18	0.20	0.22	0.24	0.26	0.29
0.19	0.21	0.23	0.25	0.27	0.27	0.29	0.29	0.31	0.31
0.17	0.19	0.21	0.23	0.25	0.25	0.27	0.27	0.29	0.29
0.15	0.17	0.19	0.21	0.23	0.23	0.25	0.25	0.25	0.27
0.19	0.21	0.22	0.23	0.25	0.25	0.27	0.27	0.29	0.29
0.17	0.19	0.20	0.21	0.23	0.23	0.25	0.25	0.27	0.27

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76



Recommended Drilling Data | Metric (mm)

GEN3SYS XT

ISO Material		Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	146	0.23	0.28	0.30	0.33
		150 - 200	126	0.23	0.26	0.28	0.30
		200 - 250	119	0.19	0.21	0.23	0.26
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	137	0.26	0.28	0.30	0.33
		125 - 175	119	0.23	0.26	0.28	0.30
		175 - 225	108	0.21	0.23	0.26	0.28
		225 - 275	95	0.16	0.19	0.21	0.23
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	119	0.23	0.26	0.28	0.30
		175 - 225	108	0.21	0.23	0.26	0.28
		225 - 275	95	0.19	0.21	0.23	0.26
		275 - 325	81	0.16	0.19	0.21	0.23
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	114	0.23	0.26	0.28	0.30
		175 - 225	105	0.21	0.23	0.26	0.28
		225 - 275	95	0.19	0.21	0.23	0.26
		275 - 325	87	0.14	0.16	0.19	0.21
		325 - 375	78	0.14	0.14	0.16	0.19
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	70	0.19	0.21	0.23	0.26
		300 - 350	63	0.14	0.16	0.19	0.21
		350 - 400	56	0.12	0.14	0.16	0.19
	Structural Steel A36, A285, A516, etc.	100 - 150	108	0.23	0.26	0.28	0.30
		150 - 250	87	0.19	0.21	0.23	0.26
		250 - 350	81	0.16	0.19	0.21	0.23
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	78	0.14	0.16	0.16	0.19
		200 - 250	59	0.12	0.14	0.14	0.16
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	73	0.15	0.18	0.18	0.20
		275 - 350	56	0.13	0.15	0.15	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	64	0.10	0.13	0.13	0.15
		185 - 275	47	0.08	0.10	0.10	0.13
	Super Duplex Stainless Steel	135 - 185	38	0.08	0.08	0.08	0.10
		185 - 275	30	0.05	0.05	0.08	0.08

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

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Recommended Drilling Data | Metric (mm)

GEN3SYS XT									
Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.35	0.37	0.40	0.44	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.37	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.42	0.44	0.47	0.49	0.51	0.54
0.35	0.37	0.40	0.44	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.37	0.41	0.44	0.47	0.49	0.51	0.54	0.56
0.30	0.33	0.35	0.38	0.41	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.35	0.37	0.40	0.42	0.44	0.47	0.49
0.33	0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.41	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.35	0.37	0.40	0.42	0.44	0.47	0.49
0.33	0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54	0.56
0.28	0.30	0.33	0.37	0.38	0.44	0.47	0.49	0.51	0.54
0.23	0.26	0.28	0.33	0.35	0.37	0.40	0.42	0.46	0.47
0.21	0.23	0.26	0.30	0.33	0.35	0.37	0.40	0.42	0.44
0.26	0.28	0.30	0.33	0.35	0.37	0.40	0.42	0.44	0.47
0.23	0.26	0.26	0.28	0.30	0.33	0.35	0.37	0.40	0.42
0.21	0.23	0.23	0.26	0.28	0.30	0.33	0.35	0.37	0.40
0.30	0.35	0.35	0.40	0.44	0.49	0.51	0.54	0.56	0.58
0.28	0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51	0.54
0.26	0.28	0.30	0.33	0.35	0.40	0.44	0.47	0.49	0.51
0.19	0.21	0.21	0.23	0.26	0.28	0.30	0.33	0.35	0.37
0.16	0.19	0.19	0.21	0.23	0.26	0.28	0.30	0.33	0.35
0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41	0.43
0.18	0.20	0.23	0.25	0.28	0.30	0.33	0.36	0.38	0.41
0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25	0.25	0.28
0.13	0.15	0.15	0.18	0.18	0.20	0.20	0.23	0.23	0.25
0.10	0.13	0.13	0.15	0.15	0.18	0.20	0.20	0.20	0.25
0.10	0.10	0.13	0.13	0.15	0.15	0.18	0.18	0.20	0.20

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76



Recommended Drilling Data | Metric (mm)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter			
				11 series 11.00 mm - 11.99 mm	12 series 12.00 mm - 12.99 mm	13 series 13.00 mm - 13.99 mm	14 series 14.00 mm - 14.99 mm
K	SG / Nodular Cast Iron	120 - 150	146	0.23	0.28	0.30	0.33
		150 - 200	138	0.23	0.26	0.28	0.30
		200 - 220	123	0.19	0.23	0.26	0.28
		220 - 260	108	0.19	0.21	0.23	0.26
		260 - 320	97	0.19	0.19	0.21	0.23
	Grey / White Iron	120 - 150	152	0.28	0.30	0.33	0.35
		150 - 200	146	0.26	0.28	0.30	0.33
		200 - 220	131	0.23	0.26	0.28	0.30
		220 - 260	113	0.21	0.23	0.26	0.28
		260 - 320	102	0.21	0.23	0.26	0.28
N	Cast Aluminum	30	300	0.28	0.30	0.33	0.35
		180	225	0.26	0.28	0.30	0.33
	Wrought Aluminum	30	425	0.30	0.35	0.37	0.40
		180	300	0.28	0.33	0.35	0.37
	Aluminum Bronze	100 - 200	110	0.23	0.26	0.28	0.28
		200 - 250	90	0.19	0.21	0.23	0.26
	Brass	100	200	0.23	0.28	0.30	0.33
	Copper	60	130	0.07	0.07	0.07	0.09
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	37	0.14	0.16	0.16	0.19
		220 - 310	29	0.12	0.14	0.14	0.16
	Titanium Alloy	140 - 220	42	0.12	0.14	0.16	0.19
		220 - 310	33	0.09	0.12	0.14	0.16
	Aerospace Alloy S82	185 - 275	45	0.09	0.09	0.12	0.12
		275 - 350	37	0.07	0.07	0.09	0.12
H	Wear Plate Hardox®, AR400, T-1, etc.	400	45	0.12	0.12	0.14	0.14
		500	37	0.09	0.09	0.12	0.14
		600	25	0.09	0.09	0.09	0.12
	Hardened Steel	300 - 400	47	0.12	0.12	0.14	0.14
		400 - 500	37	0.09	0.09	0.12	0.14

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
61 m/min • 0.80	= 48.8 m/min
0.20 mm/rev • 0.80	= 0.16 mm/rev

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Metric (mm)

GEN3SYS XT									
Feed Rate (mm/rev) by Diameter									
15 series 15.00 mm - 15.99 mm	16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.35	0.37	0.42	0.47	0.47	0.51	0.51	0.56	0.58	0.61
0.33	0.35	0.40	0.44	0.47	0.47	0.51	0.51	0.56	0.56
0.30	0.33	0.37	0.41	0.44	0.47	0.47	0.51	0.51	0.54
0.28	0.30	0.35	0.38	0.41	0.44	0.47	0.47	0.51	0.51
0.26	0.28	0.33	0.35	0.38	0.41	0.44	0.47	0.47	0.49
0.37	0.40	0.46	0.49	0.51	0.54	0.56	0.58	0.61	0.63
0.35	0.37	0.42	0.47	0.49	0.51	0.54	0.56	0.58	0.61
0.33	0.35	0.40	0.47	0.47	0.49	0.51	0.54	0.56	0.58
0.30	0.33	0.37	0.42	0.44	0.47	0.49	0.51	0.54	0.56
0.30	0.33	0.35	0.40	0.41	0.44	0.47	0.49	0.51	0.54
0.37	0.40	0.42	0.44	0.47	0.49	0.51	0.54	0.56	0.58
0.35	0.37	0.40	0.41	0.44	0.47	0.49	0.51	0.54	0.54
0.42	0.44	0.47	0.51	0.54	0.56	0.61	0.63	0.68	0.70
0.40	0.41	0.44	0.49	0.51	0.54	0.58	0.61	0.65	0.68
0.30	0.33	0.35	0.35	0.37	0.40	0.42	0.44	0.44	0.44
0.28	0.28	0.30	0.33	0.35	0.37	0.40	0.41	0.41	0.41
0.35	0.37	0.40	0.44	0.47	0.51	0.54	0.56	0.61	0.61
0.12	0.14	0.14	0.16	0.19	0.19	0.19	0.23	0.23	0.26
0.19	0.21	0.21	0.23	0.26	0.26	0.28	0.28	0.30	0.33
0.16	0.19	0.19	0.21	0.23	0.23	0.26	0.26	0.28	0.30
0.19	0.21	0.21	0.23	0.26	0.26	0.28	0.28	0.30	0.33
0.16	0.19	0.19	0.21	0.23	0.23	0.26	0.26	0.28	0.28
0.14	0.14	0.16	0.16	0.19	0.19	0.21	0.23	0.26	0.28
0.12	0.14	0.14	0.14	0.16	0.19	0.19	0.21	0.23	0.26
0.16	0.19	0.21	0.23	0.23	0.23	0.26	0.26	0.28	0.28
0.14	0.16	0.19	0.21	0.23	0.23	0.23	0.23	0.26	0.26
0.14	0.14	0.16	0.19	0.21	0.21	0.23	0.23	0.23	0.23
0.16	0.19	0.19	0.21	0.23	0.23	0.23	0.23	0.26	0.26
0.14	0.16	0.19	0.19	0.21	0.21	0.23	0.23	0.23	0.23

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
11	31	19	41	30	55	38
12	31	19	41	30	55	38
13	28	23	34	36	52	45
14	28	26	34	36	52	45
15	26	26	33	42	48	53
16	26	30	33	45	48	57
17	24	30	31	47	45	62
18	24	34	31	47	45	62
20	21	38	28	49	41	68
22	21	42	28	53	41	68
24	21	42	28	53	41	68
26	21	45	28	61	41	76
29	21	45	28	61	41	76
32	21	45	28	61	41	76



Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	550	0.011	0.012	0.013	0.014
		150 - 200	475	0.010	0.011	0.012	0.013
		200 - 250	425	0.008	0.009	0.010	0.011
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	520	0.011	0.012	0.013	0.014
		125 - 175	450	0.010	0.011	0.012	0.013
		175 - 225	410	0.009	0.010	0.011	0.012
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	350	0.007	0.008	0.009	0.010
		125 - 175	450	0.010	0.011	0.012	0.013
		175 - 225	410	0.009	0.010	0.011	0.012
		225 - 275	350	0.008	0.009	0.010	0.011
	Alloy Steel 4140, 5140, 8640, etc.	275 - 325	300	0.007	0.008	0.009	0.010
		125 - 175	415	0.010	0.011	0.012	0.013
		175 - 225	380	0.009	0.010	0.011	0.012
		225 - 275	340	0.008	0.009	0.010	0.011
	High-Strength Alloy 4340, 4330V, 300M, etc.	275 - 325	310	0.006	0.007	0.008	0.009
		325 - 375	280	0.006	0.006	0.007	0.008
		225 - 300	250	0.008	0.009	0.010	0.011
		300 - 350	225	0.006	0.007	0.008	0.009
	Structural Steel A36, A285, A516, etc.	350 - 400	200	0.005	0.006	0.007	0.008
		100 - 150	410	0.010	0.011	0.012	0.013
		150 - 250	330	0.008	0.009	0.010	0.011
	Tool Steel H-13, H-21, A-4, S-3, etc.	250 - 350	305	0.007	0.008	0.009	0.010
		150 - 200	265	0.006	0.007	0.007	0.008
	M	200 - 250	205	0.005	0.006	0.006	0.007
		185 - 275	240	0.006	0.007	0.007	0.008
		416, 420, etc.	180	0.005	0.006	0.006	0.007
		135 - 185	220	0.004	0.005	0.005	0.006
		304, 316, 17-4PH, etc.	160	0.003	0.004	0.004	0.005
	Super Duplex Stainless Steel	185 - 275	125	0.003	0.003	0.003	0.004
		185 - 275	100	0.002	0.002	0.003	0.003

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

WARNING Tool failure can cause serious injury. To prevent:

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- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO									
Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	16 series 0.6299" - 0.6692"	17 series 0.6693" - 0.7086"	18 series 0.7087" - 0.7873"	20 series 0.7874" - 0.8660"	22 series 0.8661" - 0.9448"	24 series 0.9449" - 1.0235"	26 series 1.0236" - 1.1416"	29 series 1.1417" - 1.2597"	32 series 1.2598" - 1.3780"
0.015	0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.015	0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.012	0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.020
0.009	0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.019
0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020
0.010	0.011	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.018
0.009	0.010	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.013	0.015	0.015	0.017	0.019	0.021	0.022	0.023	0.024	0.025
0.012	0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.014	0.015	0.017	0.019	0.020	0.021	0.022
0.008	0.009	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.007	0.008	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015
0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010
0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010
0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.008

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20



Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
K	SG / Nodular Cast Iron	120 - 150	550	0.010	0.012	0.013	0.014
		150 - 200	520	0.010	0.011	0.012	0.013
		200 - 220	465	0.008	0.010	0.011	0.012
		220 - 260	405	0.008	0.009	0.010	0.011
	Grey / White Iron	260 - 320	365	0.008	0.008	0.009	0.010
		120 - 150	575	0.012	0.013	0.014	0.015
		150 - 200	550	0.011	0.012	0.013	0.014
		200 - 220	495	0.010	0.011	0.012	0.013
N	Cast Aluminum	120 - 260	425	0.009	0.010	0.011	0.012
		260 - 320	380	0.009	0.010	0.011	0.012
	Wrought Aluminum	30	1150	0.012	0.013	0.014	0.015
		180	860	0.011	0.012	0.013	0.014
	Aluminum Bronze	30	1600	0.013	0.015	0.016	0.017
		180	1150	0.012	0.014	0.015	0.016
	Brass	100 - 200	415	0.010	0.011	0.012	0.012
		200 - 250	335	0.008	0.009	0.010	0.011
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	755	0.010	0.012	0.013	0.014
		60	490	0.003	0.003	0.003	0.004
	Titanium Alloy	140 - 220	130	0.006	0.007	0.007	0.008
		220 - 310	100	0.005	0.006	0.006	0.007
	Aerospace Alloy S82	140 - 220	140	0.005	0.006	0.007	0.008
		220 - 310	110	0.004	0.005	0.006	0.007
	Wear Plate Hardox®, AR400, T-1, etc.	185 - 275	165	0.004	0.004	0.005	0.005
		275 - 350	135	0.003	0.003	0.004	0.005
H	Hardened Steel	400	160	0.005	0.005	0.006	0.006
		500	130	0.004	0.004	0.005	0.006
		600	90	0.004	0.004	0.004	0.005
	Hardened Steel	300 - 400	170	0.005	0.005	0.006	0.006
		400 - 500	130	0.004	0.004	0.005	0.006

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

10xD and 12xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (10xD/12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

GEN3SYS XT PRO									
Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	16 series 0.6299" - 0.6692"	17 series 0.6693" - 0.7086"	18 series 0.7087" - 0.7873"	20 series 0.7874" - 0.8660"	22 series 0.8661" - 0.9448"	24 series 0.9449" - 1.0235"	26 series 1.0236" - 1.1416"	29 series 1.1417" - 1.2597"	32 series 1.2598" - 1.3780"
0.015	0.016	0.018	0.020	0.020	0.022	0.022	0.024	0.025	0.026
0.014	0.015	0.017	0.019	0.020	0.020	0.022	0.022	0.024	0.024
0.013	0.014	0.016	0.018	0.019	0.020	0.020	0.022	0.022	0.023
0.012	0.013	0.015	0.017	0.018	0.019	0.020	0.020	0.022	0.022
0.011	0.012	0.014	0.015	0.017	0.018	0.019	0.020	0.020	0.021
0.016	0.017	0.019	0.021	0.022	0.023	0.024	0.025	0.026	0.027
0.015	0.016	0.018	0.020	0.021	0.022	0.023	0.024	0.025	0.026
0.014	0.015	0.017	0.020	0.020	0.021	0.022	0.023	0.024	0.025
0.013	0.014	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.016	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.024	0.025
0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.023
0.018	0.019	0.020	0.022	0.023	0.024	0.026	0.027	0.029	0.030
0.017	0.018	0.019	0.021	0.022	0.023	0.025	0.026	0.028	0.029
0.013	0.014	0.015	0.015	0.016	0.017	0.018	0.019	0.019	0.019
0.012	0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.018	0.019
0.015	0.016	0.017	0.019	0.020	0.022	0.023	0.024	0.026	0.026
0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010	0.010	0.011
0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.012	0.013	0.014
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.012	0.013	0.014
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.012
0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.010	0.011	0.012
0.005	0.006	0.006	0.006	0.007	0.008	0.008	0.009	0.010	0.011
0.007	0.008	0.009	0.010	0.010	0.010	0.011	0.011	0.012	0.012
0.006	0.007	0.008	0.009	0.010	0.010	0.010	0.010	0.011	0.011
0.006	0.006	0.007	0.008	0.009	0.009	0.010	0.010	0.010	0.010
0.007	0.008	0.008	0.009	0.010	0.010	0.010	0.010	0.011	0.011
0.006	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.010	0.010

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20



Recommended Drilling Data | Imperial (in)

GEN3SYS XT

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	480	0.009	0.011	0.012	0.013
		150 - 200	415	0.009	0.010	0.011	0.012
		200 - 250	390	0.007	0.008	0.009	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	450	0.010	0.011	0.012	0.013
		125 - 175	390	0.009	0.010	0.011	0.012
		175 - 225	355	0.008	0.009	0.010	0.011
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	310	0.006	0.007	0.008	0.009
		125 - 175	390	0.009	0.010	0.011	0.012
		175 - 225	355	0.008	0.009	0.010	0.011
		225 - 275	310	0.007	0.008	0.009	0.010
	Alloy Steel 4140, 5140, 8640, etc.	275 - 325	265	0.006	0.007	0.008	0.009
		125 - 175	375	0.009	0.010	0.011	0.012
		175 - 225	345	0.008	0.009	0.010	0.011
		225 - 275	310	0.007	0.008	0.009	0.010
	High-Strength Alloy 4340, 4330V, 300M, etc.	275 - 325	285	0.006	0.006	0.007	0.008
		325 - 375	255	0.006	0.006	0.006	0.007
		225 - 300	230	0.007	0.008	0.009	0.010
	Structural Steel A36, A285, A516, etc.	300 - 350	205	0.006	0.006	0.007	0.008
		350 - 400	185	0.005	0.006	0.006	0.007
		100 - 150	355	0.009	0.010	0.011	0.012
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	285	0.007	0.008	0.009	0.010
		250 - 350	265	0.006	0.007	0.008	0.009
M	Stainless Steel 400 Series 416, 420, etc.	150 - 200	255	0.006	0.006	0.006	0.007
		200 - 250	195	0.005	0.006	0.006	0.006
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	185 - 275	160	0.003	0.004	0.004	0.005
		135 - 185	220	0.004	0.005	0.005	0.006
	Super Duplex Stainless Steel	135 - 185	125	0.003	0.003	0.003	0.004
		185 - 275	100	0.002	0.002	0.003	0.003

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

GEN3SYS XT									
Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	16 series 0.6299" - 0.6692"	17 series 0.6693" - 0.7086"	18 series 0.7087" - 0.7873"	20 series 0.7874" - 0.8660"	22 series 0.8661" - 0.9448"	24 series 0.9449" - 1.0235"	26 series 1.0236" - 1.1416"	29 series 1.1417" - 1.2597"	32 series 1.2598" - 1.3780"
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.017	0.017	0.018	0.019	0.020	0.021
0.014	0.015	0.016	0.017	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.012	0.013	0.014	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.017	0.018	0.019
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.014	0.015	0.016	0.017	0.017	0.018	0.019
0.013	0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021	0.022
0.011	0.012	0.013	0.015	0.015	0.017	0.018	0.019	0.020	0.021
0.009	0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.018
0.008	0.009	0.010	0.012	0.013	0.014	0.015	0.016	0.017	0.017
0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017	0.017	0.018
0.009	0.010	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.008	0.009	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.012	0.014	0.014	0.016	0.017	0.019	0.020	0.021	0.022	0.023
0.011	0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020	0.021
0.010	0.011	0.012	0.013	0.014	0.016	0.017	0.018	0.019	0.020
0.007	0.008	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015
0.006	0.007	0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014
0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016	0.017
0.007	0.008	0.009	0.010	0.011	0.012	0.013	0.014	0.015	0.016
0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010	0.010	0.011
0.005	0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.010
0.004	0.005	0.005	0.006	0.006	0.007	0.008	0.008	0.008	0.010
0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.008

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20

**Recommended Drilling Data | Imperial (in)****GEN3SYS XT**

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter			
				11 series 0.4331" - 0.4723"	12 series 0.4724" - 0.5117"	13 series 0.5118" - 0.5511"	14 series 0.5512" - 0.5905"
K	SG / Nodular Cast Iron	120 - 150	480	0.009	0.011	0.012	0.013
		150 - 200	450	0.009	0.010	0.011	0.012
		200 - 220	400	0.007	0.009	0.010	0.011
		220 - 260	350	0.007	0.008	0.009	0.010
	Grey / White Iron	260 - 320	320	0.007	0.007	0.008	0.009
		120 - 150	500	0.011	0.012	0.013	0.014
		150 - 200	480	0.010	0.011	0.012	0.013
		200 - 220	430	0.009	0.010	0.011	0.012
N	Cast Aluminum	120 - 260	370	0.008	0.009	0.010	0.011
		260 - 320	335	0.008	0.009	0.010	0.011
	Wrought Aluminum	30	1000	0.011	0.012	0.013	0.014
		180	750	0.010	0.011	0.012	0.013
	Aluminum Bronze	30	1400	0.012	0.014	0.015	0.016
		180	1000	0.011	0.013	0.014	0.015
	Brass	100 - 200	360	0.009	0.010	0.011	0.011
		200 - 250	295	0.007	0.008	0.009	0.010
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	660	0.009	0.011	0.012	0.013
		60	425	0.003	0.003	0.003	0.004
	Titanium Alloy	140 - 220	120	0.006	0.006	0.006	0.007
		220 - 310	95	0.005	0.006	0.006	0.006
	Aerospace Alloy S82	140 - 220	140	0.005	0.006	0.006	0.007
		220 - 310	110	0.004	0.005	0.006	0.006
	Wear Plate Hardox®, AR400, T-1, etc.	185 - 275	145	0.004	0.004	0.005	0.005
		275 - 350	120	0.003	0.003	0.004	0.005
H	Hardened Steel	400	145	0.005	0.005	0.006	0.006
		500	110	0.004	0.004	0.005	0.006
		600	80	0.004	0.004	0.004	0.005
	Hardened Steel	300 - 400	155	0.005	0.005	0.006	0.006
		400 - 500	120	0.004	0.004	0.005	0.006

7xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, and 12xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

GEN3SYS XT									
Feed Rate (IPR) by Diameter									
15 series 0.5906" - 0.6298"	16 series 0.6299" - 0.6692"	17 series 0.6693" - 0.7086"	18 series 0.7087" - 0.7873"	20 series 0.7874" - 0.8660"	22 series 0.8661" - 0.9448"	24 series 0.9449" - 1.0235"	26 series 1.0236" - 1.1416"	29 series 1.1417" - 1.2597"	32 series 1.2598" - 1.3780"
0.014	0.015	0.017	0.018	0.018	0.020	0.020	0.022	0.023	0.024
0.013	0.014	0.016	0.017	0.018	0.018	0.020	0.020	0.022	0.022
0.012	0.013	0.015	0.016	0.017	0.018	0.018	0.020	0.020	0.021
0.011	0.012	0.014	0.015	0.016	0.017	0.018	0.018	0.020	0.020
0.010	0.011	0.013	0.014	0.015	0.016	0.017	0.018	0.018	0.019
0.015	0.016	0.018	0.019	0.020	0.021	0.022	0.023	0.024	0.025
0.014	0.015	0.017	0.018	0.019	0.020	0.021	0.022	0.023	0.024
0.013	0.014	0.016	0.018	0.018	0.019	0.020	0.021	0.022	0.023
0.012	0.013	0.015	0.017	0.017	0.018	0.019	0.020	0.021	0.022
0.012	0.013	0.014	0.016	0.016	0.017	0.018	0.019	0.020	0.021
0.015	0.016	0.017	0.017	0.018	0.019	0.020	0.021	0.022	0.023
0.014	0.015	0.016	0.016	0.017	0.018	0.019	0.020	0.021	0.021
0.017	0.017	0.018	0.020	0.021	0.022	0.024	0.025	0.027	0.028
0.016	0.016	0.017	0.019	0.020	0.021	0.023	0.024	0.026	0.027
0.012	0.013	0.014	0.014	0.015	0.016	0.017	0.017	0.017	0.017
0.011	0.011	0.012	0.013	0.014	0.015	0.016	0.016	0.016	0.016
0.014	0.015	0.016	0.017	0.018	0.020	0.021	0.022	0.024	0.024
0.005	0.006	0.006	0.006	0.007	0.007	0.007	0.009	0.009	0.010
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.006	0.007	0.007	0.008	0.009	0.009	0.010	0.010	0.011	0.012
0.007	0.008	0.008	0.009	0.010	0.010	0.011	0.011	0.012	0.013
0.006	0.007	0.007	0.008	0.009	0.009	0.010	0.010	0.011	0.011
0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.010	0.011
0.005	0.006	0.006	0.006	0.006	0.007	0.007	0.008	0.009	0.010
0.006	0.007	0.008	0.009	0.009	0.009	0.010	0.010	0.011	0.011
0.006	0.006	0.007	0.008	0.009	0.009	0.009	0.009	0.010	0.010
0.006	0.006	0.006	0.007	0.008	0.008	0.009	0.009	0.009	0.009
0.006	0.007	0.007	0.008	0.009	0.009	0.009	0.009	0.010	0.010
0.006	0.006	0.007	0.007	0.008	0.008	0.009	0.009	0.009	0.009

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Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD		10xD, 12xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
11	450	5	600	8	800	10
12	450	5	600	8	800	10
13	400	6	500	9.5	750	12
14	400	7	500	9.5	750	12
15	380	7	475	11	700	14
16	380	8	475	12	700	15
17	350	8	450	12.5	650	16.5
18	350	9	450	12.5	650	16.5
20	300	10	400	13	600	18
22	300	11	400	14	600	18
24	300	11	400	14	600	18
26	300	12	400	16	600	20
29	300	12	400	16	600	20
32	300	12	400	16	600	20



Technical Formulas

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Formulas

1.	RPM = $(318.47 \cdot \text{m/min}) / \text{DIA}$ <i>where:</i> RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)
2.	mm/min = $\text{RPM} \cdot \text{mm/rev}$ <i>where:</i> mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3.	m/min = $\text{RPM} \cdot 0.003 \cdot \text{DIA}$ <i>where:</i> m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)
4.	Thrust = $154 \cdot (\text{mm/rev}) \cdot \text{DIA} \cdot K_m$ <i>where:</i> Thrust = axial thrust (N) mm/rev = feed rate (mm/rev) DIA = diameter of drill (mm) K_m = specific cutting energy (kPa)
5.	Tool Power = $((\text{mm/rev}) \cdot \text{RPM} \cdot K_m \cdot \text{DIA}^2) / 218604.8$ <i>where:</i> Tool Power = tool power (HP) mm/rev = feed rate (mm/rev) RPM = revolutions per minute (rev/min) K_m = specific cutting energy (kPa) DIA = diameter of drill (mm)

Material Constants

Type of Material	Hardness	K_m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	—	1.52
Magnesium Alloy	—	1.10
High-Temperature Alloys	—	9.93
Titanium Alloy	—	4.96

Formulas

1.	RPM = $(3.82 \cdot \text{SFM}) / \text{DIA}$ <i>where:</i> RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = diameter of drill (inch)
2.	IPM = $\text{RPM} \cdot \text{IPR}$ <i>where:</i> IPM = inches per minute (in/min) RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)
3.	SFM = $\text{RPM} \cdot 0.262 \cdot \text{DIA}$ <i>where:</i> SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)
4.	Thrust = $153,700 \cdot \text{IPR} \cdot \text{DIA} \cdot K_m$ <i>where:</i> Thrust = axial thrust (lbs) IPR = feed rate (in/rev) DIA = diameter of drill (inch) K_m = specific cutting energy (lbs/in ²)
5.	Tool Power = $.6991 \cdot \text{IPR} \cdot \text{RPM} \cdot K_m \cdot \text{DIA}^2$ <i>where:</i> Tool Power = tool power (HP) IPR = feed rate (in/rev) RPM = revolutions per minute (rev/min) K_m = specific cutting energy (lbs/in ²) DIA = diameter of drill (inch)

Material Constants

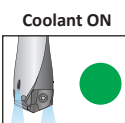
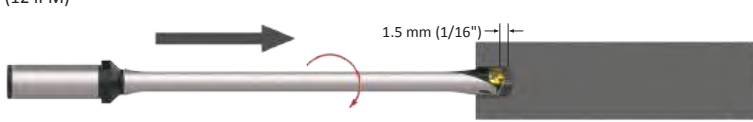
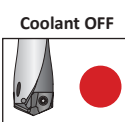
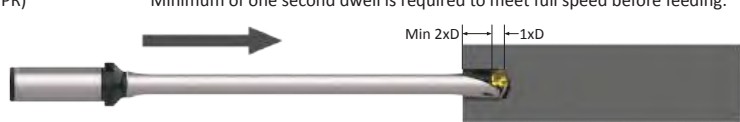
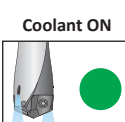
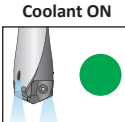
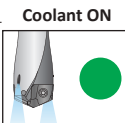
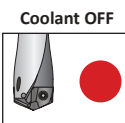
Type of Material	Hardness	K_m (lbs/in ²)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	—	0.22
Magnesium Alloy	—	0.16
High-Temperature Alloys	—	1.44
Titanium Alloy	—	0.72

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."



Deep Hole Drilling Guidelines

GEN3SYS XT Pro | 10xD and 12xD Holders

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	 
2. Feed-in 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	 
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	 
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	 
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.	 
6. Drill Retract 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	 

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short GEN3SYS holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

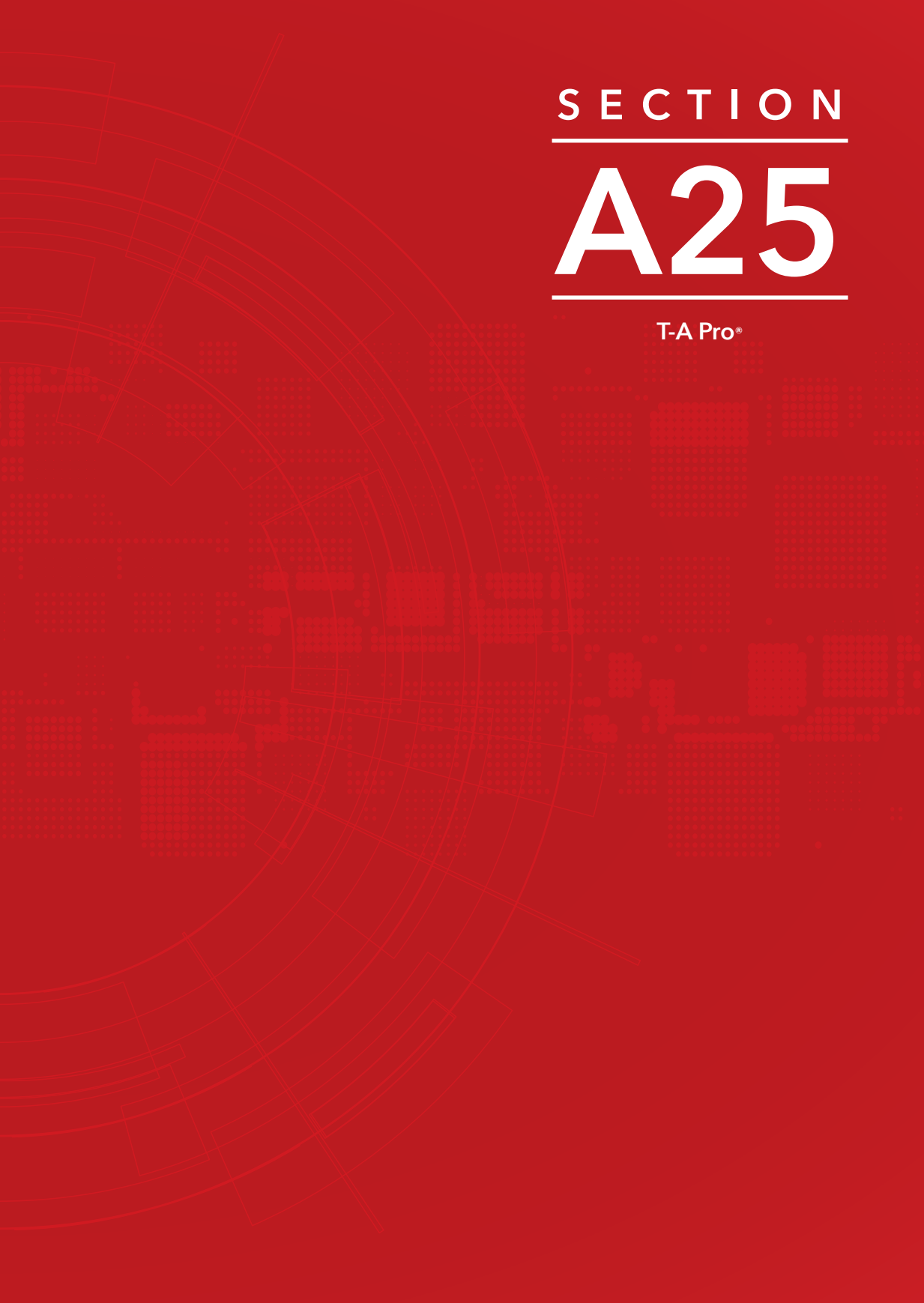
A20

	Potential Problem																				
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-up edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter		
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Possible Solutions	
Worn or misaligned spindle (lathe, screw machine, chucker)	1	2	3				7		9	10	11		13			16	17			<ul style="list-style-type: none">Align spindle and turret or tailstock.Repair spindle.	
Use of low rigidity machine tools			2	3	4		7		9	10			13	14						<ul style="list-style-type: none">Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).	
Poor workpiece support			2		4		7			10	11				15		17			<ul style="list-style-type: none">Provide additional support for the workpiece.Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).	
Flood coolant, low coolant pressure, or low coolant volume	1					5	6		8		10		12				16	17	18	19	<ul style="list-style-type: none">Run coolant through tool holder when drilling greater than 1xD.Increase coolant pressure and volume through the tool holder.Reduce penetration rate to fall within the coolant limitations (NOTICE: Do not reduce feed below threshold of good chip formation).Add a peck cycle to help clear chips.
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, parting lines, curved or stepped surfaces, cross holes, and cast or forged surfaces)					4		7		9	10	11			13	14	15	16	17	18		<ul style="list-style-type: none">Premill (spot face) entry or exit surface to remove interruption.Decrease feed as much as 50% through entry or exit interruption.Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speed	1					5	6				10		12						18		<ul style="list-style-type: none">Reduce speed.Increase coolant pressure and volume.Improve coolant condition by use of quality products and regular maintenance.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts, and sand casting)						4		6			10		12	13					18		<ul style="list-style-type: none">Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining.Reduce feeds (NOTICE: Do not reduce feed below threshold of good chip formation).
Poor chip control								8		10	11		13				16	17	18	19	<ul style="list-style-type: none">Increase feed to recommended levels. Contact Allied's Application Engineering group for technical recommendations.Increase coolant pressure and volume.Improve coolant condition by use of quality products and regular maintenance.
Spot drilled holes with included angle less than that matching GEN3SYS XT or cored holes	1				4		7						13						18		<ul style="list-style-type: none">Spot hole with short tool of same or greater included angle as GEN3SYS XT drill insert.Reduce feed (NOTICE: Do not reduce feed below threshold of good chip formation). If possible, drill from solid.



Notes

A20



SECTION

A25

T-A Pro®

T-A Pro® Drill

9.50 mm - 47.80 mm (0.3739" - 1.8820")



T-A Pro®

After 35 years of spade drilling success with our iconic T-A® (throwaway) insert, the best just got better. Our team of engineers developed technology that takes THE "go-to" solution for general purpose holemaking to a performance level previously unachievable by a spade insert.

The T-A Pro combines material-specific insert geometries, a redesigned drill body, and a proprietary coolant-through system to allow penetration rates, which run at speeds faster than other high performance drills.

The best just got *better*

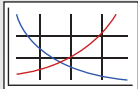
- ▶ Excellent chip control.
- ▶ Improves hole quality and surface finish.
- ▶ Provides maximum durability and stability.

Applicable Industries

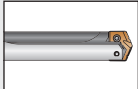
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

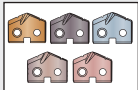
The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



T-A Pro Holders
Range of holders that connect with the corresponding inserts.



T-A Pro Inserts
ISO-material special coated inserts that connect with the corresponding holders.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

	WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.
	NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
	NOTE and IMPORTANT are also used. These are important that you read and follow but are not safety-related.
	Visit www.alliedmachine.com for the most up-to-date information and procedures.

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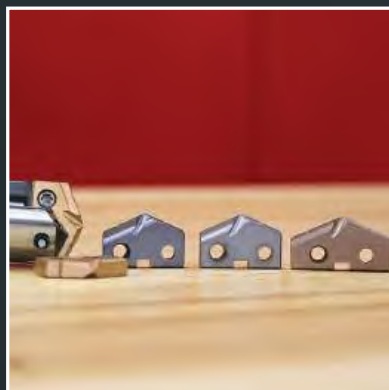
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T-A Pro[®]



NEW HOLDER DESIGN

Optimized flute design for **increased chip evacuation.**



NEW INSERT DESIGN

ISO-specific geometries with a new point design to **simplify** your insert choices.



NEW COOLANT DESIGN

Proprietary coolant outlet configuration provides **superior** performance **even in low coolant applications (200 PSI).**



Case Study

T-A Pro® (P) STEEL GEOMETRY

A25



Mold Components | P20 Hi-hard

Hole Ø: 37.31 mm (1.4689")
Hole Depth: 165.10 mm (6.5000")

Holder, 5xD length: HTA3A05-150F
Insert, P (steel): TAP3-37.31

P - Steel



- ✓ 68% decrease in cycle time.
- ✓ 600% increase in tool life.
- ✓ 95% decrease in cost per hole.

	 RPM	 SPEED	 FEED IN	 CYCLE TIME	 TOOL LIFE
Competitor	590	68.58 m/min (225 SFM)	0.06 mm/rev (0.0025 IPR)	4 min 30 sec	2.54 m (100")
Allied	470	54.86 m/min (180 SFM)	0.254 mm/rev (0.0100 IPR)	1 min 25 sec	17.78 m (700")



T-A Pro Drilling System Information

A High Penetration Drilling Solution



- ▶ Quick connectivity to existing T-A® holders for minimal setup times and immediate increase in productivity.
- ▶ Body diameter specific holders to maximize rigidity while drilling.
- ▶ Ease of insert selection with ISO geometries compared to T-A.
- ▶ Consistency of a spade with penetration rates of a high performance drill.

A25

INSERT GEOMETRIES

P

STEELS

- Designed to provide increased penetration rates and tool life in steel applications.
- Excellent chip control with superior geometry and edge.
- Increased heat resistance and improved tool life with Allied's multilayer AM300® coating.

M

Available in Z-3 series only.

STAINLESS STEEL

- Designed for all stainless steels and heat-resistant super alloy (HRSA) materials.
- Optimized geometry for improved chip formation while minimizing exit burr.
- Industry-leading tool life in stainless and HRSA materials with Allied's new AM460 coating.

K

CAST IRONS

- Uniquely designed for cast/nodular iron applications.
- Geometry that provides maximum tool life, reduced exit burr, and improved hole finish.
- Increased abrasion resistance and tool life with Allied's multilayer TiAlN coating.

N

NONFERROUS

- Designed for applications in aluminum, brass, and copper.
- Geometry that yields excellent chip control in these softer materials.
- TiCN coating for versatility to run in a variety of materials while reducing buildup.

X

SUBSTRATE FROM HIGH-SPEED STEEL

- Multipurpose geometry engineered for a wide range of materials.
- Reliable tool life and high process repeatability in the most challenging applications.
- Excellent heat resistance and high lubricity for broad scope use with AM200® coating.

INSERT DESIGN

ISO-specific geometries with a new point design to simplify your insert choices.



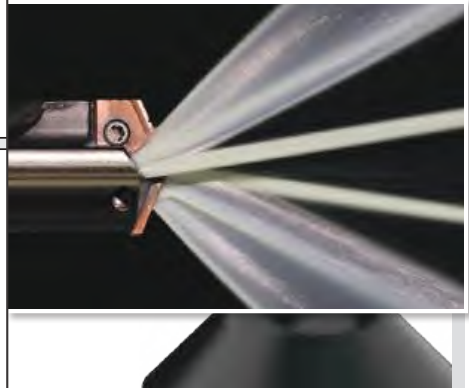
COOLANT DESIGN

Proprietary coolant outlet configuration provides superior cooling even in low-coolant applications.



HOLDER DESIGN

New flute design optimized to prevent chip packing from slowing you down.



Insert Comparison & Assembly Information

		 T-A Pro® Inserts	 GEN2 T-A® Inserts	 T-A® Inserts
Recommended for increased productivity				
ISO-specific geometry/coating combination	<div><div>P</div><div>M</div><div>K</div><div>N</div></div>			
Connects with T-A Pro holders				
Connects with T-A holders				

A25



Step 1:
Align the flats on the T-A Pro insert with the flats on the ears of the holder.



Step 2:
Slide the insert into the precision ground locating pocket on the holder. The insert should not be turned, rotated, or twisted for locking purposes. The holder pocket and locating pads on the insert assure optimum fit and repeatability.



Step 3:
Apply a generous amount of E-Z Break® (provided in the packaging) onto the supplied TORX® Plus screws.

Tighten the TORX Plus screws to the recommended torque value specified in the catalog by series. A preset TORX driver is available to assure that the proper torque is applied.



Product Nomenclature

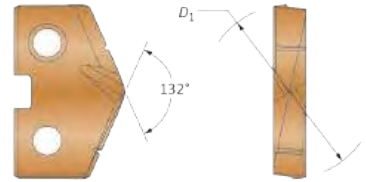
T-A Pro Drill Inserts

TA	P		0	—	15.00
	ISO Material / Geometry		Series		Diameter (mm)
	Standard T-A Pro Inserts: P = Steel M = Stainless steel* K = Cast iron N = Nonferrous X = High-speed steel	Form T-A Pro Inserts: CF = Carbide XF = High-speed steel	Y Z 0 1 2 3		Standard T-A Pro Inserts: For complete list of ranges by series, see table below. Form T-A Pro Inserts: 82DEG = 82° form angle 90DEG = 90° form angle 100DEG = 100° form angle

*Available in Z-3 series only.

Reference Key

Symbol	Attribute
D_1	Insert diameter



Series & Body Diameters

Series		Y Series	Z Series	0 Series
Insert				
Insert Ø	mm	9.50 - 11.09	11.10 - 12.69	12.70 - 17.64
	inch	0.3739 - 0.4368	0.4369 - 0.4998	0.4999 - 0.6946
Holder				
Insert Ø min	A Body	9.50 mm (0.3739")	11.10 mm (0.4369")	12.70 mm (0.4999")
	B Body	10.32 mm (0.4062")	12.20 mm (0.4802")	14.00 mm (0.5510")
	C Body	—	—	15.08 mm (0.5936")
	D Body	—	—	16.50 mm (0.6495")
Shank Ø	mm	20.00	20.00	20.00
	inch	0.750	0.750	0.750



Product Nomenclature

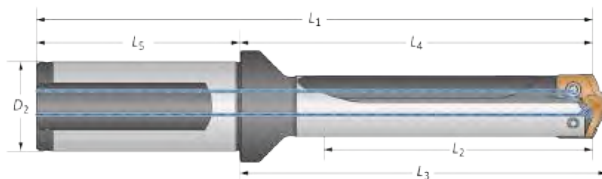
T-A Pro Holders

HTA	0	B	05	—	20		FM
	Series	Body Diameter	Drill Length		Shank Diameter		Shank Style
	Y	A	01 = Stub		Metric (mm)	Imperial (inch)	FM = Flanged metric with flat
	Z	B	03 = 3xD		20 = 20 mm	075 = 0.750"	CM = Cylindrical metric (no flat)
	0	C	05 = 5xD		25 = 25 mm	100 = 1.000"	F = Flanged with flat
	1	D	07 = 7xD		32 = 32 mm	125 = 1.250"	C = Cylindrical (no flat)
	2		10 = 10xD ⚠		40 = 40 mm	150 = 1.500"	
	3		12 = 12xD ⚠				
			15 = 15xD ⚠				
			C45 = Drill/chamfer*				

* Drill and chamfer holders are available in A and C body diameters only.

Reference Key

Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder body length
L_5	Shank length



1 Series	2 Series	3 Series
		
17.65 - 24.37	24.38 - 35.04	35.05 - 47.80
0.6947 - 0.9596	0.9597 - 1.3797	1.3798 - 1.8820
17.65 mm (0.6947")	24.38 mm (0.9597")	35.05 mm (1.3798")
19.05 mm (0.7499")	25.40 mm (0.9999")	37.80 mm (1.4880")
20.60 mm (0.8109")	28.50 mm (1.1219")	41.00 mm (1.6140")
22.90 mm (0.9014")	31.70 mm (1.2479")	44.40 mm (1.7479")
25.00	32.00	40.00
1.000	1.250	1.500

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

**Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")**

Replaceable Inserts

A25



Insert				Carbide			HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent	 Part No.	 Part No.	 Part No.	 Part No.
				P	K	N	X
Y-A	9.50	0.3740	—	TAPY-9.50	TAKY-9.50	TANY-9.50	TAXY-9.50
Y-A	9.53	0.3752	3/8	TAPY-9.53	TAKY-9.53	TANY-9.53	TAXY-9.53
Y-A	9.60	0.3780	—	TAPY-9.60	TAKY-9.60	TANY-9.60	TAXY-9.60
Y-A	9.70	0.3819	—	TAPY-9.70	TAKY-9.70	TANY-9.70	TAXY-9.70
Y-A	9.80	0.3858	—	TAPY-9.80	TAKY-9.80	TANY-9.80	TAXY-9.80
Y-A	9.90	0.3898	—	TAPY-9.90	TAKY-9.90	TANY-9.90	TAXY-9.90
Y-A	9.92	0.3906	25/64	TAPY-9.92	TAKY-9.92	TANY-9.92	TAXY-9.92
Y-A	10.00	0.3937	—	TAPY-10.00	TAKY-10.00	TANY-10.00	TAXY-10.00
Y-A	10.10	0.3976	—	TAPY-10.10	TAKY-10.10	TANY-10.10	TAXY-10.10
Y-A	10.20	0.4016	—	TAPY-10.20	TAKY-10.20	TANY-10.20	TAXY-10.20
Y-A	10.30	0.4055	—	TAPY-10.30	TAKY-10.30	TANY-10.30	TAXY-10.30

Inserts sold in multiples of 2.

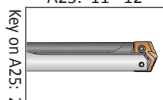
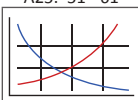
Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

A Series Insert +
A Series HolderC Series Insert +
A Series HolderC Series Insert +
C Series HolderA Series Insert +
C Series Holder

A25: 11 - 12

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Sizes not shown are available upon request.

When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16****Imperial:** 0.5180", steel, 0 series = use Part No. **TAP0-13.16**

Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Replaceable Inserts



A25

Insert				Carbide			HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No.	Part No.	Part No.	Part No.
				P	K	N	X
Y-B	10.32	0.4063	13/32	TAPY-10.32	TAKY-10.32	TANY-10.32	TAXY-10.32
Y-B	10.40	0.4094	—	TAPY-10.40	TAKY-10.40	TANY-10.40	TAXY-10.40
Y-B	10.50	0.4134	—	TAPY-10.50	TAKY-10.50	TANY-10.50	TAXY-10.50
Y-B	10.60	0.4173	—	TAPY-10.60	TAKY-10.60	TANY-10.60	TAXY-10.60
Y-B	10.70	0.4213	—	TAPY-10.70	TAKY-10.70	TANY-10.70	TAXY-10.70
Y-B	10.72	0.4220	27/64	TAPY-10.72	TAKY-10.72	TANY-10.72	TAXY-10.72
Y-B	10.80	0.4252	—	TAPY-10.80	TAKY-10.80	TANY-10.80	TAXY-10.80
Y-B	10.90	0.4291	—	TAPY-10.90	TAKY-10.90	TANY-10.90	TAXY-10.90
Y-B	11.00	0.4331	—	TAPY-11.00	TAKY-11.00	TANY-11.00	TAXY-11.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



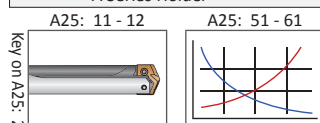
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



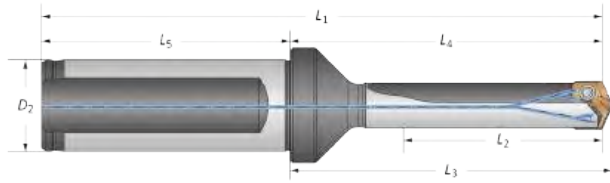
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Holders



A25

Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	11.1	39.5	41.5	89.5	50.0	20	HTAYA01-20FM	HTAYA01-20CM
Stub	B	11.1	39.5	41.5	89.5	50.0	20	HTAYB01-20FM	HTAYB01-20CM
3xD	A	33.2	64.9	66.9	114.9	50.0	20	HTAYA03-20FM	HTAYA03-20CM
3xD	B	33.2	64.9	66.9	114.9	50.0	20	HTAYB03-20FM	HTAYB03-20CM
5xD	A	55.4	87.0	89.1	137.1	50.0	20	HTAYA05-20FM	HTAYA05-20CM
5xD	B	55.4	87.0	89.1	137.1	50.0	20	HTAYB05-20FM	HTAYB05-20CM
7xD	A	77.5	109.2	111.2	159.2	50.0	20	HTAYA07-20FM	HTAYA07-20CM
7xD	B	77.5	109.2	111.2	159.2	50.0	20	HTAYB07-20FM	HTAYB07-20CM
10xD	A	110.7	142.4	144.4	192.4	50.0	20	HTAYA10-20FM	HTAYA10-20CM
10xD	B	110.7	142.4	144.4	192.4	50.0	20	HTAYB10-20FM	HTAYB10-20CM
12xD	A	132.9	164.6	166.6	214.6	50.0	20	HTAYA12-20FM	HTAYA12-20CM
12xD	B	132.9	164.6	166.6	214.6	50.0	20	HTAYB12-20FM	HTAYB12-20CM
15xD	A	166.1	197.8	199.8	247.8	50.0	20	HTAYA15-20FM	HTAYA15-20CM
15xD	B	166.1	197.8	199.8	247.8	50.0	20	HTAYB15-20FM	HTAYB15-20CM

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

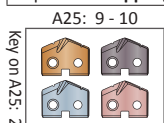
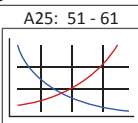
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Y Series Holder Diameter Range

Sub Series	YA	YB
Metric (mm)	9.50 mm - 11.09 mm	10.32 mm - 11.09 mm
Imperial (inch)	0.3739" - 0.4368"	0.4062" - 0.4368"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



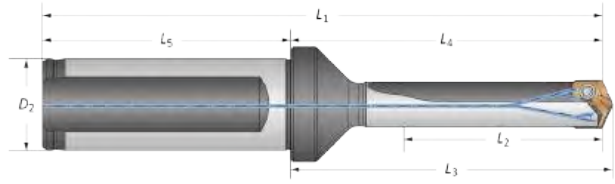
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



Y Series: 9.50 mm - 11.09 mm (0.3739" - 0.4368")

Holders



Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	0.436	1.554	1.634	3.584	2.030	3/4	HTAYA01-075F	HTAYA01-075C
Stub	B	0.436	1.554	1.634	3.584	2.030	3/4	HTAYB01-075F	HTAYB01-075C
3xD	A	1.308	2.555	2.635	4.585	2.030	3/4	HTAYA03-075F	HTAYA03-075C
3xD	B	1.308	2.555	2.635	4.585	2.030	3/4	HTAYB03-075F	HTAYB03-075C
5xD	A	2.180	3.427	3.507	5.457	2.030	3/4	HTAYA05-075F	HTAYA05-075C
5xD	B	2.180	3.427	3.507	5.457	2.030	3/4	HTAYB05-075F	HTAYB05-075C
7xD	A	3.052	4.299	4.379	6.329	2.030	3/4	HTAYA07-075F	HTAYA07-075C
7xD	B	3.052	4.299	4.379	6.329	2.030	3/4	HTAYB07-075F	HTAYB07-075C
10xD	A	4.360	5.607	5.687	7.637	2.030	3/4	HTAYA10-075F	HTAYA10-075C
10xD	B	4.360	5.607	5.687	7.637	2.030	3/4	HTAYB10-075F	HTAYB10-075C
12xD	A	5.232	6.479	6.559	8.509	2.030	3/4	HTAYA12-075F	HTAYA12-075C
12xD	B	5.232	6.479	6.559	8.509	2.030	3/4	HTAYB12-075F	HTAYB12-075C
15xD	A	6.540	7.787	7.867	9.817	2.030	3/4	HTAYA15-075F	HTAYA15-075C
15xD	B	6.540	7.787	7.867	9.817	2.030	3/4	HTAYB15-075F	HTAYB15-075C

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

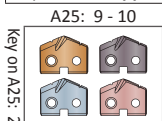
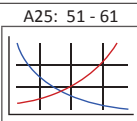
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Y Series Holder Diameter Range

Sub Series	YA	YB
Metric (mm)	9.50 mm - 11.09 mm	10.32 mm - 11.09 mm
Imperial (inch)	0.3739" - 0.4368"	0.4062" - 0.4368"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



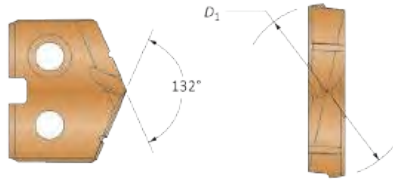
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")**

Replaceable Inserts

A25

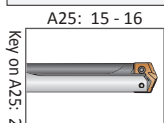
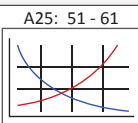


Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
Z-A	11.11	0.4374	7/16	TAPZ-11.11	TAMZ-11.11	TAKZ-11.11	TANZ-11.11	TAXZ-11.11
Z-A	11.20	0.4409	—	TAPZ-11.20	TAMZ-11.20	TAKZ-11.20	TANZ-11.20	TAXZ-11.20
Z-A	11.30	0.4449	—	TAPZ-11.30	TAMZ-11.30	TAKZ-11.30	TANZ-11.30	TAXZ-11.30
Z-A	11.40	0.4488	—	TAPZ-11.40	TAMZ-11.40	TAKZ-11.40	TANZ-11.40	TAXZ-11.40
Z-A	11.50	0.4528	—	TAPZ-11.50	TAMZ-11.50	TAKZ-11.50	TANZ-11.50	TAXZ-11.50
Z-A	11.51	0.4531	29/64	TAPZ-11.51	TAMZ-11.51	TAKZ-11.51	TANZ-11.51	TAXZ-11.51
Z-A	11.60	0.4567	—	TAPZ-11.60	TAMZ-11.60	TAKZ-11.60	TANZ-11.60	TAXZ-11.60
Z-A	11.70	0.4606	—	TAPZ-11.70	TAMZ-11.70	TAKZ-11.70	TANZ-11.70	TAXZ-11.70
Z-A	11.80	0.4646	—	TAPZ-11.80	TAMZ-11.80	TAKZ-11.80	TANZ-11.80	TAXZ-11.80
Z-A	11.91	0.4689	15/32	TAPZ-11.91	TAMZ-11.91	TAKZ-11.91	TANZ-11.91	TAXZ-11.91
Z-A	12.00	0.4724	—	TAPZ-12.00	TAMZ-12.00	TAKZ-12.00	TANZ-12.00	TAXZ-12.00
Z-A	12.10	0.4764	—	TAPZ-12.10	TAMZ-12.10	TAKZ-12.10	TANZ-12.10	TAXZ-12.10

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.

A Series Insert +
A Series HolderC Series Insert +
A Series HolderC Series Insert +
C Series HolderA Series Insert +
C Series Holder

Sizes not shown are available upon request.

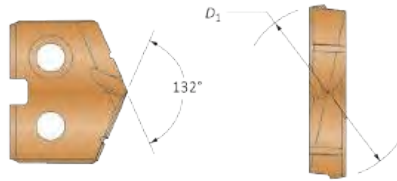
When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16****Imperial:** 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D_1 mm	D_1 inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
Z-B	12.20	0.4803	—	P	M	K	N	X
Z-B	12.30	0.4843	31/64	TAPZ-12.20	TAMZ-12.20	TAKZ-12.20	TANZ-12.20	TAXZ-12.20
Z-B	12.40	0.4882	—	TAPZ-12.30	TAMZ-12.30	TAKZ-12.30	TANZ-12.30	TAXZ-12.30
Z-B	12.50	0.4921	—	TAPZ-12.40	TAMZ-12.40	TAKZ-12.40	TANZ-12.40	TAXZ-12.40
Z-B	12.60	0.4961	—	TAPZ-12.50	TAMZ-12.50	TAKZ-12.50	TANZ-12.50	TAXZ-12.50
Z-B	12.69	0.5000	—	TAPZ-12.60	TAMZ-12.60	TAKZ-12.60	TANZ-12.60	TAXZ-12.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



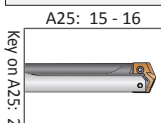
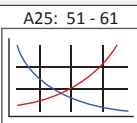
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



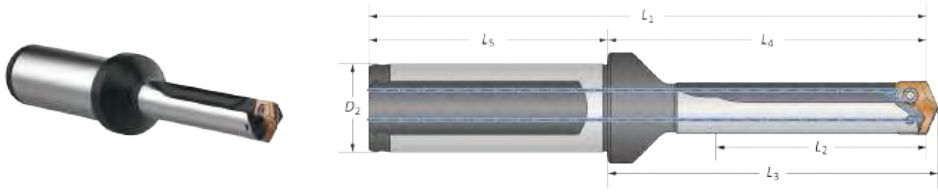
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Holders



A25



Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	12.0	40.6	42.7	90.7	50.0	20	HTAZA01-20FM	HTAZA01-20CM
Stub	B	12.0	40.6	42.7	90.7	50.0	20	HTAZB01-20FM	HTAZB01-20CM
3xD	A	36.1	68.4	70.4	118.4	50.0	20	HTAZA03-20FM	HTAZA03-20CM
3xD	B	36.1	68.4	70.4	118.4	50.0	20	HTAZB03-20FM	HTAZB03-20CM
5xD	A	60.2	92.5	94.5	142.5	50.0	20	HTAZA05-20FM	HTAZA05-20CM
5xD	B	60.2	92.5	94.5	142.5	50.0	20	HTAZB05-20FM	HTAZB05-20CM
7xD	A	84.3	116.6	118.6	166.6	50.0	20	HTAZA07-20FM	HTAZA07-20CM
7xD	B	84.3	116.6	118.6	166.6	50.0	20	HTAZB07-20FM	HTAZB07-20CM
10xD	A	120.4	152.7	154.7	202.7	50.0	20	HTAZA10-20FM	HTAZA10-20CM
10xD	B	120.4	152.7	154.7	202.7	50.0	20	HTAZB10-20FM	HTAZB10-20CM
12xD	A	144.5	176.8	178.8	226.8	50.0	20	HTAZA12-20FM	HTAZA12-20CM
12xD	B	144.5	176.8	178.8	226.8	50.0	20	HTAZB12-20FM	HTAZB12-20CM
15xD	A	180.6	212.9	214.9	262.9	50.0	20	HTAZA15-20FM	HTAZA15-20CM
15xD	B	180.6	212.9	214.9	262.9	50.0	20	HTAZB15-20FM	HTAZB15-20CM

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

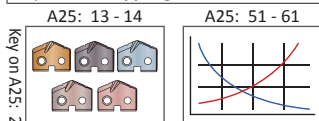
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Z Series Holder Diameter Range

Sub Series	ZA	ZB
Metric (mm)	11.10 mm - 12.69 mm	12.20 mm - 12.69 mm
Imperial (inch)	0.4369" - 0.4998"	0.4802" - 0.4998"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



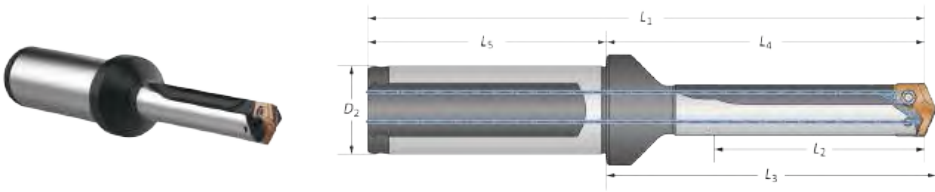
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



Z Series: 11.10 mm - 12.69 mm (0.4369" - 0.4998")

Holders



Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	0.474	1.600	1.680	3.630	2.030	3/4	HTAZA01-075F	HTAZA01-075C
Stub	B	0.474	1.600	1.680	3.630	2.030	3/4	HTAZB01-075F	HTAZB01-075C
3xD	A	1.422	2.693	2.773	4.723	2.030	3/4	HTAZA03-075F	HTAZA03-075C
3xD	B	1.422	2.693	2.773	4.723	2.030	3/4	HTAZB03-075F	HTAZB03-075C
5xD	A	2.370	3.641	3.721	5.671	2.030	3/4	HTAZA05-075F	HTAZA05-075C
5xD	B	2.370	3.641	3.721	5.671	2.030	3/4	HTAZB05-075F	HTAZB05-075C
7xD	A	3.318	4.589	4.669	6.619	2.030	3/4	HTAZA07-075F	HTAZA07-075C
7xD	B	3.318	4.589	4.669	6.619	2.030	3/4	HTAZB07-075F	HTAZB07-075C
10xD	A	4.740	6.011	6.091	8.041	2.030	3/4	HTAZA10-075F	HTAZA10-075C
10xD	B	4.740	6.011	6.091	8.041	2.030	3/4	HTAZB10-075F	HTAZB10-075C
12xD	A	5.688	6.959	7.039	8.989	2.030	3/4	HTAZA12-075F	HTAZA12-075C
12xD	B	5.688	6.959	7.039	8.989	2.030	3/4	HTAZB12-075F	HTAZB12-075C
15xD	A	7.110	8.381	8.461	10.411	2.030	3/4	HTAZA15-075F	HTAZA15-075C
15xD	B	7.110	8.381	8.461	10.411	2.030	3/4	HTAZB15-075F	HTAZB15-075C

Connection Accessories

7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

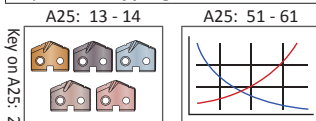
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Z Series Holder Diameter Range

Sub Series	ZA	ZB
Metric (mm)	11.10 mm - 12.69 mm	12.20 mm - 12.69 mm
Imperial (inch)	0.4369" - 0.4998"	0.4802" - 0.4998"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



= Metric (mm)

= Imperial (in)

Screws sold in multiples of 10.



0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No. P	Part No. M	Part No. K	Part No. N	Part No. X
O-A	12.70	0.5000	1/2	TAP0-12.70	TAM0-12.70	TAK0-12.70	TAN0-12.70	TAX0-12.70
O-A	12.80	0.5039	—	TAP0-12.80	TAM0-12.80	TAK0-12.80	TAN0-12.80	TAX0-12.80
O-A	12.90	0.5079	—	TAP0-12.90	TAM0-12.90	TAK0-12.90	TAN0-12.90	TAX0-12.90
O-A	13.00	0.5118	—	TAP0-13.00	TAM0-13.00	TAK0-13.00	TAN0-13.00	TAX0-13.00
O-A	13.10	0.5157	33/64	TAP0-13.10	TAM0-13.10	TAK0-13.10	TAN0-13.10	TAX0-13.10
O-A	13.20	0.5197	—	TAP0-13.20	TAM0-13.20	TAK0-13.20	TAN0-13.20	TAX0-13.20
O-A	13.30	0.5236	—	TAP0-13.30	TAM0-13.30	TAK0-13.30	TAN0-13.30	TAX0-13.30
O-A	13.40	0.5276	—	TAP0-13.40	TAM0-13.40	TAK0-13.40	TAN0-13.40	TAX0-13.40
O-A	13.49	0.5311	17/32	TAP0-13.49	TAM0-13.49	TAK0-13.49	TAN0-13.49	TAX0-13.49
O-A	13.50	0.5315	—	TAP0-13.50	TAM0-13.50	TAK0-13.50	TAN0-13.50	TAX0-13.50
O-A	13.60	0.5354	—	TAP0-13.60	TAM0-13.60	TAK0-13.60	TAN0-13.60	TAX0-13.60
O-A	13.70	0.5394	—	TAP0-13.70	TAM0-13.70	TAK0-13.70	TAN0-13.70	TAX0-13.70
O-A	13.80	0.5433	—	TAP0-13.80	TAM0-13.80	TAK0-13.80	TAN0-13.80	TAX0-13.80
O-A	13.89	0.5469	35/64	TAP0-13.89	TAM0-13.89	TAK0-13.89	TAN0-13.89	TAX0-13.89
O-B	14.00	0.5512	—	TAP0-14.00	TAM0-14.00	TAK0-14.00	TAN0-14.00	TAX0-14.00
O-B	14.10	0.5551	—	TAP0-14.10	TAM0-14.10	TAK0-14.10	TAN0-14.10	TAX0-14.10
O-B	14.20	0.5591	—	TAP0-14.20	TAM0-14.20	TAK0-14.20	TAN0-14.20	TAX0-14.20
O-B	14.29	0.5626	9/16	TAP0-14.29	TAM0-14.29	TAK0-14.29	TAN0-14.29	TAX0-14.29
O-B	14.40	0.5669	—	TAP0-14.40	TAM0-14.40	TAK0-14.40	TAN0-14.40	TAX0-14.40
O-B	14.50	0.5709	—	TAP0-14.50	TAM0-14.50	TAK0-14.50	TAN0-14.50	TAX0-14.50
O-B	14.60	0.5748	—	TAP0-14.60	TAM0-14.60	TAK0-14.60	TAN0-14.60	TAX0-14.60
O-B	14.68	0.5780	37/64	TAP0-14.68	TAM0-14.68	TAK0-14.68	TAN0-14.68	TAX0-14.68
O-B	14.80	0.5827	—	TAP0-14.80	TAM0-14.80	TAK0-14.80	TAN0-14.80	TAX0-14.80
O-B	14.90	0.5866	—	TAP0-14.90	TAM0-14.90	TAK0-14.90	TAN0-14.90	TAX0-14.90
O-B	15.00	0.5906	—	TAP0-15.00	TAM0-15.00	TAK0-15.00	TAN0-15.00	TAX0-15.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



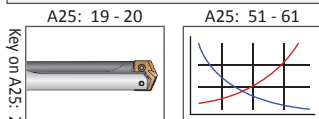
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



Sizes not shown are available upon request.

When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
O-C	15.08	0.5937	19/32	TAP0-15.08	TAM0-15.08	TAK0-15.08	TAN0-15.08	TAX0-15.08
O-C	15.20	0.5984	—	TAP0-15.20	TAM0-15.20	TAK0-15.20	TAN0-15.20	TAX0-15.20
O-C	15.25	0.6004	—	TAP0-15.25	TAM0-15.25	TAK0-15.25	TAN0-15.25	TAX0-15.25
O-C	15.30	0.6024	—	TAP0-15.30	TAM0-15.30	TAK0-15.30	TAN0-15.30	TAX0-15.30
O-C	15.40	0.6063	—	TAP0-15.40	TAM0-15.40	TAK0-15.40	TAN0-15.40	TAX0-15.40
O-C	15.48	0.6094	39/64	TAP0-15.48	TAM0-15.48	TAK0-15.48	TAN0-15.48	TAX0-15.48
O-C	15.50	0.6102	—	TAP0-15.50	TAM0-15.50	TAK0-15.50	TAN0-15.50	TAX0-15.50
O-C	15.60	0.6142	—	TAP0-15.60	TAM0-15.60	TAK0-15.60	TAN0-15.60	TAX0-15.60
O-C	15.70	0.6181	—	TAP0-15.70	TAM0-15.70	TAK0-15.70	TAN0-15.70	TAX0-15.70
O-C	15.80	0.6220	—	TAP0-15.80	TAM0-15.80	TAK0-15.80	TAN0-15.80	TAX0-15.80
O-C	15.88	0.6252	5/8	TAP0-15.88	TAM0-15.88	TAK0-15.88	TAN0-15.88	TAX0-15.88
O-C	16.00	0.6299	—	TAP0-16.00	TAM0-16.00	TAK0-16.00	TAN0-16.00	TAX0-16.00
O-C	16.08	0.6331	—	TAP0-16.08	TAM0-16.08	TAK0-16.08	TAN0-16.08	TAX0-16.08
O-C	16.20	0.6378	—	TAP0-16.20	TAM0-16.20	TAK0-16.20	TAN0-16.20	TAX0-16.20
O-C	16.27	0.6406	41/64	TAP0-16.27	TAM0-16.27	TAK0-16.27	TAN0-16.27	TAX0-16.27
O-C	16.40	0.6457	—	TAP0-16.40	TAM0-16.40	TAK0-16.40	TAN0-16.40	TAX0-16.40
O-D	16.50	0.6496	—	TAP0-16.50	TAM0-16.50	TAK0-16.50	TAN0-16.50	TAX0-16.50
O-D	16.60	0.6535	—	TAP0-16.60	TAM0-16.60	TAK0-16.60	TAN0-16.60	TAX0-16.60
O-D	16.67	0.6563	21/32	TAP0-16.67	TAM0-16.67	TAK0-16.67	TAN0-16.67	TAX0-16.67
O-D	16.80	0.6614	—	TAP0-16.80	TAM0-16.80	TAK0-16.80	TAN0-16.80	TAX0-16.80
O-D	16.90	0.6654	—	TAP0-16.90	TAM0-16.90	TAK0-16.90	TAN0-16.90	TAX0-16.90
O-D	17.00	0.6693	—	TAP0-17.00	TAM0-17.00	TAK0-17.00	TAN0-17.00	TAX0-17.00
O-D	17.07	0.6720	43/64	TAP0-17.07	TAM0-17.07	TAK0-17.07	TAN0-17.07	TAX0-17.07
O-D	17.10	0.6732	—	TAP0-17.10	TAM0-17.10	TAK0-17.10	TAN0-17.10	TAX0-17.10
O-D	17.20	0.6772	—	TAP0-17.20	TAM0-17.20	TAK0-17.20	TAN0-17.20	TAX0-17.20
O-D	17.30	0.6811	—	TAP0-17.30	TAM0-17.30	TAK0-17.30	TAN0-17.30	TAX0-17.30
O-D	17.40	0.6850	—	TAP0-17.40	TAM0-17.40	TAK0-17.40	TAN0-17.40	TAX0-17.40
O-D	17.46	0.6874	11/16	TAP0-17.46	TAM0-17.46	TAK0-17.46	TAN0-17.46	TAX0-17.46
O-D	17.50	0.6890	—	TAP0-17.50	TAM0-17.50	TAK0-17.50	TAN0-17.50	TAX0-17.50
O-D	17.60	0.6929	—	TAP0-17.60	TAM0-17.60	TAK0-17.60	TAN0-17.60	TAX0-17.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



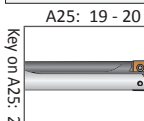
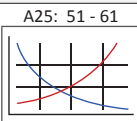
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



Sizes not shown are available upon request.

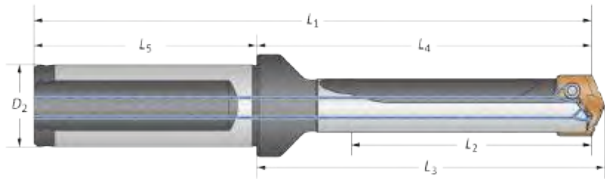
When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**

**0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")**

Holders



A25

Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	15.3	44.0	46.7	94.0	50.0	20	HTA0A01-20FM	HTA0A01-20CM
Stub	B	15.3	44.0	46.7	94.0	50.0	20	HTA0B01-20FM	HTA0B01-20CM
Stub	C	15.3	44.0	46.7	94.0	50.0	20	HTA0C01-20FM	HTA0C01-20CM
Stub	D	15.3	44.0	46.7	94.0	50.0	20	HTA0D01-20FM	HTA0D01-20CM
3xD	A	45.9	77.8	80.5	127.8	50.0	20	HTA0A03-20FM	HTA0A03-20CM
3xD	B	45.9	77.8	80.5	127.8	50.0	20	HTA0B03-20FM	HTA0B03-20CM
3xD	C	45.9	77.8	80.5	127.8	50.0	20	HTA0C03-20FM	HTA0C03-20CM
3xD	D	45.9	77.8	80.5	127.8	50.0	20	HTA0D03-20FM	HTA0D03-20CM
5xD	A	76.6	108.5	111.2	158.5	50.0	20	HTA0A05-20FM	HTA0A05-20CM
5xD	B	76.6	108.5	111.2	158.5	50.0	20	HTA0B05-20FM	HTA0B05-20CM
5xD	C	76.6	108.5	111.2	158.5	50.0	20	HTA0C05-20FM	HTA0C05-20CM
5xD	D	76.6	108.5	111.2	158.5	50.0	20	HTA0D05-20FM	HTA0D05-20CM
7xD	A	107.2	139.1	141.8	189.1	50.0	20	HTA0A07-20FM	HTA0A07-20CM
7xD	B	107.2	139.1	141.8	189.1	50.0	20	HTA0B07-20FM	HTA0B07-20CM
7xD	C	107.2	139.1	141.8	189.1	50.0	20	HTA0C07-20FM	HTA0C07-20CM
7xD	D	107.2	139.1	141.8	189.1	50.0	20	HTA0D07-20FM	HTA0D07-20CM
10xD	A	153.2	185.0	187.8	235.1	50.0	20	HTA0A10-20FM	HTA0A10-20CM
10xD	B	153.2	185.0	187.8	235.1	50.0	20	HTA0B10-20FM	HTA0B10-20CM
10xD	C	153.2	185.0	187.8	235.1	50.0	20	HTA0C10-20FM	HTA0C10-20CM
10xD	D	153.2	185.0	187.8	235.1	50.0	20	HTA0D10-20FM	HTA0D10-20CM
12xD	A	183.8	215.7	218.4	265.7	50.0	20	HTA0A12-20FM	HTA0A12-20CM
12xD	B	183.8	215.7	218.4	265.7	50.0	20	HTA0B12-20FM	HTA0B12-20CM
12xD	C	183.8	215.7	218.4	265.7	50.0	20	HTA0C12-20FM	HTA0C12-20CM
12xD	D	183.8	215.7	218.4	265.7	50.0	20	HTA0D12-20FM	HTA0D12-20CM
15xD	A	229.7	261.6	264.3	311.6	50.0	20	HTA0A15-20FM	HTA0A15-20CM
15xD	B	229.7	261.6	264.3	311.6	50.0	20	HTA0B15-20FM	HTA0B15-20CM
15xD	C	229.7	261.6	264.3	311.6	50.0	20	HTA0C15-20FM	HTA0C15-20CM
15xD	D	229.7	261.6	264.3	311.6	50.0	20	HTA0D15-20FM	HTA0D15-20CM

Connection Accessories

Insert Screws		Nylon Locking Screws		Insert Driver		Preset Torque Hand Driver		Replacement Tips		Admissible Tightening Torque*	
A/B	72556-IP8-1		72556N-IP8-1		8IP-8		8IP-8TL		8IP-8B		175 N-cm (15.5 in-lbs)
C/D	72567-IP8-1		72567N-IP8-1		8IP-8		8IP-8TL		8IP-8B		175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

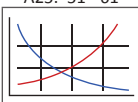
0 Series Holder Diameter Range

Sub Series	0A	0B	0C	0D
Metric (mm)	12.70 mm - 17.64 mm	14.00 mm - 17.64 mm	15.08 mm - 17.64 mm	16.50 mm - 17.64 mm
Imperial (inch)	0.4999" - 0.6946"	0.5510" - 0.6946"	0.5936" - 0.6946"	0.6495" - 0.6946"

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

A25: 17 - 18

A25: 51 - 61



M = Metric (mm)

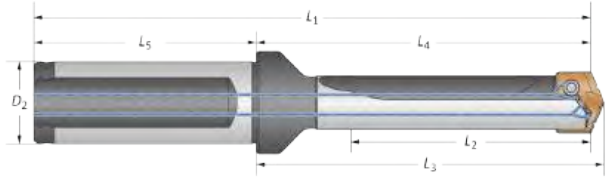
I = Imperial (in)

Screws sold in multiples of 10.



0 Series: 12.70 mm - 17.64 mm (0.4999" - 0.6946")

Holders



Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	0.603	1.731	1.838	3.761	2.030	3/4	HTA0A01-075F	HTA0A01-075C
Stub	B	0.603	1.731	1.838	3.761	2.030	3/4	HTA0B01-075F	HTA0B01-075C
Stub	C	0.603	1.731	1.838	3.761	2.030	3/4	HTA0C01-075F	HTA0C01-075C
Stub	D	0.603	1.731	1.838	3.761	2.030	3/4	HTA0D01-075F	HTA0D01-075C
3xD	A	1.809	3.064	3.171	5.094	2.030	3/4	HTA0A03-075F	HTA0A03-075C
3xD	B	1.809	3.064	3.171	5.094	2.030	3/4	HTA0B03-075F	HTA0B03-075C
3xD	C	1.809	3.064	3.171	5.094	2.030	3/4	HTA0C03-075F	HTA0C03-075C
3xD	D	1.809	3.064	3.171	5.094	2.030	3/4	HTA0D03-075F	HTA0D03-075C
5xD	A	3.015	4.270	4.377	6.300	2.030	3/4	HTA0A05-075F	HTA0A05-075C
5xD	B	3.015	4.270	4.377	6.300	2.030	3/4	HTA0B05-075F	HTA0B05-075C
5xD	C	3.015	4.270	4.377	6.300	2.030	3/4	HTA0C05-075F	HTA0C05-075C
5xD	D	3.015	4.270	4.377	6.300	2.030	3/4	HTA0D05-075F	HTA0D05-075C
7xD	A	4.221	5.476	5.583	7.506	2.030	3/4	HTA0A07-075F	HTA0A07-075C
7xD	B	4.221	5.476	5.583	7.506	2.030	3/4	HTA0B07-075F	HTA0B07-075C
7xD	C	4.221	5.476	5.583	7.506	2.030	3/4	HTA0C07-075F	HTA0C07-075C
7xD	D	4.221	5.476	5.583	7.506	2.030	3/4	HTA0D07-075F	HTA0D07-075C
10xD	A	6.030	7.285	7.392	9.315	2.030	3/4	HTA0A10-075F	HTA0A10-075C
10xD	B	6.030	7.285	7.392	9.315	2.030	3/4	HTA0B10-075F	HTA0B10-075C
10xD	C	6.030	7.285	7.392	9.315	2.030	3/4	HTA0C10-075F	HTA0C10-075C
10xD	D	6.030	7.285	7.392	9.315	2.030	3/4	HTA0D10-075F	HTA0D10-075C
12xD	A	7.236	8.491	8.598	10.521	2.030	3/4	HTA0A12-075F	HTA0A12-075C
12xD	B	7.236	8.491	8.598	10.521	2.030	3/4	HTA0B12-075F	HTA0B12-075C
12xD	C	7.236	8.491	8.598	10.521	2.030	3/4	HTA0C12-075F	HTA0C12-075C
12xD	D	7.236	8.491	8.598	10.521	2.030	3/4	HTA0D12-075F	HTA0D12-075C
15xD	A	9.045	10.300	10.407	12.330	2.030	3/4	HTA0A15-075F	HTA0A15-075C
15xD	B	9.045	10.300	10.407	12.330	2.030	3/4	HTA0B15-075F	HTA0B15-075C
15xD	C	9.045	10.300	10.407	12.330	2.030	3/4	HTA0C15-075F	HTA0C15-075C
15xD	D	9.045	10.300	10.407	12.330	2.030	3/4	HTA0D15-075F	HTA0D15-075C

Connection Accessories

Insert Screws		Nylon Locking Screws		Insert Driver		Preset Torque Hand Driver		Replacement Tips		Admissible Tightening Torque*	
A/B	72556-IP8-1		72556N-IP8-1		8IP-8		8IP-8TL		8IP-8B		175 N-cm (15.5 in-lbs)
C/D	72567-IP8-1		72567N-IP8-1		8IP-8		8IP-8TL		8IP-8B		175 N-cm (15.5 in-lbs)

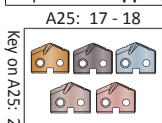
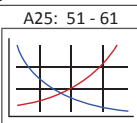
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

0 Series Holder Diameter Range

Sub Series	0A	0B	0C	0D
Metric (mm)	12.70 mm - 17.64 mm	14.00 mm - 17.64 mm	15.08 mm - 17.64 mm	16.50 mm - 17.64 mm
Imperial (inch)	0.4999" - 0.6946"	0.5510" - 0.6946"	0.5936" - 0.6946"	0.6495" - 0.6946"

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A25: 64 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



= Metric (mm)
 = Imperial (in)

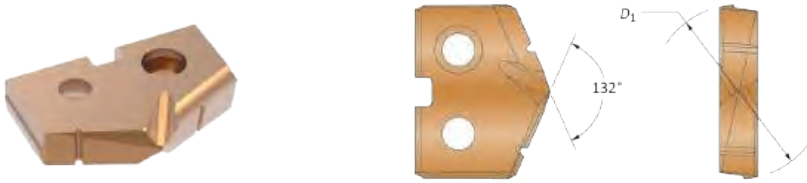
Screws sold in multiples of 10.



1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
1-A	17.70	0.6969	—	TAP1-17.70	TAM1-17.70	TAK1-17.70	TAN1-17.70	TAX1-17.70
1-A	17.80	0.7008	—	TAP1-17.80	TAM1-17.80	TAK1-17.80	TAN1-17.80	TAX1-17.80
1-A	17.86	0.7031	45/64	TAP1-17.86	TAM1-17.86	TAK1-17.86	TAN1-17.86	TAX1-17.86
1-A	17.90	0.7047	—	TAP1-17.90	TAM1-17.90	TAK1-17.90	TAN1-17.90	TAX1-17.90
1-A	18.00	0.7087	—	TAP1-18.00	TAM1-18.00	TAK1-18.00	TAN1-18.00	TAX1-18.00
1-A	18.10	0.7126	—	TAP1-18.10	TAM1-18.10	TAK1-18.10	TAN1-18.10	TAX1-18.10
1-A	18.20	0.7165	—	TAP1-18.20	TAM1-18.20	TAK1-18.20	TAN1-18.20	TAX1-18.20
1-A	18.26	0.7189	23/32	TAP1-18.26	TAM1-18.26	TAK1-18.26	TAN1-18.26	TAX1-18.26
1-A	18.30	0.7205	—	TAP1-18.30	TAM1-18.30	TAK1-18.30	TAN1-18.30	TAX1-18.30
1-A	18.40	0.7244	—	TAP1-18.40	TAM1-18.40	TAK1-18.40	TAN1-18.40	TAX1-18.40
1-A	18.50	0.7283	—	TAP1-18.50	TAM1-18.50	TAK1-18.50	TAN1-18.50	TAX1-18.50
1-A	18.60	0.7323	—	TAP1-18.60	TAM1-18.60	TAK1-18.60	TAN1-18.60	TAX1-18.60
1-A	18.65	0.7343	47/64	TAP1-18.65	TAM1-18.65	TAK1-18.65	TAN1-18.65	TAX1-18.65
1-A	18.70	0.7362	—	TAP1-18.70	TAM1-18.70	TAK1-18.70	TAN1-18.70	TAX1-18.70
1-A	18.80	0.7402	—	TAP1-18.80	TAM1-18.80	TAK1-18.80	TAN1-18.80	TAX1-18.80
1-A	18.90	0.7441	—	TAP1-18.90	TAM1-18.90	TAK1-18.90	TAN1-18.90	TAX1-18.90
1-A	19.00	0.7480	—	TAP1-19.00	TAM1-19.00	TAK1-19.00	TAN1-19.00	TAX1-19.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



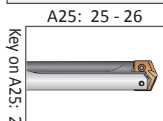
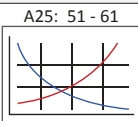
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



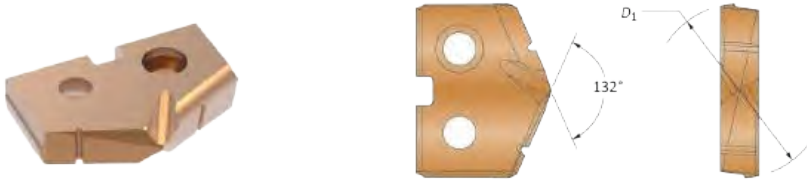
Sizes not shown are available upon request.

When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Part No.	Part No.	Part No.	Part No.	Part No.
1-B	19.05	0.7500	3/4	TAP1-19.05	TAM1-19.05	TAK1-19.05	TAN1-19.05	TAX1-19.05
1-B	19.10	0.7520	—	TAP1-19.10	TAM1-19.10	TAK1-19.10	TAN1-19.10	TAX1-19.10
1-B	19.20	0.7559	—	TAP1-19.20	TAM1-19.20	TAK1-19.20	TAN1-19.20	TAX1-19.20
1-B	19.25	0.7579	—	TAP1-19.25	TAM1-19.25	TAK1-19.25	TAN1-19.25	TAX1-19.25
1-B	19.30	0.7598	—	TAP1-19.30	TAM1-19.30	TAK1-19.30	TAN1-19.30	TAX1-19.30
1-B	19.40	0.7638	—	TAP1-19.40	TAM1-19.40	TAK1-19.40	TAN1-19.40	TAX1-19.40
1-B	19.45	0.7657	49/64	TAP1-19.45	TAM1-19.45	TAK1-19.45	TAN1-19.45	TAX1-19.45
1-B	19.50	0.7677	—	TAP1-19.50	TAM1-19.50	TAK1-19.50	TAN1-19.50	TAX1-19.50
1-B	19.60	0.7717	—	TAP1-19.60	TAM1-19.60	TAK1-19.60	TAN1-19.60	TAX1-19.60
1-B	19.70	0.7756	—	TAP1-19.70	TAM1-19.70	TAK1-19.70	TAN1-19.70	TAX1-19.70
1-B	19.80	0.7795	—	TAP1-19.80	TAM1-19.80	TAK1-19.80	TAN1-19.80	TAX1-19.80
1-B	19.84	0.7811	25/32	TAP1-19.84	TAM1-19.84	TAK1-19.84	TAN1-19.84	TAX1-19.84
1-B	19.90	0.7835	—	TAP1-19.90	TAM1-19.90	TAK1-19.90	TAN1-19.90	TAX1-19.90
1-B	20.00	0.7874	—	TAP1-20.00	TAM1-20.00	TAK1-20.00	TAN1-20.00	TAX1-20.00
1-B	20.10	0.7913	—	TAP1-20.10	TAM1-20.10	TAK1-20.10	TAN1-20.10	TAX1-20.10
1-B	20.20	0.7953	—	TAP1-20.20	TAM1-20.20	TAK1-20.20	TAN1-20.20	TAX1-20.20
1-B	20.24	0.7969	51/64	TAP1-20.24	TAM1-20.24	TAK1-20.24	TAN1-20.24	TAX1-20.24
1-B	20.30	0.7992	—	TAP1-20.30	TAM1-20.30	TAK1-20.30	TAN1-20.30	TAX1-20.30
1-B	20.40	0.8031	—	TAP1-20.40	TAM1-20.40	TAK1-20.40	TAN1-20.40	TAX1-20.40
1-B	20.50	0.8071	—	TAP1-20.50	TAM1-20.50	TAK1-20.50	TAN1-20.50	TAX1-20.50

Inserts sold in multiples of 2.

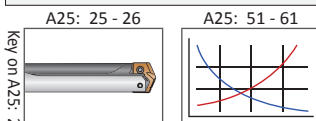
Sub Series Holders (A, B, C, D)

Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified sub series inserts should be used with equivalent or smaller sub series holders.


A Series Insert +
A Series Holder

C Series Insert +
A Series Holder

C Series Insert +
C Series Holder

A Series Insert +
C Series Holder


Sizes not shown are available upon request.

When ordering, please follow the example below:

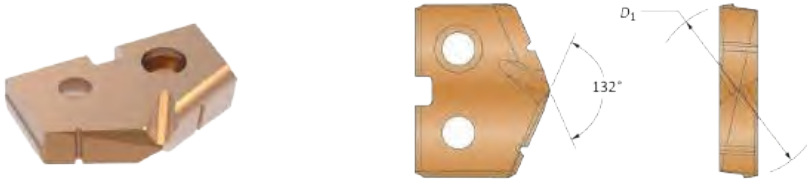
Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
1-C	20.60	0.8110	—	TAP1-20.60	TAM1-20.60	TAK1-20.60	TAN1-20.60	TAX1-20.60
1-C	20.64	0.8126	13/16	TAP1-20.64	TAM1-20.64	TAK1-20.64	TAN1-20.64	TAX1-20.64
1-C	20.70	0.8150	—	TAP1-20.70	TAM1-20.70	TAK1-20.70	TAN1-20.70	TAX1-20.70
1-C	20.80	0.8189	—	TAP1-20.80	TAM1-20.80	TAK1-20.80	TAN1-20.80	TAX1-20.80
1-C	20.90	0.8228	—	TAP1-20.90	TAM1-20.90	TAK1-20.90	TAN1-20.90	TAX1-20.90
1-C	21.00	0.8268	—	TAP1-21.00	TAM1-21.00	TAK1-21.00	TAN1-21.00	TAX1-21.00
1-C	21.10	0.8307	—	TAP1-21.10	TAM1-21.10	TAK1-21.10	TAN1-21.10	TAX1-21.10
1-C	21.20	0.8346	—	TAP1-21.20	TAM1-21.20	TAK1-21.20	TAN1-21.20	TAX1-21.20
1-C	21.30	0.8386	—	TAP1-21.30	TAM1-21.30	TAK1-21.30	TAN1-21.30	TAX1-21.30
1-C	21.40	0.8425	—	TAP1-21.40	TAM1-21.40	TAK1-21.40	TAN1-21.40	TAX1-21.40
1-C	21.43	0.8437	27/32	TAP1-21.43	TAM1-21.43	TAK1-21.43	TAN1-21.43	TAX1-21.43
1-C	21.50	0.8465	—	TAP1-21.50	TAM1-21.50	TAK1-21.50	TAN1-21.50	TAX1-21.50
1-C	21.60	0.8504	—	TAP1-21.60	TAM1-21.60	TAK1-21.60	TAN1-21.60	TAX1-21.60
1-C	21.70	0.8543	—	TAP1-21.70	TAM1-21.70	TAK1-21.70	TAN1-21.70	TAX1-21.70
1-C	21.80	0.8583	—	TAP1-21.80	TAM1-21.80	TAK1-21.80	TAN1-21.80	TAX1-21.80
1-C	21.83	0.8594	55/64	TAP1-21.83	TAM1-21.83	TAK1-21.83	TAN1-21.83	TAX1-21.83
1-C	21.90	0.8622	—	TAP1-21.90	TAM1-21.90	TAK1-21.90	TAN1-21.90	TAX1-21.90
1-C	22.00	0.8661	—	TAP1-22.00	TAM1-22.00	TAK1-22.00	TAN1-22.00	TAX1-22.00
1-C	22.10	0.8701	—	TAP1-22.10	TAM1-22.10	TAK1-22.10	TAN1-22.10	TAX1-22.10
1-C	22.20	0.8740	—	TAP1-22.20	TAM1-22.20	TAK1-22.20	TAN1-22.20	TAX1-22.20
1-C	22.23	0.8752	7/8	TAP1-22.23	TAM1-22.23	TAK1-22.23	TAN1-22.23	TAX1-22.23
1-C	22.30	0.8780	—	TAP1-22.30	TAM1-22.30	TAK1-22.30	TAN1-22.30	TAX1-22.30
1-C	22.40	0.8819	—	TAP1-22.40	TAM1-22.40	TAK1-22.40	TAN1-22.40	TAX1-22.40
1-C	22.50	0.8858	—	TAP1-22.50	TAM1-22.50	TAK1-22.50	TAN1-22.50	TAX1-22.50
1-C	22.62	0.8906	57/64	TAP1-22.62	TAM1-22.62	TAK1-22.62	TAN1-22.62	TAX1-22.62
1-C	22.70	0.8937	—	TAP1-22.70	TAM1-22.70	TAK1-22.70	TAN1-22.70	TAX1-22.70
1-C	22.80	0.8976	—	TAP1-22.80	TAM1-22.80	TAK1-22.80	TAN1-22.80	TAX1-22.80

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D)

Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



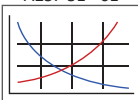
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 25 - 26

A25: 51 - 61



Sizes not shown are available upon request.

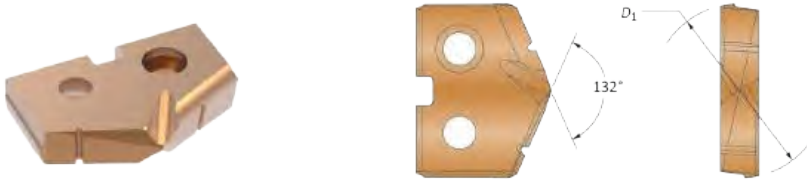
When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**

1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Replaceable Inserts



Insert				Carbide				HSS
Series	D_1 mm	D_1 inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
1-D	22.90	0.9016	—	TAP1-22.90	TAM1-22.90	TAK1-22.90	TAN1-22.90	TAX1-22.90
1-D	23.00	0.9055	—	TAP1-23.00	TAM1-23.00	TAK1-23.00	TAN1-23.00	TAX1-23.00
1-D	23.02	0.9063	29/32	TAP1-23.02	TAM1-23.02	TAK1-23.02	TAN1-23.02	TAX1-23.02
1-D	23.10	0.9094	—	TAP1-23.10	TAM1-23.10	TAK1-23.10	TAN1-23.10	TAX1-23.10
1-D	23.20	0.9134	—	TAP1-23.20	TAM1-23.20	TAK1-23.20	TAN1-23.20	TAX1-23.20
1-D	23.30	0.9173	—	TAP1-23.30	TAM1-23.30	TAK1-23.30	TAN1-23.30	TAX1-23.30
1-D	23.42	0.9220	59/64	TAP1-23.42	TAM1-23.42	TAK1-23.42	TAN1-23.42	TAX1-23.42
1-D	23.50	0.9252	—	TAP1-23.50	TAM1-23.50	TAK1-23.50	TAN1-23.50	TAX1-23.50
1-D	23.60	0.9291	—	TAP1-23.60	TAM1-23.60	TAK1-23.60	TAN1-23.60	TAX1-23.60
1-D	23.70	0.9331	—	TAP1-23.70	TAM1-23.70	TAK1-23.70	TAN1-23.70	TAX1-23.70
1-D	23.81	0.9374	15/16	TAP1-23.81	TAM1-23.81	TAK1-23.81	TAN1-23.81	TAX1-23.81
1-D	23.90	0.9409	—	TAP1-23.90	TAM1-23.90	TAK1-23.90	TAN1-23.90	TAX1-23.90
1-D	24.00	0.9449	—	TAP1-24.00	TAM1-24.00	TAK1-24.00	TAN1-24.00	TAX1-24.00
1-D	24.10	0.9488	—	TAP1-24.10	TAM1-24.10	TAK1-24.10	TAN1-24.10	TAX1-24.10
1-D	24.20	0.9528	—	TAP1-24.20	TAM1-24.20	TAK1-24.20	TAN1-24.20	TAX1-24.20
1-D	24.30	0.9567	—	TAP1-24.30	TAM1-24.30	TAK1-24.30	TAN1-24.30	TAX1-24.30

Inserts sold in multiples of 2.

A25

Sub Series Holders (A, B, C, D)

Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



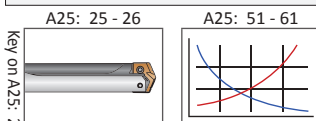
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



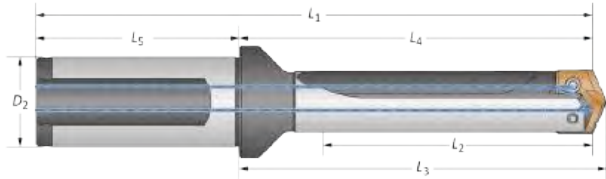
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Holders



A25

Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	21.0	56.5	60.0	112.5	56.0	25	HTA1A01-25FM	HTA1A01-25CM
Stub	B	21.0	56.5	60.0	112.5	56.0	25	HTA1B01-25FM	HTA1B01-25CM
Stub	C	21.0	56.5	60.0	112.5	56.0	25	HTA1C01-25FM	HTA1C01-25CM
Stub	D	21.0	56.5	60.0	112.5	56.0	25	HTA1D01-25FM	HTA1D01-25CM
3xD	A	62.9	100.9	104.5	156.9	56.0	25	HTA1A03-25FM	HTA1A03-25CM
3xD	B	62.9	100.9	104.5	156.9	56.0	25	HTA1B03-25FM	HTA1B03-25CM
3xD	C	62.9	100.9	104.5	156.9	56.0	25	HTA1C03-25FM	HTA1C03-25CM
3xD	D	62.9	100.9	104.5	156.9	56.0	25	HTA1D03-25FM	HTA1D03-25CM
5xD	A	104.8	142.8	146.4	198.8	56.0	25	HTA1A05-25FM	HTA1A05-25CM
5xD	B	104.8	142.8	146.4	198.8	56.0	25	HTA1B05-25FM	HTA1B05-25CM
5xD	C	104.8	142.8	146.4	198.8	56.0	25	HTA1C05-25FM	HTA1C05-25CM
5xD	D	104.8	142.8	146.4	198.8	56.0	25	HTA1D05-25FM	HTA1D05-25CM
7xD	A	146.7	184.7	188.3	240.7	56.0	25	HTA1A07-25FM	HTA1A07-25CM
7xD	B	146.7	184.7	188.3	240.7	56.0	25	HTA1B07-25FM	HTA1B07-25CM
7xD	C	146.7	184.7	188.3	240.7	56.0	25	HTA1C07-25FM	HTA1C07-25CM
7xD	D	146.7	184.7	188.3	240.7	56.0	25	HTA1D07-25FM	HTA1D07-25CM
10xD	A	209.6	247.6	251.2	303.6	56.0	25	HTA1A10-25FM	HTA1A10-25CM
10xD	B	209.6	247.6	251.2	303.6	56.0	25	HTA1B10-25FM	HTA1B10-25CM
10xD	C	209.6	247.6	251.2	303.6	56.0	25	HTA1C10-25FM	HTA1C10-25CM
10xD	D	209.6	247.6	251.2	303.6	56.0	25	HTA1D10-25FM	HTA1D10-25CM
12xD	A	251.5	289.5	293.1	345.5	56.0	25	HTA1A12-25FM	HTA1A12-25CM
12xD	B	251.5	289.5	293.1	345.5	56.0	25	HTA1B12-25FM	HTA1B12-25CM
12xD	C	251.5	289.5	293.1	345.5	56.0	25	HTA1C12-25FM	HTA1C12-25CM
12xD	D	251.5	289.5	293.1	345.5	56.0	25	HTA1D12-25FM	HTA1D12-25CM
15xD	A	314.3	352.4	355.9	408.4	56.0	25	HTA1A15-25FM	HTA1A15-25CM
15xD	B	314.3	352.4	355.9	408.4	56.0	25	HTA1B15-25FM	HTA1B15-25CM
15xD	C	314.3	352.4	355.9	408.4	56.0	25	HTA1C15-25FM	HTA1C15-25CM
15xD	D	314.3	352.4	355.9	408.4	56.0	25	HTA1D15-25FM	HTA1D15-25CM

Connection Accessories

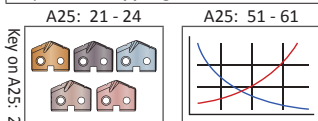
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
A/B 7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
C/D 739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

1 Series Holder Diameter Range

Sub Series	1A	1B	1C	1D
Metric (mm)	17.65 mm - 24.37 mm	19.05 mm - 24.37 mm	20.60 mm - 24.37 mm	22.90 mm - 24.37 mm
Imperial (inch)	0.6947" - 0.9596"	0.7499" - 0.9596"	0.8109" - 0.9596"	0.9014" - 0.9596"

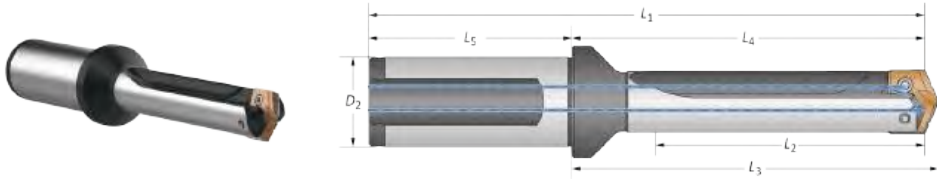
⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.





1 Series: 17.65 mm - 24.37 mm (0.6947" - 0.9596")

Holder



Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	0.825	2.224	2.364	4.504	2.280	1	HTA1A01-100F	HTA1A01-100C
Stub	B	0.825	2.224	2.364	4.504	2.280	1	HTA1B01-100F	HTA1B01-100C
Stub	C	0.825	2.224	2.364	4.504	2.280	1	HTA1C01-100F	HTA1C01-100C
Stub	D	0.825	2.224	2.364	4.504	2.280	1	HTA1D01-100F	HTA1D01-100C
3xD	A	2.475	3.973	4.113	6.253	2.280	1	HTA1A03-100F	HTA1A03-100C
3xD	B	2.475	3.973	4.113	6.253	2.280	1	HTA1B03-100F	HTA1B03-100C
3xD	C	2.475	3.973	4.113	6.253	2.280	1	HTA1C03-100F	HTA1C03-100C
3xD	D	2.475	3.973	4.113	6.253	2.280	1	HTA1D03-100F	HTA1D03-100C
5xD	A	4.125	5.623	5.763	7.903	2.280	1	HTA1A05-100F	HTA1A05-100C
5xD	B	4.125	5.623	5.763	7.903	2.280	1	HTA1B05-100F	HTA1B05-100C
5xD	C	4.125	5.623	5.763	7.903	2.280	1	HTA1C05-100F	HTA1C05-100C
5xD	D	4.125	5.623	5.763	7.903	2.280	1	HTA1D05-100F	HTA1D05-100C
7xD	A	5.775	7.273	7.413	9.553	2.280	1	HTA1A07-100F	HTA1A07-100C
7xD	B	5.775	7.273	7.413	9.553	2.280	1	HTA1B07-100F	HTA1B07-100C
7xD	C	5.775	7.273	7.413	9.553	2.280	1	HTA1C07-100F	HTA1C07-100C
7xD	D	5.775	7.273	7.413	9.553	2.280	1	HTA1D07-100F	HTA1D07-100C
10xD	A	8.250	9.748	9.888	12.028	2.280	1	HTA1A10-100F	HTA1A10-100C
10xD	B	8.250	9.748	9.888	12.028	2.280	1	HTA1B10-100F	HTA1B10-100C
10xD	C	8.250	9.748	9.888	12.028	2.280	1	HTA1C10-100F	HTA1C10-100C
10xD	D	8.250	9.748	9.888	12.028	2.280	1	HTA1D10-100F	HTA1D10-100C
12xD	A	9.900	11.398	11.538	13.678	2.280	1	HTA1A12-100F	HTA1A12-100C
12xD	B	9.900	11.398	11.538	13.678	2.280	1	HTA1B12-100F	HTA1B12-100C
12xD	C	9.900	11.398	11.538	13.678	2.280	1	HTA1C12-100F	HTA1C12-100C
12xD	D	9.900	11.398	11.538	13.678	2.280	1	HTA1D12-100F	HTA1D12-100C
15xD	A	12.375	13.873	14.013	16.153	2.280	1	HTA1A15-100F	HTA1A15-100C
15xD	B	12.375	13.873	14.013	16.153	2.280	1	HTA1B15-100F	HTA1B15-100C
15xD	C	12.375	13.873	14.013	16.153	2.280	1	HTA1C15-100F	HTA1C15-100C
15xD	D	12.375	13.873	14.013	16.153	2.280	1	HTA1D15-100F	HTA1D15-100C

Connection Accessories

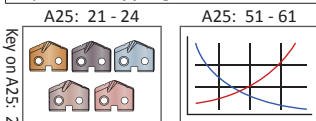
Insert Screws		Nylon Locking Screws		Insert Driver		Preset Torque Hand Driver		Replacement Tips		Admissible Tightening Torque*	
A/B	7375-IP9-1	7375N-IP9-1		8IP-9		8IP-9TL		8IP-9B		305 N-cm (27.0 in-lbs)	
C/D	739-IP9-1	739N-IP9-1		8IP-9		8IP-9TL		8IP-9B		305 N-cm (27.0 in-lbs)	

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

1 Series Holder Diameter Range

Sub Series	1A	1B	1C	1D
Metric (mm)	17.65 mm - 24.37 mm	19.05 mm - 24.37 mm	20.60 mm - 24.37 mm	22.90 mm - 24.37 mm
Imperial (inch)	0.6947" - 0.9596"	0.7499" - 0.9596"	0.8109" - 0.9596"	0.9014" - 0.9596"

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)

i = Imperial (in)

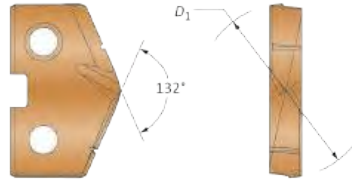
Screws sold in multiples of 10.



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
2-A	24.40	0.9606	—	TAP2-24.40	TAM2-24.40	TAK2-24.40	TAN2-24.40	TAX2-24.40
2-A	24.50	0.9646	—	TAP2-24.50	TAM2-24.50	TAK2-24.50	TAN2-24.50	TAX2-24.50
2-A	24.61	0.9689	31/32	TAP2-24.61	TAM2-24.61	TAK2-24.61	TAN2-24.61	TAX2-24.61
2-A	24.70	0.9724	—	TAP2-24.70	TAM2-24.70	TAK2-24.70	TAN2-24.70	TAX2-24.70
2-A	24.80	0.9764	—	TAP2-24.80	TAM2-24.80	TAK2-24.80	TAN2-24.80	TAX2-24.80
2-A	24.90	0.9803	—	TAP2-24.90	TAM2-24.90	TAK2-24.90	TAN2-24.90	TAX2-24.90
2-A	25.00	0.9843	63/64	TAP2-25.00	TAM2-25.00	TAK2-25.00	TAN2-25.00	TAX2-25.00
2-A	25.10	0.9882	—	TAP2-25.10	TAM2-25.10	TAK2-25.10	TAN2-25.10	TAX2-25.10
2-A	25.20	0.9921	—	TAP2-25.20	TAM2-25.20	TAK2-25.20	TAN2-25.20	TAX2-25.20
2-A	25.30	0.9961	—	TAP2-25.30	TAM2-25.30	TAK2-25.30	TAN2-25.30	TAX2-25.30
2-B	25.40	1.0000	1	TAP2-25.40	TAM2-25.40	TAK2-25.40	TAN2-25.40	TAX2-25.40
2-B	25.50	1.0039	—	TAP2-25.50	TAM2-25.50	TAK2-25.50	TAN2-25.50	TAX2-25.50
2-B	25.60	1.0079	—	TAP2-25.60	TAM2-25.60	TAK2-25.60	TAN2-25.60	TAX2-25.60
2-B	25.70	1.0118	—	TAP2-25.70	TAM2-25.70	TAK2-25.70	TAN2-25.70	TAX2-25.70
2-B	25.78	1.0150	—	TAP2-25.78	TAM2-25.78	TAK2-25.78	TAN2-25.78	TAX2-25.78
2-B	25.90	1.0197	—	TAP2-25.90	TAM2-25.90	TAK2-25.90	TAN2-25.90	TAX2-25.90
2-B	26.00	1.0236	—	TAP2-26.00	TAM2-26.00	TAK2-26.00	TAN2-26.00	TAX2-26.00
2-B	26.10	1.0276	—	TAP2-26.10	TAM2-26.10	TAK2-26.10	TAN2-26.10	TAX2-26.10
2-B	26.20	1.0315	1-1/32	TAP2-26.20	TAM2-26.20	TAK2-26.20	TAN2-26.20	TAX2-26.20
2-B	26.30	1.0354	—	TAP2-26.30	TAM2-26.30	TAK2-26.30	TAN2-26.30	TAX2-26.30
2-B	26.40	1.0394	—	TAP2-26.40	TAM2-26.40	TAK2-26.40	TAN2-26.40	TAX2-26.40
2-B	26.50	1.0433	—	TAP2-26.50	TAM2-26.50	TAK2-26.50	TAN2-26.50	TAX2-26.50
2-B	26.57	1.0461	—	TAP2-26.57	TAM2-26.57	TAK2-26.57	TAN2-26.57	TAX2-26.57
2-B	26.59	1.0469	1-3/64	TAP2-26.59	TAM2-26.59	TAK2-26.59	TAN2-26.59	TAX2-26.59
2-B	26.60	1.0472	—	TAP2-26.60	TAM2-26.60	TAK2-26.60	TAN2-26.60	TAX2-26.60
2-B	26.70	1.0512	—	TAP2-26.70	TAM2-26.70	TAK2-26.70	TAN2-26.70	TAX2-26.70
2-B	26.80	1.0551	—	TAP2-26.80	TAM2-26.80	TAK2-26.80	TAN2-26.80	TAX2-26.80
2-B	26.90	1.0591	—	TAP2-26.90	TAM2-26.90	TAK2-26.90	TAN2-26.90	TAX2-26.90
2-B	26.99	1.0626	1-1/16	TAP2-26.99	TAM2-26.99	TAK2-26.99	TAN2-26.99	TAX2-26.99
2-B	27.00	1.0630	—	TAP2-27.00	TAM2-27.00	TAK2-27.00	TAN2-27.00	TAX2-27.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



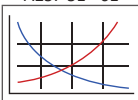
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 31 - 32

A25: 51 - 61



Sizes not shown are available upon request.

When ordering, please follow the example below:

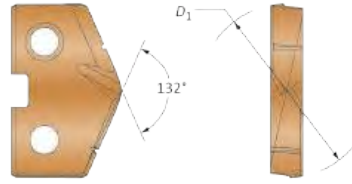
Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
2-B	27.10	1.0669	—	TAP2-27.10	TAM2-27.10	TAK2-27.10	TAN2-27.10	TAX2-27.10
2-B	27.20	1.0709	—	TAP2-27.20	TAM2-27.20	TAK2-27.20	TAN2-27.20	TAX2-27.20
2-B	27.30	1.0748	—	TAP2-27.30	TAM2-27.30	TAK2-27.30	TAN2-27.30	TAX2-27.30
2-B	27.40	1.0787	—	TAP2-27.40	TAM2-27.40	TAK2-27.40	TAN2-27.40	TAX2-27.40
2-B	27.50	1.0827	—	TAP2-27.50	TAM2-27.50	TAK2-27.50	TAN2-27.50	TAX2-27.50
2-B	27.60	1.0866	—	TAP2-27.60	TAM2-27.60	TAK2-27.60	TAN2-27.60	TAX2-27.60
2-B	27.70	1.0906	—	TAP2-27.70	TAM2-27.70	TAK2-27.70	TAN2-27.70	TAX2-27.70
2-B	27.78	1.0937	1-3/32	TAP2-27.78	TAM2-27.78	TAK2-27.78	TAN2-27.78	TAX2-27.78
2-B	27.90	1.0984	—	TAP2-27.90	TAM2-27.90	TAK2-27.90	TAN2-27.90	TAX2-27.90
2-B	28.00	1.1024	—	TAP2-28.00	TAM2-28.00	TAK2-28.00	TAN2-28.00	TAX2-28.00
2-B	28.10	1.1063	—	TAP2-28.10	TAM2-28.10	TAK2-28.10	TAN2-28.10	TAX2-28.10
2-B	28.17	1.1091	1-7/64	TAP2-28.17	TAM2-28.17	TAK2-28.17	TAN2-28.17	TAX2-28.17
2-B	28.20	1.1102	—	TAP2-28.20	TAM2-28.20	TAK2-28.20	TAN2-28.20	TAX2-28.20
2-B	28.30	1.1142	—	TAP2-28.30	TAM2-28.30	TAK2-28.30	TAN2-28.30	TAX2-28.30
2-B	28.40	1.1181	—	TAP2-28.40	TAM2-28.40	TAK2-28.40	TAN2-28.40	TAX2-28.40
2-C	28.50	1.1220	—	TAP2-28.50	TAM2-28.50	TAK2-28.50	TAN2-28.50	TAX2-28.50
2-C	28.58	1.1252	1-1/8	TAP2-28.58	TAM2-28.58	TAK2-28.58	TAN2-28.58	TAX2-28.58
2-C	28.70	1.1299	—	TAP2-28.70	TAM2-28.70	TAK2-28.70	TAN2-28.70	TAX2-28.70
2-C	28.80	1.1339	—	TAP2-28.80	TAM2-28.80	TAK2-28.80	TAN2-28.80	TAX2-28.80
2-C	28.90	1.1378	—	TAP2-28.90	TAM2-28.90	TAK2-28.90	TAN2-28.90	TAX2-28.90
2-C	29.00	1.1417	—	TAP2-29.00	TAM2-29.00	TAK2-29.00	TAN2-29.00	TAX2-29.00
2-C	29.10	1.1457	—	TAP2-29.10	TAM2-29.10	TAK2-29.10	TAN2-29.10	TAX2-29.10
2-C	29.20	1.1496	—	TAP2-29.20	TAM2-29.20	TAK2-29.20	TAN2-29.20	TAX2-29.20
2-C	29.30	1.1535	—	TAP2-29.30	TAM2-29.30	TAK2-29.30	TAN2-29.30	TAX2-29.30
2-C	29.37	1.1563	1-5/32	TAP2-29.37	TAM2-29.37	TAK2-29.37	TAN2-29.37	TAX2-29.37
2-C	29.40	1.1575	—	TAP2-29.40	TAM2-29.40	TAK2-29.40	TAN2-29.40	TAX2-29.40
2-C	29.50	1.1614	—	TAP2-29.50	TAM2-29.50	TAK2-29.50	TAN2-29.50	TAX2-29.50
2-C	29.60	1.1654	—	TAP2-29.60	TAM2-29.60	TAK2-29.60	TAN2-29.60	TAX2-29.60
2-C	29.70	1.1693	—	TAP2-29.70	TAM2-29.70	TAK2-29.70	TAN2-29.70	TAX2-29.70
2-C	29.80	1.1732	—	TAP2-29.80	TAM2-29.80	TAK2-29.80	TAN2-29.80	TAX2-29.80

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



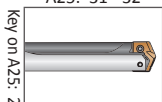
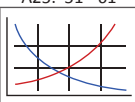
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 31 - 32

A25: 51 - 61



Sizes not shown are available upon request.

When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

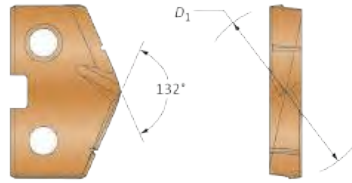
Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No. P	Part No. M	Part No. K	Part No. N	Part No. X
2-C	29.90	1.1772	—	TAP2-29.90	TAM2-29.90	TAK2-29.90	TAN2-29.90	TAX2-29.90
2-C	30.00	1.1811	—	TAP2-30.00	TAM2-30.00	TAK2-30.00	TAN2-30.00	TAX2-30.00
2-C	30.10	1.1850	—	TAP2-30.10	TAM2-30.10	TAK2-30.10	TAN2-30.10	TAX2-30.10
2-C	30.16	1.1874	1-3/16	TAP2-30.16	TAM2-30.16	TAK2-30.16	TAN2-30.16	TAX2-30.16
2-C	30.20	1.1890	—	TAP2-30.20	TAM2-30.20	TAK2-30.20	TAN2-30.20	TAX2-30.20
2-C	30.30	1.1929	—	TAP2-30.30	TAM2-30.30	TAK2-30.30	TAN2-30.30	TAX2-30.30
2-C	30.40	1.1969	—	TAP2-30.40	TAM2-30.40	TAK2-30.40	TAN2-30.40	TAX2-30.40
2-C	30.50	1.2008	—	TAP2-30.50	TAM2-30.50	TAK2-30.50	TAN2-30.50	TAX2-30.50
2-C	30.60	1.2047	—	TAP2-30.60	TAM2-30.60	TAK2-30.60	TAN2-30.60	TAX2-30.60
2-C	30.70	1.2087	—	TAP2-30.70	TAM2-30.70	TAK2-30.70	TAN2-30.70	TAX2-30.70
2-C	30.80	1.2126	—	TAP2-30.80	TAM2-30.80	TAK2-30.80	TAN2-30.80	TAX2-30.80
2-C	30.90	1.2165	—	TAP2-30.90	TAM2-30.90	TAK2-30.90	TAN2-30.90	TAX2-30.90
2-C	30.96	1.2189	1-7/32	TAP2-30.96	TAM2-30.96	TAK2-30.96	TAN2-30.96	TAX2-30.96
2-C	31.00	1.2205	—	TAP2-31.00	TAM2-31.00	TAK2-31.00	TAN2-31.00	TAX2-31.00
2-C	31.10	1.2244	—	TAP2-31.10	TAM2-31.10	TAK2-31.10	TAN2-31.10	TAX2-31.10
2-C	31.20	1.2283	—	TAP2-31.20	TAM2-31.20	TAK2-31.20	TAN2-31.20	TAX2-31.20
2-C	31.30	1.2323	—	TAP2-31.30	TAM2-31.30	TAK2-31.30	TAN2-31.30	TAX2-31.30
2-C	31.40	1.2362	—	TAP2-31.40	TAM2-31.40	TAK2-31.40	TAN2-31.40	TAX2-31.40
2-C	31.50	1.2402	—	TAP2-31.50	TAM2-31.50	TAK2-31.50	TAN2-31.50	TAX2-31.50
2-C	31.60	1.2441	—	TAP2-31.60	TAM2-31.60	TAK2-31.60	TAN2-31.60	TAX2-31.60
2-D	31.70	1.2480	—	TAP2-31.70	TAM2-31.70	TAK2-31.70	TAN2-31.70	TAX2-31.70
2-D	31.75	1.2500	1-1/4	TAP2-31.75	TAM2-31.75	TAK2-31.75	TAN2-31.75	TAX2-31.75
2-D	31.80	1.2520	—	TAP2-31.80	TAM2-31.80	TAK2-31.80	TAN2-31.80	TAX2-31.80
2-D	31.90	1.2559	—	TAP2-31.90	TAM2-31.90	TAK2-31.90	TAN2-31.90	TAX2-31.90
2-D	32.00	1.2598	—	TAP2-32.00	TAM2-32.00	TAK2-32.00	TAN2-32.00	TAX2-32.00
2-D	32.10	1.2638	—	TAP2-32.10	TAM2-32.10	TAK2-32.10	TAN2-32.10	TAX2-32.10
2-D	32.15	1.2657	1-17/64	TAP2-32.15	TAM2-32.15	TAK2-32.15	TAN2-32.15	TAX2-32.15
2-D	32.20	1.2677	—	TAP2-32.20	TAM2-32.20	TAK2-32.20	TAN2-32.20	TAX2-32.20
2-D	32.30	1.2717	—	TAP2-32.30	TAM2-32.30	TAK2-32.30	TAN2-32.30	TAX2-32.30
2-D	32.40	1.2756	—	TAP2-32.40	TAM2-32.40	TAK2-32.40	TAN2-32.40	TAX2-32.40

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder

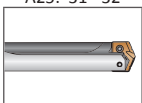


C Series Insert +
C Series Holder

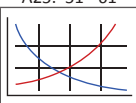


A Series Insert +
C Series Holder

key on A25: 2



A25: 51 - 61



Sizes not shown are available upon request.

When ordering, please follow the example below:

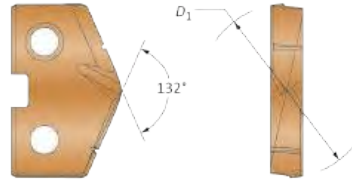
Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
2-D	32.50	1.2795	—	TAP2-32.50	TAM2-32.50	TAK2-32.50	TAN2-32.50	TAX2-32.50
2-D	32.55	1.2815	1-9/32	TAP2-32.55	TAM2-32.55	TAK2-32.55	TAN2-32.55	TAX2-32.55
2-D	32.60	1.2835	—	TAP2-32.60	TAM2-32.60	TAK2-32.60	TAN2-32.60	TAX2-32.60
2-D	32.70	1.2874	—	TAP2-32.70	TAM2-32.70	TAK2-32.70	TAN2-32.70	TAX2-32.70
2-D	32.80	1.2913	—	TAP2-32.80	TAM2-32.80	TAK2-32.80	TAN2-32.80	TAX2-32.80
2-D	32.90	1.2953	—	TAP2-32.90	TAM2-32.90	TAK2-32.90	TAN2-32.90	TAX2-32.90
2-D	33.00	1.2992	—	TAP2-33.00	TAM2-33.00	TAK2-33.00	TAN2-33.00	TAX2-33.00
2-D	33.10	1.3031	—	TAP2-33.10	TAM2-33.10	TAK2-33.10	TAN2-33.10	TAX2-33.10
2-D	33.20	1.3071	—	TAP2-33.20	TAM2-33.20	TAK2-33.20	TAN2-33.20	TAX2-33.20
2-D	33.30	1.3110	—	TAP2-33.30	TAM2-33.30	TAK2-33.30	TAN2-33.30	TAX2-33.30
2-D	33.34	1.3126	1-5/16	TAP2-33.34	TAM2-33.34	TAK2-33.34	TAN2-33.34	TAX2-33.34
2-D	33.40	1.3150	—	TAP2-33.40	TAM2-33.40	TAK2-33.40	TAN2-33.40	TAX2-33.40
2-D	33.50	1.3189	—	TAP2-33.50	TAM2-33.50	TAK2-33.50	TAN2-33.50	TAX2-33.50
2-D	33.60	1.3228	—	TAP2-33.60	TAM2-33.60	TAK2-33.60	TAN2-33.60	TAX2-33.60
2-D	33.70	1.3268	—	TAP2-33.70	TAM2-33.70	TAK2-33.70	TAN2-33.70	TAX2-33.70
2-D	33.80	1.3307	—	TAP2-33.80	TAM2-33.80	TAK2-33.80	TAN2-33.80	TAX2-33.80
2-D	33.90	1.3346	—	TAP2-33.90	TAM2-33.90	TAK2-33.90	TAN2-33.90	TAX2-33.90
2-D	34.00	1.3386	—	TAP2-34.00	TAM2-34.00	TAK2-34.00	TAN2-34.00	TAX2-34.00
2-D	34.10	1.3425	—	TAP2-34.10	TAM2-34.10	TAK2-34.10	TAN2-34.10	TAX2-34.10
2-D	34.13	1.3437	1-11/32	TAP2-34.13	TAM2-34.13	TAK2-34.13	TAN2-34.13	TAX2-34.13
2-D	34.20	1.3465	—	TAP2-34.20	TAM2-34.20	TAK2-34.20	TAN2-34.20	TAX2-34.20
2-D	34.30	1.3504	—	TAP2-34.30	TAM2-34.30	TAK2-34.30	TAN2-34.30	TAX2-34.30
2-D	34.40	1.3543	—	TAP2-34.40	TAM2-34.40	TAK2-34.40	TAN2-34.40	TAX2-34.40
2-D	34.50	1.3583	—	TAP2-34.50	TAM2-34.50	TAK2-34.50	TAN2-34.50	TAX2-34.50
2-D	34.60	1.3622	—	TAP2-34.60	TAM2-34.60	TAK2-34.60	TAN2-34.60	TAX2-34.60
2-D	34.70	1.3661	—	TAP2-34.70	TAM2-34.70	TAK2-34.70	TAN2-34.70	TAX2-34.70
2-D	34.80	1.3701	—	TAP2-34.80	TAM2-34.80	TAK2-34.80	TAN2-34.80	TAX2-34.80
2-D	34.90	1.3740	—	TAP2-34.90	TAM2-34.90	TAK2-34.90	TAN2-34.90	TAX2-34.90
2-D	34.93	1.3752	1-3/8	TAP2-34.93	TAM2-34.93	TAK2-34.93	TAN2-34.93	TAX2-34.93
2-D	35.00	1.3780	—	TAP2-35.00	TAM2-35.00	TAK2-35.00	TAN2-35.00	TAX2-35.00

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



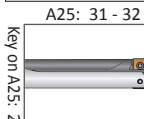
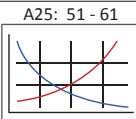
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



Sizes not shown are available upon request.

When ordering, please follow the example below:

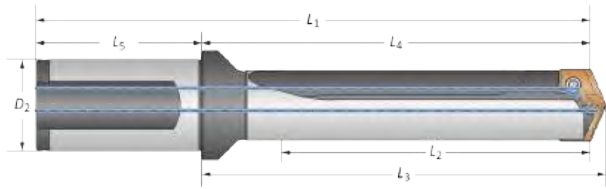
Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Holders



A25



Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	29.7	75.0	78.6	135.0	60.0	32	HTA2A01-32FM	HTA2A01-32CM
Stub	B	29.7	75.0	78.6	135.0	60.0	32	HTA2B01-32FM	HTA2B01-32CM
Stub	C	29.7	75.0	78.6	135.0	60.0	32	HTA2C01-32FM	HTA2C01-32CM
Stub	D	29.7	75.0	78.6	135.0	60.0	32	HTA2D01-32FM	HTA2D01-32CM
3xD	A	89.2	137.4	141.0	197.4	60.0	32	HTA2A03-32FM	HTA2A03-32CM
3xD	B	89.2	137.4	141.0	197.4	60.0	32	HTA2B03-32FM	HTA2B03-32CM
3xD	C	89.2	137.4	141.0	197.4	60.0	32	HTA2C03-32FM	HTA2C03-32CM
3xD	D	89.2	137.4	141.0	197.4	60.0	32	HTA2D03-32FM	HTA2D03-32CM
5xD	A	148.7	196.9	200.5	256.9	60.0	32	HTA2A05-32FM	HTA2A05-32CM
5xD	B	148.7	196.9	200.5	256.9	60.0	32	HTA2B05-32FM	HTA2B05-32CM
5xD	C	148.7	196.9	200.5	256.9	60.0	32	HTA2C05-32FM	HTA2C05-32CM
5xD	D	148.7	196.9	200.5	256.9	60.0	32	HTA2D05-32FM	HTA2D05-32CM
7xD	A	208.2	256.4	260.0	316.4	60.0	32	HTA2A07-32FM	HTA2A07-32CM
7xD	B	208.2	256.4	260.0	316.4	60.0	32	HTA2B07-32FM	HTA2B07-32CM
7xD	C	208.2	256.4	260.0	316.4	60.0	32	HTA2C07-32FM	HTA2C07-32CM
7xD	D	208.2	256.4	260.0	316.4	60.0	32	HTA2D07-32FM	HTA2D07-32CM
10xD	A	297.4	345.6	349.2	405.6	60.0	32	HTA2A10-32FM	HTA2A10-32CM
10xD	B	297.4	345.6	349.2	405.6	60.0	32	HTA2B10-32FM	HTA2B10-32CM
10xD	C	297.4	345.6	349.2	405.6	60.0	32	HTA2C10-32FM	HTA2C10-32CM
10xD	D	297.4	345.6	349.2	405.6	60.0	32	HTA2D10-32FM	HTA2D10-32CM
12xD	A	356.9	405.1	408.7	465.1	60.0	32	HTA2A12-32FM	HTA2A12-32CM
12xD	B	356.9	405.1	408.7	465.1	60.0	32	HTA2B12-32FM	HTA2B12-32CM
12xD	C	356.9	405.1	408.7	465.1	60.0	32	HTA2C12-32FM	HTA2C12-32CM
12xD	D	356.9	405.1	408.7	465.1	60.0	32	HTA2D12-32FM	HTA2D12-32CM
15xD	A	446.2	494.4	497.9	554.4	60.0	32	HTA2A15-32FM	HTA2A15-32CM
15xD	B	446.2	494.4	497.9	554.4	60.0	32	HTA2B15-32FM	HTA2B15-32CM
15xD	C	446.2	494.4	497.9	554.4	60.0	32	HTA2C15-32FM	HTA2C15-32CM
15xD	D	446.2	494.4	497.9	554.4	60.0	32	HTA2D15-32FM	HTA2D15-32CM

Connection Accessories

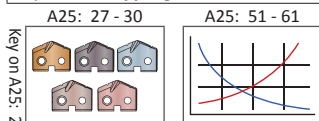
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

2 Series Holder Diameter Range

Sub Series	2A	2B	2C	2D
Metric (mm)	24.38 mm - 35.04 mm	25.40 mm - 35.04 mm	28.50 mm - 35.04 mm	31.70 mm - 35.04 mm
Imperial (inch)	0.9597" - 1.3797"	0.9999" - 1.3797"	1.1219" - 1.3797"	1.2479" - 1.3797"

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



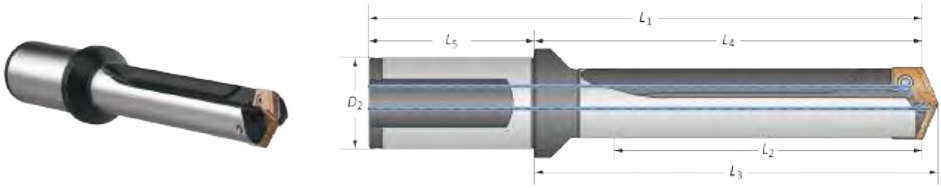
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.38 mm - 35.04 mm (0.9597" - 1.3797")

Holders



A25

Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2A01-125F	HTA2A01-125C
Stub	B	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2B01-125F	HTA2B01-125C
Stub	C	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2C01-125F	HTA2C01-125C
Stub	D	1.171	2.954	3.094	5.234	2.280	1-1/4	HTA2D01-125F	HTA2D01-125C
3xD	A	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2A03-125F	HTA2A03-125C
3xD	B	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2B03-125F	HTA2B03-125C
3xD	C	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2C03-125F	HTA2C03-125C
3xD	D	3.513	5.411	5.551	7.691	2.280	1-1/4	HTA2D03-125F	HTA2D03-125C
5xD	A	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2A05-125F	HTA2A05-125C
5xD	B	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2B05-125F	HTA2B05-125C
5xD	C	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2C05-125F	HTA2C05-125C
5xD	D	5.855	7.753	7.893	10.033	2.280	1-1/4	HTA2D05-125F	HTA2D05-125C
7xD	A	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2A07-125F	HTA2A07-125C
7xD	B	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2B07-125F	HTA2B07-125C
7xD	C	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2C07-125F	HTA2C07-125C
7xD	D	8.197	10.095	10.235	12.375	2.280	1-1/4	HTA2D07-125F	HTA2D07-125C
10xD	A	11.710	13.608	13.748	15.888	2.280	1-1/4	HTA2A10-125F	HTA2A10-125C
10xD	B	11.710	13.608	13.748	15.888	2.280	1-1/4	HTA2B10-125F	HTA2B10-125C
10xD	C	11.710	13.608	13.748	15.888	2.280	1-1/4	HTA2C10-125F	HTA2C10-125C
10xD	D	11.710	13.608	13.748	15.888	2.280	1-1/4	HTA2D10-125F	HTA2D10-125C
12xD	A	14.052	15.950	16.090	18.230	2.280	1-1/4	HTA2A12-125F	HTA2A12-125C
12xD	B	14.052	15.950	16.090	18.230	2.280	1-1/4	HTA2B12-125F	HTA2B12-125C
12xD	C	14.052	15.950	16.090	18.230	2.280	1-1/4	HTA2C12-125F	HTA2C12-125C
12xD	D	14.052	15.950	16.090	18.230	2.280	1-1/4	HTA2D12-125F	HTA2D12-125C
15xD	A	17.565	19.463	19.603	21.743	2.280	1-1/4	HTA2A15-125F	HTA2A15-125C
15xD	B	17.565	19.463	19.603	21.743	2.280	1-1/4	HTA2B15-125F	HTA2B15-125C
15xD	C	17.565	19.463	19.603	21.743	2.280	1-1/4	HTA2C15-125F	HTA2C15-125C
15xD	D	17.565	19.463	19.603	21.743	2.280	1-1/4	HTA2D15-125F	HTA2D15-125C

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

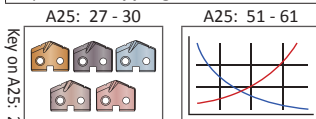
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

2 Series Holder Diameter Range

Sub Series	2A	2B	2C	2D
Metric (mm)	24.38 mm - 35.04 mm	25.40 mm - 35.04 mm	28.50 mm - 35.04 mm	31.70 mm - 35.04 mm
Imperial (inch)	0.9597" - 1.3797"	0.9999" - 1.3797"	1.1219" - 1.3797"	1.2479" - 1.3797"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



= Metric (mm)
 = Imperial (in)

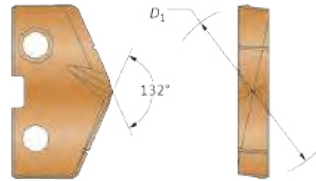
Screws sold in multiples of 10.



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-A	35.10	1.3819	—	TAP3-35.10	TAM3-35.10	TAK3-35.10	TAN3-35.10	TAX3-35.10
3-A	35.20	1.3858	—	TAP3-35.20	TAM3-35.20	TAK3-35.20	TAN3-35.20	TAX3-35.20
3-A	35.30	1.3898	—	TAP3-35.30	TAM3-35.30	TAK3-35.30	TAN3-35.30	TAX3-35.30
3-A	35.40	1.3937	—	TAP3-35.40	TAM3-35.40	TAK3-35.40	TAN3-35.40	TAX3-35.40
3-A	35.50	1.3976	—	TAP3-35.50	TAM3-35.50	TAK3-35.50	TAN3-35.50	TAX3-35.50
3-A	35.60	1.4016	—	TAP3-35.60	TAM3-35.60	TAK3-35.60	TAN3-35.60	TAX3-35.60
3-A	35.70	1.4055	—	TAP3-35.70	TAM3-35.70	TAK3-35.70	TAN3-35.70	TAX3-35.70
3-A	35.72	1.4063	1-13/32	TAP3-35.72	TAM3-35.72	TAK3-35.72	TAN3-35.72	TAX3-35.72
3-A	35.80	1.4094	—	TAP3-35.80	TAM3-35.80	TAK3-35.80	TAN3-35.80	TAX3-35.80
3-A	35.90	1.4134	—	TAP3-35.90	TAM3-35.90	TAK3-35.90	TAN3-35.90	TAX3-35.90
3-A	36.00	1.4173	—	TAP3-36.00	TAM3-36.00	TAK3-36.00	TAN3-36.00	TAX3-36.00
3-A	36.10	1.4213	—	TAP3-36.10	TAM3-36.10	TAK3-36.10	TAN3-36.10	TAX3-36.10
3-A	36.20	1.4252	—	TAP3-36.20	TAM3-36.20	TAK3-36.20	TAN3-36.20	TAX3-36.20
3-A	36.30	1.4291	—	TAP3-36.30	TAM3-36.30	TAK3-36.30	TAN3-36.30	TAX3-36.30
3-A	36.40	1.4331	—	TAP3-36.40	TAM3-36.40	TAK3-36.40	TAN3-36.40	TAX3-36.40
3-A	36.50	1.4370	—	TAP3-36.50	TAM3-36.50	TAK3-36.50	TAN3-36.50	TAX3-36.50
3-A	36.51	1.4374	1-7/16	TAP3-36.51	TAM3-36.51	TAK3-36.51	TAN3-36.51	TAX3-36.51
3-A	36.60	1.4409	—	TAP3-36.60	TAM3-36.60	TAK3-36.60	TAN3-36.60	TAX3-36.60
3-A	36.70	1.4449	—	TAP3-36.70	TAM3-36.70	TAK3-36.70	TAN3-36.70	TAX3-36.70
3-A	36.80	1.4488	—	TAP3-36.80	TAM3-36.80	TAK3-36.80	TAN3-36.80	TAX3-36.80
3-A	36.90	1.4528	—	TAP3-36.90	TAM3-36.90	TAK3-36.90	TAN3-36.90	TAX3-36.90
3-A	37.00	1.4567	—	TAP3-37.00	TAM3-37.00	TAK3-37.00	TAN3-37.00	TAX3-37.00
3-A	37.10	1.4606	—	TAP3-37.10	TAM3-37.10	TAK3-37.10	TAN3-37.10	TAX3-37.10
3-A	37.20	1.4646	—	TAP3-37.20	TAM3-37.20	TAK3-37.20	TAN3-37.20	TAX3-37.20

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



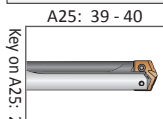
C Series Insert +
A Series Holder



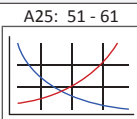
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



A25: 39 - 40



A25: 51 - 61

Sizes not shown are available upon request.

When ordering, please follow the example below:

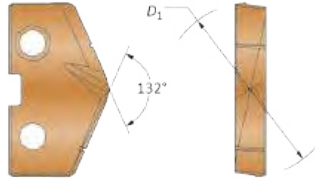
Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-A	37.30	1.4685	—	TAP3-37.30	TAM3-37.30	TAK3-37.30	TAN3-37.30	TAX3-37.30
3-A	37.31	1.4689	1-15/32	TAP3-37.31	TAM3-37.31	TAK3-37.31	TAN3-37.31	TAX3-37.31
3-A	37.40	1.4724	—	TAP3-37.40	TAM3-37.40	TAK3-37.40	TAN3-37.40	TAX3-37.40
3-A	37.50	1.4764	—	TAP3-37.50	TAM3-37.50	TAK3-37.50	TAN3-37.50	TAX3-37.50
3-A	37.60	1.4803	—	TAP3-37.60	TAM3-37.60	TAK3-37.60	TAN3-37.60	TAX3-37.60
3-A	37.70	1.4843	1-31/64	TAP3-37.70	TAM3-37.70	TAK3-37.70	TAN3-37.70	TAX3-37.70
3-B	37.80	1.4882	—	TAP3-37.80	TAM3-37.80	TAK3-37.80	TAN3-37.80	TAX3-37.80
3-B	37.90	1.4921	—	TAP3-37.90	TAM3-37.90	TAK3-37.90	TAN3-37.90	TAX3-37.90
3-B	38.00	1.4961	—	TAP3-38.00	TAM3-38.00	TAK3-38.00	TAN3-38.00	TAX3-38.00
3-B	38.10	1.5000	1-1/2	TAP3-38.10	TAM3-38.10	TAK3-38.10	TAN3-38.10	TAX3-38.10
3-B	38.20	1.5039	—	TAP3-38.20	TAM3-38.20	TAK3-38.20	TAN3-38.20	TAX3-38.20
3-B	38.30	1.5079	—	TAP3-38.30	TAM3-38.30	TAK3-38.30	TAN3-38.30	TAX3-38.30
3-B	38.40	1.5118	—	TAP3-38.40	TAM3-38.40	TAK3-38.40	TAN3-38.40	TAX3-38.40
3-B	38.50	1.5157	1-33/64	TAP3-38.50	TAM3-38.50	TAK3-38.50	TAN3-38.50	TAX3-38.50
3-B	38.60	1.5197	—	TAP3-38.60	TAM3-38.60	TAK3-38.60	TAN3-38.60	TAX3-38.60
3-B	38.70	1.5236	—	TAP3-38.70	TAM3-38.70	TAK3-38.70	TAN3-38.70	TAX3-38.70
3-B	38.80	1.5276	—	TAP3-38.80	TAM3-38.80	TAK3-38.80	TAN3-38.80	TAX3-38.80
3-B	38.89	1.5311	1-17/32	TAP3-38.89	TAM3-38.89	TAK3-38.89	TAN3-38.89	TAX3-38.89
3-B	38.90	1.5315	—	TAP3-38.90	TAM3-38.90	TAK3-38.90	TAN3-38.90	TAX3-38.90
3-B	39.00	1.5354	—	TAP3-39.00	TAM3-39.00	TAK3-39.00	TAN3-39.00	TAX3-39.00
3-B	39.10	1.5394	—	TAP3-39.10	TAM3-39.10	TAK3-39.10	TAN3-39.10	TAX3-39.10
3-B	39.20	1.5433	—	TAP3-39.20	TAM3-39.20	TAK3-39.20	TAN3-39.20	TAX3-39.20
3-B	39.29	1.5469	1-35/64	TAP3-39.29	TAM3-39.29	TAK3-39.29	TAN3-39.29	TAX3-39.29
3-B	39.30	1.5472	—	TAP3-39.30	TAM3-39.30	TAK3-39.30	TAN3-39.30	TAX3-39.30

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



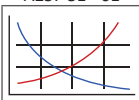
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 39 - 40

A25: 51 - 61



Sizes not shown are available upon request.

When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

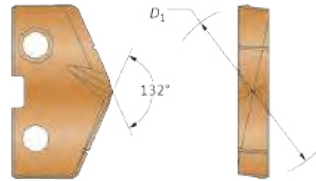
Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-B	39.40	1.5512	—	TAP3-39.40	TAM3-39.40	TAK3-39.40	TAN3-39.40	TAX3-39.40
3-B	39.50	1.5551	—	TAP3-39.50	TAM3-39.50	TAK3-39.50	TAN3-39.50	TAX3-39.50
3-B	39.60	1.5591	—	TAP3-39.60	TAM3-39.60	TAK3-39.60	TAN3-39.60	TAX3-39.60
3-B	39.69	1.5626	1-9/16	TAP3-39.69	TAM3-39.69	TAK3-39.69	TAN3-39.69	TAX3-39.69
3-B	39.70	1.5630	—	TAP3-39.70	TAM3-39.70	TAK3-39.70	TAN3-39.70	TAX3-39.70
3-B	39.80	1.5669	—	TAP3-39.80	TAM3-39.80	TAK3-39.80	TAN3-39.80	TAX3-39.80
3-B	39.90	1.5709	—	TAP3-39.90	TAM3-39.90	TAK3-39.90	TAN3-39.90	TAX3-39.90
3-B	40.00	1.5748	—	TAP3-40.00	TAM3-40.00	TAK3-40.00	TAN3-40.00	TAX3-40.00
3-B	40.10	1.5787	—	TAP3-40.10	TAM3-40.10	TAK3-40.10	TAN3-40.10	TAX3-40.10
3-B	40.20	1.5827	—	TAP3-40.20	TAM3-40.20	TAK3-40.20	TAN3-40.20	TAX3-40.20
3-B	40.30	1.5866	—	TAP3-40.30	TAM3-40.30	TAK3-40.30	TAN3-40.30	TAX3-40.30
3-B	40.40	1.5906	—	TAP3-40.40	TAM3-40.40	TAK3-40.40	TAN3-40.40	TAX3-40.40
3-B	40.48	1.5937	1-19/32	TAP3-40.48	TAM3-40.48	TAK3-40.48	TAN3-40.48	TAX3-40.48
3-B	40.50	1.5945	—	TAP3-40.50	TAM3-40.50	TAK3-40.50	TAN3-40.50	TAX3-40.50
3-B	40.60	1.5984	—	TAP3-40.60	TAM3-40.60	TAK3-40.60	TAN3-40.60	TAX3-40.60
3-B	40.70	1.6024	—	TAP3-40.70	TAM3-40.70	TAK3-40.70	TAN3-40.70	TAX3-40.70
3-B	40.80	1.6063	—	TAP3-40.80	TAM3-40.80	TAK3-40.80	TAN3-40.80	TAX3-40.80
3-B	40.90	1.6102	—	TAP3-40.90	TAM3-40.90	TAK3-40.90	TAN3-40.90	TAX3-40.90
3-C	41.00	1.6142	—	TAP3-41.00	TAM3-41.00	TAK3-41.00	TAN3-41.00	TAX3-41.00
3-C	41.10	1.6181	—	TAP3-41.10	TAM3-41.10	TAK3-41.10	TAN3-41.10	TAX3-41.10
3-C	41.20	1.6220	—	TAP3-41.20	TAM3-41.20	TAK3-41.20	TAN3-41.20	TAX3-41.20
3-C	41.28	1.6252	1-5/8	TAP3-41.28	TAM3-41.28	TAK3-41.28	TAN3-41.28	TAX3-41.28
3-C	41.30	1.6260	—	TAP3-41.30	TAM3-41.30	TAK3-41.30	TAN3-41.30	TAX3-41.30
3-C	41.40	1.6299	—	TAP3-41.40	TAM3-41.40	TAK3-41.40	TAN3-41.40	TAX3-41.40

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



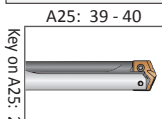
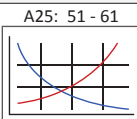
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



Sizes not shown are available upon request.

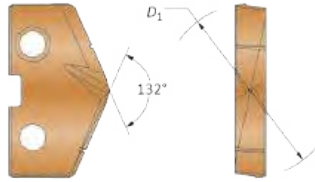
When ordering, please follow the example below:

Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**

3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D_1 mm	D_1 inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-C	41.50	1.6339	—	TAP3-41.50	TAM3-41.50	TAK3-41.50	TAN3-41.50	TAX3-41.50
3-C	41.60	1.6378	—	TAP3-41.60	TAM3-41.60	TAK3-41.60	TAN3-41.60	TAX3-41.60
3-C	41.70	1.6417	—	TAP3-41.70	TAM3-41.70	TAK3-41.70	TAN3-41.70	TAX3-41.70
3-C	41.80	1.6457	—	TAP3-41.80	TAM3-41.80	TAK3-41.80	TAN3-41.80	TAX3-41.80
3-C	41.90	1.6496	—	TAP3-41.90	TAM3-41.90	TAK3-41.90	TAN3-41.90	TAX3-41.90
3-C	42.00	1.6535	—	TAP3-42.00	TAM3-42.00	TAK3-42.00	TAN3-42.00	TAX3-42.00
3-C	42.07	1.6563	1-21/32	TAP3-42.07	TAM3-42.07	TAK3-42.07	TAN3-42.07	TAX3-42.07
3-C	42.10	1.6575	—	TAP3-42.10	TAM3-42.10	TAK3-42.10	TAN3-42.10	TAX3-42.10
3-C	42.20	1.6614	—	TAP3-42.20	TAM3-42.20	TAK3-42.20	TAN3-42.20	TAX3-42.20
3-C	42.30	1.6654	—	TAP3-42.30	TAM3-42.30	TAK3-42.30	TAN3-42.30	TAX3-42.30
3-C	42.40	1.6693	—	TAP3-42.40	TAM3-42.40	TAK3-42.40	TAN3-42.40	TAX3-42.40
3-C	42.50	1.6732	—	TAP3-42.50	TAM3-42.50	TAK3-42.50	TAN3-42.50	TAX3-42.50
3-C	42.60	1.6772	—	TAP3-42.60	TAM3-42.60	TAK3-42.60	TAN3-42.60	TAX3-42.60
3-C	42.70	1.6811	—	TAP3-42.70	TAM3-42.70	TAK3-42.70	TAN3-42.70	TAX3-42.70
3-C	42.80	1.6850	—	TAP3-42.80	TAM3-42.80	TAK3-42.80	TAN3-42.80	TAX3-42.80
3-C	42.86	1.6874	1-11/16	TAP3-42.86	TAM3-42.86	TAK3-42.86	TAN3-42.86	TAX3-42.86
3-C	42.90	1.6890	—	TAP3-42.90	TAM3-42.90	TAK3-42.90	TAN3-42.90	TAX3-42.90
3-C	43.00	1.6929	—	TAP3-43.00	TAM3-43.00	TAK3-43.00	TAN3-43.00	TAX3-43.00
3-C	43.10	1.6969	—	TAP3-43.10	TAM3-43.10	TAK3-43.10	TAN3-43.10	TAX3-43.10
3-C	43.20	1.7008	—	TAP3-43.20	TAM3-43.20	TAK3-43.20	TAN3-43.20	TAX3-43.20
3-C	43.30	1.7047	—	TAP3-43.30	TAM3-43.30	TAK3-43.30	TAN3-43.30	TAX3-43.30
3-C	43.40	1.7087	—	TAP3-43.40	TAM3-43.40	TAK3-43.40	TAN3-43.40	TAX3-43.40
3-C	43.50	1.7126	—	TAP3-43.50	TAM3-43.50	TAK3-43.50	TAN3-43.50	TAX3-43.50
3-C	43.60	1.7165	—	TAP3-43.60	TAM3-43.60	TAK3-43.60	TAN3-43.60	TAX3-43.60

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



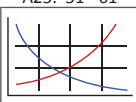
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 39 - 40

A25: 51 - 61



Sizes not shown are available upon request.
When ordering, please follow the example below:

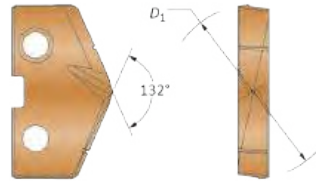
Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts

A25



Insert				Carbide				HSS
Series	D ₁ mm	D ₁ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-C	43.66	1.7189	1-23/32	TAP3-43.66	TAM3-43.66	TAK3-43.66	TAN3-43.66	TAX3-43.66
3-C	43.70	1.7205	—	TAP3-43.70	TAM3-43.70	TAK3-43.70	TAN3-43.70	TAX3-43.70
3-C	43.80	1.7244	—	TAP3-43.80	TAM3-43.80	TAK3-43.80	TAN3-43.80	TAX3-43.80
3-C	43.90	1.7283	—	TAP3-43.90	TAM3-43.90	TAK3-43.90	TAN3-43.90	TAX3-43.90
3-C	44.00	1.7323	—	TAP3-44.00	TAM3-44.00	TAK3-44.00	TAN3-44.00	TAX3-44.00
3-C	44.10	1.7362	—	TAP3-44.10	TAM3-44.10	TAK3-44.10	TAN3-44.10	TAX3-44.10
3-C	44.20	1.7402	—	TAP3-44.20	TAM3-44.20	TAK3-44.20	TAN3-44.20	TAX3-44.20
3-C	44.30	1.7441	—	TAP3-44.30	TAM3-44.30	TAK3-44.30	TAN3-44.30	TAX3-44.30
3-D	44.40	1.7480	—	TAP3-44.40	TAM3-44.40	TAK3-44.40	TAN3-44.40	TAX3-44.40
3-D	44.45	1.7500	1-3/4	TAP3-44.45	TAM3-44.45	TAK3-44.45	TAN3-44.45	TAX3-44.45
3-D	44.50	1.7520	—	TAP3-44.50	TAM3-44.50	TAK3-44.50	TAN3-44.50	TAX3-44.50
3-D	44.60	1.7559	—	TAP3-44.60	TAM3-44.60	TAK3-44.60	TAN3-44.60	TAX3-44.60
3-D	44.70	1.7598	—	TAP3-44.70	TAM3-44.70	TAK3-44.70	TAN3-44.70	TAX3-44.70
3-D	44.80	1.7638	—	TAP3-44.80	TAM3-44.80	TAK3-44.80	TAN3-44.80	TAX3-44.80
3-D	44.90	1.7677	—	TAP3-44.90	TAM3-44.90	TAK3-44.90	TAN3-44.90	TAX3-44.90
3-D	45.00	1.7717	—	TAP3-45.00	TAM3-45.00	TAK3-45.00	TAN3-45.00	TAX3-45.00
3-D	45.10	1.7756	—	TAP3-45.10	TAM3-45.10	TAK3-45.10	TAN3-45.10	TAX3-45.10
3-D	45.20	1.7795	—	TAP3-45.20	TAM3-45.20	TAK3-45.20	TAN3-45.20	TAX3-45.20
3-D	45.24	1.7811	1-25/32	TAP3-45.24	TAM3-45.24	TAK3-45.24	TAN3-45.24	TAX3-45.24
3-D	45.30	1.7835	—	TAP3-45.30	TAM3-45.30	TAK3-45.30	TAN3-45.30	TAX3-45.30
3-D	45.40	1.7874	—	TAP3-45.40	TAM3-45.40	TAK3-45.40	TAN3-45.40	TAX3-45.40
3-D	45.50	1.7913	—	TAP3-45.50	TAM3-45.50	TAK3-45.50	TAN3-45.50	TAX3-45.50
3-D	45.60	1.7953	—	TAP3-45.60	TAM3-45.60	TAK3-45.60	TAN3-45.60	TAX3-45.60
3-D	45.64	1.7969	1-51/64	TAP3-45.64	TAM3-45.64	TAK3-45.64	TAN3-45.64	TAX3-45.64

Inserts sold in multiples of 2.

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A Series Insert +
A Series Holder



C Series Insert +
A Series Holder



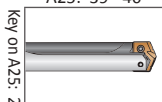
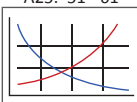
C Series Insert +
C Series Holder



A Series Insert +
C Series Holder

A25: 39 - 40

A25: 51 - 61



Sizes not shown are available upon request.

When ordering, please follow the example below:

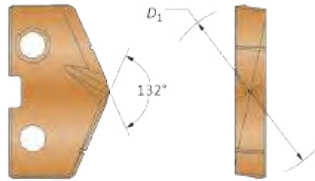
Metric: 13.16 mm, steel, 0 series = use Part No. **TAP0-13.16**

Imperial: 0.5180", steel, 0 series = use Part No. **TAP0-13.16**



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Replaceable Inserts



A25

Insert				Carbide				HSS
Series	D ₁ mm	D ₂ inch	Fractional Equivalent					
				Part No.	Part No.	Part No.	Part No.	Part No.
				P	M	K	N	X
3-D	45.70	1.7992	—	TAP3-45.70	TAM3-45.70	TAK3-45.70	TAN3-45.70	TAX3-45.70
3-D	45.80	1.8031	—	TAP3-45.80	TAM3-45.80	TAK3-45.80	TAN3-45.80	TAX3-45.80
3-D	45.90	1.8071	—	TAP3-45.90	TAM3-45.90	TAK3-45.90	TAN3-45.90	TAX3-45.90
3-D	46.00	1.8110	—	TAP3-46.00	TAM3-46.00	TAK3-46.00	TAN3-46.00	TAX3-46.00
3-D	46.04	1.8126	1-13/16	TAP3-46.04	TAM3-46.04	TAK3-46.04	TAN3-46.04	TAX3-46.04
3-D	46.10	1.8150	—	TAP3-46.10	TAM3-46.10	TAK3-46.10	TAN3-46.10	TAX3-46.10
3-D	46.20	1.8189	—	TAP3-46.20	TAM3-46.20	TAK3-46.20	TAN3-46.20	TAX3-46.20
3-D	46.30	1.8228	—	TAP3-46.30	TAM3-46.30	TAK3-46.30	TAN3-46.30	TAX3-46.30
3-D	46.40	1.8268	—	TAP3-46.40	TAM3-46.40	TAK3-46.40	TAN3-46.40	TAX3-46.40
3-D	46.50	1.8307	—	TAP3-46.50	TAM3-46.50	TAK3-46.50	TAN3-46.50	TAX3-46.50
3-D	46.60	1.8346	—	TAP3-46.60	TAM3-46.60	TAK3-46.60	TAN3-46.60	TAX3-46.60
3-D	46.70	1.8386	—	TAP3-46.70	TAM3-46.70	TAK3-46.70	TAN3-46.70	TAX3-46.70
3-D	46.80	1.8425	—	TAP3-46.80	TAM3-46.80	TAK3-46.80	TAN3-46.80	TAX3-46.80
3-D	46.83	1.8437	1-27/32	TAP3-46.83	TAM3-46.83	TAK3-46.83	TAN3-46.83	TAX3-46.83
3-D	46.90	1.8465	—	TAP3-46.90	TAM3-46.90	TAK3-46.90	TAN3-46.90	TAX3-46.90
3-D	47.00	1.8504	—	TAP3-47.00	TAM3-47.00	TAK3-47.00	TAN3-47.00	TAX3-47.00
3-D	47.10	1.8543	—	TAP3-47.10	TAM3-47.10	TAK3-47.10	TAN3-47.10	TAX3-47.10
3-D	47.20	1.8583	—	TAP3-47.20	TAM3-47.20	TAK3-47.20	TAN3-47.20	TAX3-47.20
3-D	47.30	1.8622	—	TAP3-47.30	TAM3-47.30	TAK3-47.30	TAN3-47.30	TAX3-47.30
3-D	47.40	1.8661	—	TAP3-47.40	TAM3-47.40	TAK3-47.40	TAN3-47.40	TAX3-47.40
3-D	47.50	1.8701	—	TAP3-47.50	TAM3-47.50	TAK3-47.50	TAN3-47.50	TAX3-47.50
3-D	47.60	1.8740	—	TAP3-47.60	TAM3-47.60	TAK3-47.60	TAN3-47.60	TAX3-47.60
3-D	47.63	1.8752	1-7/8	TAP3-47.63	TAM3-47.63	TAK3-47.63	TAN3-47.63	TAX3-47.63

Inserts sold in multiples of 2.

Sub Series Holders (A, B, C, D) - Sub series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength.

NOTE: Only specified sub series inserts should be used with equivalent or smaller sub series holders.



A Series Insert +
A Series Holder



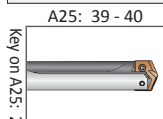
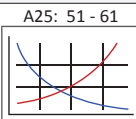
C Series Insert +
A Series Holder



C Series Insert +
C Series Holder



A Series Insert +
C Series Holder



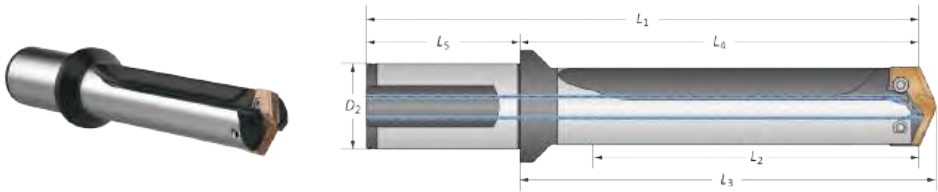
Sizes not shown are available upon request.
When ordering, please follow the example below:

Metric:	13.16 mm, steel, 0 series = use Part No. TAP0-13.16
Imperial:	0.5180", steel, 0 series = use Part No. TAP0-13.16



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Holders



A25



Metric Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	41.1	92.3	97.1	162.3	70.0	40	HTA3A01-40FM	HTA3A01-40CM
Stub	B	41.1	92.3	97.1	162.3	70.0	40	HTA3B01-40FM	HTA3B01-40CM
Stub	C	41.1	92.3	97.1	162.3	70.0	40	HTA3C01-40FM	HTA3C01-40CM
Stub	D	41.1	92.3	97.1	162.3	70.0	40	HTA3D01-40FM	HTA3D01-40CM
3xD	A	123.3	180.1	184.8	250.1	70.0	40	HTA3A03-40FM	HTA3A03-40CM
3xD	B	123.3	180.1	184.8	250.1	70.0	40	HTA3B03-40FM	HTA3B03-40CM
3xD	C	123.3	180.1	184.8	250.1	70.0	40	HTA3C03-40FM	HTA3C03-40CM
3xD	D	123.3	180.1	184.8	250.1	70.0	40	HTA3D03-40FM	HTA3D03-40CM
5xD	A	205.5	262.3	267.0	332.3	70.0	40	HTA3A05-40FM	HTA3A05-40CM
5xD	B	205.5	262.3	267.0	332.3	70.0	40	HTA3B05-40FM	HTA3B05-40CM
5xD	C	205.5	262.3	267.0	332.3	70.0	40	HTA3C05-40FM	HTA3C05-40CM
5xD	D	205.5	262.3	267.0	332.3	70.0	40	HTA3D05-40FM	HTA3D05-40CM
7xD	A	287.7	344.4	349.2	414.5	70.0	40	HTA3A07-40FM	HTA3A07-40CM
7xD	B	287.7	344.4	349.2	414.5	70.0	40	HTA3B07-40FM	HTA3B07-40CM
7xD	C	287.7	344.4	349.2	414.5	70.0	40	HTA3C07-40FM	HTA3C07-40CM
7xD	D	287.7	344.4	349.2	414.5	70.0	40	HTA3D07-40FM	HTA3D07-40CM
10xD	A	411.0	467.7	472.5	537.7	70.0	40	HTA3A10-40FM	HTA3A10-40CM
10xD	B	411.0	467.7	472.5	537.7	70.0	40	HTA3B10-40FM	HTA3B10-40CM
10xD	C	411.0	467.7	472.5	537.7	70.0	40	HTA3C10-40FM	HTA3C10-40CM
10xD	D	411.0	467.7	472.5	537.7	70.0	40	HTA3D10-40FM	HTA3D10-40CM
12xD	A	493.2	549.9	554.7	619.9	70.0	40	HTA3A12-40FM	HTA3A12-40CM
12xD	B	493.2	549.9	554.7	619.9	70.0	40	HTA3B12-40FM	HTA3B12-40CM
12xD	C	493.2	549.9	554.7	619.9	70.0	40	HTA3C12-40FM	HTA3C12-40CM
12xD	D	493.2	549.9	554.7	619.9	70.0	40	HTA3D12-40FM	HTA3D12-40CM
15xD	A	616.5	673.2	678.0	743.2	70.0	40	HTA3A15-40FM	HTA3A15-40CM
15xD	B	616.5	673.2	678.0	743.2	70.0	40	HTA3B15-40FM	HTA3B15-40CM
15xD	C	616.5	673.2	678.0	743.2	70.0	40	HTA3C15-40FM	HTA3C15-40CM
15xD	D	616.5	673.2	678.0	743.2	70.0	40	HTA3D15-40FM	HTA3D15-40CM

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

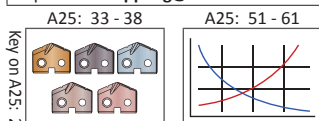
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

3 Series Holder Diameter Range

Sub Series	3A	3B	3C	3D
Metric (mm)	35.05 mm - 47.80 mm	37.80 mm - 47.80 mm	41.00 mm - 47.80 mm	44.40 mm - 47.80 mm
Imperial (inch)	1.3798" - 1.8820"	1.4880" - 1.8820"	1.6140" - 1.8820"	1.7479" - 1.8820"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



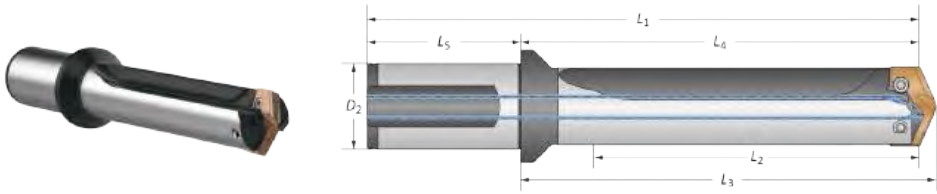
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



3 Series: 35.05 mm - 47.80 mm (1.3798" - 1.8820")

Holders



Imperial Holders

Length	Sub Series	Body				Shank		Part No.	
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	With Flat	Cylindrical
Stub	A	1.618	3.634	3.821	6.322	2.688	1-1/2	HTA3A01-150F	HTA3A01-150C
Stub	B	1.618	3.634	3.821	6.322	2.688	1-1/2	HTA3B01-150F	HTA3B01-150C
Stub	C	1.618	3.634	3.821	6.322	2.688	1-1/2	HTA3C01-150F	HTA3C01-150C
Stub	D	1.618	3.634	3.821	6.322	2.688	1-1/2	HTA3D01-150F	HTA3D01-150C
3xD	A	4.854	7.089	7.276	9.777	2.688	1-1/2	HTA3A03-150F	HTA3A03-150C
3xD	B	4.854	7.089	7.276	9.777	2.688	1-1/2	HTA3B03-150F	HTA3B03-150C
3xD	C	4.854	7.089	7.276	9.777	2.688	1-1/2	HTA3C03-150F	HTA3C03-150C
3xD	D	4.854	7.089	7.276	9.777	2.688	1-1/2	HTA3D03-150F	HTA3D03-150C
5xD	A	8.090	10.325	10.512	13.013	2.688	1-1/2	HTA3A05-150F	HTA3A05-150C
5xD	B	8.090	10.325	10.512	13.013	2.688	1-1/2	HTA3B05-150F	HTA3B05-150C
5xD	C	8.090	10.325	10.512	13.013	2.688	1-1/2	HTA3C05-150F	HTA3C05-150C
5xD	D	8.090	10.325	10.512	13.013	2.688	1-1/2	HTA3D05-150F	HTA3D05-150C
7xD	A	11.326	13.561	13.748	16.249	2.688	1-1/2	HTA3A07-150F	HTA3A07-150C
7xD	B	11.326	13.561	13.748	16.249	2.688	1-1/2	HTA3B07-150F	HTA3B07-150C
7xD	C	11.326	13.561	13.748	16.249	2.688	1-1/2	HTA3C07-150F	HTA3C07-150C
7xD	D	11.326	13.561	13.748	16.249	2.688	1-1/2	HTA3D07-150F	HTA3D07-150C
10xD	A	16.180	18.415	18.602	21.103	2.688	1-1/2	HTA3A10-150F	HTA3A10-150C
10xD	B	16.180	18.415	18.602	21.103	2.688	1-1/2	HTA3B10-150F	HTA3B10-150C
10xD	C	16.180	18.415	18.602	21.103	2.688	1-1/2	HTA3C10-150F	HTA3C10-150C
10xD	D	16.180	18.415	18.602	21.103	2.688	1-1/2	HTA3D10-150F	HTA3D10-150C
12xD	A	19.416	21.651	21.838	24.339	2.688	1-1/2	HTA3A12-150F	HTA3A12-150C
12xD	B	19.416	21.651	21.838	24.339	2.688	1-1/2	HTA3B12-150F	HTA3B12-150C
12xD	C	19.416	21.651	21.838	24.339	2.688	1-1/2	HTA3C12-150F	HTA3C12-150C
12xD	D	19.416	21.651	21.838	24.339	2.688	1-1/2	HTA3D12-150F	HTA3D12-150C
15xD	A	24.270	26.505	26.692	29.193	2.688	1-1/2	HTA3A15-150F	HTA3A15-150C
15xD	B	24.270	26.505	26.692	29.193	2.688	1-1/2	HTA3B15-150F	HTA3B15-150C
15xD	C	24.270	26.505	26.692	29.193	2.688	1-1/2	HTA3C15-150F	HTA3C15-150C
15xD	D	24.270	26.505	26.692	29.193	2.688	1-1/2	HTA3D15-150F	HTA3D15-150C

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

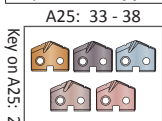
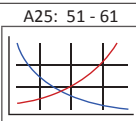
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

3 Series Holder Diameter Range

Sub Series	3A	3B	3C	3D
Metric (mm)	35.05 mm - 47.80 mm	37.80 mm - 47.80 mm	41.00 mm - 47.80 mm	44.40 mm - 47.80 mm
Imperial (inch)	1.3798" - 1.8820"	1.4880" - 1.8820"	1.6140" - 1.8820"	1.7479" - 1.8820"

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A25: 64** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



T-A Pro Drill Chamfer Holders

Overview & Formulas

A25



DRILL CHAMFER HOLDERS

- Provides a 1.0 mm (0.040") x 45° (minimum) chamfer for various thread specifications.
- Chamfer/edge break the top of the hole to reduce secondary deburring.
- Flute length of the tool being a minimum 2xD offers ability to pre-drill for extended length holders from 10xD to 15xD.

CHAMFER SOLUTIONS **MADE EASY.**

Preselected diameters for standard thread sizes offer easy user selection.

- 1 Select your thread size from the selection guide.
- 2 Select insert ISO geometry based on material.
- 3 Select shank designation.
- 4 Specify chamfer size and calculate step length and Z-depth.

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	11.10	TA#Y-9.50	HTAYAC45-XXXX
	1/2" - 13	12.70	TA#Y-10.80	HTAYAC45-XXXX
	9/16" - 12	14.27	TA#Z-12.20	HTAZAC45-XXXX
	5/8" - 11	15.88	TA#0-13.50	HTA0AC45-XXXX
	3/4" - 10	19.05	TA#0-16.50	HTA0CC45-XXXX
	7/8" - 9	22.23	TA#1-19.50	HTA1AC45-XXXX
	1" - 8	25.40	TA#1-22.30	HTA1CC45-XXXX
	1-1/8" - 7	28.58	TA#2-25.00	HTA2AC45-XXXX
	1-1/4" - 7	31.75	TA#2-28.20	HTA2CC45-XXXX
	1-3/8" - 6	34.93	TA#2-31.00	HTA2CC45-XXXX
	1-1/2" - 6	38.10	TA#2-34.00	HTA2CC45-XXXX
	1-3/4" - 5	44.45	TA#3-39.50	HTA3AC45-XXXX
	2" - 4.5	50.80	TA#3-45.00	HTA3CC45-XXXX

- Denotes insert ISO code (P (steel), M (stainless steel), K (cast iron), N (nonferrous), X (high-speed steel substrate)).

Z-Depth

Drill & Chamfer for Threads

$$\text{Z-Depth} = \left(\frac{\text{Thread Major } \phi - D_{1 \min}}{2} \right) + (L_s) + (\text{Chamfer Size})$$

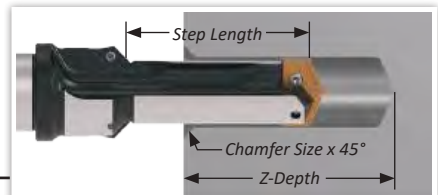
Drill and Chamfer for Edge Break

$$\text{Z-Depth} = \left(\frac{D_1 - D_{1 \min}}{2} \right) + (L_s) + (\text{Chamfer Size})$$

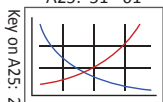
Step Length

$$\text{Step Length} = \left(\frac{D_1 - D_{1 \min}}{2} \right) + (L_s) - \left(\frac{D_1}{2(\tan(\text{Point Angle}/2))} \right)$$

NOTE: Standard point angle is 132°.



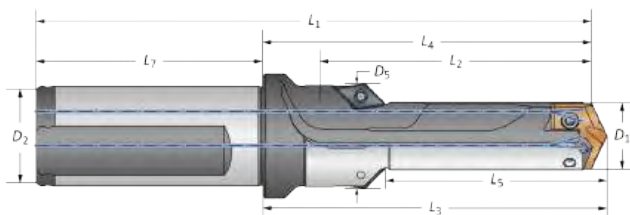
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T-A Pro Drill Chamfer Holders

Metric & Imperial Holders



A25

Series	Sub Series	D ₁ Range		Step		Body					Shank		Part No.	
		Min	Max	D ₅	L ₅	L ₂	L ₄	L ₃	L ₁	L ₇	D ₂		With Flat	Cylindrical
m	Y	A	9.50	11.09	18.7	31.8	44.6	59.3	61.3	109.3	50.0	20	HTAYAC45-20FM	HTAYAC45-20CM
	Z	A	11.10	12.69	20.3	38.1	50.0	65.1	67.1	115.1	50.0	20	HTAZAC45-20FM	HTAZAC45-20CM
	0	A	12.70	15.07	21.9	44.5	57.9	70.7	73.4	120.7	50.0	20	HTA0AC45-20FM	HTA0AC45-20CM
		C	15.08	17.64	24.3	50.8	61.9	76.3	79.0	126.3	50.0	20	HTA0CC45-20FM	HTA0CC45-20CM
	1	A	17.65	20.59	26.9	57.2	68.7	84.3	87.9	140.3	56.0	25	HTA1AC45-25FM	HTA1AC45-25CM
		C	20.60	24.37	29.9	63.5	74.4	90.0	93.6	146.1	56.0	25	HTA1CC45-25FM	HTA1CC45-25CM
	2	A	24.38	28.49	39.1	63.5	83.2	102.9	106.5	162.9	60.0	32	HTA2AC45-32FM	HTA2AC45-32CM
		C	28.50	35.04	43.2	82.6	99.8	120.3	123.9	180.3	60.0	32	HTA2CC45-32FM	HTA2CC45-32CM
	3	A	35.05	40.99	49.8	95.3	112.1	138.0	142.7	208.0	70.0	40	HTA3AC45-40FM	HTA3AC45-40CM
		C	41.00	47.80	55.7	108.0	123.7	152.0	156.7	222.0	70.0	40	HTA3CC45-40FM	HTA3CC45-40CM
i	Y	A	0.3739	0.4368	0.735	1.250	1.754	2.333	2.413	4.363	2.030	3/4	HTAYAC45-075F	HTAYAC45-075C
	Z	A	0.4369	0.4998	0.800	1.500	1.970	2.562	2.642	4.592	2.030	3/4	HTAZAC45-075F	HTAZAC45-075C
	0	A	0.4999	0.5935	0.864	1.750	2.278	2.782	2.889	4.812	2.030	3/4	HTA0AC45-075F	HTA0AC45-075C
		C	0.5936	0.6946	0.958	2.000	2.438	3.003	3.110	5.033	2.030	3/4	HTA0CC45-075F	HTA0CC45-075C
	1	A	0.6947	0.8108	1.060	2.250	2.705	3.320	3.460	5.600	2.280	1	HTA1AC45-100F	HTA1AC45-100C
		C	0.8109	0.9596	1.176	2.500	2.930	3.545	3.685	5.825	2.280	1	HTA1CC45-100F	HTA1CC45-100C
	2	A	0.9597	1.1218	1.540	2.500	3.277	4.051	4.191	6.331	2.280	1-1/4	HTA2AC45-125F	HTA2AC45-125C
		C	1.1219	1.3797	1.700	3.250	3.927	4.737	4.877	7.017	2.280	1-1/4	HTA2CC45-125F	HTA2CC45-125C
	3	A	1.3798	1.6139	1.960	3.750	4.412	5.432	5.619	8.120	2.688	1-1/2	HTA3AC45-150F	HTA3AC45-150C
		C	1.6140	1.8820	2.194	4.250	4.872	5.984	6.171	8.672	2.688	1-1/2	HTA3CC45-150F	HTA3CC45-150C

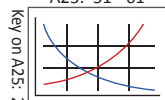
Chamfer Inserts (Wohlfahrt® 146 Geometry)

Y - 1 Series			2 - 3 Series			P	M	K	N	S	H
Part No.	TORX®	Driver	Part No.	TORX®	Driver						
397968WHC88	115676-1	8T-8	397591WHC88	115673-1	8T-15	●	●	—	●	●	—
397968WHC81	115676-1	8T-8	397591WHC81	115673-1	8T-15	●	—	●	—	—	●

● First Choice ● Second Choice

Pilot insert screws and drivers can be found on the respective series holder page.

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m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



Chamfer Thread Size & Pilot Insert

Metric

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	11.10	TA#Y-9.50	HTAYAC45-XXXX
	1/2" - 13	12.70	TA#Y-10.80	
	9/16" - 12	14.27	TA#Z-12.20	
	5/8" - 11	15.88	TA#0-13.50	
	3/4" - 10	19.05	TA#0-16.50	HTA0CC45-XXXX
	7/8" - 9	22.23	TA#1-19.50	HTA1AC45-XXXX
	1" - 8	25.40	TA#1-22.30	HTA1CC45-XXXX
	1-1/8" - 7	28.58	TA#2-25.00	HTA2AC45-XXXX
	1-1/4" - 7	31.75	TA#2-28.20	
	1-3/8" - 6	34.93	TA#2-31.00	HTA2CC45-XXXX
	1-1/2" - 6	38.10	TA#2-34.00	
	1-3/4" - 5	44.45	TA#3-39.50	HTA3AC45-XXXX
	2" - 4.5	50.80	TA#3-45.00	HTA3CC45-XXXX
	7/16" - 20	11.10	TA#Y-9.90	HTAYAC45-XXXX
Fine (UNF)	1/2" - 20	12.70	TA#Z-11.50	HTAZAC45-XXXX
	9/16" - 18	14.27	TA#0-12.90	HTA0AC45-XXXX
	5/8" - 18	15.88	TA#0-14.50	HTA0CC45-XXXX
	3/4" - 16	19.05	TA#0-17.50	HTA0CC45-XXXX
	7/8" - 14	22.23	TA#1-20.50	HTA1AC45-XXXX
	1" - 12	25.40	TA#1-23.30	HTA1CC45-XXXX
	1-1/8" - 12	28.58	TA#2-26.50	HTA2AC45-XXXX
	1-1/4" - 12	31.75	TA#2-29.70	HTA2CC45-XXXX
	1-3/8" - 12	34.93	TA#2-32.90	HTA2CC45-XXXX
	1-1/2" - 12	38.10	TA#2-36.00	
	7/16" - 28	11.10	TA#Y-10.20	HTAYAC45-XXXX
	1/2" - 28	12.70	TA#Z-11.80	HTAZAC45-XXXX
	9/16" - 24	14.27	TA#0-13.30	HTA0AC45-XXXX
	5/8" - 24	15.88	TA#0-14.90	HTA0AC45-XXXX
Extra Fine (UNEF)	3/4" - 20	19.05	TA#1-17.80	HTA1AC45-XXXX
	7/8" - 20	22.23	TA#1-21.00	HTA1CC45-XXXX
	1" - 20	25.40	TA#1-24.20	HTA2AC45-XXXX
	1-1/8" - 18	28.58	TA#2-27.20	
	1-1/4" - 18	31.75	TA#2-30.40	
	1-3/8" - 18	34.93	TA#2-33.60	
	1-1/2" - 18	38.10	TA#2-36.70	HTA3AC45-XXXX

ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (MC)	M11 x 1.5	11.00	TA#Y-9.50	HTAYAC45-XXXX
	M12 x 1.75	12.00	TA#Y-10.30	
	M14 x 2	14.00	TA#Z-12.00	
	M16 x 2	16.00	TA#0-14.00	
	M18 x 2.5	18.00	TA#0-15.50	HTA0AC45-XXXX
	M20 x 2.5	20.00	TA#0-17.50	HTA0CC45-XXXX
	M22 x 2.5	22.00	TA#1-19.50	HTA1AC45-XXXX
	M24 x 3	24.00	TA#1-21.00	HTA1CC45-XXXX
	M27 x 3	27.00	TA#1-24.00	HTA1CC45-XXXX
	M30 x 3.5	30.00	TA#2-26.50	HTA2AC45-XXXX
	M33 x 3.5	33.00	TA#2-29.50	HTA2CC45-XXXX
	M36 x 4	36.00	TA#2-32.00	
	M39 x 4	39.00	TA#2-35.00	
	M42 x 4.5	42.00	TA#3-37.50	
	M45 x 4.5	45.00	TA#3-40.50	HTA3AC45-XXXX
	M48 x 5	48.00	TA#3-43.00	HTA3CC45-XXXX
	M52 x 5	52.00	TA#3-47.00	

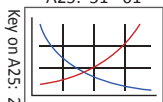
ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Fine (MF)	M11 x 1	11.00	TA#Y-10.00	HTAYAC45-XXXX
	M11 x 0.75	11.00	TA#Y-10.30	
	M12 x 1.5	12.00	TA#Y-10.50	
	M12 x 1.25	12.00	TA#Y-10.80	
	M12 x 1	12.00	TA#Y-11.00	HTAZAC45-XXXX
	M14 x 1.5	14.00	TA#Z-12.50	
	M14 x 1.25	14.00	TA#0-12.80	
	M14 x 1	14.00	TA#0-13.00	
	M16 x 1.5	16.00	TA#0-14.50	HTA0AC45-XXXX
	M16 x 1	16.00	TA#0-15.00	
	M18 x 2	18.00	TA#0-16.00	HTA0CC45-XXXX
	M18 x 1.5	18.00	TA#0-16.50	
	M18 x 1	18.00	TA#0-17.00	
	M20 x 2	20.00	TA#1-18.00	HTA1AC45-XXXX
	M20 x 1.5	20.00	TA#1-18.50	
	M20 x 1	20.00	TA#1-19.00	
	M22 x 2	22.00	TA#1-20.00	
	M22 x 1.5	22.00	TA#1-20.50	HTA1CC45-XXXX
	M22 x 1	22.00	TA#1-21.00	
	M24 x 2	24.00	TA#1-22.00	
	M24 x 1.5	24.00	TA#1-22.50	
Fine (MF)	M24 x 1	24.00	TA#1-23.00	HTA2AC45-XXXX
	M27 x 2	27.00	TA#2-25.00	
	M27 x 1.5	27.00	TA#2-25.50	
	M27 x 1	27.00	TA#2-26.00	
	M30 x 3	30.00	TA#2-27.00	HTA2CC45-XXXX
	M30 x 2	30.00	TA#2-28.00	
	M30 x 1.5	30.00	TA#2-28.50	
	M30 x 1	30.00	TA#2-29.00	
	M33 x 3	33.00	TA#2-30.00	HTA2CC45-XXXX
	M33 x 2	33.00	TA#2-31.00	
	M33 x 1.5	33.00	TA#2-31.50	
	M36 x 3	36.00	TA#2-33.00	
	M36 x 2	36.00	TA#2-34.00	HTA3AC45-XXXX
	M36 x 1.5	36.00	TA#2-34.50	
	M39 x 3	39.00	TA#3-36.00	
	M39 x 2	39.00	TA#3-37.00	
	M39 x 1.5	39.00	TA#3-37.50	HTA3AC45-XXXX
	M42 x 4	42.00	TA#3-38.00	
	M42 x 3	42.00	TA#3-39.00	
	M42 x 2	42.00	TA#3-40.00	
Fine (MF)	M42 x 1.5	42.00	TA#3-40.50	HTA3CC45-XXXX
	M45 x 4	45.00	TA#3-41.00	
	M45 x 3	45.00	TA#3-42.00	
	M45 x 2	45.00	TA#3-43.00	
	M45 x 1.5	45.00	TA#3-43.50	HTA3CC45-XXXX
	M48 x 4	48.00	TA#3-44.00	
	M48 x 3	48.00	TA#3-45.00	
	M48 x 2	48.00	TA#3-46.00	
	M48 x 1.5	48.00	TA#3-46.50	

NOTE: All diameters listed are for cutting taps and thread mills.

- Denotes insert ISO code (P (steel), M (stainless steel), K (cast iron), N (nonferrous), X (high-speed steel substrate)).

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Chamfer Thread Size & Pilot Insert

Metric

American National Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Tapered without Reamer (NPT)	1/4" - 18	13.72	TA#Z-11.11	HTAZAC45-XXXX
	3/8" - 18	17.15	TA#0-14.60	HTA0AC45-XXXX
	1/2" - 14	21.34	TA#1-17.90	HTA1AC45-XXXX
	3/4" - 14	26.67	TA#1-23.30	HTA1CC45-XXXX
	1" - 11.5	33.40	TA#2-29.00	HTA2CC45-XXXX
	1-1/4" - 11.5	42.16	TA#3-37.70	HTA3AC45-XXXX
Tapered with Reamer (NPT)	1-1/2" - 11.5	48.26	TA#3-43.70	HTA3CC45-XXXX
	1/4" - 18	13.72	TA#Y-10.70	HTAYAC45-XXXX
	3/8" - 18	17.15	TA#0-14.20	HTA0AC45-XXXX
	1/2" - 14	21.34	TA#0-17.50	HTA0CC45-XXXX
	3/4" - 14	26.67	TA#1-22.90	HTA1CC45-XXXX
	1" - 11.5	33.40	TA#2-28.60	HTA2CC45-XXXX
Straight (NPS)	1-1/4" - 11.5	42.16	TA#3-37.30	HTA3AC45-XXXX
	1-1/2" - 11.5	48.26	TA#3-43.30	HTA3CC45-XXXX
	1/4" - 18	13.36	TA#Z-11.50	HTAZAC45-XXXX
	3/8" - 18	16.76	TA#0-15.00	HTA0AC45-XXXX
	1/2" - 14	20.90	TA#1-18.30	HTA1AC45-XXXX
	3/4" - 14	26.26	TA#1-23.70	HTA1CC45-XXXX
	1" - 11.5	32.84	TA#2-29.40	HTA2CC45-XXXX
	1-1/4" - 11.5	41.61	TA#3-38.10	HTA3AC45-XXXX
	1-1/2" - 11.5	47.68	TA#3-44.10	HTA3CC45-XXXX

British Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (BSW)	1/2" - 12	12.70	TA#Y-10.50	HTAYAC45-XXXX
	9/16" - 12	14.29	TA#Z-12.00	HTAZAC45-XXXX
	5/8" - 11	15.88	TA#0-13.40	HTA0AC45-XXXX
	11/16" - 11	17.46	TA#0-14.80	HTA0CC45-XXXX
	3/4" - 10	19.05	TA#0-16.40	HTA0CC45-XXXX
	7/8" - 9	22.23	TA#1-19.25	HTA1AC45-XXXX
	1" - 8	25.40	TA#1-22.00	HTA1CC45-XXXX
	1-1/8" - 7	28.58	TA#2-24.70	HTA2AC45-XXXX
	1-1/4" - 7	31.75	TA#2-27.50	HTA2CC45-XXXX
	1-3/8" - 6	34.93	TA#2-30.00	HTA2CC45-XXXX
	1-1/2" - 6	38.10	TA#2-33.50	HTA2CC45-XXXX
	1-3/4" - 5	44.45	TA#3-39.00	HTA3AC45-XXXX
	2" - 4.5	50.80	TA#3-44.50	HTA3CC45-XXXX
	1/2" - 16	12.70	TA#Y-11.00	HTAYAC45-XXXX
	9/16" - 16	14.29	TA#Z-12.60	HTAZAC45-XXXX
	5/8" - 14	15.88	TA#0-14.00	HTA0AC45-XXXX
Fine (BSF)	11/16" - 14	17.46	TA#0-15.50	HTA0CC45-XXXX
	3/4" - 12	19.05	TA#0-16.80	HTA0CC45-XXXX
	7/8" - 11	22.23	TA#1-19.80	HTA1AC45-XXXX
	1" - 10	25.40	TA#1-22.70	HTA1CC45-XXXX
	1-1/8" - 9	28.58	TA#2-25.50	HTA2AC45-XXXX
	1-1/4" - 9	31.75	TA#2-28.50	HTA2CC45-XXXX
	1-3/8" - 8	34.93	TA#2-31.50	HTA2CC45-XXXX
	1-1/2" - 8	38.10	TA#2-34.50	HTA2CC45-XXXX

British Standard Pipe Threads

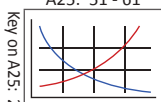
Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Rc Series without Reamer (BSPT)	1/4" - 19	13.16	TA#Y-11.00	HTAYAC45-XXXX
	3/8" - 19	16.66	TA#0-14.50	HTA0AC45-XXXX
	1/2" - 14	20.99	TA#1-18.10	HTA1AC45-XXXX
	3/4" - 14	26.44	TA#1-23.50	HTA1CC45-XXXX
	1" - 11	33.25	TA#2-29.60	HTA2CC45-XXXX
	1-1/4" - 11	41.91	TA#3-38.10	HTA3AC45-XXXX
Rc Series with Reamer (BSPT)	1-1/2" - 11	47.80	TA#3-44.00	HTA3CC45-XXXX
	1/4" - 19	13.16	TA#Y-10.60	HTAYAC45-XXXX
	3/8" - 19	16.66	TA#0-14.10	HTA0AC45-XXXX
	1/2" - 14	20.99	TA#1-17.70	HTA1AC45-XXXX
	3/4" - 14	26.44	TA#1-23.10	HTA1CC45-XXXX
	1" - 11	33.25	TA#2-29.20	HTA2CC45-XXXX
Rp Series (BSPT)	1-1/4" - 11	41.91	TA#3-37.70	HTA3AC45-XXXX
	1-1/2" - 11	47.80	TA#3-43.60	HTA3CC45-XXXX
	1/4" - 19	13.16	TA#Z-11.50	HTAZAC45-XXXX
	3/8" - 19	16.66	TA#0-15.00	HTA0AC45-XXXX
	1/2" - 14	20.96	TA#1-18.50	HTA1AC45-XXXX
	5/8" - 14	21.96	TA#1-20.50	HTA1CC45-XXXX
G Series (BSPP)	3/4" - 14	26.44	TA#1-24.00	HTA1CC45-XXXX
	1" - 11	33.25	TA#2-30.30	HTA2CC45-XXXX
	1-1/4" - 11	41.91	TA#3-39.00	HTA3AC45-XXXX
	1-1/2" - 11	47.80	TA#3-45.00	HTA3CC45-XXXX
	1/4" - 19	13.16	TA#Z-11.80	HTAZAC45-XXXX
	3/8" - 19	16.66	TA#0-15.25	HTA0CC45-XXXX
	1/2" - 14	20.96	TA#1-19.00	HTA1AC45-XXXX
	5/8" - 14	26.44	TA#1-21.00	HTA1CC45-XXXX
	3/4" - 14	26.44	TA#2-24.50	HTA2AC45-XXXX
	7/8" - 14	31.24	TA#2-28.20	HTA2CC45-XXXX
	1" - 11	33.25	TA#2-30.75	HTA2CC45-XXXX
	1-1/8" - 11	34.25	TA#3-35.50	HTA3AC45-XXXX
	1-1/4" - 11	41.91	TA#3-39.50	HTA3AC45-XXXX
	1-3/8" - 11	42.91	TA#3-41.90	HTA3CC45-XXXX
	1-1/2" - 11	47.80	TA#3-45.20	HTA3CC45-XXXX

A25

NOTE: All diameters listed are for cutting taps and thread mills.

- Denotes insert ISO code (P (steel), M (stainless steel), K (cast iron), N (nonferrous), X (high-speed steel substrate)).

A25: 51 - 61





Chamfer Thread Size & Pilot Insert

Imperial

Unified Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (UNC)	7/16" - 14	0.4370	TA#Y-9.50	HTAYAC45-XXXX
	1/2" - 13	0.5000	TA#Y-10.72	HTAYAC45-XXXX
	9/16" - 12	0.5620	TA#Z-12.30	HTAZAC45-XXXX
	5/8" - 11	0.6250	TA#0-13.49	HTA0AC45-XXXX
	3/4" - 10	0.7500	TA#0-16.67	HTA0CC45-XXXX
	7/8" - 9	0.8750	TA#1-19.45	HTA1AC45-XXXX
	1" - 8	1.0000	TA#1-22.23	HTA1CC45-XXXX
	1-1/8" - 7	1.1250	TA#2-25.00	HTA2AC45-XXXX
	1-1/4" - 7	1.2500	TA#2-28.17	HTA2AC45-XXXX
	1-3/8" - 6	1.3750	TA#2-30.96	HTA2CC45-XXXX
	1-1/2" - 6	1.5000	TA#2-34.13	HTA2CC45-XXXX
	1-3/4" - 5	1.7500	TA#3-39.29	HTA3AC45-XXXX
	2" - 4.5	2.0000	TA#3-45.24	HTA3CC45-XXXX
	7/16" - 20	0.4370	TA#Y-9.92	HTAYAC45-XXXX
Fine (UNF)	1/2" - 20	0.5000	TA#Z-11.51	HTAZAC45-XXXX
	9/16" - 18	0.5620	TA#0-12.90	HTA0AC45-XXXX
	5/8" - 18	0.6250	TA#0-14.50	HTA0CC45-XXXX
	3/4" - 16	0.7500	TA#0-17.46	HTA0CC45-XXXX
	7/8" - 14	0.8750	TA#1-20.50	HTA1AC45-XXXX
	1" - 12	1.0000	TA#1-23.42	HTA1CC45-XXXX
	1-1/8" - 12	1.1250	TA#2-26.59	HTA2AC45-XXXX
	1-1/4" - 12	1.2500	TA#2-29.70	HTA2CC45-XXXX
	1-3/8" - 12	1.3750	TA#2-32.90	HTA2CC45-XXXX
	1-1/2" - 12	1.5000	TA#2-36.00	HTA3AC45-XXXX
Extra Fine (UNEF)	7/16" - 28	0.4370	TA#Y-10.20	HTAYAC45-XXXX
	1/2" - 28	0.5000	TA#Z-11.80	HTAZAC45-XXXX
	9/16" - 24	0.5620	TA#0-13.30	HTA0AC45-XXXX
	5/8" - 24	0.6250	TA#0-14.90	HTA0AC45-XXXX
	3/4" - 20	0.7500	TA#1-17.86	HTA1AC45-XXXX
	7/8" - 20	0.8750	TA#1-21.00	HTA1CC45-XXXX
	1" - 20	1.0000	TA#1-24.20	HTA1CC45-XXXX
	1-1/8" - 18	1.1250	TA#2-27.20	HTA2AC45-XXXX
	1-1/4" - 18	1.2500	TA#2-30.40	HTA2CC45-XXXX
	1-3/8" - 18	1.3750	TA#2-33.60	HTA2CC45-XXXX
	1-1/2" - 18	1.5000	TA#2-36.70	HTA3AC45-XXXX

ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (MC)	M11 x 1.5	0.4331	TA#Y-9.50	HTAYAC45-XXXX
	M12 x 1.75	0.4724	TA#Y-10.30	HTAYAC45-XXXX
	M14 x 2	0.5512	TA#Z-12.00	HTAZAC45-XXXX
	M16 x 2	0.6299	TA#0-14.00	HTA0AC45-XXXX
	M18 x 2.5	0.7087	TA#0-15.50	HTA0CC45-XXXX
	M20 x 2.5	0.7874	TA#0-17.50	HTA0CC45-XXXX
	M22 x 2.5	0.8661	TA#1-19.50	HTA1AC45-XXXX
	M24 x 3	0.9449	TA#1-21.00	HTA1CC45-XXXX
	M27 x 3	1.0630	TA#1-24.00	HTA1CC45-XXXX
	M30 x 3.5	1.1811	TA#2-26.50	HTA2AC45-XXXX
	M33 x 3.5	1.2992	TA#2-29.50	HTA2CC45-XXXX
	M36 x 4	1.4173	TA#2-32.00	HTA2CC45-XXXX
	M39 x 4	1.5354	TA#2-35.00	HTA2CC45-XXXX
	M42 x 4.5	1.6535	TA#3-37.50	HTA3AC45-XXXX
	M45 x 4.5	1.7717	TA#3-40.50	HTA3AC45-XXXX
	M48 x 5	1.8898	TA#3-43.00	HTA3CC45-XXXX
	M52 x 5	2.0472	TA#3-47.00	HTA3CC45-XXXX

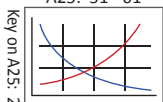
ISO Metric Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Fine (MF)	M11 x 1	0.4331	TA#Y-10.00	HTAYAC45-XXXX
	M11 x 0.75	0.4331	TA#Y-10.30	HTAYAC45-XXXX
	M12 x 1.5	0.4724	TA#Y-10.50	HTAYAC45-XXXX
	M12 x 1.25	0.4724	TA#Y-10.80	HTAYAC45-XXXX
	M12 x 1	0.4724	TA#Y-11.00	HTAYAC45-XXXX
	M14 x 1.5	0.5512	TA#Z-12.50	HTAZAC45-XXXX
	M14 x 1.25	0.5512	TA#0-12.80	HTAZAC45-XXXX
	M14 x 1	0.5512	TA#0-13.00	HTA0AC45-XXXX
	M16 x 1.5	0.6299	TA#0-14.50	HTA0AC45-XXXX
	M16 x 1	0.6299	TA#0-15.00	HTA0AC45-XXXX
	M18 x 2	0.7087	TA#0-16.00	HTA0CC45-XXXX
	M18 x 1.5	0.7087	TA#0-16.50	HTA0CC45-XXXX
	M18 x 1	0.7087	TA#0-17.00	HTA0CC45-XXXX
	M20 x 2	0.7874	TA#1-18.00	HTA1AC45-XXXX
	M20 x 1.5	0.7874	TA#1-18.50	HTA1AC45-XXXX
	M20 x 1	0.7874	TA#1-19.00	HTA1AC45-XXXX
	M22 x 2	0.8661	TA#1-20.00	HTA1AC45-XXXX
	M22 x 1.5	0.8661	TA#1-20.50	HTA1AC45-XXXX
	M22 x 1	0.8661	TA#1-21.00	HTA1AC45-XXXX
	M24 x 2	0.9449	TA#1-22.00	HTA1CC45-XXXX
Fine (MF)	M24 x 1.5	0.9449	TA#1-22.50	HTA1CC45-XXXX
	M24 x 1	0.9449	TA#1-23.00	HTA1CC45-XXXX
	M27 x 2	1.0630	TA#2-25.00	HTA2AC45-XXXX
	M27 x 1.5	1.0630	TA#2-25.50	HTA2AC45-XXXX
	M27 x 1	1.0630	TA#2-26.00	HTA2AC45-XXXX
	M30 x 3	1.1811	TA#2-27.00	HTA2AC45-XXXX
	M30 x 2	1.1811	TA#2-28.00	HTA2AC45-XXXX
	M30 x 1.5	1.1811	TA#2-28.50	HTA2AC45-XXXX
	M30 x 1	1.1811	TA#2-29.00	HTA2AC45-XXXX
	M33 x 3	1.2992	TA#2-30.00	HTA2CC45-XXXX
	M33 x 2	1.2992	TA#2-31.00	HTA2CC45-XXXX
	M33 x 1.5	1.2992	TA#2-31.50	HTA2CC45-XXXX
	M36 x 3	1.4173	TA#2-33.00	HTA2CC45-XXXX
	M36 x 2	1.4173	TA#2-34.00	HTA2CC45-XXXX
	M36 x 1.5	1.4173	TA#2-34.50	HTA2CC45-XXXX
	M39 x 3	1.5354	TA#3-36.00	HTA3AC45-XXXX
	M39 x 2	1.5354	TA#3-37.00	HTA3AC45-XXXX
	M39 x 1.5	1.5354	TA#3-37.50	HTA3AC45-XXXX
	M42 x 4	1.6535	TA#3-38.00	HTA3AC45-XXXX
	M42 x 3	1.6535	TA#3-39.00	HTA3AC45-XXXX
	M42 x 2	1.6535	TA#3-40.00	HTA3AC45-XXXX
	M42 x 1.5	1.6535	TA#3-40.50	HTA3AC45-XXXX
	M45 x 4	1.7717	TA#3-41.00	HTA3CC45-XXXX
	M45 x 3	1.7717	TA#3-42.00	HTA3CC45-XXXX
	M45 x 2	1.7717	TA#3-43.00	HTA3CC45-XXXX
	M45 x 1.5	1.7717	TA#3-43.50	HTA3CC45-XXXX
	M48 x 4	1.8898	TA#3-44.00	HTA3CC45-XXXX
	M48 x 3	1.8898	TA#3-45.00	HTA3CC45-XXXX
	M48 x 2	1.8898	TA#3-46.00	HTA3CC45-XXXX
	M48 x 1.5	1.8898	TA#3-46.50	HTA3CC45-XXXX

NOTE: All diameters listed are for cutting taps and thread mills.

- Denotes insert ISO code (P (steel), M (stainless steel), K (cast iron), N (nonferrous), X (high-speed steel substrate)).

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Chamfer Thread Size & Pilot Insert

Imperial

American National Standard Pipe Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Tapered without Reamer (NPT)	1/4" - 18	0.5400	TA#Z-11.11	HTAZAC45-XXXX
	3/8" - 18	0.6750	TA#0-14.68	HTA0AC45-XXXX
	1/2" - 14	0.8400	TA#1-17.86	HTA1AC45-XXXX
	3/4" - 14	1.0500	TA#1-23.02	HTA1CC45-XXXX
	1" - 11.5	1.3150	TA#2-28.97	HTA2CC45-XXXX
	1-1/4" - 11.5	1.6600	TA#3-37.70	HTA3AC45-XXXX
Tapered with Reamer (NPT)	1-1/2" - 11.5	1.9000	TA#3-43.66	HTA3CC45-XXXX
	1/4" - 18	0.5400	TA#Y-10.72	HTAYAC45-XXXX
	3/8" - 18	0.6750	TA#0-14.29	HTA0AC45-XXXX
	1/2" - 14	0.8400	TA#0-17.46	HTA0CC45-XXXX
	3/4" - 14	1.0500	TA#1-22.62	HTA1CC45-XXXX
	1" - 11.5	1.3150	TA#2-28.58	HTA2CC45-XXXX
Straight (NPS)	1-1/4" - 11.5	1.6600	TA#3-37.31	HTA3AC45-XXXX
	1-1/2" - 11.5	1.9000	TA#3-43.26	HTA3CC45-XXXX
	1/4" - 18	0.5260	TA#Z-11.51	HTAZAC45-XXXX
	3/8" - 18	0.6600	TA#0-15.08	HTA0CC45-XXXX
	1/2" - 14	0.8230	TA#1-18.26	HTA1AC45-XXXX
	3/4" - 14	1.0340	TA#1-23.42	HTA1CC45-XXXX
	1" - 11.5	1.2930	TA#2-29.37	HTA2CC45-XXXX
	1-1/4" - 11.5	1.6380	TA#3-38.10	HTA3AC45-XXXX
	1-1/2" - 11.5	1.8770	TA#3-44.05	HTA3CC45-XXXX

British Standard Threads

Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Coarse (BSW)	1/2" - 12	0.5000	TA#Y-10.32	HTAYAC45-XXXX
	9/16" - 12	0.5626	TA#Z-11.91	HTAZAC45-XXXX
	5/8" - 11	0.6252	TA#0-13.10	HTA0AC45-XXXX
	11/16" - 11	0.6874	TA#0-14.68	HTA0AC45-XXXX
	3/4" - 10	0.7500	TA#0-16.27	HTA0CC45-XXXX
	7/8" - 9	0.8752	TA#1-19.05	HTA1AC45-XXXX
	1" - 8	1.0000	TA#1-21.83	HTA1CC45-XXXX
	1-1/8" - 7	1.1252	TA#2-24.61	HTA2AC45-XXXX
	1-1/4" - 7	1.2500	TA#2-27.38	HTA2AC45-XXXX
	1-3/8" - 6	1.3752	TA#2-29.77	HTA2CC45-XXXX
	1-1/2" - 6	1.5000	TA#2-33.34	HTA2CC45-XXXX
	1-3/4" - 5	1.7500	TA#3-38.50	HTA3AC45-XXXX
	2" - 4.5	2.0000	TA#3-44.05	HTA3CC45-XXXX
	1/2" - 16	0.5000	TA#Z-11.11	HTAZAC45-XXXX
	9/16" - 16	0.5626	TA#0-12.70	HTA0AC45-XXXX
	5/8" - 14	0.6252	TA#0-13.89	HTA0AC45-XXXX
Fine (BSF)	11/16" - 14	0.6874	TA#0-15.48	HTA0CC45-XXXX
	3/4" - 12	0.7500	TA#0-16.67	HTA0CC45-XXXX
	7/8" - 11	0.8752	TA#1-19.45	HTA1AC45-XXXX
	1" - 10	1.0000	TA#1-22.62	HTA1CC45-XXXX
	1-1/8" - 9	1.1252	TA#2-25.40	HTA2AC45-XXXX
	1-1/4" - 9	1.2500	TA#2-28.58	HTA2AC45-XXXX
	1-3/8" - 8	1.3752	TA#2-31.35	HTA2CC45-XXXX
	1-1/2" - 8	1.5000	TA#2-34.58	HTA2CC45-XXXX

British Standard Pipe Threads

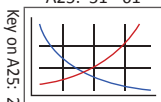
Series	Thread Size	Thread Major	Pilot Insert No.	Holder Part No.
Rc Series without Reamer (BSPT)	1/4" - 19	0.5181	TA#Z-11.11	HTAZAC45-XXXX
	3/8" - 19	0.6559	TA#0-14.68	HTA0AC45-XXXX
	1/2" - 14	0.8264	TA#1-18.26	HTA1AC45-XXXX
	3/4" - 14	1.0409	TA#1-23.81	HTA1CC45-XXXX
	1" - 11	1.3091	TA#2-29.77	HTA2CC45-XXXX
	1-1/4" - 11	1.6500	TA#3-38.50	HTA3AC45-XXXX
Rc Series with Reamer (BSPT)	1-1/2" - 11	1.8819	TA#3-44.45	HTA3CC45-XXXX
	1/4" - 19	0.5181	TA#Y-10.72	HTAYAC45-XXXX
	3/8" - 19	0.6559	TA#0-14.29	HTA0AC45-XXXX
	1/2" - 14	0.8264	TA#1-17.86	HTA1AC45-XXXX
	3/4" - 14	1.0409	TA#1-23.42	HTA1CC45-XXXX
	1" - 11	1.3091	TA#2-29.37	HTA2CC45-XXXX
Rp Series (BSPT)	1-1/4" - 11	1.6500	TA#3-38.10	HTA3AC45-XXXX
	1-1/2" - 11	1.8819	TA#3-44.05	HTA3CC45-XXXX
	1/4" - 19	0.5181	TA#Z-11.51	HTAZAC45-XXXX
	3/8" - 19	0.6559	TA#0-15.08	HTA0CC45-XXXX
	1/2" - 14	0.8252	TA#1-19.05	HTA1AC45-XXXX
	5/8" - 14	0.8646	TA#1-20.64	HTA1CC45-XXXX
G Series (BSPP)	3/4" - 14	1.0409	TA#1-21.03	HTA1CC45-XXXX
	1" - 11	1.3091	TA#2-30.56	HTA2CC45-XXXX
	1-1/4" - 11	1.6500	TA#3-39.29	HTA3AC45-XXXX
	1-1/2" - 11	1.8819	TA#3-45.24	HTA3CC45-XXXX
	1/4" - 19	0.5181	TA#Z-11.51	HTAZAC45-XXXX
	3/8" - 19	0.6559	TA#0-15.08	HTA0CC45-XXXX
	1/2" - 14	0.8252	TA#1-19.05	HTA1AC45-XXXX
	5/8" - 14	1.0409	TA#1-21.03	HTA1CC45-XXXX
	3/4" - 14	1.0409	TA#2-24.61	HTA2AC45-XXXX
	7/8" - 14	1.2299	TA#2-28.17	HTA2AC45-XXXX
	1" - 11	1.3091	TA#2-30.56	HTA2CC45-XXXX
	1-1/8" - 11	1.3484	TA#3-35.32	HTA3AC45-XXXX
	1-1/4" - 11	1.6500	TA#3-39.29	HTA3AC45-XXXX
	1-3/8" - 11	1.6894	TA#3-41.67	HTA3CC45-XXXX
	1-1/2" - 11	1.8819	TA#3-45.24	HTA3CC45-XXXX

A25

NOTE: All diameters listed are for cutting taps and thread mills.

- Denotes insert ISO code (P (steel), M (stainless steel), K (cast iron), N (nonferrous), X (high-speed steel substrate)).

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T-A Pro Form Inserts

Countersink Specs

T-A Pro Drill Form Inserts

TA	C	F	0	—	90DEG
	Insert Substrate	Style	Series		Form Type
	C = Carbide X = High-speed steel (cobalt)	F = Form Insert	Y Z 0 1 2 3		82DEG = 82° form angle 90DEG = 90° form angle 100DEG = 100° form angle

A25

Metric Screw Countersinks

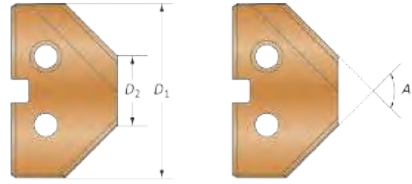
A ₁ (Form)	Insert			Metric Screw Sizes										
	Series	D ₂ - D ₁		M3	M4	M5	M6	M8	M10	M12	M14	M16	M20	M24
90°	Y	3.05 - 11.09	0.1200 - 0.4368											
	Z	3.05 - 12.69	0.1200 - 0.4998											
	0	6.22 - 17.64	0.2450 - 0.6946											
	1	10.29 - 24.37	0.4050 - 0.9596											
	2	12.70 - 35.04	0.5000 - 1.3797											
	3	15.88 - 47.80	0.6250 - 1.8820											

Imperial Screw Countersinks

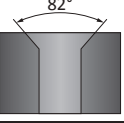
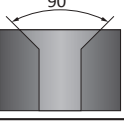
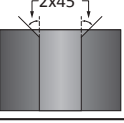
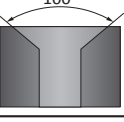
A ₁ (Form)	Insert			Imperial Screw Sizes												
	Series	mm	D ₂ - D ₁ inch	#6	#8	#10	#12	1/4"	5/16"	3/8"	7/16"	1/2"	9/16"	5/8"	3/4"	7/8"
82°	Y	3.43 - 11.09	0.1350 - 0.4368													
	Z	3.43 - 12.69	0.1350 - 0.4998													
	0	6.22 - 17.64	0.2450 - 0.6946													
	1	9.53 - 24.37	0.3750 - 0.9596													
	2	14.22 - 35.04	0.5600 - 1.3797													
	3	15.88 - 47.80	0.6250 - 1.8820													
100°	Y	3.30 - 11.09	0.1300 - 0.4368													
	Z	3.30 - 12.69	0.1300 - 0.4998													
	0	6.10 - 17.64	0.2400 - 0.6946													
	1	8.89 - 24.37	0.3500 - 0.9596													
	2	12.70 - 35.04	0.5000 - 1.3797													
	3	15.88 - 47.80	0.6250 - 1.8820													

T-A Pro Form Inserts

Countersink and Chamfer Inserts



Countersink and Chamfer Form Inserts

A ₁ (Form)		Insert			Part No.		Stub Holders*
		Series	D ₂ - D ₁		 Carbide	 HSS	
Countersink	Chamfer		mm	inch	AM300®	AM200®	Part No.
	—	Y	3.43 - 11.09	0.1350 - 0.4368	TACFY-82DEG	TAXFY-82DEG	HTAYx01-xxxx
		Z	3.43 - 12.69	0.1350 - 0.4998	TACFZ-82DEG	TAXFZ-82DEG	HTAZx01-xxxx
		0	6.22 - 17.64	0.2450 - 0.6946	TACF0-82DEG	TAXF0-82DEG	HTA0x01-xxxx
		1	9.53 - 24.37	0.3750 - 0.9596	TACF1-82DEG	TAXF1-82DEG	HTA1x01-xxxx
		2	14.22 - 35.04	0.5600 - 1.3797	TACF2-82DEG	TAXF2-82DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-82DEG	TAXF3-82DEG	HTA3x01-xxxx
		Y	3.05 - 11.09	0.1200 - 0.4368	TACFY-90DEG	TAXFY-90DEG	HTAYx01-xxxx
		Z	3.05 - 12.69	0.1200 - 0.4998	TACFZ-90DEG	TAXFZ-90DEG	HTAZx01-xxxx
		0	6.22 - 17.64	0.2450 - 0.6946	TACF0-90DEG	TAXF0-90DEG	HTA0x01-xxxx
		1	10.29 - 24.37	0.4050 - 0.9596	TACF1-90DEG	TAXF1-90DEG	HTA1x01-xxxx
	—	2	12.70 - 35.04	0.5000 - 1.3797	TACF2-90DEG	TAXF2-90DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-90DEG	TAXF3-90DEG	HTA3x01-xxxx
		Y	3.30 - 11.09	0.1300 - 0.4368	TACFY-100DEG	TAXFY-100DEG	HTAYx01-xxxx
		Z	3.30 - 12.69	0.1300 - 0.4998	TACFZ-100DEG	TAXFZ-100DEG	HTAZx01-xxxx
		0	6.10 - 17.64	0.2400 - 0.6946	TACF0-100DEG	TAXF0-100DEG	HTA0x01-xxxx
		1	8.89 - 24.37	0.3500 - 0.9596	TACF1-100DEG	TAXF1-100DEG	HTA1x01-xxxx
		2	12.70 - 35.04	0.5000 - 1.3797	TACF2-100DEG	TAXF2-100DEG	HTA2x01-xxxx
		3	15.88 - 47.80	0.6250 - 1.8820	TACF3-100DEG	TAXF3-100DEG	HTA3x01-xxxx

NOTE: Only for use with stub holders.

*See holder nomenclature on page A25: 8 for holder body diameters (x) and shanks (xxxx).

Series Y-2: inserts sold in multiples of 2. | Series 3: inserts sold in multiples of 1.

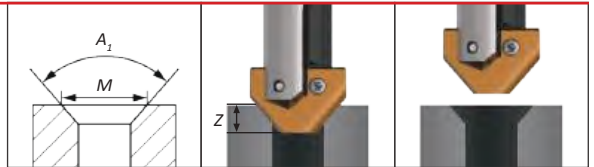
Countersink (82°, 90°, and 100°)

$$Z \text{ Depth (Z)} = \left(\frac{M - D_2}{2 \cdot (\tan(A_1 / 2))} \right)$$

M = Desired major diameter

D₂ = Insert diameter at touch off flat

A₁ = Included angle of insert



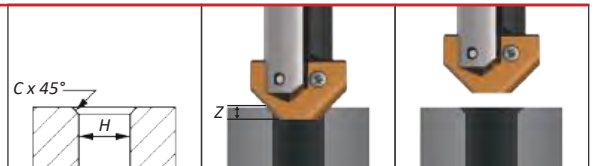
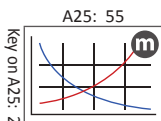
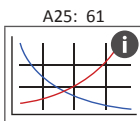
Chamfer (90°)

$$Z \text{ Depth (Z)} = \left(\frac{(H + (2 \cdot C)) - D_2}{2} \right)$$

H = Existing hole diameter

C = Radial chamfer size

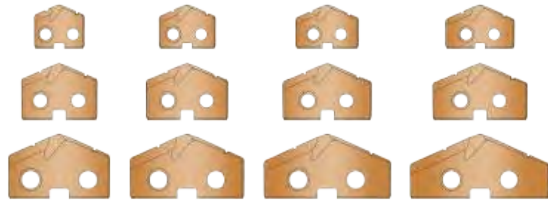
D₂ = Insert diameter at touch off flat





T-A Pro Kits: 12.70 mm - 35.04 mm (0.4999" - 1.3797")

Inserts



A25

Metric Insert Kit

Series	Diameter			Qty	TAP-MET-KIT	TAM-MET-KIT	TAK-MET-KIT	TAN-MET-KIT	TAX-MET-KIT
	mm	inch	Fractional						
0-A	13.00	0.5118	—	2	TAP0-13.00	TAM0-13.00	TAK0-13.00	TAN0-13.00	TAX0-13.00
0-B	14.00	0.5512	—	2	TAP0-14.00	TAM0-14.00	TAK0-14.00	TAN0-14.00	TAX0-14.00
0-C	16.00	0.6299	—	2	TAP0-16.00	TAM0-16.00	TAK0-16.00	TAN0-16.00	TAX0-16.00
0-D	17.50	0.6890	—	2	TAP0-17.50	TAM0-17.50	TAK0-17.50	TAN0-17.50	TAX0-17.50
1-A	18.00	0.7087	—	2	TAP1-18.00	TAM1-18.00	TAK1-18.00	TAN1-18.00	TAX1-18.00
1-B	20.00	0.7874	—	2	TAP1-20.00	TAM1-20.00	TAK1-20.00	TAN1-20.00	TAX1-20.00
1-C	22.00	0.8661	—	2	TAP1-22.00	TAM1-22.00	TAK1-22.00	TAN1-22.00	TAX1-22.00
1-D	24.00	0.9449	—	2	TAP1-24.00	TAM1-24.00	TAK1-24.00	TAN1-24.00	TAX1-24.00
2-A	25.00	0.9843	63/64	2	TAP2-25.00	TAM2-25.00	TAK2-25.00	TAN2-25.00	TAX2-25.00
2-C	30.00	1.1811	—	2	TAP2-30.00	TAM2-30.00	TAK2-30.00	TAN2-30.00	TAX2-30.00
2-D	32.00	1.2598	—	2	TAP2-32.00	TAM2-32.00	TAK2-32.00	TAN2-32.00	TAX2-32.00
2-D	35.00	1.3780	—	2	TAP2-35.00	TAM2-35.00	TAK2-35.00	TAN2-35.00	TAX2-35.00

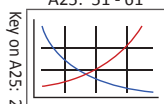
Imperial Insert Kit

Series	Diameter			Qty	TAP-IMP-KIT	TAM-IMP-KIT	TAK-IMP-KIT	TAN-IMP-KIT	TAX-IMP-KIT
	mm	inch	Fractional						
0-A	12.70	0.5000	1/2	2	TAP0-12.70	TAM0-12.70	TAK0-12.70	TAN0-12.70	TAX0-12.70
0-B	14.29	0.5626	9/16	2	TAP0-14.29	TAM0-14.29	TAK0-14.29	TAN0-14.29	TAX0-14.29
0-C	15.88	0.6252	5/8	2	TAP0-15.88	TAM0-15.88	TAK0-15.88	TAN0-15.88	TAX0-15.88
0-D	17.46	0.6874	11/16	2	TAP0-17.46	TAM0-17.46	TAK0-17.46	TAN0-17.46	TAX0-17.46
1-B	19.05	0.7500	3/4	2	TAP1-19.05	TAM1-19.05	TAK1-19.05	TAN1-19.05	TAX1-19.05
1-C	20.64	0.8126	13/16	2	TAP1-20.64	TAM1-20.64	TAK1-20.64	TAN1-20.64	TAX1-20.64
1-C	22.23	0.8752	7/8	2	TAP1-22.23	TAM1-22.23	TAK1-22.23	TAN1-22.23	TAX1-22.23
1-D	23.81	0.9374	15/16	2	TAP1-23.81	TAM1-23.81	TAK1-23.81	TAN1-23.81	TAX1-23.81
2-B	25.40	1.0000	1	2	TAP2-25.40	TAM2-25.40	TAK2-25.40	TAN2-25.40	TAX2-25.40
2-C	28.58	1.1252	1-1/8	2	TAP2-28.58	TAM2-28.58	TAK2-28.58	TAN2-28.58	TAX2-28.58
2-D	31.75	1.2500	1-1/4	2	TAP2-31.75	TAM2-31.75	TAK2-31.75	TAN2-31.75	TAX2-31.75
2-D	34.93	1.3752	1-3/8	2	TAP2-34.93	TAM2-34.93	TAK2-34.93	TAN2-34.93	TAX2-34.93



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T-A PRO MATERIAL LIBRARY: SEE IT IN ACTION.

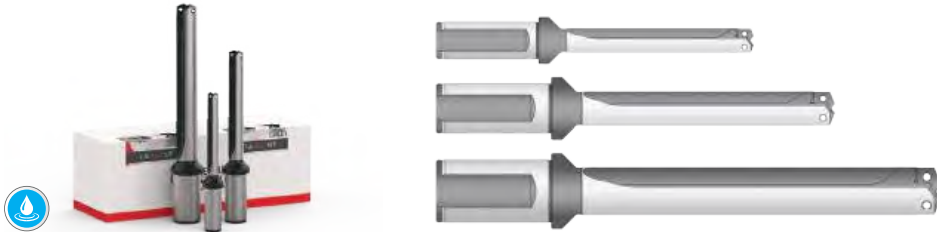


 = Metric (mm)
 = Imperial (in)



T-A Pro Kits: 12.70 mm - 35.04 mm (0.4999" - 1.3797")

Holders



A25

Metric 3xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty
m	0-A	3xD	45.9	20	1
	1-A	3xD	62.9	25	1
	2-A	3xD	89.2	32	1

HTA03FM-KIT

Flanged with flat
HTA0A03-20FM
HTA1A03-25FM
HTA2A03-32FM

HTA03CM-KIT

Cylindrical (no flat)
HTA0A03-20CM
HTA1A03-25CM
HTA2A03-32CM

Metric 5xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty
m	0-A	5xD	76.6	20	1
	1-A	5xD	104.8	25	1
	2-A	5xD	148.7	32	1

HTA05FM-KIT

Flanged with flat
HTA0A05-20FM
HTA1A05-25FM
HTA2A05-32FM

HTA05CM-KIT

Cylindrical (no flat)
HTA0A05-20CM
HTA1A05-25CM
HTA2A05-32CM

Imperial 3xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty
i	0-A	3xD	1.809	0.750	1
	1-A	3xD	2.475	1.000	1
	2-A	3xD	3.513	1.250	1

HTA03F-KIT

Flanged with flat
HTA0A03-075F
HTA1A03-100F
HTA2A03-125F

HTA03C-KIT

Cylindrical (no flat)
HTA0A03-075C
HTA1A03-100C
HTA2A03-125C

Imperial 5xD Holder Kits

	Series	Length	Drill Depth	Shank Diameter	Qty
i	0-A	5xD	3.015	0.750	1
	1-A	5xD	4.125	1.000	1
	2-A	5xD	5.855	1.250	1

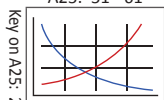
HTA05F-KIT

Flanged with flat
HTA0A05-075F
HTA1A05-100F
HTA2A05-125F

HTA05C-KIT

Cylindrical (no flat)
HTA0A05-075C
HTA1A05-100C
HTA2A05-125C

A25: 51 - 61



m = Metric (mm)

i = Imperial (in)



Recommended Drilling Data | Metric (mm)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	X	105	0.15	0.25	0.33	0.41	0.51
		150 - 200	X	100	0.15	0.25	0.33	0.41	0.51
		200 - 250	X	90	0.13	0.25	0.33	0.41	0.51
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	X	95	0.15 ❖	0.23	0.30	0.38	0.48
		125 - 175	X	90	0.13 ❖	0.23	0.30	0.38	0.48
		175 - 225	X	85	0.13 ❖	0.20	0.25	0.36	0.46
		225 - 275	X	80	0.13 ❖	0.20	0.25	0.36	0.46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	X	90	0.15	0.23	0.30	0.38	0.48
		175 - 225	X	85	0.13	0.20	0.25	0.36	0.46
		225 - 275	X	80	0.13	0.20	0.25	0.36	0.46
		275 - 325	X	70	0.10	0.18	0.23	0.30	0.41
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	X	75	0.15	0.23	0.30	0.36	0.43
		175 - 225	X	70	0.13	0.20	0.28	0.36	0.43
		225 - 275	X	65	0.13	0.20	0.28	0.36	0.43
		275 - 325	X	60	0.10	0.18	0.25	0.30	0.38
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	X	60	0.08	0.18	0.25	0.30	0.38
		225 - 300	X	40	0.10	0.18	0.25	0.33	0.38
		300 - 350	X	35	0.08	0.15	0.23	0.30	0.36
	Structural Steel A36, A285, A516, etc.	350 - 400	X	25	0.08	0.15	0.20	0.28	0.33
		100 - 150	X	75	0.15 ❖	0.25	0.30	0.36	0.46
		150 - 250	X	65	0.13 ❖	0.23	0.25	0.30	0.41
	Tool Steel H-13, H-21, A-4, S-3, etc.	250 - 350	X	55	0.10 ❖	0.20	0.23	0.25	0.36
		150 - 200	X	45	0.10	0.15	0.20	0.25	0.30
	M	200 - 250	X	35	0.10	0.15	0.20	0.25	0.30
		185 - 275	X	40	0.13 ❖	0.25	0.28	0.30	0.33
		416, 420, etc.	X	35	0.10 ❖	0.23	0.25	0.28	0.30
		135 - 185	X	40	0.13 ❖	0.18	0.20	0.23	0.30
		304, 316, 17-4PH, etc.	X	35	0.10 ❖	0.15	0.18	0.20	0.28
		275 - 350	X	30	0.08 ❖	0.10	0.15	0.20	0.25
		17-4, 13-8, 15-5	X	25	0.08 ❖	0.10	0.15	0.20	0.25
	Super Duplex Stainless Steel	350 - 425	X	25	0.08 ❖	0.10	0.15	0.20	0.25
		135 - 185	X	40	0.13 ❖	0.13	0.15	0.15	0.18
		185 - 275	X	35	0.10 ❖	0.13	0.13	0.15	0.15

❖ Contact our Application Engineering department for assistance when machining these materials.

7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.



Recommended Drilling Data | Metric (mm)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
K	SG / Nodular Cast Iron	120 - 150	X	90	0.18	0.30	0.41	0.51	0.61
		150 - 200	X	85	0.15	0.28	0.36	0.46	0.56
		200 - 220	X	75	0.15	0.23	0.30	0.41	0.46
		220 - 260	X	65	0.13	0.18	0.23	0.30	0.36
		260 - 320	X	55	0.10	0.15	0.18	0.23	0.30
N	Cast Aluminum	30	X	185	0.20	0.33	0.41	0.51	0.56
		180	X	90	0.20	0.33	0.41	0.46	0.56
	Wrought Aluminum	30	X	275	0.23	0.33	0.43	0.51	0.61
		180	X	185	0.13	0.18	0.25	0.33	0.41
	Aluminum Bronze	100 - 200	X	90	0.15	0.28	0.36	0.46	0.56
		200 - 250	X	75	0.13	0.18	0.23	0.30	0.36
	Brass	100	X	150	0.18	0.30	0.41	0.51	0.61
m	Copper	60	X	100	0.05	0.08	0.15	0.20	0.25
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	X	15	0.08 ❖	0.18	0.20	0.25	0.30
		220 - 310	X	10	0.08 ❖	0.15	0.18	0.20	0.25
	Titanium Alloy	140 - 220	X	20	0.08	0.18	0.20	0.25	0.30
		220 - 310	X	15	0.08	0.15	0.18	0.20	0.25
	Aerospace Alloy S82	185 - 275	X	40	0.13	0.20	0.23	0.25	0.36
		275 - 350	X	35	0.10	0.18	0.20	0.20	0.30
H	Wear Plate Hardox®, AR400, T-1, etc.	400	X	20	0.08	0.15	0.20	0.23	0.30
		500	X	15	0.05	0.13	0.18	0.20	0.25
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	X	25	0.08	0.15	0.20	0.23	0.30
		400 - 500	X	15	0.05	0.13	0.18	0.20	0.25

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING Tool failure can cause serious injury. To prevent:

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Recommended Drilling Data | Metric (mm)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	P	145	0.18	0.25	0.33	0.41	0.51
		150 - 200	P	135	0.18	0.25	0.33	0.41	0.51
		200 - 250	P	125	0.15	0.25	0.33	0.41	0.51
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P	130	0.15 ❖	0.23	0.30	0.38	0.48
		125 - 175	P	125	0.15 ❖	0.23	0.30	0.38	0.48
		175 - 225	P	115	0.13 ❖	0.20	0.25	0.36	0.46
		225 - 275	P	110	0.13 ❖	0.20	0.25	0.36	0.46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P	125	0.15	0.23	0.30	0.38	0.48
		175 - 225	P	115	0.13	0.20	0.25	0.36	0.46
		225 - 275	P	110	0.13	0.20	0.25	0.36	0.46
		275 - 325	P	100	0.10	0.18	0.23	0.30	0.41
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P	130	0.15	0.23	0.30	0.36	0.43
		175 - 225	P	120	0.13	0.20	0.28	0.36	0.43
		225 - 275	P	110	0.13	0.20	0.28	0.36	0.43
		275 - 325	P	105	0.10	0.18	0.25	0.30	0.38
		325 - 375	P	95	0.08	0.18	0.25	0.30	0.38
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P	105	0.10	0.18	0.25	0.33	0.38
		300 - 350	P	100	0.08	0.15	0.23	0.30	0.36
		350 - 400	P	90	0.08	0.15	0.20	0.28	0.33
	Structural Steel A36, A285, A516, etc.	100 - 150	P	120	0.15 ❖	0.25	0.30	0.36	0.46
		150 - 250	P	105	0.13 ❖	0.23	0.25	0.30	0.41
		250 - 350	P	85	0.10 ❖	0.20	0.25	0.25	0.36
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P	65	0.10	0.15	0.20	0.25	0.30
		200 - 250	P	55	0.10	0.15	0.20	0.25	0.30
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	M	85	0.13 ❖	0.23	0.25	0.30	0.33
		275 - 350	M	70	0.10 ❖	0.20	0.23	0.28	0.30
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	M	85	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	75	0.05 ❖	0.08	0.10	0.18	0.23
	Stainless Steel 300L Series 304L, 316L, etc.	135 - 185	M	100	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	85	0.05 ❖	0.08	0.10	0.18	0.23
	PH Stainless 17-4, 13-8, 15-5	275 - 350	M	85	0.08 ❖	0.10	0.13	0.20	0.28
		350 - 425	M	75	0.05 ❖	0.08	0.10	0.18	0.23
	Super Duplex Stainless Steel	135 - 185	M	75	0.08 ❖	0.10	0.13	0.20	0.28
		185 - 275	M	70	0.05 ❖	0.08	0.10	0.18	0.23

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

⚠ WARNING Tool failure can cause serious injury. To prevent:

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Recommended Drilling Data | Metric (mm)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (m/min)	Feed Rate (mm/rev) by Diameter				
					Y / Z Series 9.50 mm - 12.69 mm	0 Series 12.70 mm - 17.64 mm	1 Series 17.65 mm - 24.37 mm	2 Series 24.38 mm - 35.04 mm	3 Series 35.05 mm - 47.80 mm
K	SG / Nodular Cast Iron	120 - 150	K	185	0.18	0.30	0.41	0.51	0.61
		150 - 200	K	170	0.15	0.28	0.36	0.46	0.56
		200 - 220	K	150	0.15	0.23	0.30	0.41	0.46
		220 - 260	K	135	0.13	0.18	0.23	0.30	0.36
		260 - 320	K	120	0.10	0.15	0.18	0.23	0.30
N	Cast Aluminum	30	N	335	0.20	0.33	0.41	0.51	0.56
		180	N	185	0.20	0.33	0.41	0.46	0.56
	Wrought Aluminum	30	N	335	0.23	0.33	0.43	0.51	0.61
		180	N	185	0.13	0.18	0.25	0.33	0.41
	Aluminum Bronze	100 - 200	N	150	0.15	0.28	0.36	0.46	0.56
		200 - 250	N	90	0.13	0.18	0.23	0.30	0.36
	Brass	100	N	200	0.18	0.30	0.41	0.51	0.61
m	Copper	60	N	130	0.05	0.08	0.15	0.20	0.25
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	M	35	0.05 ❖	0.13	0.18	0.20	0.23
		220 - 310	M	25	0.05 ❖	0.08	0.13	0.15	0.18
	Titanium Alloy	140 - 220	M	45	0.08 ❖	0.10	0.18	0.20	0.23
		220 - 310	M	35	0.08 ❖	0.08	0.13	0.15	0.18
	Aerospace Alloy S82	185 - 275	M	45	0.08 ❖	0.10	0.18	0.20	0.23
		275 - 350	M	35	0.08 ❖	0.08	0.13	0.15	0.18
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P	20	0.08	0.15	0.20	0.23	0.30
		500	P	15	0.05	0.13	0.18	0.20	0.25
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	P	30	0.08	0.15	0.20	0.23	0.30
		400 - 500	P	15	0.05	0.13	0.18	0.20	0.25

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
100 m/min • 0.80	= 80 m/min
0.2 mm/rev • 0.80	= 0.16 mm/rev

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
100 m/min • 0.70	= 70 m/min
0.2 mm/rev • 0.70	= 0.14 mm/rev

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM	Pressure BAR	Flow Rate LPM
Y	31	15	34	55	45	30
Z	31	15	34	22	45	30
0	24	22	31	34	34	45
1	21	30	27	38	34	45
2	17	38	24	49	31	60
3	14	45	21	53	27	68

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**Recommended Drilling Data | Metric (mm)****T-A PRO FORM INSERTS | HIGH-SPEED STEEL**

ISO	Material		Y / Z Series	0 Series	1 Series	2 Series	3 Series
			9.50 mm - 12.69 mm	12.70 mm - 17.64 mm	17.65 mm - 24.37 mm	24.38 mm - 35.04 mm	35.05 mm - 47.80 mm
P	Low-Carbon Steel	m/min	45 - 70	45 - 70	45 - 70	60 - 75	60 - 75
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.25 - 0.38	0.28 - 0.43	0.30 - 0.48
	Alloy Steel	m/min	40 - 65	40 - 65	40 - 65	45 - 70	45 - 70
		mm/rev	0.18 - 0.25	0.15 - 0.23	0.25 - 0.36	0.28 - 0.41	0.30 - 0.43
M	Stainless Steel	m/min	65 - 85	65 - 85	65 - 95	65 - 95	65 - 105
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.20 - 0.36	0.20 - 0.36	0.25 - 0.41
K	Cast Iron	m/min	55 - 110	55 - 110	55 - 110	70 - 120	70 - 120
		mm/rev	0.20 - 0.30	0.20 - 0.30	0.20 - 0.48	0.23 - 0.48	0.33 - 0.53
N	Nonferrous	m/min	75 - 190	60 - 170	65 - 220	105 - 225	135 - 260
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.25 - 0.38	0.28 - 0.43	0.30 - 0.48

T-A PRO FORM INSERTS | CARBIDE

ISO	Material		Y / Z Series	0 Series	1 Series	2 Series	3 Series
			9.50 mm - 12.69 mm	12.70 mm - 17.64 mm	17.65 mm - 24.37 mm	24.38 mm - 35.04 mm	35.05 mm - 47.80 mm
P	Low-Carbon Steel	m/min	60 - 115	60 - 115	60 - 115	75 - 120	75 - 120
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.41	0.30 - 0.46	0.33 - 0.51
	Alloy Steel	m/min	60 - 105	60 - 105	60 - 105	70 - 115	70 - 115
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.43	0.30 - 0.48	0.30 - 0.48
M	Stainless Steel	m/min	75 - 100	75 - 100	75 - 115	75 - 115	75 - 120
		mm/rev	0.18 - 0.25	0.18 - 0.25	0.20 - 0.36	0.20 - 0.36	0.25 - 0.41
K	Cast Iron	m/min	105 - 195	105 - 195	105 - 195	130 - 210	130 - 210
		mm/rev	0.23 - 0.33	0.23 - 0.33	0.23 - 0.51	0.25 - 0.51	0.36 - 0.56
N	Nonferrous	m/min	105 - 215	105 - 245	105 - 275	120 - 290	120 - 290
		mm/rev	0.18 - 0.28	0.18 - 0.28	0.28 - 0.41	0.30 - 0.46	0.33 - 0.51



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

A25



Recommended Drilling Data | Imperial (in)

T-A PRO | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	X	350	0.006	0.010	0.013	0.016	0.020
		150 - 200	X	325	0.006	0.010	0.013	0.016	0.020
		200 - 250	X	300	0.005	0.010	0.013	0.016	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	X	315	0.006 ❖	0.009	0.012	0.015	0.019
		125 - 175	X	300	0.005 ❖	0.009	0.012	0.015	0.019
		175 - 225	X	285	0.005 ❖	0.008	0.010	0.014	0.018
		225 - 275	X	265	0.005 ❖	0.008	0.010	0.014	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	X	300	0.006	0.009	0.012	0.015	0.019
		175 - 225	X	285	0.005	0.008	0.010	0.014	0.018
		225 - 275	X	265	0.005	0.008	0.010	0.014	0.018
		275 - 325	X	235	0.004	0.007	0.009	0.012	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	X	250	0.006	0.009	0.012	0.014	0.017
		175 - 225	X	235	0.005	0.008	0.011	0.014	0.017
		225 - 275	X	220	0.005	0.008	0.011	0.014	0.017
		275 - 325	X	205	0.004	0.007	0.010	0.012	0.015
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	X	190	0.003	0.007	0.010	0.012	0.015
		225 - 300	X	135	0.004	0.007	0.010	0.013	0.015
		300 - 350	X	110	0.003	0.006	0.009	0.012	0.014
	Structural Steel A36, A285, A516, etc.	350 - 400	X	90	0.003	0.006	0.008	0.011	0.013
		100 - 150	X	250	0.006 ❖	0.010	0.012	0.014	0.018
		150 - 250	X	210	0.005 ❖	0.009	0.010	0.012	0.016
	Tool Steel H-13, H-21, A-4, S-3, etc.	250 - 350	X	175	0.004 ❖	0.008	0.009	0.010	0.014
		150 - 200	X	145	0.004	0.006	0.008	0.010	0.012
	M	200 - 250	X	120	0.004	0.006	0.008	0.010	0.012
		185 - 275	X	125	0.005 ❖	0.010	0.011	0.012	0.013
		275 - 350	X	110	0.004 ❖	0.009	0.010	0.011	0.012
		135 - 185	X	125	0.005 ❖	0.007	0.008	0.009	0.012
		185 - 275	X	110	0.004 ❖	0.006	0.007	0.008	0.011
		275 - 350	X	95	0.003 ❖	0.004	0.006	0.008	0.010
		350 - 425	X	75	0.003 ❖	0.004	0.006	0.008	0.010
	Super Duplex Stainless Steel	135 - 185	X	125	0.005 ❖	0.005	0.006	0.006	0.007
		185 - 275	X	110	0.004 ❖	0.005	0.005	0.006	0.006

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18



WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

T-A PRO | HIGH-SPEED STEEL

ISO Material		Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
K	SG / Nodular Cast Iron	120 - 150	X	300	0.007	0.012	0.016	0.020	0.024
		150 - 200	X	275	0.006	0.011	0.014	0.018	0.022
		200 - 220	X	240	0.006	0.009	0.012	0.016	0.018
		220 - 260	X	215	0.005	0.007	0.009	0.012	0.014
		260 - 320	X	175	0.004	0.006	0.007	0.009	0.012
N	Cast Aluminum	30	X	600	0.008	0.013	0.016	0.020	0.022
		180	X	300	0.008	0.013	0.016	0.018	0.022
	Wrought Aluminum	30	X	900	0.009	0.013	0.017	0.020	0.024
		180	X	600	0.005	0.007	0.010	0.013	0.016
	Aluminum Bronze	100 - 200	X	300	0.006	0.011	0.014	0.018	0.022
		200 - 250	X	250	0.005	0.007	0.009	0.012	0.014
	Brass	100	X	485	0.007	0.012	0.016	0.020	0.024
	Copper	60	X	320	0.002	0.003	0.006	0.008	0.010
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	X	45	0.003 ❖	0.007	0.008	0.010	0.012
		220 - 310	X	40	0.003 ❖	0.006	0.007	0.008	0.010
	Titanium Alloy	140 - 220	X	60	0.003	0.007	0.008	0.010	0.012
		220 - 310	X	50	0.003	0.006	0.007	0.008	0.010
	Aerospace Alloy S82	185 - 275	X	125	0.005	0.008	0.009	0.010	0.014
		275 - 350	X	110	0.004	0.007	0.008	0.008	0.012
	H	Wear Plate Hardox®, AR400, T-1, etc.	400	X	60	0.003	0.006	0.008	0.009
500			X	45	0.002	0.005	0.007	0.008	0.010
600			—	—	—	—	—	—	—
Hardened Steel		300 - 400	X	75	0.003	0.006	0.008	0.009	0.012
		400 - 500	X	45	0.002	0.005	0.007	0.008	0.010

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the coolant recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. For 7xD, 10xD, 12xD, and 15xD holder lengths, see adjustment example above.



Recommended Drilling Data | Imperial (in)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	P	475	0.007	0.010	0.013	0.016	0.020
		150 - 200	P	440	0.007	0.010	0.013	0.016	0.020
		200 - 250	P	410	0.006	0.010	0.013	0.016	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P	425	0.006 ❖	0.009	0.012	0.015	0.019
		125 - 175	P	410	0.006 ❖	0.009	0.012	0.015	0.019
		175 - 225	P	385	0.005 ❖	0.008	0.010	0.014	0.018
		225 - 275	P	355	0.005 ❖	0.008	0.010	0.014	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P	410	0.006	0.009	0.012	0.015	0.019
		175 - 225	P	385	0.005	0.008	0.010	0.014	0.018
		225 - 275	P	355	0.005	0.008	0.010	0.014	0.018
		275 - 325	P	330	0.004	0.007	0.009	0.012	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P	420	0.006	0.009	0.012	0.014	0.017
		175 - 225	P	390	0.005	0.008	0.011	0.014	0.017
		225 - 275	P	360	0.005	0.008	0.011	0.014	0.017
		275 - 325	P	340	0.004	0.007	0.010	0.012	0.015
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	P	310	0.003	0.007	0.010	0.012	0.015
		225 - 300	P	350	0.004	0.007	0.010	0.013	0.015
		300 - 350	P	325	0.003	0.006	0.009	0.012	0.014
	Structural Steel A36, A285, A516, etc.	350 - 400	P	300	0.003	0.006	0.008	0.011	0.013
		100 - 150	P	400	0.006 ❖	0.010	0.012	0.014	0.018
		150 - 250	P	340	0.005 ❖	0.009	0.010	0.012	0.016
	Tool Steel H-13, H-21, A-4, S-3, etc.	250 - 350	P	280	0.004 ❖	0.008	0.009	0.010	0.014
		150 - 200	P	220	0.004	0.006	0.008	0.010	0.012
		200 - 250	P	180	0.004	0.006	0.008	0.010	0.012
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	M	280	0.005 ❖	0.009	0.010	0.012	0.013
		275 - 350	M	230	0.004 ❖	0.008	0.009	0.011	0.012
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	M	280	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	250	0.002 ❖	0.003	0.004	0.007	0.009
	Stainless Steel 300L Series 304L, 316L, etc.	135 - 185	M	325	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	280	0.002 ❖	0.003	0.004	0.007	0.009
	PH Stainless 17-4, 13-8, 15-5	275 - 350	M	280	0.003 ❖	0.004	0.005	0.008	0.011
		350 - 425	M	250	0.002 ❖	0.003	0.004	0.007	0.009
	Super Duplex Stainless Steel	135 - 185	M	250	0.003 ❖	0.004	0.005	0.008	0.011
		185 - 275	M	230	0.002 ❖	0.003	0.004	0.007	0.009

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
0.008 IPR • 0.80	= 0.0064 IPR

12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18



WARNING Tool failure can cause serious injury. To prevent:

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Recommended Drilling Data | Imperial (in)

T-A PRO | CARBIDE

ISO	Material	Hardness (BHN)	Insert Grade	Speed (SFM)	Feed Rate (IPR) by Diameter				
					Y / Z Series 0.3739" - 0.4998"	0 Series 0.4999" - 0.6946"	1 Series 0.6947" - 0.9596"	2 Series 0.9597" - 1.3797"	3 Series 1.3798" - 1.8820"
K	SG / Nodular Cast Iron	120 - 150	K	600	0.007	0.012	0.016	0.020	0.024
		150 - 200	K	550	0.006	0.011	0.014	0.018	0.022
		200 - 220	K	500	0.006	0.009	0.012	0.016	0.018
		220 - 260	K	450	0.005	0.007	0.009	0.012	0.014
		260 - 320	K	400	0.004	0.006	0.007	0.009	0.012
N	Cast Aluminum	30	N	1100	0.008	0.013	0.016	0.020	0.022
		180	N	600	0.008	0.013	0.016	0.018	0.022
	Wrought Aluminum	30	N	1100	0.009	0.013	0.017	0.020	0.024
		180	N	600	0.005	0.007	0.010	0.013	0.016
	Aluminum Bronze	100 - 200	N	500	0.006	0.011	0.014	0.018	0.022
		200 - 250	N	300	0.005	0.007	0.009	0.012	0.014
	Brass	100	N	650	0.007	0.012	0.016	0.020	0.024
S	Copper	60	N	430	0.002	0.003	0.006	0.008	0.010
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	M	110	0.002 ❖	0.005	0.007	0.008	0.009
		220 - 310	M	85	0.002 ❖	0.003	0.005	0.006	0.007
	Titanium Alloy	140 - 220	M	150	0.003 ❖	0.004	0.007	0.008	0.009
		220 - 310	M	120	0.003 ❖	0.003	0.005	0.006	0.007
	Aerospace Alloy S82	185 - 275	M	150	0.003 ❖	0.004	0.007	0.008	0.009
		275 - 350	M	120	0.003 ❖	0.003	0.005	0.006	0.007
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P	70	0.003	0.006	0.008	0.009	0.012
		500	P	45	0.002	0.005	0.007	0.008	0.010
		600	—	—	—	—	—	—	—
	Hardened Steel	300 - 400	P	95	0.003	0.006	0.008	0.009	0.012
		400 - 500	P	45	0.002	0.005	0.007	0.008	0.010

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7xD and 10xD Adjustment Example (0.80 Adjustment)

Data • Adjustment Value	Speed/Feed (7xD)
200 SFM • 0.80	= 160 SFM
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12xD and 15xD Adjustment Example (0.70 Adjustment)

Speed • Adjustment Value	Speed/Feed (12xD)
200 SFM • 0.70	= 140 SFM
0.008 IPR • 0.70	= 0.0056 IPR

Coolant Recommendations

Series	Stub, 3xD, 5xD		7xD, 10xD		12xD, 15xD	
	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM	Pressure PSI	Flow Rate GPM
Y	450	4	550	6	650	8
Z	450	4	550	6	650	8
0	350	6	450	9	550	12
1	300	8	400	10	500	12
2	250	10	350	13	450	16
3	200	12	300	14	400	18

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**Recommended Drilling Data | Imperial (in)****T-A PRO FORM INSERTS | HIGH-SPEED STEEL**

ISO	Material		Y / Z Series	0 Series	1 Series	2 Series	3 Series
			0.3739" - 0.4998"	0.4999" - 0.6946"	0.6947" - 0.9596"	0.9597" - 1.3797"	1.3798" - 1.8820"
P	Low-Carbon Steel	SFM	150 - 235	150 - 235	150 - 235	190 - 250	190 - 250
		IPR	0.007 - 0.01	0.007 - 0.01	0.01 - 0.015	0.011 - 0.017	0.012 - 0.019
	Alloy Steel	SFM	130 - 220	130 - 220	130 - 220	145 - 235	145 - 235
		IPR	0.007 - 0.010	0.006 - 0.009	0.01 - 0.014	0.011 - 0.016	0.012 - 0.017
M	Stainless Steel	SFM	215 - 275	215 - 275	215 - 315	215 - 315	215 - 340
		IPR	0.007 - 0.010	0.007 - 0.010	0.008 - 0.014	0.008 - 0.014	0.01 - 0.016
K	Cast Iron	SFM	180 - 365	180 - 365	180 - 365	225 - 390	225 - 390
		IPR	0.008 - 0.012	0.008 - 0.012	0.008 - 0.019	0.009 - 0.019	0.013 - 0.021
N	Nonferrous	SFM	250 - 625	195 - 565	220 - 715	350 - 745	450 - 850
		IPR	0.009 - 0.014	0.009 - 0.014	0.014 - 0.018	0.014 - 0.020	0.014 - 0.022

T-A PRO FORM INSERTS | CARBIDE

ISO	Material		Y / Z Series	0 Series	1 Series	2 Series	3 Series
			0.3739" - 0.4998"	0.4999" - 0.6946"	0.6947" - 0.9596"	0.9597" - 1.3797"	1.3798" - 1.8820"
P	Low-Carbon Steel	SFM	200 - 375	200 - 375	200 - 375	250 - 400	250 - 400
		IPR	0.007 - 0.011	0.007 - 0.011	0.011 - 0.016	0.012 - 0.018	0.013 - 0.02
	Alloy Steel	SFM	200 - 350	200 - 350	200 - 350	225 - 375	225 - 375
		IPR	0.007 - 0.011	0.007 - 0.011	0.011 - 0.017	0.012 - 0.019	0.012 - 0.019
M	Stainless Steel	SFM	250 - 325	250 - 325	250 - 375	250 - 375	250 - 400
		IPR	0.007 - 0.010	0.007 - 0.010	0.008 - 0.014	0.008 - 0.014	0.010 - 0.016
K	Cast Iron	SFM	340 - 645	340 - 645	340 - 645	430 - 685	430 - 685
		IPR	0.009 - 0.013	0.009 - 0.013	0.009 - 0.020	0.010 - 0.020	0.014 - 0.022
N	Nonferrous	SFM	350 - 700	350 - 800	350 - 900	400 - 950	400 - 950
		IPR	0.010 - 0.017	0.010 - 0.017	0.014 - 0.020	0.014 - 0.020	0.014 - 0.022



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The margins are consistent on all sides, and there are no markings or text on the paper.

A25



Technical Formulas

A25

Formulas

1.	RPM	= (3.82 • SFM) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)
2.	IPM	= RPM • IPR
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)
3.	SFM	= RPM • 0.262 • DIA
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)
4.	Thrust	= 153,700 • IPR • DIA • K_m
	where:	
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA	= diameter of drill (inch)
	K _m	= specific cutting energy (lbs/in ²)
5.	Tool Power	= .6991 • IPR • RPM • K_m • DIA²
	where:	
	Tool Power	= tool power (HP)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K _m	= specific cutting energy (lbs/in ²)
	DIA	= diameter of drill (inch)

Material Constants

Type of Material	Hardness	K _m (lbs/in ²)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	–	0.22
Magnesium Alloy	–	0.16
High-Temperature Alloys	–	1.44
Titanium Alloy	–	0.72

Formulas

1.	RPM	= (318.47 • m/min) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	m/min	= speed (m/min)
	DIA	= diameter of drill (mm)
2.	mm/min	= RPM • mm/rev
	where:	
	mm/min	= mm per minute (mm/min)
	RPM	= revolutions per minute (rev/min)
	mm/rev	= feed rate (mm/rev)
3.	m/min	= RPM • 0.003 • DIA
	where:	
	m/min	= speed (m/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (mm)
4.	Thrust	= 154 • (mm/rev) • DIA • K_m
	where:	
	Thrust	= axial thrust (N)
	mm/rev	= feed rate (mm/rev)
	DIA	= diameter of drill (mm)
	K _m	= specific cutting energy (kPa)
5.	Tool Power	= ((mm/rev) • RPM • K_m • DIA²)/218604.8
	where:	
	Tool Power	= tool power (HP)
	mm/rev	= feed rate (mm/rev)
	RPM	= revolutions per minute (rev/min)
	K _m	= specific cutting energy (kPa)
	DIA	= diameter of drill (mm)

Material Constants

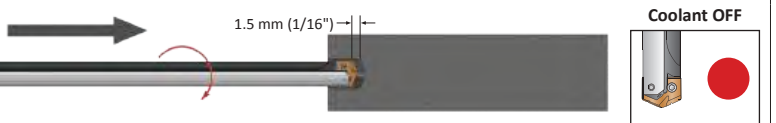
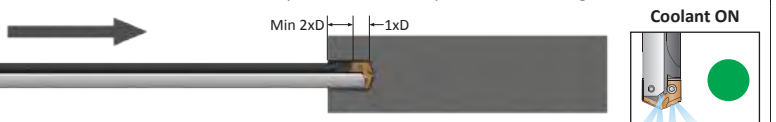
Type of Material	Hardness	K _m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	–	1.52
Magnesium Alloy	–	1.10
High-Temperature Alloys	–	9.93
Titanium Alloy	–	4.96

The table and equations on this page are found in the “Machinery’s Handbook.” Permission to simplify and print the equations is granted by the Editor of the “Machinery’s Handbook.”



Deep Hole Drilling Guidelines

T-A Pro | 10xD, 12xD, and 15xD Holders

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	
2. Feed-in ⚠️ 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.	
6. Drill Retract ⚠️ 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	

⚠️ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A Pro holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

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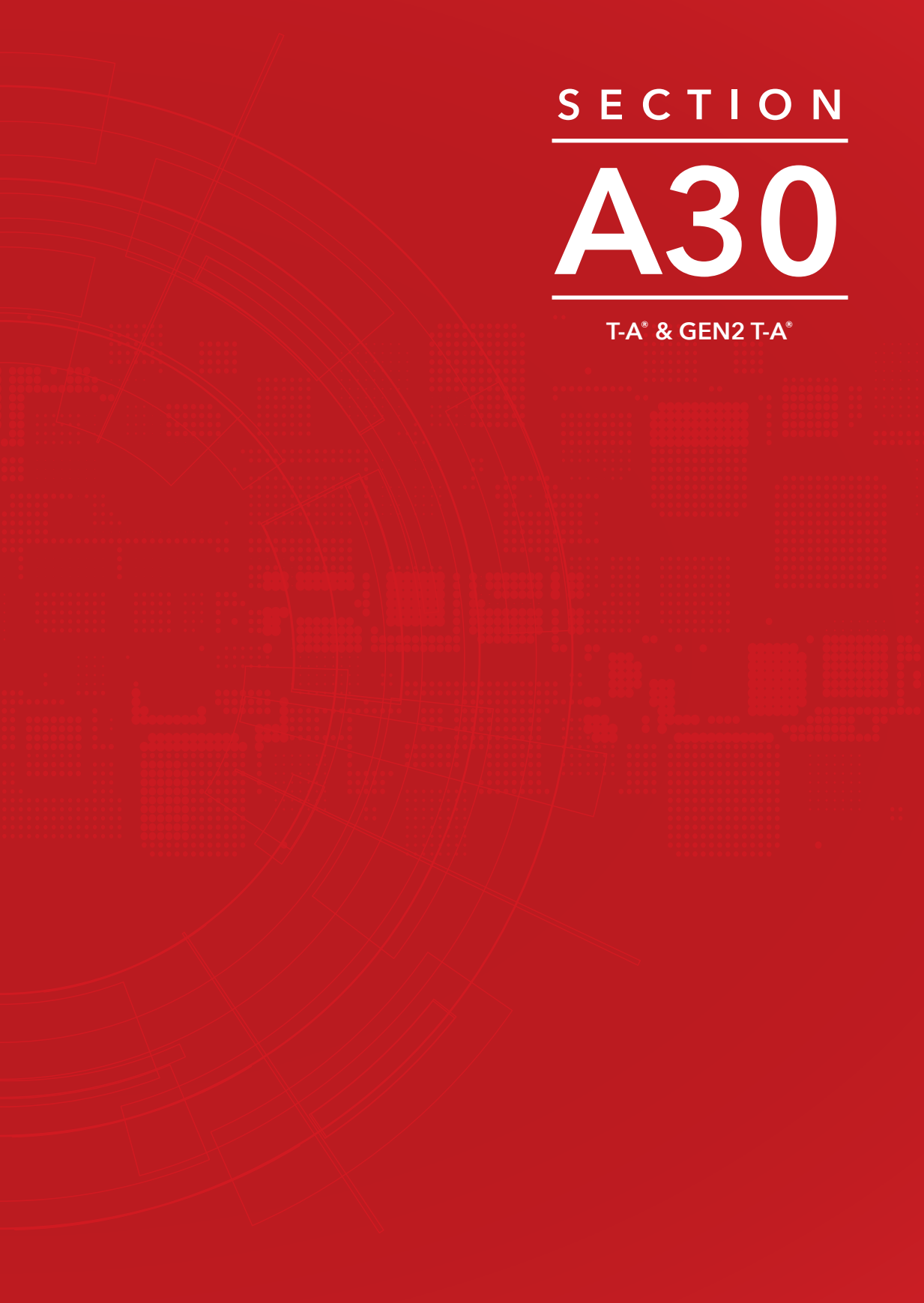
	Potential Problem																			
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-Up Edge (BUE)	Chatter	Chip packing	Damaged or broken tools	Chipping of point	Excessive margin wear	High flank wear	Hole lead off	Hole out of round	Hole out of position	Over-size hole	Poor hole finish	Poor tool life	Power spikes - Load meter	
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Possible Solutions
Worn or misaligned spindle (lathe, screw machine, chucker)	1	2	3				7		9	10	11		13			16	17			<ul style="list-style-type: none"> Align spindle and turret or tailstock. Repair spindle.
Use of low rigidity machine tools			2	3	4		7		9	10			13	14						<ul style="list-style-type: none"> Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).
Poor workpiece support		2		4			7		10	11				15			17			<ul style="list-style-type: none"> Provide additional support for the workpiece. Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).
Flood coolant, low coolant pressure, or low coolant volume	1				5	6		8	10		12					16	17	18	19	<ul style="list-style-type: none"> Run coolant through tool holder when drilling greater than 1xD. Increase coolant pressure and volume through the tool holder. Reduce penetration rate to fall within the coolant limitations (NOTICE: Do not reduce feed below threshold of good chip formation). Add a peck cycle to help clear chips.
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, parting lines, curved or stepped surfaces, cross holes, and cast or forged surfaces)				4			7		9	10	11		13	14	15	16	17	18		<ul style="list-style-type: none"> Pre-mill (spot face) entry or exit surface to remove interruption. Decrease feed as much as 50% through entry or exit interruption. Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speed	1				5	6			10		12							18		<ul style="list-style-type: none"> Reduce speed. Increase coolant pressure and volume. Improve coolant condition by use of quality products and regular maintenance.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts, and sand casting)				4		6			10		12	13						18		<ul style="list-style-type: none"> Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining. Reduce feeds (NOTICE: Do not reduce feed below threshold of good chip formation).
Poor chip control								8	10	11		13				16	17	18	19	<ul style="list-style-type: none"> Increase feed to recommended levels. Contact Allied's Application Engineering group for technical recommendations. Increase coolant pressure and volume. Improve coolant condition by use of quality products and regular maintenance.
Spot drilled holes with included angle less than that matching T-A Pro or cored holes	1			4			7						13					18		<ul style="list-style-type: none"> Spot hole with short tool of same or greater included angle as T-A Pro drill insert. Reduce feed (NOTICE: Do not reduce feed below threshold of good chip formation). If possible, drill from solid.



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

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SECTION

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T-A® & GEN2 T-A®

T-A® & GEN2 T-A®

9.50 mm - 114.48 mm (0.3740" - 4.5070")



T-A® Drilling System

The T-A drilling system is an innovation inspired by the Universal replaceable spade insert drilling system. However, with the development of the GEN2 T-A insert, along with the countless geometry options for the T-A, this drilling system provides benefits and performance that spade blade inserts of the past never could.

With constant innovations in holder designs, insert geometries and coatings, and coolant dispersion, the T-A drilling system continues to evolve and become much more productive and powerful than ever before.

This is Not Yesterday's Spade Drill

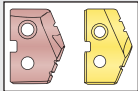
- ▶ Excellent hole size and finish.
- ▶ Optimizes chip evacuation.
- ▶ Wide range of geometry options available.

Applicable Industries

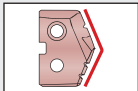
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

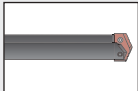
The following icons will appear throughout the catalog to help you navigate between products.



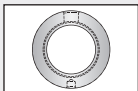
T-A Inserts
Range of inserts that connect with the corresponding holders.



Available Insert Geometries
Details for the different geometry options available for each T-A insert style.



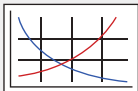
T-A Holders
Range of holders that connect with the corresponding inserts.



Rotary Coolant Adapter (RCA) Information
Detailed instructions and information regarding the corresponding part(s).



T-ACR 45 Chamfer Rings
Range of T-ACR 45 chamfer rings available for the corresponding holders.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

	WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.
	NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
	NOTE and IMPORTANT are also used. These are important that you read and follow but are not safety-related.
	Visit www.alliedmachine.com for the most up-to-date information and procedures.

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T-A Drilling System Overview

Replaceable Inserts

Series	Y Series		Z Series		0 Series		1 Series		2 Series		3 Series	
T-A®												
Insert Ø	mm	9.50 - 11.09	11.10 - 12.97		12.98 - 17.67		17.53 - 24.40		24.41 - 35.06		34.37 - 47.82	
	inch	0.3740 - 0.4369	0.4370 - 0.5109		0.5110 - 0.6959		0.6900 - 0.9609		0.9610 - 1.3809		1.3530 - 1.8829	
Half Series Insert Ø min					0.6094" (15.48 mm)		0.8594" (21.83 mm)		1.1875" (30.16 mm)			
Series	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A
HSS Substrates	SC PC	SC	SC PC	SC	SC PC	SC	HSS SC PC	SC	HSS SC PC	SC	SC	HSS SC PC
Carbide Substrates	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) K10 (C3) P40 (C5) N2	K35 (C1) K20 (C2)	K20 (C2) P40 (C5)	—
Coatings	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN TiAlN TiCN	AM200® AM300®	TiN	AM200® TiN

SC = Super Cobalt PC = Premium Cobalt

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Coatings

 <p>AM300®</p> <ul style="list-style-type: none"> Increased heat resistance over AM200 coating. Up to 20% increased tool life over AM200 coating. Provides superior tool life at high penetration rates. Color: copper/orange. 	 <p>AM200®</p> <ul style="list-style-type: none"> Increased heat resistance over TiN, TiCN, and TiAlN with improved wear capabilities. Over 20% increase in tool life compared to TiAlN coating. Color: copper/bronze. 	 <p>TiN</p> <ul style="list-style-type: none"> General purpose coating. Improved tool life over noncoated inserts. Excellent choice for aluminum. Color: gold/yellow. 	 <p>TiAlN</p> <ul style="list-style-type: none"> Excellent choice for wear resistance over high surface speeds. Excellent oxidation resistance. Maximum working temperature 800°C. Color: violet/grey. 	 <p>TiCN</p> <ul style="list-style-type: none"> Excellent choice for wear resistance over low surface speeds. High hardness/wear resistance. Maximum working temperature 400°C. Color: blue/grey.
--	---	---	--	--

T-A Drilling System Overview

Replaceable Inserts

4 Series		5 Series		6 Series		7 Series		8 Series	
									
46.99 - 65.30		62.38 - 76.22		76.23 - 89.09		89.10 - 101.62		101.63 - 114.48	
1.8500 - 2.5709		2.4560 - 3.0009		3.0010 - 3.5079		3.5080 - 4.0009		4.0010 - 4.5070	
									
T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A	T-A	GEN2 T-A
SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC	HSS SC
-	-	-	-	-	-	-	-	-	-
TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN	TiN	AM200® TiN

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Substrate Grades

HSS (T-A / GEN2 T-A®) First choice for general purpose use. Suited for difficult machining applications with low rigidity, as well as deep hole drilling. Recommended for drilling most steels, cast irons, and aluminum alloys up to 275 BHN.	HSS Super Cobalt (T-A / GEN2 T-A) Suited for good-to-rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For use in material hardness up to 350 BHN.	HSS Premium Cobalt (T-A / GEN2 T-A) Suited for rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For material hardness up to 400 BHN.	Carbide P40 (C5) (T-A) Excellent for drilling free-machining steel, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.
Carbide K10 (C3) (T-A) Designed for drilling grey/white cast irons. The special geometry offers substantial increase in penetration rates and provides exceptional edge strength and tool life.	Carbide K20 (C2) (T-A / GEN2 T-A) Excellent for drilling high-temperature alloys, titanium alloys, cast aluminum, SG/nodular cast iron, grey/white iron, aluminum bronze, brass, copper, and certain stainless steels.	Carbide K35 (C1) (T-A / GEN2 T-A) Excellent for drilling free-machining steels, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	Carbide N2 (T-A) Allied's N2 carbide is used with CVD diamond coating. This improves the insert's hardness, durability, and performance, which extends tool life between 30 - 50x over uncoated carbide.



T-A Drilling System Overview

Replaceable Inserts

There's a Geometry for That.

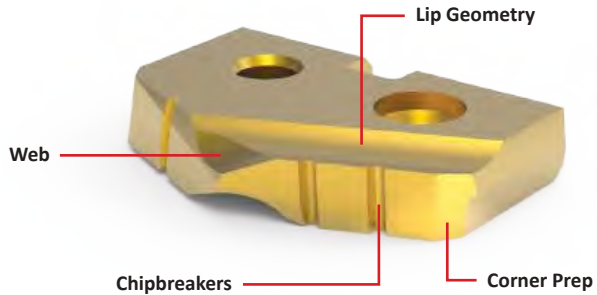
Allied Machine knows there isn't a one-size-fits-all solution when it comes to holmaking. To better accommodate the countless holes our customers drill, we have developed multiple geometry options with new geometries in development at all times.

If you're unsure which geometry would be best for your application, give our Application Engineers a call. They're standing by ready to point you in the right direction.

1.330.343.4283

1.800.321.5537 (toll free)

appeng@alliedmachine.com



GEN2 T-A®

Standard

- Offers substantial increases in penetration rates and tool life.
- Improves centering, drill stability, chip formation, and lowers drill forces.
- Provides smoother breakout on through hole applications.



High Efficiency (-HE)

- Excellent chip formation in materials with very high elasticity/ductility and poor chip forming conditions.
- Effective in lower-powered machines.
- Material example: low-carbon steel (not suitable for stainless steel).



T-A®

Standard

- Offers excellent penetration rates and tool life.
- Smooth breakout on through holes.
- Increases drill stability and chip formation.
- Ideally suited for low-to-high rigidity machining applications.



Tiny Chip (-TC)

- Unique lip and point design for excellent chip control.
- Improved capabilities in long-chipping materials such as low-carbon steels and soft alloy steels.
- Enhanced performance in lower-powered machines for better chip formation at lower feed rates.



Corner Radius (-CR)

- Improves exit burrs.
- Excellent surface finish in most applications.
- Improves heat dispersion and tool life.
- Can be used in addition to other geometries (as a special).



Special Corner Preparation (-SK)

- Ideal for machining cast iron materials.
- Larger than a standard corner clip.
- Improves heat resistance.
- Standard feature on CI, HI, and HR geometries.



Cam Point (-CP)

- Helical cam ground point.
- Improves drill stability and centering characteristics.
- Reduces bellmouthing when using longer holders.
- Target materials: steels, cast/forged steels, cast iron.



Notch Point® (-NP)

- Reduces bellmouthing and leadoff.
- Increases stability in deep hole applications.
- Reduces thrust.
- Can be used in addition to other geometries like cast iron, high rake, and high impact.



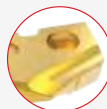
High Impact (-HI)

- Designed for materials with hardness > 200 BHN (700 N/mm²).
- Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics.
- SK corner clip improves tool life.
- Target materials: structural/cast and forged steels (not suitable for stainless steel).



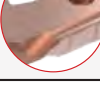
High Rake (-HR)

- Designed for materials with hardness < 200 BHN (700 N/mm²).
- Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness.
- SK corner clip improves tool life.
- Target materials: soft steels, steel castings and forgings (not suitable for stainless steel).



T-A Drilling System Overview

Replaceable Inserts

T-A®	
 <p>High Impact Notch Point® (-IN)</p> <ul style="list-style-type: none"> • Combination of high impact and Notch Point geometries. • Increases stability in deep hole applications. • Enhances chip formation in materials with high elasticity/ductility and poor chip forming characteristics. 	 <p>High Rake Notch Point® (-RN)</p> <ul style="list-style-type: none"> • Combination of high rake and Notch Point geometries. • Reduces bellmouthing and leadoff. • Improves chip formation in materials with very high elasticity/ductility, extremely poor chip forming characteristics, and low material hardness.
 <p>Cast Iron (-CI)</p> <ul style="list-style-type: none"> • Specifically designed for use in grey and white cast irons. • Exceptional edge strength. • SK2 corner preparation for improved tool life. • Standard geometry on K10 (C3) carbide inserts. 	 <p>Cast Iron Notch Point® (-CN)</p> <ul style="list-style-type: none"> • Combination of cast iron and Notch Point geometries. • Increases stability in deep hole applications. • Specifically designed for use in grey and white cast irons.
 <p>Aluminum (-AN)</p> <ul style="list-style-type: none"> • First choice for machining aluminum. • Enhanced geometry improves chip formation and hole quality. • TiN coating improves heat resistance and extends tool life. 	 <p>Brass (-BR)</p> <ul style="list-style-type: none"> • Improves tool life due to the specialized geometry and edge preparation. • Reduces self-feed tendency.
 <p>90° Spot and Chamfer (-SP)</p> <ul style="list-style-type: none"> • Center cutting web design improves stability and strength. • Eliminates the need for a secondary chamfering operation. • Available with chipbreakers (see -SW). 	 <p>90° Spot and Chamfer (-SW)</p> <ul style="list-style-type: none"> • Center cutting web design improves stability and strength. • Eliminates the need for a secondary chamfering operation. • With added chipbreakers.
 <p>Flat Bottom (-FB)</p> <ul style="list-style-type: none"> • Ideal for flattening or squaring the bottom of preexisting holes with high rigidity. • Includes small 10° point on the nose of the insert. • Available without chipbreakers (see -FN). 	 <p>Flat Bottom (-FN)</p> <ul style="list-style-type: none"> • Ideal for flattening or squaring the bottom of preexisting holes with high rigidity. • Includes small 10° point on the nose of the insert. • Available with chipbreakers (see -FB).
 <p>Double Wide Chip Splitters (-DW)</p> <ul style="list-style-type: none"> • Efficient cutting with reduced power consumption. • Confident chip control in challenging applications. • Improved heat management for consistent performance. 	

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Available Standard Insert Geometries

The following table shows which geometries are available as a standard item (based on insert type and series). If you need a geometry on your insert but it is not listed as available, please call the Application Engineering department to discuss quoting your insert as a special to include the desired geometry. Additional lead time and process fees may apply.

		-AN	-BT	-BR	-CI	-CN	-CP	-CR	-DW	-FB	-FN	-HE	-HI	-HR	-IN	-NC	-NP	-RN	-SK	-SP	-SW	-TC	-WC
GEN2 T-A®	Y - 2 Series											●											
	3 - 4 Series			●	●			●				●	●	●		●			●				●
	5 - 8 Series			●				●					●	●		●			●				●
T-A®	High-Speed Steel	Y - 2 Series	●		●	●	●	●		●	●		●	●	●	●	●	●	●	●	●	●	●
		3 Series			●	●	●		●	●			●	●	●	●	●	●	●	●	●	●	●
		4 Series			●	●		●		●	●		●	●		●			●			●	●
		5 - 8 Series			●			●	●				●	●		●			●			●	●
	Carbide	Y - Z Series	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●			●	●
		0 - 2 Series	●	●	●	●	●	●		●	●		●	●	●	●	●	●	●			●	●
		3 Series		●	●	●		●					●	●	●	●	●	●	●			●	●



T-A Drilling System Overview

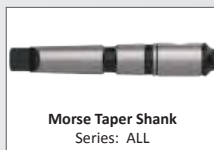
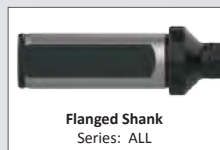
Insert Holders

Holder Length Options (for use with both T-A GEN2 and T-A inserts)

Stub	Short	Intermediate	Standard	Standard Plus 	Extended 	Long 	Long Plus 	XL 	3XL 
Y - 3*	All	All	All	Y - 2^	0 - 3	0 - 2	0	All	All
									

* straight flute flanged shank only. ^ helical flute flanged shank only.

Shank Options



Half Series Holders (0.5, 1.5, 2.5)

Half series holders are recommended when running carbide inserts toward the upper end of the series drill range, as well as in tougher applications requiring more insert support and holder strength. **NOTE:** Only specified half series inserts should be used with half series holders.



Standard Series Insert +
Standard Series Holder



Half Series Insert +
Standard Series Holder



Half Series Insert +
Half Series Holder



Standard Series Insert +
Half Series Holder

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

A30



T-A Drilling System Overview

Technical Details

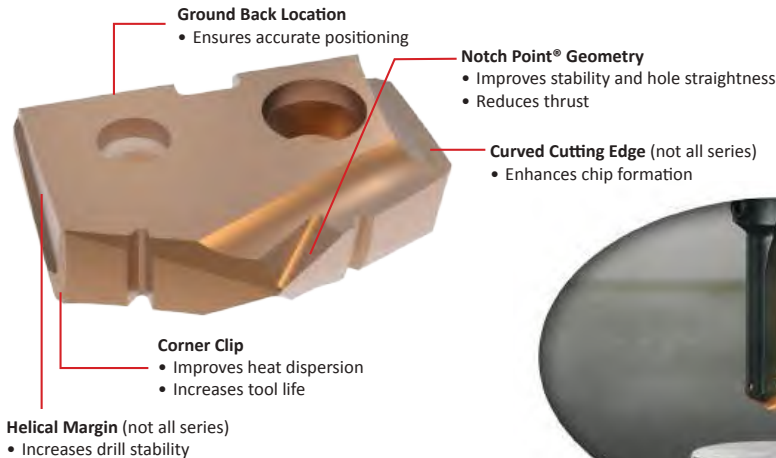
Next Level Solutions: GEN2 T-A®

What takes a solution to the next level? When you make innovative designs and enhancements to a product that already achieves high performance results, you push the boundaries of what is known. And when you push the known boundaries, the unknown becomes the next level.

After all, everything begins as unknown.

	AM300® Coating <ul style="list-style-type: none"> • <i>Provides superior tool life</i> at high penetration rates. • <i>Improves heat resistance</i> over AM200® coating. • <i>Increases tool life</i> up to 20% over AM200 coating.
	AM200® Coating <ul style="list-style-type: none"> • <i>Improves heat resistance</i> over TiN, TiCN, and TiAlN with improved wear capabilities. • <i>Increases penetration rates.</i> • <i>Increases tool life</i> more than 20% over TiAlN coating.

A30



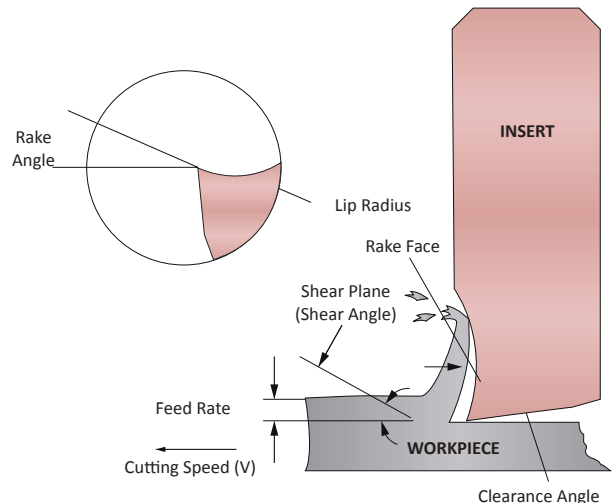
Improving Chip Formation

Achieving optimal chip formation is crucial. The quality of the chips being produced directly affects everything in the entire process: the cycle time, the tool life, the scrap rate, and the quality and condition of the final machined hole.

We know how important chip formation is. That's why we constantly improve and develop new geometries to create a better, more productive T-A product.

Setting Up New Applications

- Check coolant flows adequately through the tool before beginning.
- Drill a short hole 1xD deep initially.
- The chips produced should be short in length and material colored, not straw or blue.
- Measure the hole produced to check that it is within the desired tolerance.
- If all is correct, continue to machine the remainder of the hole.
- Ensure the drilling process is quiet and smooth with no chip packing.





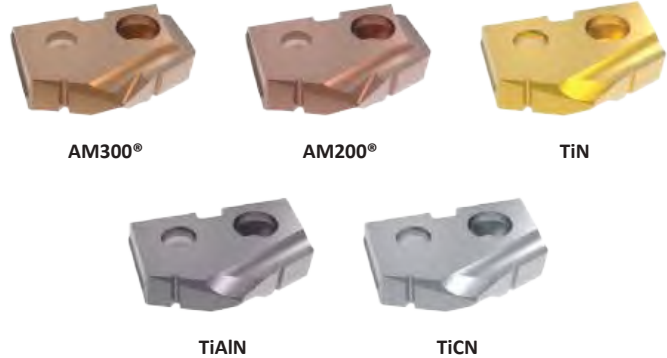
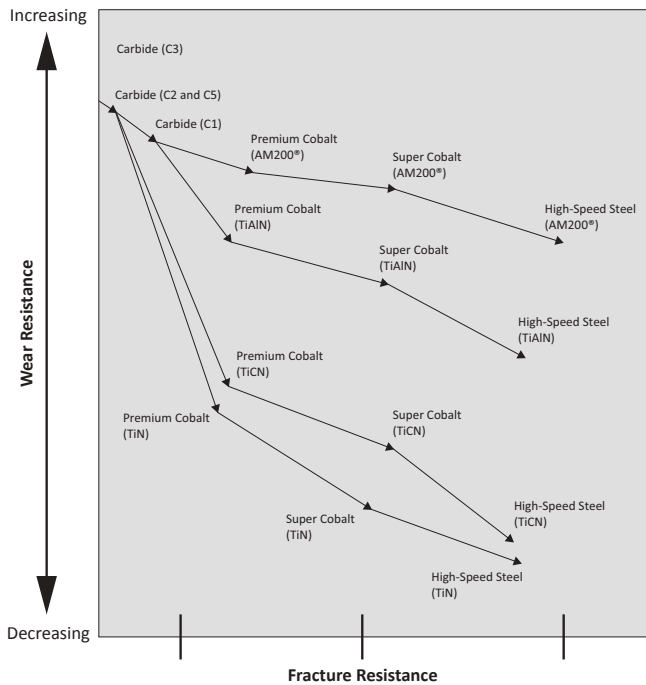
T-A Drilling System Overview

Technical Details

Wear vs Toughness

When selecting a grade of cutting tool material for your application, both wear resistance and grade toughness should be considered. The greater the wear resistance a cutting tool material exhibits, the more likely chipping or fracture is to occur. This requires more rigid machining conditions.

On the other hand, to effectively machine some materials, cobalt or carbide grades of cutting tool material may be required. The graph will aid you in the selection of a cutting tool material with the right combination of wear resistance and toughness to make your application both efficient and cost-effective.



T-A System Guidelines for Use

- Select the shortest holder possible for the application.
- Ensure the T-A holder is held securely and is within 0.08 mm (0.003") of center line.
- The T-A insert should be installed in the slot of the holder using the TORX® Plus screws provided. These should be tightened to the values listed on the T-A holder pages.
- The holder slot should be clean from dirt or debris.
- Check that the insert outer diameter is a minimum of 0.30 mm (0.012") larger than the holder body diameter.
- Use the recommended cutting data section for guidance when selecting correct insert grades, along with speeds and feeds.
- **NOTE:** These cutting parameters are starting conditions only and make no allowance for machine or component rigidity.





Product Nomenclature

T-A Drill Inserts

4	5		3	H	—	0115	-TC
Insert	Material		Series	Coating		Diameter	Geometry
1 = T-A® 4 = GEN2 T-A®	3 = HSS 5 = Super cobalt 8 = Premium cobalt	C1 = K35 (C1) carbide C2 = K20 (C2) carbide C3 = K10 (C3) carbide C5 = P40 (C5) carbide	Y 4 Z 5 0 6 1 7 2 8 3	P = AM300® H = AM200® A = TiAlN N = TiCN T = TiN		13 = Metric (mm) .515 = Decimal (in) 0017 = Fractional (in)	Blank = Standard -TC = Tiny Chip See pgs. 5 - 6 for a complete list of geometries.

Ordering Instructions

► Standard Items:

All orders are processed through Allied Machine's computerized order entry and invoicing system. Please specify the correct item number as well as a full description of the desired item(s) so we can process your order accurately and efficiently. Incorrect item numbers and/or descriptions will cause unnecessary delays and possible returns that are subject to a 10% restocking charge. Your assistance is critical if we are to achieve our goal of processing orders and shipping in-stock items error free within 24 hours.

► Nonstandard Sizes and Geometries:

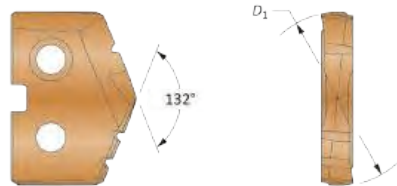
Nonstandard diameter Substitute the required diameter in place of the standard diameter.
Ex: Standard item number **132T-0101**
Nonstandard diameter with standard geometry (inch) **132T-1.0200** (Note: 4 decimal places)
Nonstandard diameter with standard geometry (metric) **132T-34.20** (Note: 2 decimal places)

Special geometry Add the special geometry code at the end of the standard item number.
Ex: Standard item number **132T-0101**
Standard diameter with special geometry (inch) **132T-0101-SK**

Nonstandard diameter with special geometry Replace the standard diameter and add the special geometry code.
Ex: Standard item number **132T-0101**
Nonstandard diameter with special geometry (inch) **132T-1.0200-SK** (Note: 4 decimal places)

Reference Key

Symbol	Attribute
D_1	Insert diameter





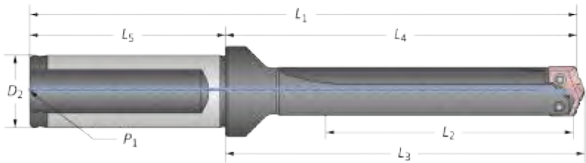
Product Nomenclature

T-A Drill Holders

2	30	20	S	—	004	I
Drill Length		Series	Flute		Shank Designator	Shank Code
10 = Stub		Y0 = Y	S = Straight		Metric	I = Imperial Morse taper
20 = Short		Z0 = Z	H = Helical		Imperial	M = Metric Morse taper
30 = Intermediate		00 = 0			Morse Taper	L = Lathe shank
40 = Standard		05 = 0.5			16 = 16 mm	F = Flanged shank
45 = Standard Plus ⚠		10 = 1			063 = 0.625"	FM = Flanged metric shank
50 = Extended ⚠		15 = 1.5			20 = 20 mm	ER = ER collet (Y - 0)
60 = Long ⚠		20 = 2			075 = 0.750"	
65 = Long Plus ⚠		25 = 2.5			25 = 25 mm	
70 = XL ⚠		30 = 3			100 = 1.000"	
90 = 3XL ⚠		40 = 4			32 = 32 mm	
		50 = 5/6			125 = 1.250"	
		70 = 7/8			40 = 40 mm	
					50 = 50 mm	
					150 = 1.500"	
					175 = 1.750"	
					200 = 2.000"	
					300 = 3.000"	

Reference Key

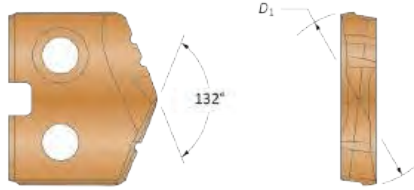
Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
L_5	Shank length
P_1	Rear pipe tap
P_2	Side pipe tap
RCA	Corresponding RCA item number
MT	Morse taper size
ER	ER collet size



A30

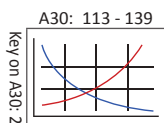
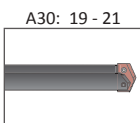
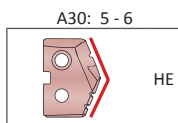
**Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")**

GEN2 T-A® Drill Inserts



A30

Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
D_1 mm	D_1 inch	Fractional Equivalent	 Part No.	 Part No.	 Part No.
			AM200®	AM300®	AM300®
9.50	0.3740	—	45YH-9.5	4C1YP-9.5	4C2YP-9.5
9.53	0.3750	3/8	45YH-0012	4C1YP-0012	4C2YP-0012
9.80	0.3860	—	45YH-.386	4C1YP-.386	4C2YP-.386
9.92	0.3906	25/64	45YH-.390	4C1YP-.390	4C2YP-.390
10.00	0.3937	—	45YH-10	4C1YP-10	4C2YP-10
10.20	0.4016	—	45YH-10.2	4C1YP-10.2	4C2YP-10.2
10.32	0.4063	13/32	45YH-0013	4C1YP-0013	4C2YP-0013
10.50	0.4134	—	45YH-10.5	4C1YP-10.5	4C2YP-10.5
10.72	0.4219	27/64	45YH-.421	4C1YP-.421	4C2YP-.421
10.80	0.4252	—	45YH-10.8	4C1YP-10.8	4C2YP-10.8
11.00	0.4331	—	45YH-11	4C1YP-11	4C2YP-11

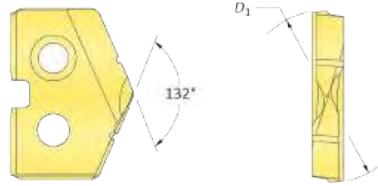


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

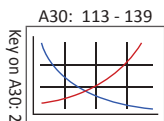
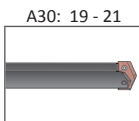
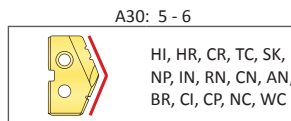
T-A® Drill Inserts



Insert			HSS: Super Cobalt		
D _i mm	D _i inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
9.50	0.3740	—	15YT-9.5	15YA-9.5	15YN-9.5
9.53	0.3750	3/8	15YT-0012	15YA-0012	15YN-0012
9.80	0.3860	—	15YT-.386	15YA-.386	15YN-.386
9.92	0.3906	25/64	15YT-.390	15YA-.390	15YN-.390
10.00	0.3937	—	15YT-10	15YA-10	15YN-10
10.20	0.4016	—	15YT-10.2	15YA-10.2	15YN-10.2
10.32	0.4063	13/32	15YT-0013	15YA-0013	15YN-0013
10.50	0.4134	—	15YT-10.5	15YA-10.5	15YN-10.5
10.72	0.4219	27/64	15YT-.421	15YA-.421	15YN-.421
10.80	0.4252	—	15YT-10.8	15YA-10.8	15YN-10.8
11.00	0.4331	—	15YT-11	15YA-11	15YN-11

A30

Insert			HSS: Premium Cobalt		
D _i mm	D _i inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
9.50	0.3740	—	18YT-9.5	18YA-9.5	18YN-9.5
9.53	0.3750	3/8	18YT-0012	18YA-0012	18YN-0012
9.80	0.3860	—	18YT-.386	18YA-.386	18YN-.386
9.92	0.3906	25/64	18YT-.390	18YA-.390	18YN-.390
10.00	0.3937	—	18YT-10	18YA-10	18YN-10
10.20	0.4016	—	18YT-10.2	18YA-10.2	18YN-10.2
10.32	0.4063	13/32	18YT-0013	18YA-0013	18YN-0013
10.50	0.4134	—	18YT-10.5	18YA-10.5	18YN-10.5
10.72	0.4219	27/64	18YT-.421	18YA-.421	18YN-.421
10.80	0.4252	—	18YT-10.8	18YA-10.8	18YN-10.8
11.00	0.4331	—	18YT-11	18YA-11	18YN-11

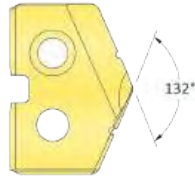
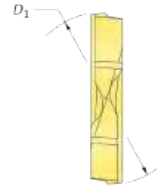


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



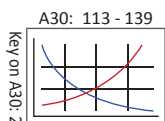
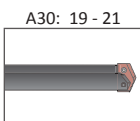
Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts



A30

Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	TiAlN	TiN	TiAlN
9.50	0.3740	—	1C5YT-9.5	1C5YA-9.5	1C2YT-9.5	1C2YA-9.5
9.53	0.3750	3/8	1C5YT-0012	1C5YA-0012	1C2YT-0012	1C2YA-0012
9.80	0.3860	—	1C5YT-.386	1C5YA-.386	1C2YT-.386	1C2YA-.386
9.92	0.3906	25/64	1C5YT-.390	1C5YA-.390	1C2YT-.390	1C2YA-.390
10.00	0.3937	—	1C5YT-10	1C5YA-10	1C2YT-10	1C2YA-10
10.20	0.4016	—	1C5YT-10.2	1C5YA-10.2	1C2YT-10.2	1C2YA-10.2
10.32	0.4063	13/32	1C5YT-0013	1C5YA-0013	1C2YT-0013	1C2YA-0013
10.50	0.4134	—	1C5YT-10.5	1C5YA-10.5	1C2YT-10.5	1C2YA-10.5
10.72	0.4219	27/64	1C5YT-.421	1C5YA-.421	1C2YT-.421	1C2YA-.421
10.80	0.4252	—	1C5YT-10.8	1C5YA-10.8	1C2YT-10.8	1C2YA-10.8
11.00	0.4331	—	1C5YT-11	1C5YA-11	1C2YT-11	1C2YA-11

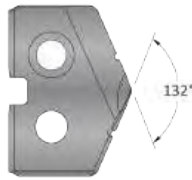
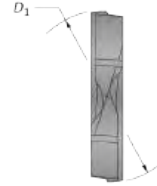


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

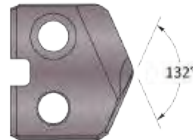
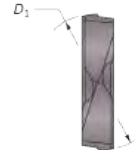


Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts



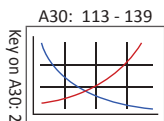
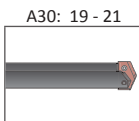
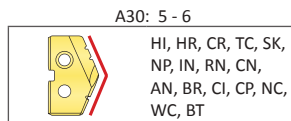
Cast Iron Geometry



A30

Insert			Carbide: N2	Cast Iron Geometry
				
			Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	Diamond Film*	TiAlN
9.50	0.3740	—	1N2YD-9.5	1C3YA-9.5-CI
9.53	0.3750	3/8	1N2YD-0012	1C3YA-0012-CI
9.80	0.3860	—	1N2YD-.386	1C3YA-.386-CI
9.92	0.3906	25/64	1N2YD-.390	1C3YA-.390-CI
10.00	0.3937	—	1N2YD-10	1C3YA-10-CI
10.20	0.4016	—	1N2YD-10.2	1C3YA-10.2-CI
10.32	0.4063	13/32	1N2YD-0013	1C3YA-0013-CI
10.50	0.4134	—	1N2YD-10.5	1C3YA-10.5-CI
10.72	0.4219	27/64	1N2YD-.421	1C3YA-.421-CI
10.80	0.4252	—	1N2YD-10.8	1C3YA-10.8-CI
11.00	0.4331	—	1N2YD-11	1C3YA-11-CI

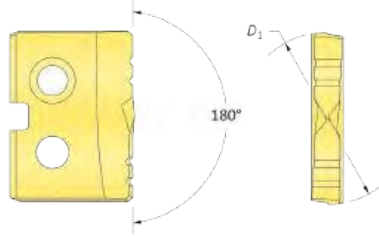
*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

**Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")**

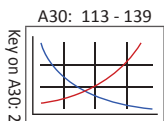
T-A® Drill Inserts



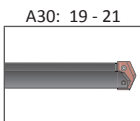
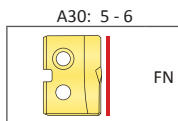
A30

Insert			Flat Bottom Geometry	
			HSS: Super Cobalt	Carbide: K20 (C2)
D ₁ mm	D ₁ inch	Fractional Equivalent	 Part No.	 Part No.
			TiN	TiN*
9.50	0.3740	—	15YT-9.5-FB	15YT-9.5-FB
9.53	0.3750	3/8	15YT-0012-FB	15YT-0012-FB
9.80	0.3860	—	15YT-.386-FB	15YT-.386-FB
9.92	0.3906	25/64	15YT-.390-FB	15YT-.390-FB
10.00	0.3937	—	15YT-10-FB	15YT-10-FB
10.20	0.4016	—	15YT-10.2-FB	15YT-10.2-FB
10.32	0.4063	13/32	15YT-0013-FB	15YT-0013-FB
10.50	0.4134	—	15YT-10.5-FB	15YT-10.5-FB
10.72	0.4219	27/64	15YT-.421-FB	15YT-.421-FB
10.80	0.4252	—	15YT-10.8-FB	15YT-10.8-FB
11.00	0.4331	—	15YT-11-FB	15YT-11-FB

* Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

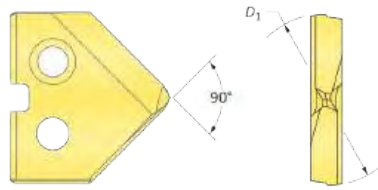


Key on A30: 2



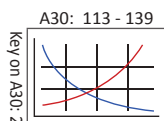
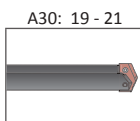
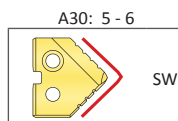
Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Inserts



Insert			90° Spot & Chamfer Geometry		
			HSS: Super Cobalt		
D_1 mm	D_1 inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
9.50	0.3740	—	15YT-9.5-SP	15YA-9.5-SP	15YN-9.5-SP
9.53	0.3750	3/8	15YT-0012-SP	15YA-0012-SP	15YN-0012-SP
9.80	0.3860	—	15YT-.386-SP	15YA-.386-SP	15YN-.386-SP
9.92	0.3906	25/64	15YT-.390-SP	15YA-.390-SP	15YN-.390-SP
10.00	0.3937	—	15YT-10-SP	15YA-10-SP	15YN-10-SP
10.20	0.4016	—	15YT-10.2-SP	15YA-10.2-SP	15YN-10.2-SP
10.32	0.4063	13/32	15YT-0013-SP	15YA-0013-SP	15YN-0013-SP
10.50	0.4134	—	15YT-10.5-SP	15YA-10.5-SP	15YN-10.5-SP
10.72	0.4219	27/64	15YT-.421-SP	15YA-.421-SP	15YN-.421-SP
10.80	0.4252	—	15YT-10.8-SP	15YA-10.8-SP	15YN-10.8-SP
11.00	0.4331	—	15YT-11-SP	15YA-11-SP	15YN-11-SP

A30

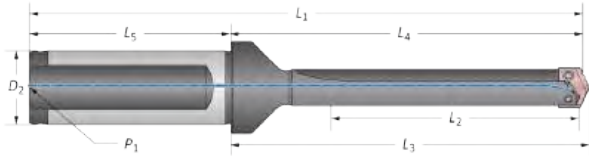
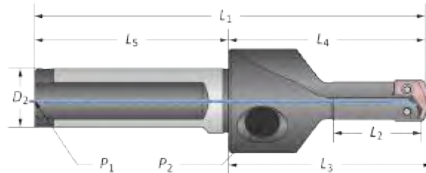


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Holders



Stub Length

A30

Flange Shank Holders

Flute		Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	Straight	Stub	21.9	47.6	49.9	95.6	48.0	16	1/16 BSPT	210Y0S-16FM
		Short	28.9	61.1	63.4	111.1	50.0	20	1/8 BSPT	220Y0S-20FM
		Standard	57.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Y0S-20FM
		Extended	108.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	⬆ 250Y0S-20FM
		XL	219.4	251.6	253.9	301.6	50.0	20	1/8 BSPT	⬆ 270Y0S-20FM
		3XL	287.6	319.9	322.1	369.9	50.0	20	1/8 BSPT	⬆ 290Y0S-20FM
	Helical	Standard	72.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Y0H-20FM
		Standard Plus	98.3	115.4	117.7	165.4	50.0	20	1/8 BSPT	⬆ 245Y0H-20FM
		Extended	123.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	⬆ 250Y0H-20FM
i	Straight	Stub	0.861	1.875	1.965	3.750	1.875	5/8	1/16 NPT	210Y0S-063F
		Short	1.141	2.406	2.496	4.436	2.030	3/4	1/8 NPT	220Y0S-075F
		Standard	2.266	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Y0S-075F
		Extended	4.266	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⬆ 250Y0S-075F
	Helical	Standard	2.860	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Y0H-075F
		Standard Plus	3.872	4.543	4.633	6.573	2.030	3/4	1/8 NPT	245Y0H-075F
		Extended	4.860	5.531	5.621	7.561	2.030	3/4	1/8 NPT	⬆ 250Y0H-075F

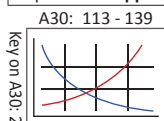
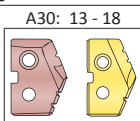
NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

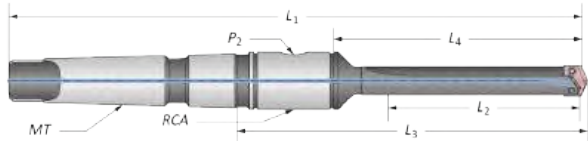
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

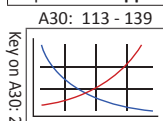
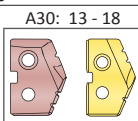
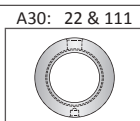


		Body					Shank			
Flute		Length	L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	Part No.
m		Short	27.3	51.6	88.0	160.3	#2 MT ISO	1/16 BSPT	2T-2SRM	220Y0S-002M
		Standard	69.1	80.2	116.6	188.9	#2 MT ISO	1/16 BSPT	2T-2SRM	240Y0H-002M
		Extended	119.9	131.0	167.4	239.7	#2 MT ISO	1/16 BSPT	2T-2SRM	⚠ 250Y0H-002M
i		Short	1.075	2.031	3.464	6.312	#2 MT	1/16 NPT	2T-2SR	220Y0S-002I
		Standard	2.200	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	240Y0S-002I
		Extended	4.200	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ 250Y0S-002I
			Standard	2.719	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR
		Extended	4.719	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	⚠ 250Y0H-002I

A30

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



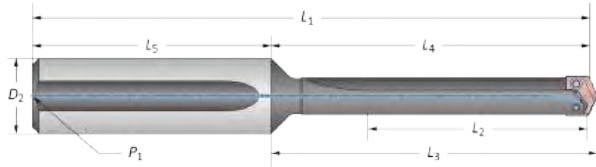
i = Imperial (in)

A30: 20



Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

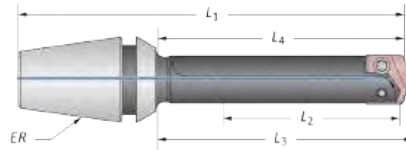
T-A® Drill Holders



Straight Shank Holders

		Body					Shank			
Flute		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	Part No.
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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A30



ER Collet Holders

Flute	Body					Part No.	Collet Nut without Retaining Ring
	L_2	L_4	L_3	L_1	ER		
 	42.5	48.5	50.8	75.8	ER-16	210Y0S-16ER	ER-16N
	42.5	48.5	50.8	79.8	ER-20	210Y0S-20ER	ER-20N

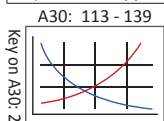
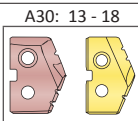
Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
724-IP7-1	724N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

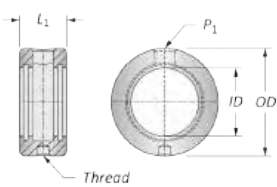


m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

Y Series: 9.50 mm - 11.09 mm (0.3740" - 0.4369")

T-A® Drill Accessories



Rotary Coolant Adapter (RCA) and Accessories

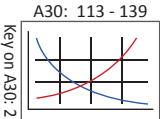
	ID	OD	L ₁	Driving Rod Thread	P ₁	RCA O-Rings		
						Part No.	Kit Part No.*	Replacements
	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	 2T-2SRM	2T1-2SR	2T1-2OR-10
	0.750	1.750	0.875	5/16" - 18	1/8 NPT	 2T-2SR	2T1-2SR	2T1-2OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
 Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

A30

 **WARNING**

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



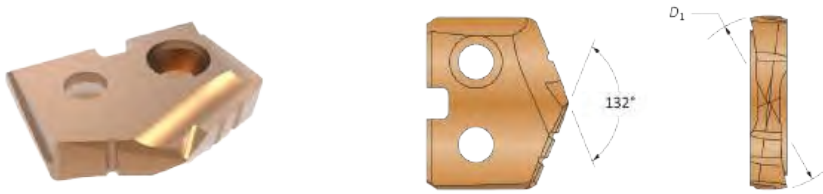
 = Metric (mm)
 = Imperial (in)

O-rings sold in packs of 10.

A30: 22

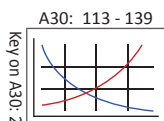
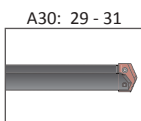
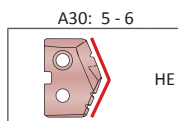
**Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")**

GEN2 T-A® Drill Inserts



A30

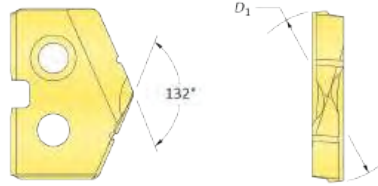
Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
D_1 mm	D_1 inch	Fractional Equivalent	 Part No.	 Part No.	 Part No.
			AM200®	AM300®	AM300®
11.11	0.4375	7/16	45ZH-0014	4C1ZP-0014	4C2ZP-0014
11.46	0.4510	—	45ZH-.451	4C1ZP-.451	4C2ZP-.451
11.50	0.4528	—	45ZH-11.5	4C1ZP-11.5	4C2ZP-11.5
11.51	0.4531	29/64	45ZH-.453	4C1ZP-.453	4C2ZP-.453
11.91	0.4688	15/32	45ZH-0015	4C1ZP-0015	4C2ZP-0015
12.00	0.4724	—	45ZH-12	4C1ZP-12	4C2ZP-12
12.30	0.4844	31/64	45ZH-.484	4C1ZP-.484	4C2ZP-.484
12.50	0.4921	—	45ZH-12.5	4C1ZP-12.5	4C2ZP-12.5
12.70	0.5000	1/2	45ZH-0016	4C1ZP-0016	4C2ZP-0016
12.85	0.5060	—	45ZH-.506	4C1ZP-.506	4C2ZP-.506
12.95	0.5100	—	45ZH-.510	4C1ZP-.510	4C2ZP-.510



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

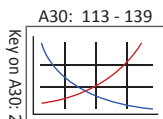
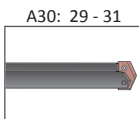
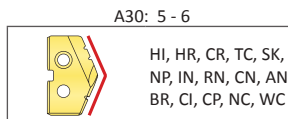
Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts



Insert			HSS: Super Cobalt		
D _i mm	D _i inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
11.11	0.4375	7/16	15ZT-0014	15ZA-0014	15ZN-0014
11.46	0.4510	—	15ZT-.451	15ZA-.451	15ZN-.451
11.50	0.4528	—	15ZT-11.5	15ZA-11.5	15ZN-11.5
11.51	0.4531	29/64	15ZT-.453	15ZA-.453	15ZN-.453
11.91	0.4688	15/32	15ZT-0015	15ZA-0015	15ZN-0015
12.00	0.4724	—	15ZT-12	15ZA-12	15ZN-12
12.30	0.4844	31/64	15ZT-.484	15ZA-.484	15ZN-.484
12.50	0.4921	—	15ZT-12.5	15ZA-12.5	15ZN-12.5
12.70	0.5000	1/2	15ZT-0016	15ZA-0016	15ZN-0016
12.85	0.5060	—	15ZT-.506	15ZA-.506	15ZN-.506
12.95	0.5100	—	15ZT-.510	15ZA-.510	15ZN-.510

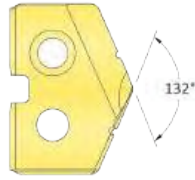
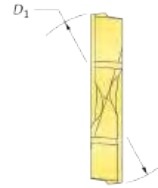
Insert			HSS: Premium Cobalt		
D _i mm	D _i inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
11.11	0.4375	7/16	18ZT-0014	18ZA-0014	18ZN-0014
11.46	0.4510	—	18ZT-.451	18ZA-.451	18ZN-.451
11.50	0.4528	—	18ZT-11.5	18ZA-11.5	18ZN-11.5
11.51	0.4531	29/64	18ZT-.453	18ZA-.453	18ZN-.453
11.91	0.4688	15/32	18ZT-0015	18ZA-0015	18ZN-0015
12.00	0.4724	—	18ZT-12	18ZA-12	18ZN-12
12.30	0.4844	31/64	18ZT-.484	18ZA-.484	18ZN-.484
12.50	0.4921	—	18ZT-12.5	18ZA-12.5	18ZN-12.5
12.70	0.5000	1/2	18ZT-0016	18ZA-0016	18ZN-0016
12.85	0.5060	—	18ZT-.506	18ZA-.506	18ZN-.506
12.95	0.5100	—	18ZT-.510	18ZA-.510	18ZN-.510



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

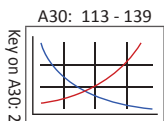
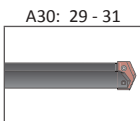
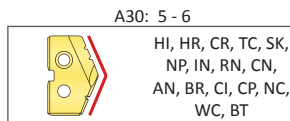
**Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")**

T-A® Drill Inserts



A30

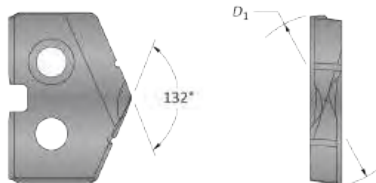
Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	TiAlN	TiN	TiAlN
11.11	0.4375	7/16	1C5ZT-0014	1C5ZA-0014	1C2ZT-0014	1C2ZA-0014
11.46	0.4510	—	1C5ZT-.451	1C5ZA-.451	1C2ZT-.451	1C2ZA-.451
11.50	0.4528	—	1C5ZT-11.5	1C5ZA-11.5	1C2ZT-11.5	1C2ZA-11.5
11.51	0.4531	29/64	1C5ZT-.453	1C5ZA-.453	1C2ZT-.453	1C2ZA-.453
11.91	0.4688	15/32	1C5ZT-0015	1C5ZA-0015	1C2ZT-0015	1C2ZA-0015
12.00	0.4724	—	1C5ZT-12	1C5ZA-12	1C2ZT-12	1C2ZA-12
12.30	0.4844	31/64	1C5ZT-.484	1C5ZA-.484	1C2ZT-.484	1C2ZA-.484
12.50	0.4921	—	1C5ZT-12.5	1C5ZA-12.5	1C2ZT-12.5	1C2ZA-12.5
12.70	0.5000	1/2	1C5ZT-0016	1C5ZA-0016	1C2ZT-0016	1C2ZA-0016
12.85	0.5060	—	1C5ZT-.506	1C5ZA-.506	1C2ZT-.506	1C2ZA-.506
12.95	0.5100	—	1C5ZT-.510	1C5ZA-.510	1C2ZT-.510	1C2ZA-.510



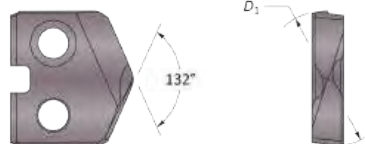
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts



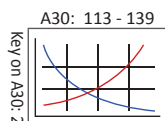
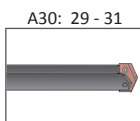
Cast Iron Geometry



A30

Insert			Carbide: N2	Cast Iron Geometry
				
			Part No.	Part No.
D_1 mm	D_1 inch	Fractional Equivalent	Diamond Film	TiAlN
11.11	0.4375	7/16	1N2ZD-0014	1C3ZA-0014-CI
11.46	0.4510	—	1N2ZD-.451	1C3ZA-.451-CI
11.50	0.4528	—	1N2ZD-11.5	1C3ZA-11.5-CI
11.51	0.4531	29/64	1N2ZD-.453	1C3ZA-.453-CI
11.91	0.4688	15/32	1N2ZD-0015	1C3ZA-0015-CI
12.00	0.4724	—	1N2ZD-12	1C3ZA-12-CI
12.30	0.4844	31/64	1N2ZD-.484	1C3ZA-.484-CI
12.50	0.4921	—	1N2ZD-12.5	1C3ZA-12.5-CI
12.70	0.5000	1/2	1N2ZD-0016	1C3ZA-0016-CI
12.85	0.5060	—	1N2ZD-.506	1C3ZA-.506-CI
12.95	0.5100	—	1N2ZD-.510	1C3ZA-.510-CI

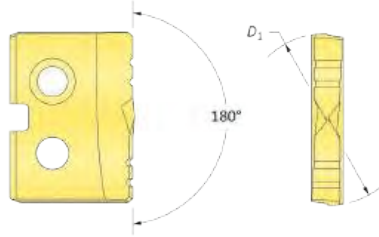
*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

**Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")**

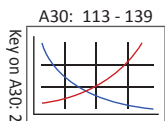
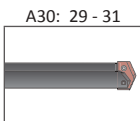
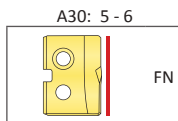
T-A® Drill Inserts



A30

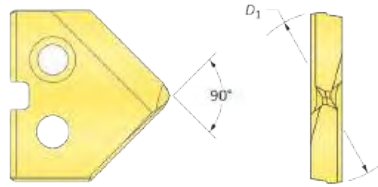
Insert			Flat Bottom Geometry	
			HSS: Super Cobalt	Carbide: K20 (C2)
			 Part No.	 Part No.
D_1 mm	D_1 inch	Fractional Equivalent	TiN	TiN*
11.11	0.4375	7/16	15ZT-0014-FB	1C2ZT-0014-FB
11.46	0.4510	—	15ZT-.451-FB	1C2ZT-.451-FB
11.50	0.4528	—	15ZT-11.5-FB	1C2ZT-11.5-FB
11.51	0.4531	29/64	15ZT-.453-FB	1C2ZT-.453-FB
11.91	0.4688	15/32	15ZT-0015-FB	1C2ZT-0015-FB
12.00	0.4724	—	15ZT-12-FB	1C2ZT-12-FB
12.30	0.4844	31/64	15ZT-.484-FB	1C2ZT-.484-FB
12.50	0.4921	—	15ZT-12.5-FB	1C2ZT-12.5-FB
12.70	0.5000	1/2	15ZT-0016-FB	1C2ZT-0016-FB
12.85	0.5060	—	15ZT-.506-FB	1C2ZT-.506-FB
12.95	0.5100	—	15ZT-.510-FB	1C2ZT-.510-FB

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.



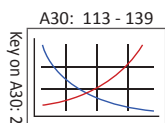
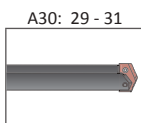
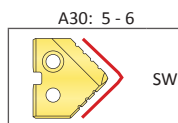
Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Inserts



Insert			90° Spot & Chamfer Geometry		
			HSS: Super Cobalt		
D_1 mm	D_1 inch	Fractional Equivalent			
			Part No.	Part No.	Part No.
			TiN	TiAlN	TiCN
11.11	0.4375	7/16	15ZT-0014-SP	15ZA-0014-SP	15ZN-0014-SP
11.46	0.4510	—	15ZT-.451-SP	15ZA-.451-SP	15ZN-.451-SP
11.50	0.4528	—	15ZT-11.5-SP	15ZA-11.5-SP	15ZN-11.5-SP
11.51	0.4531	29/64	15ZT-.453-SP	15ZA-.453-SP	15ZN-.453-SP
11.91	0.4688	15/32	15ZT-0015-SP	15ZA-0015-SP	15ZN-0015-SP
12.00	0.4724	—	15ZT-12-SP	15ZA-12-SP	15ZN-12-SP
12.30	0.4844	31/64	15ZT-.484-SP	15ZA-.484-SP	15ZN-.484-SP
12.50	0.4921	—	15ZT-12.5-SP	15ZA-12.5-SP	15ZN-12.5-SP
12.70	0.5000	1/2	15ZT-0016-SP	15ZA-0016-SP	15ZN-0016-SP
12.85	0.5060	—	15ZT-.506-SP	15ZA-.506-SP	15ZN-.506-SP
12.95	0.5100	—	15ZT-.510-SP	15ZA-.510-SP	15ZN-.510-SP

A30

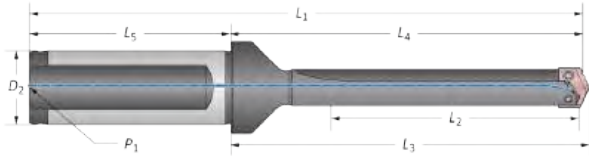
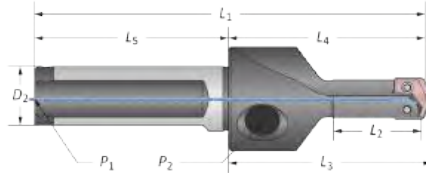


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A® Drill Holders



Stub Length

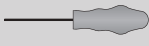
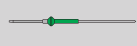
A30

Flange Shank Holders

Flute		Body					Shank			
Length		L_2	L_4	L_3	L_1	L_5	D_2	P_1	Part No.	
	 Straight	Stub	20.4	45.6	47.9	93.6	48.0	16	1/16 BSPT	210Z0S-16FM
		Short	29.1	61.1	63.4	111.1	50.0	20	1/8 BSPT	220Z0S-20FM
		Standard	57.6	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Z0S-20FM
		Extended	108.4	140.5	142.8	190.5	50.0	20	1/8 BSPT	250Z0S-20FM
		XL	219.6	251.6	253.9	301.6	50.0	20	1/8 BSPT	270Z0S-20FM
	 Helical	3XL	287.9	319.9	322.1	369.9	50.0	20	1/8 BSPT	290Z0S-20FM
		Standard	73.0	89.7	92.0	139.7	50.0	20	1/8 BSPT	240Z0H-20FM
		Standard Plus	98.7	115.4	117.7	165.4	50.0	20	1/8 BSPT	245Z0H-20FM
		Extended	123.8	140.5	142.8	190.5	50.0	20	1/8 BSPT	250Z0H-20FM
		Long	192.7	209.4	211.7	259.4	50.0	20	1/8 BSPT	260Z0H-20FM
	 Straight	Stub	0.805	1.797	1.887	3.672	1.875	5/8	1/16 NPT	210Z0S-063F
		Short	1.142	2.406	2.496	4.436	2.030	3/4	1/8 NPT	220Z0S-075F
		Standard	2.267	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Z0S-075F
		Extended	4.267	5.531	5.621	7.561	2.030	3/4	1/8 NPT	250Z0S-075F
	 Helical	Standard	2.874	3.531	3.621	5.561	2.030	3/4	1/8 NPT	240Z0H-075F
		Standard Plus	3.886	4.543	4.633	6.573	2.030	3/4	1/8 NPT	245Z0H-075F
		Extended	4.874	5.531	5.621	7.561	2.030	3/4	1/8 NPT	250Z0H-075F
		Long	7.586	8.244	8.334	10.274	2.030	3/4	1/8 NPT	260Z0H-075F

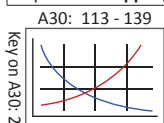
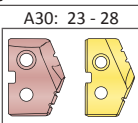
NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

Connection Accessories

					Admissible Tightening Torque*
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

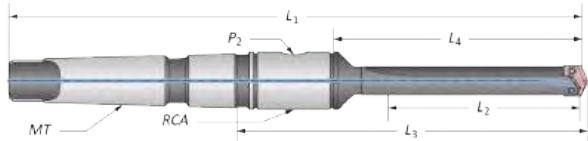
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



 = Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.

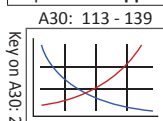
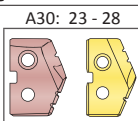
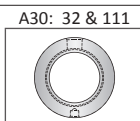


		Body					Shank			
Flute		Length	L_2	L_4	L_3	L_1	MT^*	P_2	RCA	Part No.
m		Short	27.3	51.6	88.0	160.3	#2 MT ISO	1/16 BSPT	2T-2SRM	220Z05-002M
		Standard	69.4	80.2	116.6	188.9	#2 MT ISO	1/16 BSPT	2T-2SRM	240Z0H-002M
		Extended	120.2	131.0	167.4	239.7	#2 MT ISO	1/16 BSPT	2T-2SRM	250Z0H-002M
i		Short	1.074	2.031	3.464	6.312	#2 MT	1/16 NPT	2T-2SR	220Z05-002I
		Standard	2.199	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	240Z05-002I
		Extended	4.199	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	250Z05-002I
		Standard	2.733	3.156	4.589	7.437	#2 MT	1/16 NPT	2T-2SR	240Z0H-002I
		Extended	4.733	5.156	6.589	9.437	#2 MT	1/16 NPT	2T-2SR	250Z0H-002I

A30

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



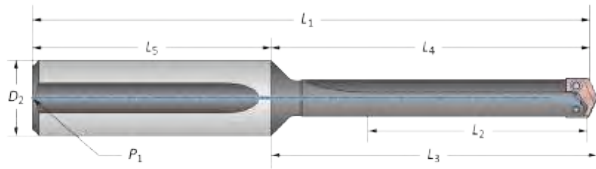
m = Metric (mm)
i = Imperial (in)

A30: 30



Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

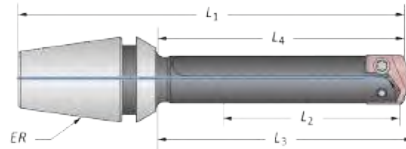
T-A® Drill Holders



Straight Shank Holders

Flute		Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
		Short	1.079	2.031	2.121	4.406	2.375	3/4	1/8 NPT	220Z0S-075L
		Standard	2.204	3.156	3.246	5.531	2.375	3/4	1/8 NPT	240Z0S-075L
		Extended	4.204	5.156	5.246	7.531	2.375	3/4	1/8 NPT	 250Z0S-075L
		XL	8.579	9.531	9.621	11.906	2.375	3/4	1/8 NPT	 270Z0S-075L
		3XL	11.266	12.218	12.308	14.593	2.375	3/4	1/8 NPT	 290Z0S-075L

A30



ER Collet Holders

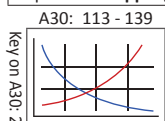
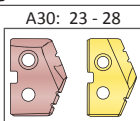
Flute		Body					Part No.	Collet Nut without Retaining Ring
		L_2	L_4	L_3	L_1	ER		
m		42.1	48.5	50.8	75.8	ER-16	210Z0S-16ER	ER-16N
	Straight	42.1	48.5	50.8	79.8	ER-20	210Z0S-20ER	ER-20N

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7247-IP7-1	7247N-IP7-1	8IP-7	8IP-7TL	8IP-7B	84 N-cm (7.4 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

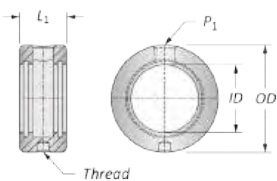


m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

Z Series: 11.10 mm - 12.97 mm (0.4370" - 0.5109")

T-A Drill Accessories



Rotary Coolant Adapter (RCA) and Accessories

			RCA O-Rings					
	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Kit Part No.*	Replacements
	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	 2T-2SRM	2T1-2SR	2T1-2OR-10
	0.750	1.750	0.875	5/16" - 18	1/8 NPT	 2T-2SR	2T1-2SR	2T1-2OR-10

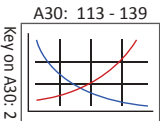
*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

 Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

A30

 **WARNING**

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com

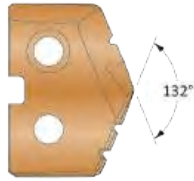


 = Metric (mm)
 = Imperial (in)
O-rings sold in packs of 10.
A30: 32



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

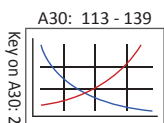
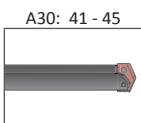
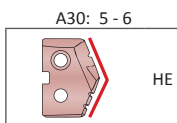
GEN2 T-A® Drill Inserts



A30

Series	Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
0	13.00	0.5118	—	AM200®	AM300®	AM300®
	13.10	0.5156	33/64	450H-13	4C20P-13	4C10P-13
	13.50	0.5313	17/32	450H-.515	4C20P-.515	4C10P-.515
	13.50	0.5315	—	450H-0017	4C20P-0017	4C10P-0017
	13.89	0.5469	35/64	450H-13.5	4C20P-13.5	4C10P-13.5
	14.00	0.5512	—	450H-.546	4C20P-.546	4C10P-.546
	14.29	0.5625	9/16	450H-14	4C20P-14	4C10P-14
	14.50	0.5709	—	450H-0018	4C20P-0018	4C10P-0018
	14.68	0.5781	37/64	450H-14.5	4C20P-14.5	4C10P-14.5
	15.00	0.5906	—	450H-.578	4C20P-.578	4C10P-.578
0.5	15.08	0.5938	19/32	450H-15	4C20P-15	4C10P-15
	15.48	0.6094	39/64	450H-0019	4C20P-0019	4C10P-0019
	15.50	0.6102	—	450H-.609	4C20P-.609	4C10P-.609
	15.88	0.6250	5/8	450H-15.5	4C20P-15.5	4C10P-15.5
	16.00	0.6299	—	450H-0020	4C20P-0020	4C10P-0020
	16.27	0.6406	41/64	450H-16	4C20P-16	4C10P-16
	16.50	0.6496	—	450H-.640	4C20P-.640	4C10P-.640
	16.67	0.6563	21/32	450H-16.5	4C20P-16.5	4C10P-16.5
	17.00	0.6693	—	450H-0021	4C20P-0021	4C10P-0021
	17.07	0.6719	43/64	450H-17	4C20P-17	4C10P-17
	17.46	0.6875	11/16	450H-.671	4C20P-.671	4C10P-.671
	17.50	0.6890	—	450H-0022	4C20P-0022	4C10P-0022
				450H-17.5	4C20P-17.5	4C10P-17.5

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

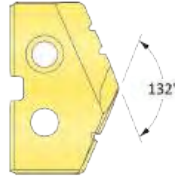
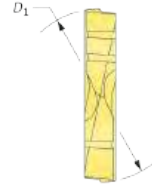


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

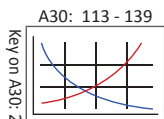
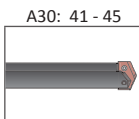
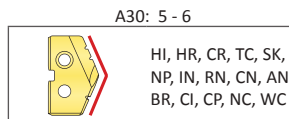
T-A® Drill Inserts



Series	Insert			HSS: Super Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TiN	TiAlN	TiCN
0	13.00	0.5118	—	150T-13	150A-13	150N-13
	13.10	0.5156	33/64	150T-.515	150A-.515	150N-.515
	13.50	0.5313	17/32	150T-0017	150A-0017	150N-0017
	13.50	0.5315	—	150T-13.5	150A-13.5	150N-13.5
	13.89	0.5469	35/64	150T-.546	150A-.546	150N-.546
	14.00	0.5512	—	150T-14	150A-14	150N-14
	14.29	0.5625	9/16	150T-0018	150A-0018	150N-0018
	14.50	0.5709	—	150T-14.5	150A-14.5	150N-14.5
	14.68	0.5781	37/64	150T-.578	150A-.578	150N-.578
	15.00	0.5906	—	150T-15	150A-15	150N-15
0.5	15.08	0.5938	19/32	150T-0019	150A-0019	150N-0019
	15.48	0.6094	39/64	150T-.609	150A-.609	150N-.609
	15.50	0.6102	—	150T-15.5	150A-15.5	150N-15.5
	15.88	0.6250	5/8	150T-0020	150A-0020	150N-0020
	16.00	0.6299	—	150T-16	150A-16	150N-16
	16.27	0.6406	41/64	150T-.640	150A-.640	150N-.640
	16.50	0.6496	—	150T-16.5	150A-16.5	150N-16.5
	16.67	0.6563	21/32	150T-0021	150A-0021	150N-0021
	17.00	0.6693	—	150T-17	150A-17	150N-17
	17.07	0.6719	43/64	150T-.671	150A-.671	150N-.671
	17.46	0.6875	11/16	150T-0022	150A-0022	150N-0022
	17.50	0.6890	—	150T-17.5	150A-17.5	150N-17.5

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

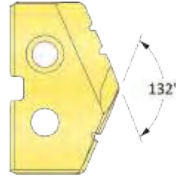
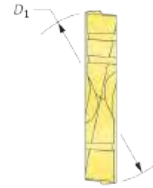
A30



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

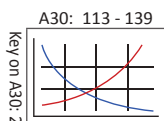
**0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")**

T-A® Drill Inserts

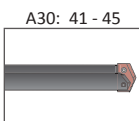


A30

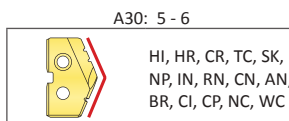
Series	Insert			HSS: Premium Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
0	13.00	0.5118	—	180T-13	180A-13	180N-13
	13.10	0.5156	33/64	180T-.515	180A-.515	180N-.515
	13.50	0.5313	17/32	180T-0017	180A-0017	180N-0017
	13.50	0.5315	—	180T-13.5	180A-13.5	180N-13.5
	13.89	0.5469	35/64	180T-.546	180A-.546	180N-.546
	14.00	0.5512	—	180T-14	180A-14	180N-14
	14.29	0.5625	9/16	180T-0018	180A-0018	180N-0018
	14.50	0.5709	—	180T-14.5	180A-14.5	180N-14.5
	14.68	0.5781	37/64	180T-.578	180A-.578	180N-.578
	15.00	0.5906	—	180T-15	180A-15	180N-15
0.5	15.08	0.5938	19/32	180T-0019	180A-0019	180N-0019
	15.48	0.6094	39/64	180T-.609	180A-.609	180N-.609
	15.50	0.6102	—	180T-15.5	180A-15.5	180N-15.5
	15.88	0.6250	5/8	180T-0020	180A-0020	180N-0020
	16.00	0.6299	—	180T-16	180A-16	180N-16
	16.27	0.6406	41/64	180T-.640	180A-.640	180N-.640
	16.50	0.6496	—	180T-16.5	180A-16.5	180N-16.5
	16.67	0.6563	21/32	180T-0021	180A-0021	180N-0021
	17.00	0.6693	—	180T-17	180A-17	180N-17
	17.07	0.6719	43/64	180T-.671	180A-.671	180N-.671
	17.46	0.6875	11/16	180T-0022	180A-0022	180N-0022
	17.50	0.6890	—	180T-17.5	180A-17.5	180N-17.5

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30: 113 - 139



A30: 41 - 45



A30: 5 - 6

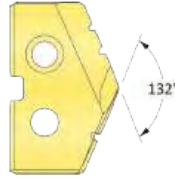
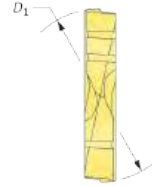
HI, HR, CR, TC, SK,
NP, IN, RN, CN, AN,
BR, CI, CP, NC, WC

Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

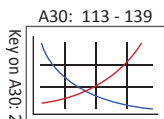
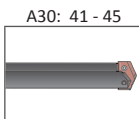
T-A® Drill Inserts



Series	Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No.	Part No.	Part No.	Part No.
0	13.00	0.5118	—	1C50T-13	1C50A-13	1C20T-13	1C20A-13
	13.10	0.5156	33/64	1C50T-.515	1C50A-.515	1C20T-.515	1C20A-.515
	13.50	0.5313	17/32	1C50T-0017	1C50A-0017	1C20T-0017	1C20A-0017
	13.50	0.5315	—	1C50T-13.5	1C50A-13.5	1C20T-13.5	1C20A-13.5
	13.89	0.5469	35/64	1C50T-.546	1C50A-.546	1C20T-.546	1C20A-.546
	14.00	0.5512	—	1C50T-14	1C50A-14	1C20T-14	1C20A-14
	14.29	0.5625	9/16	1C50T-0018	1C50A-0018	1C20T-0018	1C20A-0018
	14.50	0.5709	—	1C50T-14.5	1C50A-14.5	1C20T-14.5	1C20A-14.5
	14.68	0.5781	37/64	1C50T-.578	1C50A-.578	1C20T-.578	1C20A-.578
	15.00	0.5906	—	1C50T-15	1C50A-15	1C20T-15	1C20A-15
0.5	15.08	0.5938	19/32	1C50T-0019	1C50A-0019	1C20T-0019	1C20A-0019
	15.48	0.6094	39/64	1C50T-.609	1C50A-.609	1C20T-.609	1C20A-.609
	15.50	0.6102	—	1C50T-15.5	1C50A-15.5	1C20T-15.5	1C20A-15.5
	15.88	0.6250	5/8	1C50T-0020	1C50A-0020	1C20T-0020	1C20A-0020
	16.00	0.6299	—	1C50T-16	1C50A-16	1C20T-16	1C20A-16
	16.27	0.6406	41/64	1C50T-.640	1C50A-.640	1C20T-.640	1C20A-.640
	16.50	0.6496	—	1C50T-16.5	1C50A-16.5	1C20T-16.5	1C20A-16.5
	16.67	0.6563	21/32	1C50T-0021	1C50A-0021	1C20T-0021	1C20A-0021
	17.00	0.6693	—	1C50T-17	1C50A-17	1C20T-17	1C20A-17
	17.07	0.6719	43/64	1C50T-.671	1C50A-.671	1C20T-.671	1C20A-.671
	17.46	0.6875	11/16	1C50T-0022	1C50A-0022	1C20T-0022	1C20A-0022
	17.50	0.6890	—	1C50T-17.5	1C50A-17.5	1C20T-17.5	1C20A-17.5

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

A30



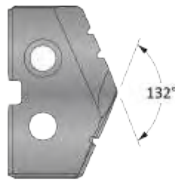
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



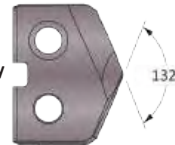
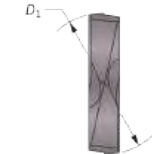
0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts

A30



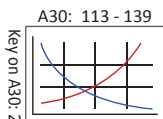
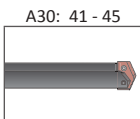
Cast Iron Geometry



Series	Insert			Carbide: N2	Cast Iron Geometry
	D ₁ mm	D ₁ inch	Fractional Equivalent		
				Part No.	Part No.
				Diamond Film*	TiAlN
0	13.00	0.5118	—	1N20D-13	1C30A-13-CI
	13.10	0.5156	33/64	1N20D-.515	1C30A-.515-CI
	13.50	0.5313	17/32	1N20D-0017	1C30A-0017-CI
	13.50	0.5315	—	1N20D-13.5	1C30A-13.5-CI
	13.89	0.5469	35/64	1N20D-.546	1C30A-.546-CI
	14.00	0.5512	—	1N20D-14	1C30A-14-CI
	14.29	0.5625	9/16	1N20D-0018	1C30A-0018-CI
	14.50	0.5709	—	1N20D-14.5	1C30A-14.5-CI
	14.68	0.5781	37/64	1N20D-.578	1C30A-.578-CI
	15.00	0.5906	—	1N20D-15	1C30A-15-CI
0.5	15.08	0.5938	19/32	1N20D-0019	1C30A-0019-CI
	15.48	0.6094	39/64	1N20D-.609	1C30A-.609-CI
	15.50	0.6102	—	1N20D-15.5	1C30A-15.5-CI
	15.88	0.6250	5/8	1N20D-0020	1C30A-0020-CI
	16.00	0.6299	—	1N20D-16	1C30A-16-CI
	16.27	0.6406	41/64	1N20D-.640	1C30A-.640-CI
	16.50	0.6496	—	1N20D-16.5	1C30A-16.5-CI
	16.67	0.6563	21/32	1N20D-0021	1C30A-0021-CI
	17.00	0.6693	—	1N20D-17	1C30A-17-CI
	17.07	0.6719	43/64	1N20D-.671	1C30A-.671-CI
	17.46	0.6875	11/16	1N20D-0022	1C30A-0022-CI
	17.50	0.6890	—	1N20D-17.5	1C30A-17.5-CI

*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

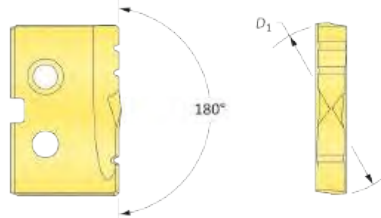


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Inserts

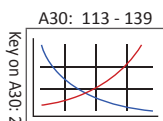
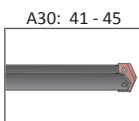
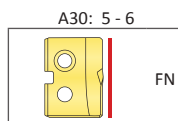


Series	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
				Part No.	Part No.
	D ₁ mm	D ₁ inch	Fractional Equivalent	TiN	TiN*
0	13.00	0.5118	—	150T-13-FB	1C20T-13-FB
	13.10	0.5156	33/64	150T-.515-FB	1C20T-.515-FB
	13.50	0.5313	17/32	150T-0017-FB	1C20T-0017-FB
	13.50	0.5315	—	150T-13.5-FB	1C20T-13.5-FB
	13.89	0.5469	35/64	150T-.546-FB	1C20T-.546-FB
	14.00	0.5512	—	150T-14-FB	1C20T-14-FB
	14.29	0.5625	9/16	150T-0018-FB	1C20T-0018-FB
	14.50	0.5709	—	150T-14.5-FB	1C20T-14.5-FB
	14.68	0.5781	37/64	150T-.578-FB	1C20T-.578-FB
	15.00	0.5906	—	150T-15-FB	1C20T-15-FB
0.5	15.08	0.5938	19/32	150T-0019-FB	1C20T-0019-FB
	15.48	0.6094	39/64	150T-.609-FB	1C20T-.609-FB
	15.50	0.6102	—	150T-15.5-FB	1C20T-15.5-FB
	15.88	0.6250	5/8	150T-0020-FB	1C20T-0020-FB
	16.00	0.6299	—	150T-16-FB	1C20T-16-FB
	16.27	0.6406	41/64	150T-.640-FB	1C20T-.640-FB
	16.50	0.6496	—	150T-16.5-FB	1C20T-16.5-FB
	16.67	0.6563	21/32	150T-0021-FB	1C20T-0021-FB
	17.00	0.6693	—	150T-17-FB	1C20T-17-FB
	17.07	0.6719	43/64	150T-.671-FB	1C20T-.671-FB
	17.46	0.6875	11/16	150T-0022-FB	1C20T-0022-FB
	17.50	0.6890	—	150T-17.5-FB	1C20T-17.5-FB

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts **ONLY** fit into 0 series holders. See page A30: 7 for visual.

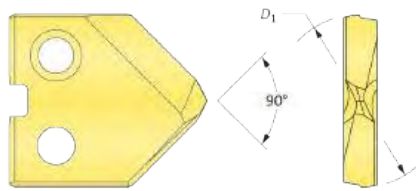
A30



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

**0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")**

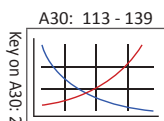
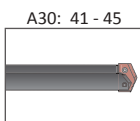
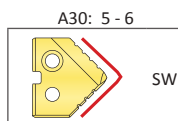
T-A® Drill Inserts



A30

Series	Insert			90° Spot & Chamfer Geometry		
	D ₁ mm	D ₁ inch	Fractional Equivalent	HSS: Super Cobalt		
				 Part No.	 Part No.	 Part No.
				TiN	TiAlN	TiCN
0	13.00	0.5118	—	150T-13-SP	150A-13-SP	150N-13-SP
	13.10	0.5156	33/64	150T-.515-SP	150A-.515-SP	150N-.515-SP
	13.50	0.5313	17/32	150T-0017-SP	150A-0017-SP	150N-0017-SP
	13.50	0.5315	—	150T-13.5-SP	150A-13.5-SP	150N-13.5-SP
	13.89	0.5469	35/64	150T-.546-SP	150A-.546-SP	150N-.546-SP
	14.00	0.5512	—	150T-14-SP	150A-14-SP	150N-14-SP
	14.29	0.5625	9/16	150T-0018-SP	150A-0018-SP	150N-0018-SP
	14.50	0.5709	—	150T-14.5-SP	150A-14.5-SP	150N-14.5-SP
	14.68	0.5781	37/64	150T-.578-SP	150A-.578-SP	150N-.578-SP
	15.00	0.5906	—	150T-15-SP	150A-15-SP	150N-15-SP
0.5	15.08	0.5938	19/32	150T-0019-SP	150A-0019-SP	150N-0019-SP
	15.48	0.6094	39/64	150T-.609-SP	150A-.609-SP	150N-.609-SP
	15.50	0.6102	—	150T-15.5-SP	150A-15.5-SP	150N-15.5-SP
	15.88	0.6250	5/8	150T-0020-SP	150A-0020-SP	150N-0020-SP
	16.00	0.6299	—	150T-16-SP	150A-16-SP	150N-16-SP
	16.27	0.6406	41/64	150T-.640-SP	150A-.640-SP	150N-.640-SP
	16.50	0.6496	—	150T-16.5-SP	150A-16.5-SP	150N-16.5-SP
	16.67	0.6563	21/32	150T-0021-SP	150A-0021-SP	150N-0021-SP
	17.00	0.6693	—	150T-17-SP	150A-17-SP	150N-17-SP
	17.07	0.6719	43/64	150T-.671-SP	150A-.671-SP	150N-.671-SP
	17.46	0.6875	11/16	150T-0022-SP	150A-0022-SP	150N-0022-SP
	17.50	0.6890	—	150T-17.5-SP	150A-17.5-SP	150N-17.5-SP

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

A30

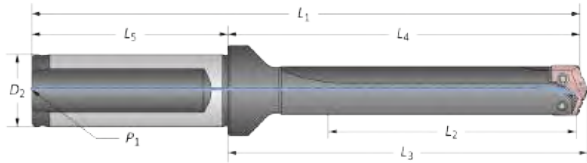
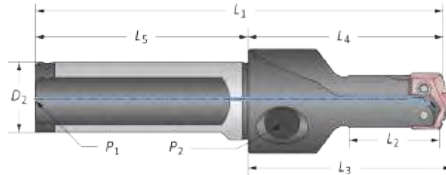


0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders



Stub Length



A30

Metric Flange Shank Holders

Flute	Series	Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	0	Stub	23.1	47.6	50.3	97.6	50.0	20	1/8 BSPT	21000S-20FM
		Short	30.9	63.5	66.2	113.5	50.0	20	1/8 BSPT	22000S-20FM
		Standard	59.6	92.1	94.8	142.1	50.0	20	1/8 BSPT	24000S-20FM
		Extended	110.4	142.9	145.6	192.9	50.0	20	1/8 BSPT	25000S-20FM
		XL	291.3	323.9	326.6	373.9	50.0	20	1/8 BSPT	27000S-20FM
	0.5	3XL	383.3	415.9	418.6	465.9	50.0	20	1/8 BSPT	29000S-20FM
		Stub	24.0	47.6	50.3	97.6	50.0	20	1/8 BSPT	21005S-20FM
		Short	29.6	63.5	66.2	113.5	50.0	20	1/8 BSPT	22005S-20FM
		Standard	58.9	92.1	94.8	142.1	50.0	20	1/8 BSPT	24005S-20FM
		Extended	109.7	142.9	145.6	192.9	50.0	20	1/8 BSPT	25005S-20FM
Helical	0	Standard	75.9	92.1	94.8	142.1	50.0	20	1/8 BSPT	24000H-20FM
		Standard Plus	101.4	117.6	120.3	167.6	50.0	20	1/8 BSPT	24500H-20FM
		Extended	126.7	142.9	145.6	192.9	50.0	20	1/8 BSPT	25000H-20FM
		Long	190.2	206.4	209.1	256.4	50.0	20	1/8 BSPT	26000H-20FM
		Long Plus	252.4	268.6	271.3	318.6	50.0	20	1/8 BSPT	26500H-20FM
	0.5	Standard	77.1	92.1	94.8	142.1	50.0	20	1/8 BSPT	24005H-20FM
		Extended	127.9	142.9	145.6	192.9	50.0	20	1/8 BSPT	25005H-20FM
		Long	191.4	206.4	209.1	256.4	50.0	20	1/8 BSPT	26005H-20FM

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).

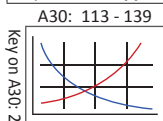
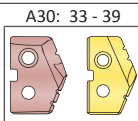
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

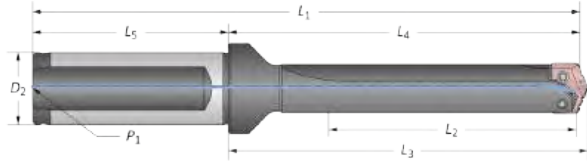
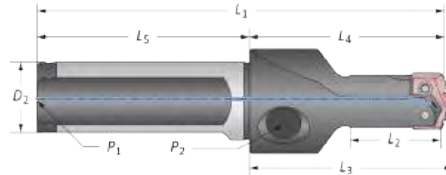


0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

T-A® Drill Holders



Stub Length



A30

Imperial Flange Shank Holders

Flute	Series	Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	0	Stub	0.910	1.875	1.982	3.905	2.030	3/4	1/8 NPT	21000S-075F
		Short	1.220	2.500	2.607	4.530	2.030	3/4	1/8 NPT	22000S-075F
		Standard	2.345	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24000S-075F
		Extended	4.345	5.625	5.732	7.655	2.030	3/4	1/8 NPT	25000S-075F
	0.5	Stub	0.945	1.875	1.982	3.905	2.030	3/4	1/8 NPT	21005S-075F
		Short	1.195	2.500	2.607	4.530	2.030	3/4	1/8 NPT	22005S-075F
		Standard	2.320	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24005S-075F
		Extended	4.320	5.625	5.732	7.655	2.030	3/4	1/8 NPT	25005S-075F
Helical	0	Standard	2.987	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24000H-075F
		Standard Plus	3.992	4.630	4.737	6.660	2.030	3/4	1/8 NPT	24500H-075F
		Extended	4.987	5.625	5.732	7.655	2.030	3/4	1/8 NPT	25000H-075F
		Long	7.487	8.125	8.232	10.155	2.030	3/4	1/8 NPT	26000H-075F
	0.5	Long Plus	9.937	10.575	10.682	12.605	2.030	3/4	1/8 NPT	26500H-075F
		Standard	3.034	3.625	3.732	5.655	2.030	3/4	1/8 NPT	24005H-075F
		Extended	5.034	5.625	5.732	7.655	2.030	3/4	1/8 NPT	25005H-075F
		Long	7.534	8.125	8.232	10.155	2.030	3/4	1/8 NPT	26005H-075F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

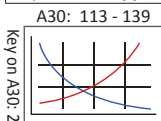
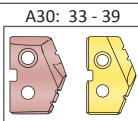
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

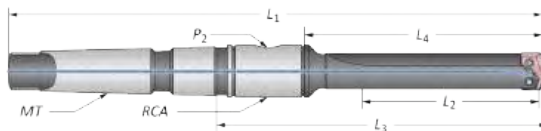
Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

T-A® Drill Holders



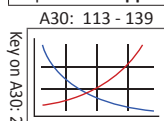
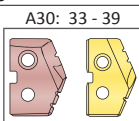
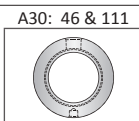
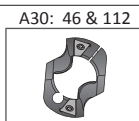
Flute		Series	Body					Shank			Part No.
			Length	L ₂	L ₄	L ₃	L ₁	MT	P ₂	RCA	
i	Straight	0	Short	1.213	2.188	3.638	6.469	#2 MT	1/16 NPT	2T-2SR	22000S-002I
			Standard	2.338	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24000S-002I
		0.5	Extended	4.338	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25000S-002I
			Short	1.188	2.188	3.638	6.469	#2 MT	1/16 NPT	2T-2SR	22005S-002I
	Helical	0	Standard	2.313	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24005S-002I
			Extended	4.313	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25005S-002I
0.5		Standard	2.909	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24000H-002I	
		Extended	4.909	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25000H-002I	
	Long	7.409	7.813	9.263	12.094	#2 MT	1/16 NPT	2T-2SR	⚠ 26000H-002I		
0.5	Standard	2.956	3.313	4.763	7.594	#2 MT	1/16 NPT	2T-2SR	24005H-002I		
	Extended	4.956	5.313	6.763	9.594	#2 MT	1/16 NPT	2T-2SR	⚠ 25005H-002I		
	Long	7.456	7.813	9.263	12.094	#2 MT	1/16 NPT	2T-2SR	⚠ 26005H-002I		

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts **ONLY** fit into 0 series holders. See page A30: 7 for visual.

A30

						Admissible Tightening Torque*
Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



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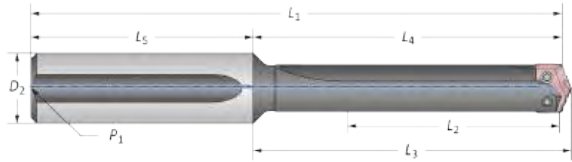
Screws sold in multiples of 10.

A30: 44



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

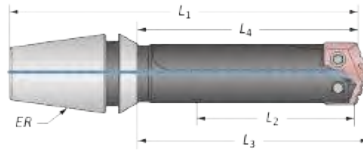
T-A® Drill Holders



Straight Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
	0	Short	1.218	2.188	2.295	4.563	2.375	3/4	1/8 NPT	22000S-075L
		Standard	2.343	3.313	3.420	5.688	2.375	3/4	1/8 NPT	24000S-075L
		Extended	4.343	5.313	5.420	7.688	2.375	3/4	1/8 NPT	25000S-075L
		Long	6.843	7.813	7.920	10.188	2.375	3/4	1/8 NPT	26000S-075L
		XL	11.468	12.438	12.545	14.813	2.375	3/4	1/8 NPT	27000S-075L
	0.5	3XL	15.093	16.063	16.170	18.438	2.375	3/4	1/8 NPT	29000S-075L
		Short	1.194	2.188	2.295	4.563	2.375	3/4	1/8 NPT	22005S-075L
		Standard	2.319	3.313	3.420	5.688	2.375	3/4	1/8 NPT	24005S-075L
		Extended	4.319	5.313	5.420	7.688	2.375	3/4	1/8 NPT	25005S-075L
		Long	6.819	7.813	7.920	10.188	2.375	3/4	1/8 NPT	26005S-075L

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.



ER Collet Holders

Series		Body					Part No.	Collet Nut without Retaining Ring
		L_2	L_4	L_3	L_1	ER		
m	0	41.2	48.1	50.8	75.3	ER-16	21000S-16ER	ER-16N
		41.2	48.1	50.8	79.3	ER-20	21000S-20ER	ER-20N

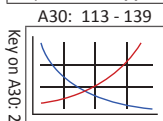
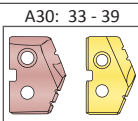
NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts ONLY fit into 0 series holders. See page A30: 7 for visual.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



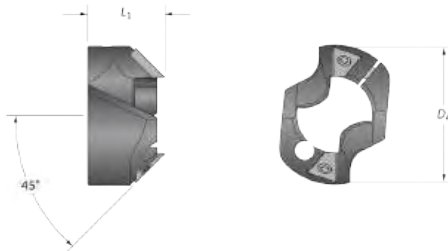
 = Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.



0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")

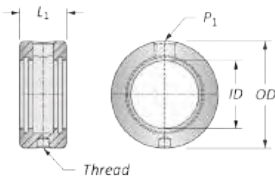
T-A® Drill Accessories



T-ACR 45 Chamfer Ring

Holder Series	D ₁ Range	Chamfer Ring		Part No.	 Insert Part No.	 Insert Screw	 Insert Driver	 Clamping Screw	 Insert Driver
		D ₄	L ₁						
0	0.5118 - 0.6890	1.148	0.676	T-ACR-45-0	T-ACRI-45-B-CSA	7255-IP8-1	8IP-8	7375-IP9-1	8IP-9

A30



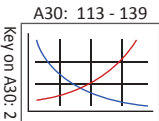
Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	 2T-2SRM	2T1-2SR	2T1-2OR-10
	0.750	1.750	0.875	5/16" - 18	1/8 NPT	 2T-2SR	2T1-2SR	2T1-2OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

 Refer to page A30: 111 for proper RCA assembly and safety information.

 **WARNING** RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



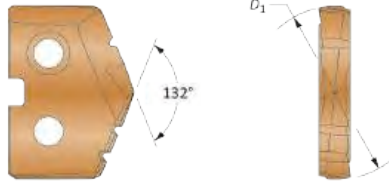
 = Metric (mm)
 = Imperial (in)

Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

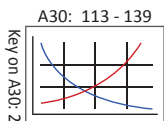
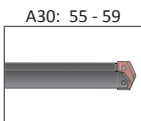
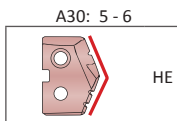
GEN2 T-A® Drill Inserts



A30

Series	Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
1	17.86	0.7031	45/64	AM200®	AM300®	AM300®
	18.00	0.7087	—	451H-.703	4C21P-.703	4C11P-.703
	18.26	0.7188	23/32	451H-18	4C21P-18	4C11P-18
	18.50	0.7283	—	451H-0023	4C21P-0023	4C11P-0023
	18.65	0.7344	47/64	451H-18.5	4C21P-18.5	4C11P-18.5
	19.00	0.7480	—	451H-.734	4C21P-.734	4C11P-.734
	19.05	0.7500	3/4	451H-19	4C21P-19	4C11P-19
	19.45	0.7656	49/64	451H-0024	4C21P-0024	4C11P-0024
	19.50	0.7677	—	451H-.765	4C21P-.765	4C11P-.765
	19.85	0.7813	25/32	451H-19.5	4C21P-19.5	4C11P-19.5
	20.00	0.7874	—	451H-0025	4C21P-0025	4C11P-0025
	20.24	0.7969	51/64	451H-20	4C21P-20	4C11P-20
	20.35	0.8010	—	451H-.796	4C21P-.796	4C11P-.796
	20.50	0.8071	—	451H-.801	4C21P-.801	4C11P-.801
	20.64	0.8125	13/16	451H-20.5	4C21P-20.5	4C11P-20.5
	21.00	0.8268	—	451H-0026	4C21P-0026	4C11P-0026
	21.43	0.8438	27/32	451H-21	4C21P-21	4C11P-21
	21.50	0.8465	—	451H-0027	4C21P-0027	4C11P-0027
1.5	21.83	0.8594	55/64	451H-21.5	4C21P-21.5	4C11P-21.5
	22.00	0.8661	—	451H-.859	4C21P-.859	4C11P-.859
	22.23	0.8750	7/8	451H-22	4C21P-22	4C11P-22
	22.50	0.8858	—	451H-0028	4C21P-0028	4C11P-0028
	22.62	0.8906	57/64	451H-22.5	4C21P-22.5	4C11P-22.5
	23.00	0.9055	—	451H-.890	4C21P-.890	4C11P-.890
	23.02	0.9063	29/32	451H-23	4C21P-23	4C11P-23
	23.42	0.9219	59/64	451H-0029	4C21P-0029	4C11P-0029
	23.50	0.9252	—	451H-.921	4C21P-.921	4C11P-.921
	23.81	0.9375	15/16	451H-23.5	4C21P-23.5	4C11P-23.5
	24.00	0.9449	—	451H-0030	4C21P-0030	4C11P-0030
				451H-24	4C21P-24	4C11P-24

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

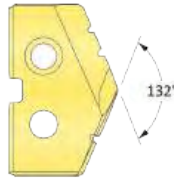
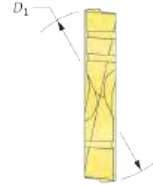


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



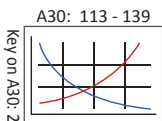
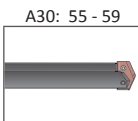
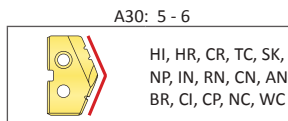
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts



Series	Insert			HSS: High-Speed Steel		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No. TiN	Part No. TiAlN	Part No. TiCN
1	17.86	0.7031	45/64	131T-.703	131A-.703	131N-.703
	18.00	0.7087	—	131T-18	131A-18	131N-18
	18.26	0.7188	23/32	131T-0023	131A-0023	131N-0023
	18.50	0.7283	—	131T-18.5	131A-18.5	131N-18.5
	18.65	0.7344	47/64	131T-.734	131A-.734	131N-.734
	19.00	0.7480	—	131T-19	131A-19	131N-19
	19.05	0.7500	3/4	131T-0024	131A-0024	131N-0024
	19.45	0.7656	49/64	131T-.765	131A-.765	131N-.765
	19.50	0.7677	—	131T-19.5	131A-19.5	131N-19.5
	19.85	0.7813	25/32	131T-0025	131A-0025	131N-0025
	20.00	0.7874	—	131T-20	131A-20	131N-20
	20.24	0.7969	51/64	131T-.796	131A-.796	131N-.796
	20.35	0.8010	—	131T-.801	131A-.801	131N-.801
	20.50	0.8071	—	131T-20.5	131A-20.5	131N-20.5
	20.64	0.8125	13/16	131T-0026	131A-0026	131N-0026
	21.00	0.8268	—	131T-21	131A-21	131N-21
	21.43	0.8438	27/32	131T-0027	131A-0027	131N-0027
	21.50	0.8465	—	131T-21.5	131A-21.5	131N-21.5
1.5	21.83	0.8594	55/64	131T-.859	131A-.859	131N-.859
	22.00	0.8661	—	131T-22	131A-22	131N-22
	22.23	0.8750	7/8	131T-0028	131A-0028	131N-0028
	22.50	0.8858	—	131T-22.5	131A-22.5	131N-22.5
	22.62	0.8906	57/64	131T-.890	131A-.890	131N-.890
	23.00	0.9055	—	131T-23	131A-23	131N-23
	23.02	0.9063	29/32	131T-0029	131A-0029	131N-0029
	23.42	0.9219	59/64	131T-.921	131A-.921	131N-.921
	23.50	0.9252	—	131T-23.5	131A-23.5	131N-23.5
	23.81	0.9375	15/16	131T-0030	131A-0030	131N-0030
	24.00	0.9449	—	131T-24	131A-24	131N-24

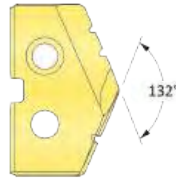
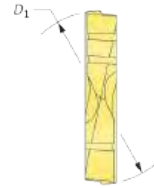
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

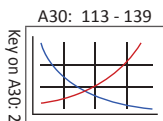
**1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")**

T-A® Drill Inserts

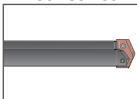


A30

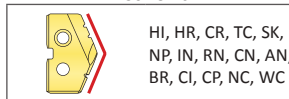
Series	Insert			HSS: Super Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TiN	TiAlN	TiCN
1	17.86	0.7031	45/64	151T-.703	151A-.703	151N-.703
	18.00	0.7087	—	151T-18	151A-18	151N-18
	18.26	0.7188	23/32	151T-0023	151A-0023	151N-0023
	18.50	0.7283	—	151T-18.5	151A-18.5	151N-18.5
	18.65	0.7344	47/64	151T-.734	151A-.734	151N-.734
	19.00	0.7480	—	151T-19	151A-19	151N-19
	19.05	0.7500	3/4	151T-0024	151A-0024	151N-0024
	19.45	0.7656	49/64	151T-.765	151A-.765	151N-.765
	19.50	0.7677	—	151T-19.5	151A-19.5	151N-19.5
	19.85	0.7813	25/32	151T-0025	151A-0025	151N-0025
	20.00	0.7874	—	151T-20	151A-20	151N-20
	20.24	0.7969	51/64	151T-.796	151A-.796	151N-.796
	20.35	0.8010	—	151T-.801	151A-.801	151N-.801
	20.50	0.8071	—	151T-20.5	151A-20.5	151N-20.5
	20.64	0.8125	13/16	151T-0026	151A-0026	151N-0026
	21.00	0.8268	—	151T-21	151A-21	151N-21
	21.43	0.8438	27/32	151T-0027	151A-0027	151N-0027
	21.50	0.8465	—	151T-21.5	151A-21.5	151N-21.5
1.5	21.83	0.8594	55/64	151T-.859	151A-.859	151N-.859
	22.00	0.8661	—	151T-22	151A-22	151N-22
	22.23	0.8750	7/8	151T-0028	151A-0028	151N-0028
	22.50	0.8858	—	151T-22.5	151A-22.5	151N-22.5
	22.62	0.8906	57/64	151T-.890	151A-.890	151N-.890
	23.00	0.9055	—	151T-23	151A-23	151N-23
	23.02	0.9063	29/32	151T-0029	151A-0029	151N-0029
	23.42	0.9219	59/64	151T-.921	151A-.921	151N-.921
	23.50	0.9252	—	151T-23.5	151A-23.5	151N-23.5
	23.81	0.9375	15/16	151T-0030	151A-0030	151N-0030
	24.00	0.9449	—	151T-24	151A-24	151N-24

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

A30: 55 - 59



A30: 5 - 6

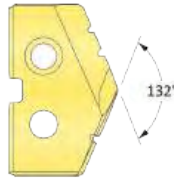
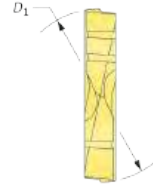


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



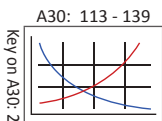
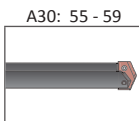
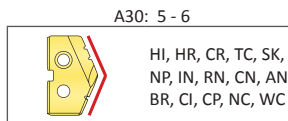
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts



Series	Insert			HSS: Premium Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TIN	TiAIN	TiCN
1	17.86	0.7031	45/64	181T-.703	181A-.703	181N-.703
	18.00	0.7087	—	181T-18	181A-18	181N-18
	18.26	0.7188	23/32	181T-0023	181A-0023	181N-0023
	18.50	0.7283	—	181T-18.5	181A-18.5	181N-18.5
	18.65	0.7344	47/64	181T-.734	181A-.734	181N-.734
	19.00	0.7480	—	181T-19	181A-19	181N-19
	19.05	0.7500	3/4	181T-0024	181A-0024	181N-0024
	19.45	0.7656	49/64	181T-.765	181A-.765	181N-.765
	19.50	0.7677	—	181T-19.5	181A-19.5	181N-19.5
	19.85	0.7813	25/32	181T-0025	181A-0025	181N-0025
	20.00	0.7874	—	181T-20	181A-20	181N-20
	20.24	0.7969	51/64	181T-.796	181A-.796	181N-.796
	20.35	0.8010	—	181T-.801	181A-.801	181N-.801
	20.50	0.8071	—	181T-20.5	181A-20.5	181N-20.5
	20.64	0.8125	13/16	181T-0026	181A-0026	181N-0026
	21.00	0.8268	—	181T-21	181A-21	181N-21
	21.43	0.8438	27/32	181T-0027	181A-0027	181N-0027
	21.50	0.8465	—	181T-21.5	181A-21.5	181N-21.5
1.5	21.83	0.8594	55/64	181T-.859	181A-.859	181N-.859
	22.00	0.8661	—	181T-22	181A-22	181N-22
	22.23	0.8750	7/8	181T-0028	181A-0028	181N-0028
	22.50	0.8858	—	181T-22.5	181A-22.5	181N-22.5
	22.62	0.8906	57/64	181T-.890	181A-.890	181N-.890
	23.00	0.9055	—	181T-23	181A-23	181N-23
	23.02	0.9063	29/32	181T-0029	181A-0029	181N-0029
	23.42	0.9219	59/64	181T-.921	181A-.921	181N-.921
	23.50	0.9252	—	181T-23.5	181A-23.5	181N-23.5
	23.81	0.9375	15/16	181T-0030	181A-0030	181N-0030
	24.00	0.9449	—	181T-24	181A-24	181N-24

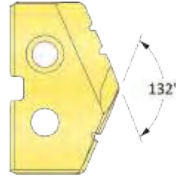
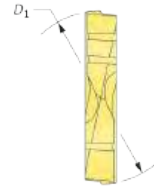
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

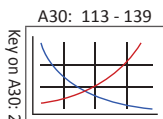
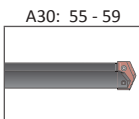
**1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")**

T-A® Drill Inserts



A30

Series	Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No.	Part No.	Part No.	Part No.
1	17.86	0.7031	45/64	1C51T-.703	1C51A-.703	1C21T-.703	1C21A-.703
	18.00	0.7087	—	1C51T-18	1C51A-18	1C21T-18	1C21A-18
	18.26	0.7188	23/32	1C51T-0023	1C51A-0023	1C21T-0023	1C21A-0023
	18.50	0.7283	—	1C51T-18.5	1C51A-18.5	1C21T-18.5	1C21A-18.5
	18.65	0.7344	47/64	1C51T-.734	1C51A-.734	1C21T-.734	1C21A-.734
	19.00	0.7480	—	1C51T-19	1C51A-19	1C21T-19	1C21A-19
	19.05	0.7500	3/4	1C51T-0024	1C51A-0024	1C21T-0024	1C21A-0024
	19.45	0.7656	49/64	1C51T-.765	1C51A-.765	1C21T-.765	1C21A-.765
	19.50	0.7677	—	1C51T-19.5	1C51A-19.5	1C21T-19.5	1C21A-19.5
	19.85	0.7813	25/32	1C51T-0025	1C51A-0025	1C21T-0025	1C21A-0025
	20.00	0.7874	—	1C51T-20	1C51A-20	1C21T-20	1C21A-20
	20.24	0.7969	51/64	1C51T-.796	1C51A-.796	1C21T-.796	1C21A-.796
	20.35	0.8010	—	1C51T-.801	1C51A-.801	1C21T-.801	1C21A-.801
	20.50	0.8071	—	1C51T-20.5	1C51A-20.5	1C21T-20.5	1C21A-20.5
	20.64	0.8125	13/16	1C51T-0026	1C51A-0026	1C21T-0026	1C21A-0026
	21.00	0.8268	—	1C51T-21	1C51A-21	1C21T-21	1C21A-21
	21.43	0.8438	27/32	1C51T-0027	1C51A-0027	1C21T-0027	1C21A-0027
	21.50	0.8465	—	1C51T-21.5	1C51A-21.5	1C21T-21.5	1C21A-21.5
1.5	21.83	0.8594	55/64	1C51T-.859	1C51A-.859	1C21T-.859	1C21A-.859
	22.00	0.8661	—	1C51T-22	1C51A-22	1C21T-22	1C21A-22
	22.23	0.8750	7/8	1C51T-0028	1C51A-0028	1C21T-0028	1C21A-0028
	22.50	0.8858	—	1C51T-22.5	1C51A-22.5	1C21T-22.5	1C21A-22.5
	22.62	0.8906	57/64	1C51T-.890	1C51A-.890	1C21T-.890	1C21A-.890
	23.00	0.9055	—	1C51T-23	1C51A-23	1C21T-23	1C21A-23
	23.02	0.9063	29/32	1C51T-0029	1C51A-0029	1C21T-0029	1C21A-0029
	23.42	0.9219	59/64	1C51T-.921	1C51A-.921	1C21T-.921	1C21A-.921
	23.50	0.9252	—	1C51T-23.5	1C51A-23.5	1C21T-23.5	1C21A-23.5
	23.81	0.9375	15/16	1C51T-0030	1C51A-0030	1C21T-0030	1C21A-0030
	24.00	0.9449	—	1C51T-24	1C51A-24	1C21T-24	1C21A-24

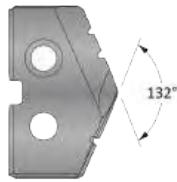
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

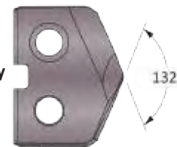
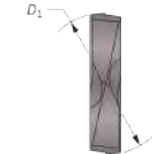


1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts



Cast Iron Geometry

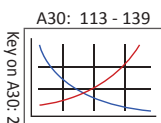
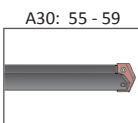
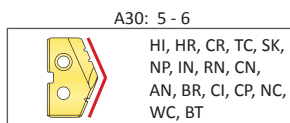


A30

					Cast Iron Geometry	
Series	Insert			Carbide: N2	Carbide: K10 (C3)	
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	
	D ₁ mm	D ₁ inch	Fractional Equivalent	Diamond Film*	TiAlN	
1	17.86	0.7031	45/64	1N21D-.703	1C31A-.703-CI	
	18.00	0.7087	—	1N21D-18	1C31A-18-CI	
	18.26	0.7188	23/32	1N21D-0023	1C31A-0023-CI	
	18.50	0.7283	—	1N21D-18.5	1C31A-18.5-CI	
	18.65	0.7344	47/64	1N21D-.734	1C31A-.734-CI	
	19.00	0.7480	—	1N21D-19	1C31A-19-CI	
	19.05	0.7500	3/4	1N21D-0024	1C31A-0024-CI	
	19.45	0.7656	49/64	1N21D-.765	1C31A-.765-CI	
	19.50	0.7677	—	1N21D-19.5	1C31A-19.5-CI	
	19.85	0.7813	25/32	1N21D-0025	1C31A-0025-CI	
	20.00	0.7874	—	1N21D-20	1C31A-20-CI	
	20.24	0.7969	51/64	1N21D-.796	1C31A-.796-CI	
	20.35	0.8010	—	1N21D-.801	1C31A-.801-CI	
	20.50	0.8071	—	1N21D-20.5	1C31A-20.5-CI	
	20.64	0.8125	13/16	1N21D-0026	1C31A-0026-CI	
	21.00	0.8268	—	1N21D-21	1C31A-21-CI	
	21.43	0.8438	27/32	1N21D-0027	1C31A-0027-CI	
	21.50	0.8465	—	1N21D-21.5	1C31A-21.5-CI	
	1.5	21.83	0.8594	55/64	1N21D-.859	1C31A-.859-CI
22.00		0.8661	—	1N21D-22	1C31A-22-CI	
22.23		0.8750	7/8	1N21D-0028	1C31A-0028-CI	
22.50		0.8858	—	1N21D-22.5	1C31A-22.5-CI	
22.62		0.8906	57/64	1N21D-.890	1C31A-.890-CI	
23.00		0.9055	—	1N21D-23	1C31A-23-CI	
23.02		0.9063	29/32	1N21D-0029	1C31A-0029-CI	
23.42		0.9219	59/64	1N21D-.921	1C31A-.921-CI	
23.50		0.9252	—	1N21D-23.5	1C31A-23.5-CI	
23.81		0.9375	15/16	1N21D-0030	1C31A-0030-CI	
24.00		0.9449	—	1N21D-24	1C31A-24-CI	

*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

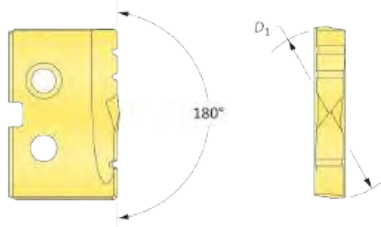


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts

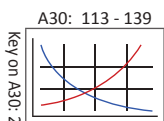
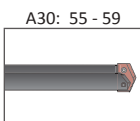
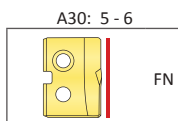


A30

Series	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
				Part No.	Part No.
	D ₁ mm	D ₁ inch	Fractional Equivalent	TiN	TiN*
1	17.86	0.7031	45/64	151T-703-FB	1C21T-703-FB
	18.00	0.7087	—	151T-18-FB	1C21T-18-FB
	18.26	0.7188	23/32	151T-0023-FB	1C21T-0023-FB
	18.50	0.7283	—	151T-18.5-FB	1C21T-18.5-FB
	18.65	0.7344	47/64	151T-.734-FB	1C21T-.734-FB
	19.00	0.7480	—	151T-19-FB	1C21T-19-FB
	19.05	0.7500	3/4	151T-0024-FB	1C21T-0024-FB
	19.45	0.7656	49/64	151T-.765-FB	1C21T-.765-FB
	19.50	0.7677	—	151T-19.5-FB	1C21T-19.5-FB
	19.85	0.7813	25/32	151T-0025-FB	1C21T-0025-FB
	20.00	0.7874	—	151T-20-FB	1C21T-20-FB
	20.24	0.7969	51/64	151T-.796-FB	1C21T-.796-FB
	20.35	0.8010	—	151T-.801-FB	1C21T-.801-FB
	20.50	0.8071	—	151T-20.5-FB	1C21T-20.5-FB
	20.64	0.8125	13/16	151T-0026-FB	1C21T-0026-FB
	21.00	0.8268	—	151T-21-FB	1C21T-21-FB
	21.43	0.8438	27/32	151T-0027-FB	1C21T-0027-FB
	21.50	0.8465	—	151T-21.5-FB	1C21T-21.5-FB
1.5	21.83	0.8594	55/64	151T-.859-FB	1C21T-.859-FB
	22.00	0.8661	—	151T-22-FB	1C21T-22-FB
	22.23	0.8750	7/8	151T-0028-FB	1C21T-0028-FB
	22.50	0.8858	—	151T-22.5-FB	1C21T-22.5-FB
	22.62	0.8906	57/64	151T-.890-FB	1C21T-.890-FB
	23.00	0.9055	—	151T-23-FB	1C21T-23-FB
	23.02	0.9063	29/32	151T-0029-FB	1C21T-0029-FB
	23.42	0.9219	59/64	151T-.921-FB	1C21T-.921-FB
	23.50	0.9252	—	151T-23.5-FB	1C21T-23.5-FB
	23.81	0.9375	15/16	151T-0030-FB	1C21T-0030-FB
	24.00	0.9449	—	151T-24-FB	1C21T-24-FB

*Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

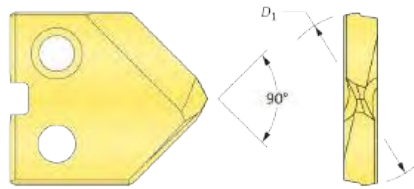


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



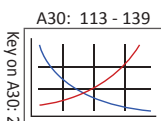
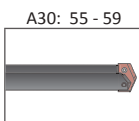
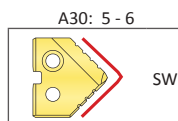
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Inserts



Series	Insert			90° Spot & Chamfer Geometry		
	D ₁ mm	D ₁ inch	Fractional Equivalent	HSS: Super Cobalt		
				Part No.	Part No.	Part No.
				TIN	TiAIN	TiCN
1	17.86	0.7031	45/64	151T-.703-SP	151A-.703-SP	151N-.703-SP
	18.00	0.7087	—	151T-18-SP	151A-18-SP	151N-18-SP
	18.26	0.7188	23/32	151T-0023-SP	151A-0023-SP	151N-0023-SP
	18.50	0.7283	—	151T-18.5-SP	151A-18.5-SP	151N-18.5-SP
	18.65	0.7344	47/64	151T-.734-SP	151A-.734-SP	151N-.734-SP
	19.00	0.7480	—	151T-19-SP	151A-19-SP	151N-19-SP
	19.05	0.7500	3/4	151T-0024-SP	151A-0024-SP	151N-0024-SP
	19.45	0.7656	49/64	151T-.765-SP	151A-.765-SP	151N-.765-SP
	19.50	0.7677	—	151T-19.5-SP	151A-19.5-SP	151N-19.5-SP
	19.85	0.7813	25/32	151T-0025-SP	151A-0025-SP	151N-0025-SP
	20.00	0.7874	—	151T-20-SP	151A-20-SP	151N-20-SP
	20.24	0.7969	51/64	151T-.796-SP	151A-.796-SP	151N-.796-SP
	20.35	0.8010	—	151T-.801-SP	151A-.801-SP	151N-.801-SP
	20.50	0.8071	—	151T-20.5-SP	151A-20.5-SP	151N-20.5-SP
	20.64	0.8125	13/16	151T-0026-SP	151A-0026-SP	151N-0026-SP
	21.00	0.8268	—	151T-21-SP	151A-21-SP	151N-21-SP
	21.43	0.8438	27/32	151T-0027-SP	151A-0027-SP	151N-0027-SP
	21.50	0.8465	—	151T-21.5-SP	151A-21.5-SP	151N-21.5-SP
1.5	21.83	0.8594	55/64	151T-.859-SP	151A-.859-SP	151N-.859-SP
	22.00	0.8661	—	151T-22-SP	151A-22-SP	151N-22-SP
	22.23	0.8750	7/8	151T-0028-SP	151A-0028-SP	151N-0028-SP
	22.50	0.8858	—	151T-22.5-SP	151A-22.5-SP	151N-22.5-SP
	22.62	0.8906	57/64	151T-.890-SP	151A-.890-SP	151N-.890-SP
	23.00	0.9055	—	151T-23-SP	151A-23-SP	151N-23-SP
	23.02	0.9063	29/32	151T-0029-SP	151A-0029-SP	151N-0029-SP
	23.42	0.9219	59/64	151T-.921-SP	151A-.921-SP	151N-.921-SP
	23.50	0.9252	—	151T-23.5-SP	151A-23.5-SP	151N-23.5-SP
	23.81	0.9375	15/16	151T-0030-SP	151A-0030-SP	151N-0030-SP
	24.00	0.9449	—	151T-24-SP	151A-24-SP	151N-24-SP

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.



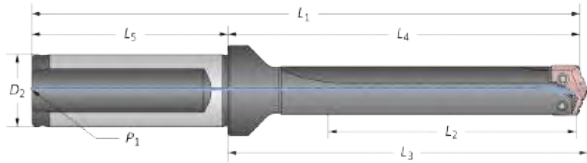
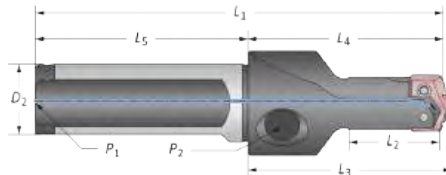
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

**1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")**

T-A® Drill Holders



Stub Length

**Metric Flange Shank Holders**

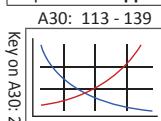
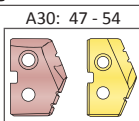
Flute	Series	Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	1	Stub	50.6	75.8	79.3	131.8	56.0	25	1/8 BSPT	21010S-25FM
		Short	66.8	107.2	110.7	163.2	56.0	25	1/8 BSPT	22010S-25FM
		Intermediate	114.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	23010S-25FM
		Standard	165.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	24010S-25FM
		Extended	267.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	25010S-25FM
	1.5	XL	454.2	494.5	498.1	550.5	56.0	25	1/8 BSPT	27010S-25FM
		3XL	562.1	602.5	606.0	658.5	56.0	25	1/8 BSPT	29010S-25FM
		Stub	64.9	88.5	92.0	144.5	56.0	25	1/8 BSPT	21015S-25FM
		Short	66.1	107.2	110.7	163.2	56.0	25	1/8 BSPT	22015S-25FM
		Intermediate	113.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	23015S-25FM
Helical	1	Standard	164.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	24015S-25FM
		Extended	266.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	25015S-25FM
		Intermediate	132.8	154.8	158.3	210.8	56.0	25	1/8 BSPT	23010H-25FM
		Standard	183.6	205.6	209.1	261.6	56.0	25	1/8 BSPT	24010H-25FM
		Standard Plus	234.3	256.3	259.9	312.3	56.0	25	1/8 BSPT	24510H-25FM
	1.5	Extended	285.2	307.2	310.7	363.2	56.0	25	1/8 BSPT	25010H-25FM
		Long	380.3	402.3	405.9	458.3	56.0	25	1/8 BSPT	26010H-25FM
		Intermediate	134.4	154.8	158.3	210.8	56.0	25	1/8 BSPT	23015H-25FM
		Standard	185.2	205.6	209.1	261.6	56.0	25	1/8 BSPT	24015H-25FM
		Extended	286.8	307.2	310.7	363.2	56.0	25	1/8 BSPT	25015H-25FM

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).**NOTE:** 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.**Connection Accessories**

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

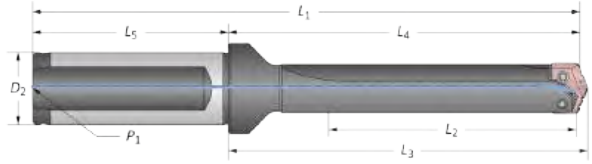
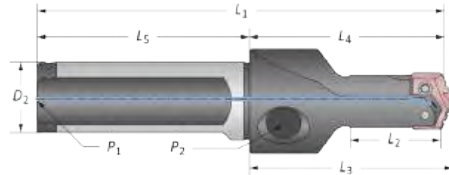


1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders



Stub Length



A30

Imperial Flange Shank Holders

Flute		Series	Body					Shank			Part No.
			Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
	Straight	1	Stub	1.992	2.984	3.124	5.264	2.280	1	1/8 NPT	21010S-100F
			Short	2.643	4.219	4.359	6.499	2.280	1	1/8 NPT	22010S-100F
			Intermediate	4.518	6.094	6.234	8.374	2.280	1	1/8 NPT	23010S-100F
			Standard	6.518	8.094	8.234	10.374	2.280	1	1/8 NPT	24010S-100F
			Extended	10.518	12.094	12.234	14.374	2.280	1	1/8 NPT	25010S-100F
	1.5	Stub	2.554	3.484	3.624	5.764	2.280	1	1/8 NPT	21015S-100F	
		Short	2.607	4.219	4.359	6.499	2.280	1	1/8 NPT	22015S-100F	
		Intermediate	4.482	6.094	6.234	8.374	2.280	1	1/8 NPT	23015S-100F	
		Standard	6.482	8.094	8.234	10.374	2.280	1	1/8 NPT	24015S-100F	
		Extended	10.482	12.094	12.234	14.374	2.280	1	1/8 NPT	25015S-100F	
	1	Intermediate	5.229	6.094	6.234	8.374	2.280	1	1/8 NPT	23010H-100F	
		Standard	7.229	8.094	8.234	10.374	2.280	1	1/8 NPT	24010H-100F	
		Standard Plus	9.226	10.091	10.231	12.371	2.280	1	1/8 NPT	24510H-100F	
		Extended	11.229	12.094	12.234	14.374	2.280	1	1/8 NPT	25010H-100F	
		Long	14.974	15.839	15.979	18.119	2.280	1	1/8 NPT	26010H-100F	
	1.5	Intermediate	5.291	6.094	6.234	8.374	2.280	1	1/8 NPT	23015H-100F	
		Standard	7.291	8.094	8.234	10.374	2.280	1	1/8 NPT	24015H-100F	
		Extended	11.291	12.094	12.234	14.374	2.280	1	1/8 NPT	25015H-100F	

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

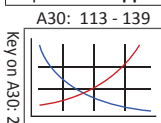
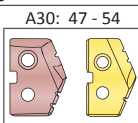
NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



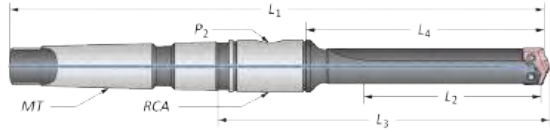
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders



Metric Taper Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	
Straight	1	Short	66.8	98.4	142.4	232.6	#3 MT ISO	1/8 BSPT	2T-3SRM	22010S-003M
	1.5	Short	63.0	98.4	142.4	232.6	#3 MT ISO	1/8 BSPT	2T-3SRM	22015S-003M
Helical	1	Intermediate	133.0	149.2	193.2	283.4	#3 MT ISO	1/8 BSPT	2T-3SRM	23010H-003M
		Standard	183.8	200.0	244.0	334.2	#3 MT ISO	1/8 BSPT	2T-3SRM	24010H-003M
		Extended	285.4	301.6	345.6	435.8	#3 MT ISO	1/8 BSPT	2T-3SRM	25010H-003M
	1.5	Intermediate	132.6	149.2	193.2	283.4	#3 MT ISO	1/8 BSPT	2T-3SRM	23015H-003M
		Standard	183.4	200.0	244.0	334.2	#3 MT ISO	1/8 BSPT	2T-3SRM	24015H-003M
		Extended	285.0	301.6	345.6	435.8	#3 MT ISO	1/8 BSPT	2T-3SRM	25015H-003M

*MT ISO 296 type BEK.

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

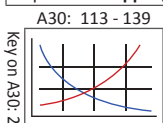
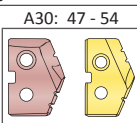
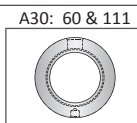
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

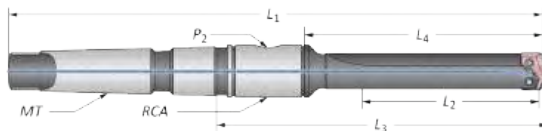
Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

T-A® Drill Holders



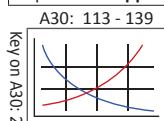
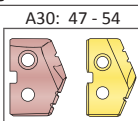
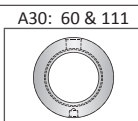
Flute		Series	Body					Shank			Part No.
			Length	L ₂	L ₄	L ₃	L ₁	MT	P ₂	RCA	
 Straight	1	Short	2.631	3.875	5.608	9.156	#3 MT	1/8 NPT	2T-3SR	22010S-003I	
		Short	2.631	3.875	5.671	10.156	#4 MT	1/8 NPT	2T-3SR	22010S-004I	
		Intermediate	4.631	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	23010S-003I	
		Standard	6.631	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	24010S-003I	
		Standard	6.631	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	24010S-004I	
		Extended	10.631	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	↑ 25010S-003I	
	1.5	Short	2.482	3.875	5.608	9.156	#3 MT	1/8 NPT	2T-3SR	22015S-003I	
		Short	2.483	3.875	5.671	10.156	#4 MT	1/8 NPT	2T-3SR	22015S-004I	
		Intermediate	4.482	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	23015S-003I	
		Standard	6.482	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	24015S-003I	
		Standard	6.483	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	24015S-004I	
		Extended	10.482	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	↑ 25015S-003I	
	 Helical	1	Intermediate	5.236	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	23010H-003I
			Standard	7.236	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	24010H-003I
Standard			7.236	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	24010H-004I	
Extended			11.236	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	↑ 25010H-003I	
1.5		Intermediate	5.219	5.875	7.608	11.156	#3 MT	1/8 NPT	2T-3SR	23015H-003I	
		Standard	7.219	7.875	9.608	13.156	#3 MT	1/8 NPT	2T-3SR	24015H-003I	
		Standard	7.219	7.875	9.671	14.156	#4 MT	1/8 NPT	2T-3SR	24015H-004I	
		Extended	11.219	11.875	13.608	17.156	#3 MT	1/8 NPT	2T-3SR	↑ 25015H-003I	

NOTE: 0.5 series inserts fit into both 0 and 0.5 series holders. However, 0 series inserts **ONLY** fit into 0 series holders. See page A30: 7 for visual.

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

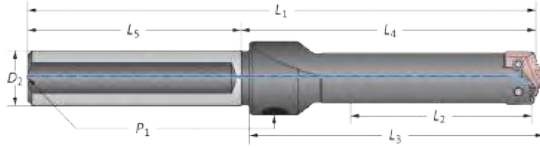
Screws sold in multiples of 10.

A30: 58



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Drill Holders



Straight Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	1	Short	2.619	3.875	4.015	6.875	3.000	3/4	1/8 NPT	22010S-075L
		Short	2.647	3.875	4.015	6.875	3.000	1	1/8 NPT	22010S-100L
		Intermediate	4.647	5.875	6.015	8.875	3.000	1	1/8 NPT	23010S-100L
		Standard	6.619	7.875	8.015	10.875	3.000	3/4	1/8 NPT	24010S-075L
		Standard	6.647	7.875	8.015	10.875	3.000	1	1/8 NPT	24010S-100L
		Extended	10.647	11.875	12.015	14.875	3.000	1	1/8 NPT	25010S-100L
	1.5	XL	18.022	19.250	19.390	22.250	3.000	1	1/8 NPT	27010S-100L
		3XL	22.272	23.500	23.640	26.500	3.000	1	1/8 NPT	29010S-100L
		Short	2.649	3.875	4.015	6.875	3.000	3/4	1/8 NPT	22015S-075L
		Short	2.661	3.875	4.015	6.875	3.000	1	1/8 NPT	22015S-100L
		Intermediate	4.661	5.875	6.015	8.875	3.000	1	1/8 NPT	23015S-100L
		Standard	6.649	7.875	8.015	10.875	3.000	3/4	1/8 NPT	24015S-075L
		Standard	6.661	7.875	8.015	10.875	3.000	1	1/8 NPT	24015S-100L
		Extended	10.661	11.875	12.015	14.875	3.000	1	1/8 NPT	25015S-100L

NOTE: 1.5 series inserts fit into both 1 and 1.5 series holders. However, 1 series inserts ONLY fit into 1 series holders. See page A30: 7 for visual.

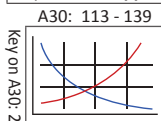
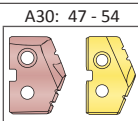
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



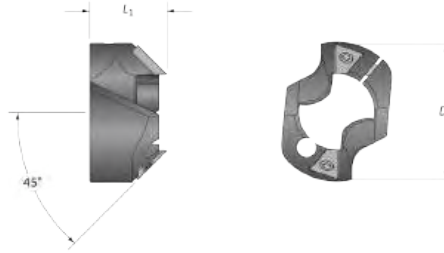
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

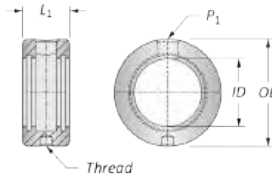
T-A® Drill Accessories



T-ACR 45 Chamfer Rings

Holder Series	D_1 Range	Chamfer Ring		Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
		D_4	L_1						
1	0.6900 - 0.8540	1.330	0.797	T-ACR-45-1	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
1.5	0.8540 - 0.9600	1.493	0.891	T-ACR-45-1.5	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15

A30



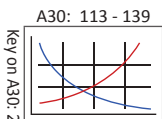
Rotary Coolant Adapters (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	2T-3SRM	2T1-3SR	2T1-3OR-10
i	1.000	2.125	1.125	5/16" - 18	1/8 NPT	2T-3SR	2T1-3SR	2T1-3OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com

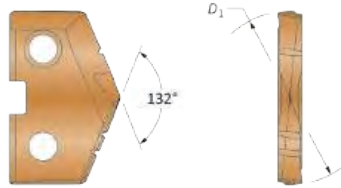


m = Metric (mm)
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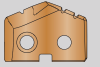
Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.

**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")**

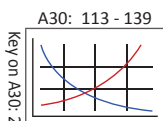
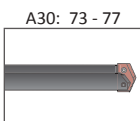
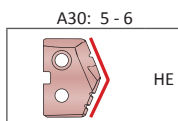
GEN2 T-A® Drill Inserts



A30

Series	Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
	D_1 mm	D_1 inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
2	24.50	0.9646	—	AM200®	AM300®	AM300®
	24.61	0.9688	31/32	452H-24.5	4C22P-24.5	4C12P-24.5
	24.79	0.9760	—	452H-0031	4C22P-0031	4C12P-0031
	25.00	0.9843	63/64	452H-.976	4C22P-.976	4C12P-.976
	25.40	1.0000	1	452H-25	4C22P-25	4C12P-25
	25.50	1.0039	—	452H-0100	4C22P-0100	4C12P-0100
	25.80	1.0156	1-1/64	452H-25.5	4C22P-25.5	4C12P-25.5
	26.00	1.0236	—	452H-1.015	4C22P-1.015	4C12P-1.015
	26.20	1.0313	1-1/32	452H-26	4C22P-26	4C12P-26
	26.50	1.0433	—	452H-0101	4C22P-0101	4C12P-0101
	26.59	1.0469	1-3/64	452H-26.5	4C22P-26.5	4C12P-26.5
	26.99	1.0625	1-1/16	452H-0102	4C22P-0102	4C12P-0102
	27.00	1.0630	—	452H-1.046	4C22P-1.046	4C12P-1.046
	27.50	1.0827	—	452H-0102	4C22P-0102	4C12P-0102
	27.78	1.0938	1-3/32	452H-27	4C22P-27	4C12P-27
	28.00	1.1024	—	452H-27.5	4C22P-27.5	4C12P-27.5
	28.18	1.1094	1-7/64	452H-0103	4C22P-0103	4C12P-0103
	28.50	1.1220	—	452H-28	4C22P-28	4C12P-28
	28.58	1.1250	1-1/8	452H-1.109	4C22P-1.109	4C12P-1.109
	29.00	1.1417	—	452H-28.5	4C22P-28.5	4C12P-28.5
	29.37	1.1563	1-5/32	452H-0104	4C22P-0104	4C12P-0104
	29.50	1.1614	—	452H-29	4C22P-29	4C12P-29
	30.00	1.1811	—	452H-0105	4C22P-0105	4C12P-0105
				452H-29.5	4C22P-29.5	4C12P-29.5
				452H-30	4C22P-30	4C12P-30

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

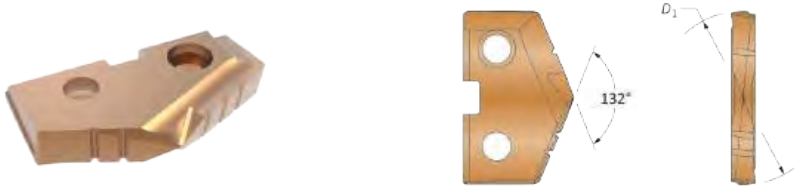


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

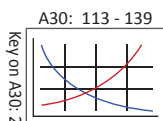
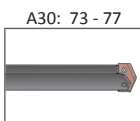
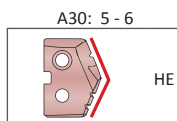
GEN2 T-A® Drill Inserts



Series	Insert			HSS: Super Cobalt	Carbide: K35 (C1)	Carbide: K20 (C2)
	D_1 mm	D_1 inch	Fractional Equivalent			
				Part No. AM200®	Part No. AM300®	Part No. AM300®
2.5	30.16	1.1875	1-3/16	452H-0106	4C22P-0106	4C12P-0106
	30.50	1.2008	—	452H-30.5	4C22P-30.5	4C12P-30.5
	30.96	1.2188	1-7/32	452H-0107	4C22P-0107	4C12P-0107
	31.00	1.2205	—	452H-31	4C22P-31	4C12P-31
	31.14	1.2260	—	452H-1.226	4C22P-1.226	4C12P-1.226
	31.27	1.2310	—	452H-1.231	4C22P-1.231	4C12P-1.231
	31.35	1.2344	1-15/64	452H-1.234	4C22P-1.234	4C12P-1.234
	31.50	1.2402	—	452H-31.5	4C22P-31.5	4C12P-31.5
	31.75	1.2500	1-1/4	452H-0108	4C22P-0108	4C12P-0108
	32.00	1.2598	—	452H-32	4C22P-32	4C12P-32
	32.50	1.2795	—	452H-32.5	4C22P-32.5	4C12P-32.5
	32.55	1.2813	1-9/32	452H-0109	4C22P-0109	4C12P-0109
	33.00	1.2992	—	452H-33	4C22P-33	4C12P-33
	33.34	1.3125	1-5/16	452H-0110	4C22P-0110	4C12P-0110
	33.50	1.3189	—	452H-33.5	4C22P-33.5	4C12P-33.5
	34.00	1.3386	—	452H-34	4C22P-34	4C12P-34
	34.13	1.3438	1-11/32	452H-0111	4C22P-0111	4C12P-0111
	34.50	1.3583	—	452H-34.5	4C22P-34.5	4C12P-34.5
	34.93	1.3750	1-3/8	452H-0112	4C22P-0112	4C12P-0112
	35.00	1.3780	—	452H-35	4C22P-35	4C12P-35

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

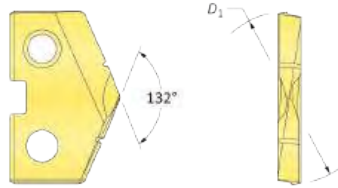
A30



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

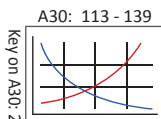
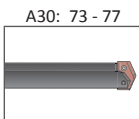
**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")**

T-A® Drill Inserts

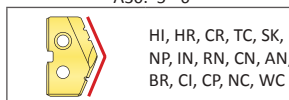


A30

Series	Insert			HSS: High-Speed Steel		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TiN	TiAlN	TiCN
2	24.50	0.9646	—	132T-24.5	132A-24.5	132N-24.5
	24.61	0.9688	31/32	132T-0031	132A-0031	132N-0031
	24.79	0.9760	—	132T-.976	132A-.976	132N-.976
	25.00	0.9843	63/64	132T-25	132A-25	132N-25
	25.40	1.0000	1	132T-0100	132A-0100	132N-0100
	25.50	1.0039	—	132T-25.5	132A-25.5	132N-25.5
	25.80	1.0156	1-1/64	132T-1.015	132A-1.015	132N-1.015
	26.00	1.0236	—	132T-26	132A-26	132N-26
	26.20	1.0313	1-1/32	132T-0101	132A-0101	132N-0101
	26.50	1.0433	—	132T-26.5	132A-26.5	132N-26.5
	26.59	1.0469	1-3/64	132T-1.046	132A-1.046	132N-1.046
	26.99	1.0625	1-1/16	132T-0102	132A-0102	132N-0102
	27.00	1.0630	—	132T-27	132A-27	132N-27
	27.50	1.0827	—	132T-27.5	132A-27.5	132N-27.5
	27.78	1.0938	1-3/32	132T-0103	132A-0103	132N-0103
	28.00	1.1024	—	132T-28	132A-28	132N-28
	28.18	1.1094	1-7/64	132T-1.109	132A-1.109	132N-1.109
	28.50	1.1220	—	132T-28.5	132A-28.5	132N-28.5
	28.58	1.1250	1-1/8	132T-0104	132A-0104	132N-0104
	29.00	1.1417	—	132T-29	132A-29	132N-29
	29.37	1.1563	1-5/32	132T-0105	132A-0105	132N-0105
	29.50	1.1614	—	132T-29.5	132A-29.5	132N-29.5
	30.00	1.1811	—	132T-30	132A-30	132N-30
	30.16	1.1875	1-3/16	132T-0106	132A-0106	132N-0106
	30.50	1.2008	—	132T-30.5	132A-30.5	132N-30.5
	30.96	1.2188	1-7/32	132T-0107	132A-0107	132N-0107
	31.00	1.2205	—	132T-31	132A-31	132N-31
	31.14	1.2260	—	132T-1.226	132A-1.226	132N-1.226
	31.27	1.2310	—	132T-1.231	132A-1.231	132N-1.231
	31.35	1.2344	1-15/64	132T-1.234	132A-1.234	132N-1.234
	31.50	1.2402	—	132T-31.5	132A-31.5	132N-31.5
	31.75	1.2500	1-1/4	132T-0108	132A-0108	132N-0108
2.5	32.00	1.2598	—	132T-32	132A-32	132N-32
	32.50	1.2795	—	132T-32.5	132A-32.5	132N-32.5
	32.55	1.2813	1-9/32	132T-0109	132A-0109	132N-0109
	33.00	1.2992	—	132T-33	132A-33	132N-33
	33.34	1.3125	1-5/16	132T-0110	132A-0110	132N-0110
	33.50	1.3189	—	132T-33.5	132A-33.5	132N-33.5
	34.00	1.3386	—	132T-34	132A-34	132N-34
	34.13	1.3438	1-11/32	132T-0111	132A-0111	132N-0111
	34.50	1.3583	—	132T-34.5	132A-34.5	132N-34.5
	34.93	1.3750	1-3/8	132T-0112	132A-0112	132N-0112
	35.00	1.3780	—	132T-35	132A-35	132N-35

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

A30: 73 - 77

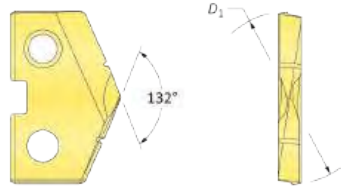


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



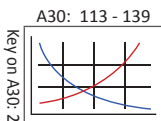
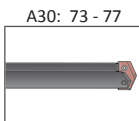
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



Series	Insert			HSS: Super Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TIN	TiAIN	TiCN
2	24.50	0.9646	—	152T-24.5	152A-24.5	152N-24.5
	24.61	0.9688	31/32	152T-0031	152A-0031	152N-0031
	24.79	0.9760	—	152T-.976	152A-.976	152N-.976
	25.00	0.9843	63/64	152T-25	152A-25	152N-25
	25.40	1.0000	1	152T-0100	152A-0100	152N-0100
	25.50	1.0039	—	152T-25.5	152A-25.5	152N-25.5
	25.80	1.0156	1-1/64	152T-1.015	152A-1.015	152N-1.015
	26.00	1.0236	—	152T-26	152A-26	152N-26
	26.20	1.0313	1-1/32	152T-0101	152A-0101	152N-0101
	26.50	1.0433	—	152T-26.5	152A-26.5	152N-26.5
	26.59	1.0469	1-3/64	152T-1.046	152A-1.046	152N-1.046
	26.99	1.0625	1-1/16	152T-0102	152A-0102	152N-0102
	27.00	1.0630	—	152T-27	152A-27	152N-27
	27.50	1.0827	—	152T-27.5	152A-27.5	152N-27.5
	27.78	1.0938	1-3/32	152T-0103	152A-0103	152N-0103
	28.00	1.1024	—	152T-28	152A-28	152N-28
	28.18	1.1094	1-7/64	152T-1.109	152A-1.109	152N-1.109
	28.50	1.1220	—	152T-28.5	152A-28.5	152N-28.5
	28.58	1.1250	1-1/8	152T-0104	152A-0104	152N-0104
	29.00	1.1417	—	152T-29	152A-29	152N-29
	29.37	1.1563	1-5/32	152T-0105	152A-0105	152N-0105
	29.50	1.1614	—	152T-29.5	152A-29.5	152N-29.5
	30.00	1.1811	—	152T-30	152A-30	152N-30
2.5	30.16	1.1875	1-3/16	152T-0106	152A-0106	152N-0106
	30.50	1.2008	—	152T-30.5	152A-30.5	152N-30.5
	30.96	1.2188	1-7/32	152T-0107	152A-0107	152N-0107
	31.00	1.2205	—	152T-31	152A-31	152N-31
	31.14	1.2260	—	152T-1.226	152A-1.226	152N-1.226
	31.27	1.2310	—	152T-1.231	152A-1.231	152N-1.231
	31.35	1.2344	1-15/64	152T-1.234	152A-1.234	152N-1.234
	31.50	1.2402	—	152T-31.5	152A-31.5	152N-31.5
	31.75	1.2500	1-1/4	152T-0108	152A-0108	152N-0108
	32.00	1.2598	—	152T-32	152A-32	152N-32
	32.50	1.2795	—	152T-32.5	152A-32.5	152N-32.5
	32.55	1.2813	1-9/32	152T-0109	152A-0109	152N-0109
	33.00	1.2992	—	152T-33	152A-33	152N-33
	33.34	1.3125	1-5/16	152T-0110	152A-0110	152N-0110
	33.50	1.3189	—	152T-33.5	152A-33.5	152N-33.5
	34.00	1.3386	—	152T-34	152A-34	152N-34
	34.13	1.3438	1-11/32	152T-0111	152A-0111	152N-0111
	34.50	1.3583	—	152T-34.5	152A-34.5	152N-34.5
	34.93	1.3750	1-3/8	152T-0112	152A-0112	152N-0112
	35.00	1.3780	—	152T-35	152A-35	152N-35

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

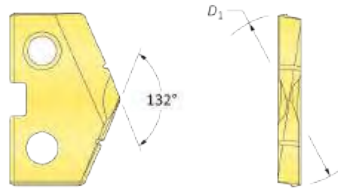


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

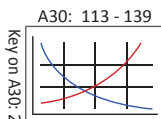
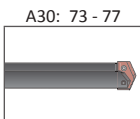
T-A® Drill Inserts



A30

Series	Insert			HSS: Premium Cobalt		
	D ₁ mm	D ₁ inch	Fractional Equivalent			
				Part No.	Part No.	Part No.
				TiN	TiAlN	TiCN
2	24.50	0.9646	—	182T-24.5	182A-24.5	182N-24.5
	24.61	0.9688	31/32	182T-0031	182A-0031	182N-0031
	24.79	0.9760	—	182T-.976	182A-.976	182N-.976
	25.00	0.9843	63/64	182T-25	182A-25	182N-25
	25.40	1.0000	1	182T-0100	182A-0100	182N-0100
	25.50	1.0039	—	182T-25.5	182A-25.5	182N-25.5
	25.80	1.0156	1-1/64	182T-1.015	182A-1.015	182N-1.015
	26.00	1.0236	—	182T-26	182A-26	182N-26
	26.20	1.0313	1-1/32	182T-0101	182A-0101	182N-0101
	26.50	1.0433	—	182T-26.5	182A-26.5	182N-26.5
	26.59	1.0469	1-3/64	182T-1.046	182A-1.046	182N-1.046
	26.99	1.0625	1-1/16	182T-0102	182A-0102	182N-0102
	27.00	1.0630	—	182T-27	182A-27	182N-27
	27.50	1.0827	—	182T-27.5	182A-27.5	182N-27.5
	27.78	1.0938	1-3/32	182T-0103	182A-0103	182N-0103
	28.00	1.1024	—	182T-28	182A-28	182N-28
	28.18	1.1094	1-7/64	182T-1.109	182A-1.109	182N-1.109
	28.50	1.1220	—	182T-28.5	182A-28.5	182N-28.5
	28.58	1.1250	1-1/8	182T-0104	182A-0104	182N-0104
	29.00	1.1417	—	182T-29	182A-29	182N-29
	29.37	1.1563	1-5/32	182T-0105	182A-0105	182N-0105
	29.50	1.1614	—	182T-29.5	182A-29.5	182N-29.5
	30.00	1.1811	—	182T-30	182A-30	182N-30
2.5	30.16	1.1875	1-3/16	182T-0106	182A-0106	182N-0106
	30.50	1.2008	—	182T-30.5	182A-30.5	182N-30.5
	30.96	1.2188	1-7/32	182T-0107	182A-0107	182N-0107
	31.00	1.2205	—	182T-31	182A-31	182N-31
	31.14	1.2260	—	182T-1.226	182A-1.226	182N-1.226
	31.27	1.2310	—	182T-1.231	182A-1.231	182N-1.231
	31.35	1.2344	1-15/64	182T-1.234	182A-1.234	182N-1.234
	31.50	1.2402	—	182T-31.5	182A-31.5	182N-31.5
	31.75	1.2500	1-1/4	182T-0108	182A-0108	182N-0108
	32.00	1.2598	—	182T-32	182A-32	182N-32
	32.50	1.2795	—	182T-32.5	182A-32.5	182N-32.5
	32.55	1.2813	1-9/32	182T-0109	182A-0109	182N-0109
	33.00	1.2992	—	182T-33	182A-33	182N-33
	33.34	1.3125	1-5/16	182T-0110	182A-0110	182N-0110
	33.50	1.3189	—	182T-33.5	182A-33.5	182N-33.5
	34.00	1.3386	—	182T-34	182A-34	182N-34
	34.13	1.3438	1-11/32	182T-0111	182A-0111	182N-0111
	34.50	1.3583	—	182T-34.5	182A-34.5	182N-34.5
	34.93	1.3750	1-3/8	182T-0112	182A-0112	182N-0112
	35.00	1.3780	—	182T-35	182A-35	182N-35

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.



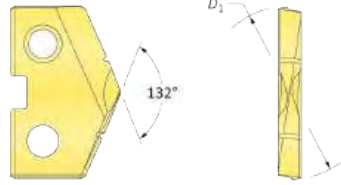
A30: 5 - 6
HI, HR, CR, TC, SK,
NP, IN, RN, CN, AN,
BR, CI, CP, NC, WC

Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



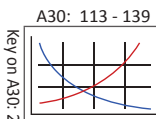
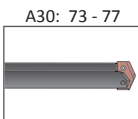
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



Series	Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
	D ₁ mm	D ₁ inch	Fractional Equivalent				
				Part No.	Part No.	Part No.	Part No.
				TIN	TiAIN	TIN	TiAIN
2	24.50	0.9646	—	1C52T-24.5	1C52A-24.5	1C22T-24.5	1C22A-24.5
	24.61	0.9688	31/32	1C52T-0031	1C52A-0031	1C22T-0031	1C22A-0031
	24.79	0.9760	—	1C52T-.976	1C52A-.976	1C22T-.976	1C22A-.976
	25.00	0.9843	63/64	1C52T-25	1C52A-25	1C22T-25	1C22A-25
	25.40	1.0000	1	1C52T-0100	1C52A-0100	1C22T-0100	1C22A-0100
	25.50	1.0039	—	1C52T-25.5	1C52A-25.5	1C22T-25.5	1C22A-25.5
	25.80	1.0156	1-1/64	1C52T-1.015	1C52A-1.015	1C22T-1.015	1C22A-1.015
	26.00	1.0236	—	1C52T-26	1C52A-26	1C22T-26	1C22A-26
	26.20	1.0313	1-1/32	1C52T-0101	1C52A-0101	1C22T-0101	1C22A-0101
	26.50	1.0433	—	1C52T-26.5	1C52A-26.5	1C22T-26.5	1C22A-26.5
	26.59	1.0469	1-3/64	1C52T-1.046	1C52A-1.046	1C22T-1.046	1C22A-1.046
	26.99	1.0625	1-1/16	1C52T-0102	1C52A-0102	1C22T-0102	1C22A-0102
	27.00	1.0630	—	1C52T-27	1C52A-27	1C22T-27	1C22A-27
	27.50	1.0827	—	1C52T-27.5	1C52A-27.5	1C22T-27.5	1C22A-27.5
	27.78	1.0938	1-3/32	1C52T-0103	1C52A-0103	1C22T-0103	1C22A-0103
	28.00	1.1024	—	1C52T-28	1C52A-28	1C22T-28	1C22A-28
	28.18	1.1094	1-7/64	1C52T-1.109	1C52A-1.109	1C22T-1.109	1C22A-1.109
	28.50	1.1220	—	1C52T-28.5	1C52A-28.5	1C22T-28.5	1C22A-28.5
	28.58	1.1250	1-1/8	1C52T-0104	1C52A-0104	1C22T-0104	1C22A-0104
	29.00	1.1417	—	1C52T-29	1C52A-29	1C22T-29	1C22A-29
	29.37	1.1563	1-5/32	1C52T-0105	1C52A-0105	1C22T-0105	1C22A-0105
	29.50	1.1614	—	1C52T-29.5	1C52A-29.5	1C22T-29.5	1C22A-29.5
	30.00	1.1811	—	1C52T-30	1C52A-30	1C22T-30	1C22A-30
	30.16	1.1875	1-3/16	1C52T-0106	1C52A-0106	1C22T-0106	1C22A-0106
	30.50	1.2008	—	1C52T-30.5	1C52A-30.5	1C22T-30.5	1C22A-30.5
	30.96	1.2188	1-7/32	1C52T-0107	1C52A-0107	1C22T-0107	1C22A-0107
	31.00	1.2205	—	1C52T-31	1C52A-31	1C22T-31	1C22A-31
	31.14	1.2260	—	1C52T-1.226	1C52A-1.226	1C22T-1.226	1C22A-1.226
	31.27	1.2310	—	1C52T-1.231	1C52A-1.231	1C22T-1.231	1C22A-1.231
	31.35	1.2344	1-15/64	1C52T-1.234	1C52A-1.234	1C22T-1.234	1C22A-1.234
	31.50	1.2402	—	1C52T-31.5	1C52A-31.5	1C22T-31.5	1C22A-31.5
	31.75	1.2500	1-1/4	1C52T-0108	1C52A-0108	1C22T-0108	1C22A-0108
2.5	32.00	1.2598	—	1C52T-32	1C52A-32	1C22T-32	1C22A-32
	32.50	1.2795	—	1C52T-32.5	1C52A-32.5	1C22T-32.5	1C22A-32.5
	32.55	1.2813	1-9/32	1C52T-0109	1C52A-0109	1C22T-0109	1C22A-0109
	33.00	1.2992	—	1C52T-33	1C52A-33	1C22T-33	1C22A-33
	33.34	1.3125	1-5/16	1C52T-0110	1C52A-0110	1C22T-0110	1C22A-0110
	33.50	1.3189	—	1C52T-33.5	1C52A-33.5	1C22T-33.5	1C22A-33.5
	34.00	1.3386	—	1C52T-34	1C52A-34	1C22T-34	1C22A-34
	34.13	1.3438	1-11/32	1C52T-0111	1C52A-0111	1C22T-0111	1C22A-0111
	34.50	1.3583	—	1C52T-34.5	1C52A-34.5	1C22T-34.5	1C22A-34.5
	34.93	1.3750	1-3/8	1C52T-0112	1C52A-0112	1C22T-0112	1C22A-0112
	35.00	1.3780	—	1C52T-35	1C52A-35	1C22T-35	1C22A-35

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.

Inserts sold in quantities of 2.

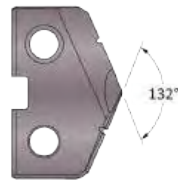
**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")**

T-A® Drill Inserts

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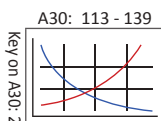
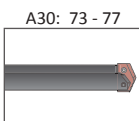
Cast Iron Geometry



Series	Insert			Carbide: N2	Cast Iron Geometry
	D ₁ mm	D ₁ inch	Fractional Equivalent		
				Part No. Diamond Film*	Part No. TiAlN
2	24.50	0.9646	—	1N22D-24.5	1C32A-24.5-CI
	24.61	0.9688	31/32	1N22D-0031	1C32A-0031-CI
	24.79	0.9760	—	1N22D-.976	1C32A-.976-CI
	25.00	0.9843	63/64	1N22D-25	1C32A-25-CI
	25.40	1.0000	1	1N22D-0100	1C32A-0100-CI
	25.50	1.0039	—	1N22D-25.5	1C32A-25.5-CI
	25.80	1.0156	1-1/64	1N22D-1.015	1C32A-1.015-CI
	26.00	1.0236	—	1N22D-26	1C32A-26-CI
	26.20	1.0313	1-1/32	1N22D-0101	1C32A-0101-CI
	26.50	1.0433	—	1N22D-26.5	1C32A-26.5-CI
	26.59	1.0469	1-3/64	1N22D-1.046	1C32A-1.046-CI
	26.99	1.0625	1-1/16	1N22D-0102	1C32A-0102-CI
	27.00	1.0630	—	1N22D-27	1C32A-27-CI
	27.50	1.0827	—	1N22D-27.5	1C32A-27.5-CI
	27.78	1.0938	1-3/32	1N22D-0103	1C32A-0103-CI
	28.00	1.1024	—	1N22D-28	1C32A-28-CI
	28.18	1.1094	1-7/64	1N22D-1.109	1C32A-1.109-CI
	28.50	1.1220	—	1N22D-28.5	1C32A-28.5-CI
	28.58	1.1250	1-1/8	1N22D-0104	1C32A-0104-CI
	29.00	1.1417	—	1N22D-29	1C32A-29-CI
	29.37	1.1563	1-5/32	1N22D-0105	1C32A-0105-CI
	29.50	1.1614	—	1N22D-29.5	1C32A-29.5-CI
	30.00	1.1811	—	1N22D-30	1C32A-30-CI

*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

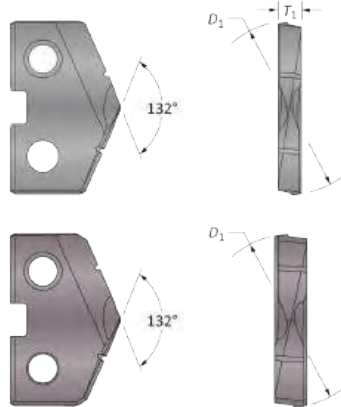


2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



Cast Iron Geometry

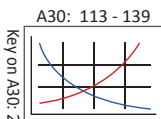
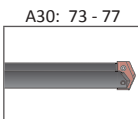


A30

Series	Insert			Carbide: N2	Cast Iron Geometry
	D ₁ mm	D ₁ inch	Fractional Equivalent		
				Part No.	Part No.
				Diamond Film*	TiAlN
2.5	30.16	1.1875	1-3/16	1N22D-0106	1C32A-0106-CI
	30.50	1.2008	—	1N22D-30.5	1C32A-30.5-CI
	30.96	1.2188	1-7/32	1N22D-0107	1C32A-0107-CI
	31.00	1.2205	—	1N22D-31	1C32A-31-CI
	31.14	1.2260	—	1N22D-1.226	1C32A-1.226-CI
	31.27	1.2310	—	1N22D-1.231	1C32A-1.231-CI
	31.35	1.2344	1-15/64	1N22D-1.234	1C32A-1.234-CI
	31.50	1.2402	—	1N22D-31.5	1C32A-31.5-CI
	31.75	1.2500	1-1/4	1N22D-0108	1C32A-0108-CI
	32.00	1.2598	—	1N22D-32	1C32A-32-CI
	32.50	1.2795	—	1N22D-32.5	1C32A-32.5-CI
	32.55	1.2813	1-9/32	1N22D-0109	1C32A-0109-CI
	33.00	1.2992	—	1N22D-33	1C32A-33-CI
	33.34	1.3125	1-5/16	1N22D-0110	1C32A-0110-CI
	33.50	1.3189	—	1N22D-33.5	1C32A-33.5-CI
	34.00	1.3386	—	1N22D-34	1C32A-34-CI
	34.13	1.3438	1-11/32	1N22D-0111	1C32A-0111-CI
	34.50	1.3583	—	1N22D-34.5	1C32A-34.5-CI
	34.93	1.3750	1-3/8	1N22D-0112	1C32A-0112-CI
	35.00	1.3780	—	1N22D-35	1C32A-35-CI

*Diamond film coated items are nonstocked standard and only available in standard geometry. For additional geometries, please contact Application Engineering. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

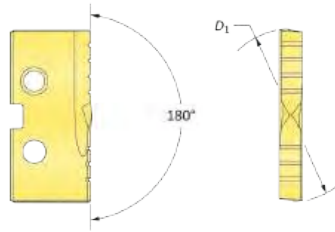


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

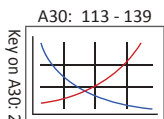
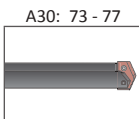
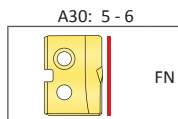


A30

Series	Insert			Flat Bottom Geometry	
				HSS: Super Cobalt	Carbide: K20 (C2)
				Part No.	Part No.
	D ₁ mm	D ₁ inch	Fractional Equivalent	TiN	TiN
2	24.50	0.9646	—	152T-24.5-FB	1C22T-24.5-FB
	24.61	0.9688	31/32	152T-0031-FB	1C22T-0031-FB
	24.79	0.9760	—	152T-.976-FB	1C22T-.976-FB
	25.00	0.9843	63/64	152T-25-FB	1C22T-25-FB
	25.40	1.0000	1	152T-0100-FB	1C22T-0100-FB
	25.50	1.0039	—	152T-25.5-FB	1C22T-25.5-FB
	25.80	1.0156	1-1/64	152T-1.015-FB	1C22T-1.015-FB
	26.00	1.0236	—	152T-26-FB	1C22T-26-FB
	26.20	1.0313	1-1/32	152T-0101-FB	1C22T-0101-FB
	26.50	1.0433	—	152T-26.5-FB	1C22T-26.5-FB
	26.59	1.0469	1-3/64	152T-1.046-FB	1C22T-1.046-FB
	26.99	1.0625	1-1/16	152T-0102-FB	1C22T-0102-FB
	27.00	1.0630	—	152T-27-FB	1C22T-27-FB
	27.50	1.0827	—	152T-27.5-FB	1C22T-27.5-FB
	27.78	1.0938	1-3/32	152T-0103-FB	1C22T-0103-FB
	28.00	1.1024	—	152T-28-FB	1C22T-28-FB
	28.18	1.1094	1-7/64	152T-1.109-FB	1C22T-1.109-FB
	28.50	1.1220	—	152T-28.5-FB	1C22T-28.5-FB
	28.58	1.1250	1-1/8	152T-0104-FB	1C22T-0104-FB
	29.00	1.1417	—	152T-29-FB	1C22T-29-FB
	29.37	1.1563	1-5/32	152T-0105-FB	1C22T-0105-FB
	29.50	1.1614	—	152T-29.5-FB	1C22T-29.5-FB
	30.00	1.1811	—	152T-30-FB	1C22T-30-FB

NOTE: *Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

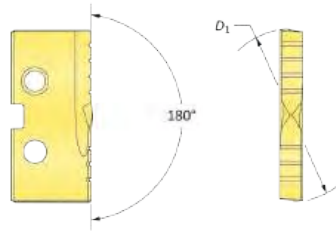


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts

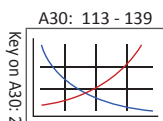
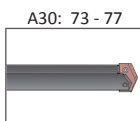
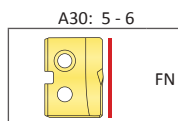


Series	Insert			Flat Bottom Geometry	
	D ₁ mm	D ₁ inch	Fractional Equivalent	HSS: Super Cobalt	Carbide: K20 (C2)
				Part No.	Part No.
2.5	30.16	1.1875	1-3/16	152T-0106-FB	1C22T-0106-FB
	30.50	1.2008	—	152T-30.5-FB	1C22T-30.5-FB
	30.96	1.2188	1-7/32	152T-0107-FB	1C22T-0107-FB
	31.00	1.2205	—	152T-31-FB	1C22T-31-FB
	31.14	1.2260	—	152T-1.226-FB	1C22T-1.226-FB
	31.27	1.2310	—	152T-1.231-FB	1C22T-1.231-FB
	31.35	1.2344	1-15/64	152T-1.234-FB	1C22T-1.234-FB
	31.50	1.2402	—	152T-31.5-FB	1C22T-31.5-FB
	31.75	1.2500	1-1/4	152T-0108-FB	1C22T-0108-FB
	32.00	1.2598	—	152T-32-FB	1C22T-32-FB
	32.50	1.2795	—	152T-32.5-FB	1C22T-32.5-FB
	32.55	1.2813	1-9/32	152T-0109-FB	1C22T-0109-FB
	33.00	1.2992	—	152T-33-FB	1C22T-33-FB
	33.34	1.3125	1-5/16	152T-0110-FB	1C22T-0110-FB
	33.50	1.3189	—	152T-33.5-FB	1C22T-33.5-FB
	34.00	1.3386	—	152T-34-FB	1C22T-34-FB
	34.13	1.3438	1-11/32	152T-0111-FB	1C22T-0111-FB
	34.50	1.3583	—	152T-34.5-FB	1C22T-34.5-FB
	34.93	1.3750	1-3/8	152T-0112-FB	1C22T-0112-FB
	35.00	1.3780	—	152T-35-FB	1C22T-35-FB

NOTE: *Carbide: K20 (C2) inserts with flat bottom geometry are nonstocked standard items. Process fees apply.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

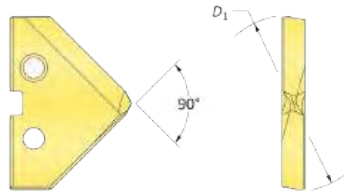
A30



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")**

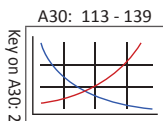
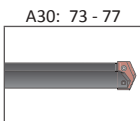
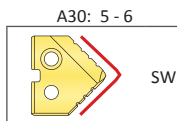
T-A® Drill Inserts



A30

Series	Insert			90° Spot & Chamfer Geometry		
	D_1 mm	D_1 inch	Fractional Equivalent	HSS: Super Cobalt		
						
				Part No.	Part No.	Part No.
				TiN	TiAlN	TiCN
2	24.50	0.9646	—	152T-24.5-SP	152A-24.5-SP	152N-24.5-SP
	24.61	0.9688	31/32	152T-0031-SP	152A-0031-SP	152N-0031-SP
	24.79	0.9760	—	152T-.976-SP	152A-.976-SP	152N-.976-SP
	25.00	0.9843	63/64	152T-25-SP	152A-25-SP	152N-25-SP
	25.40	1.0000	1	152T-0100-SP	152A-0100-SP	152N-0100-SP
	25.50	1.0039	—	152T-25.5-SP	152A-25.5-SP	152N-25.5-SP
	25.80	1.0156	1-1/64	152T-1.015-SP	152A-1.015-SP	152N-1.015-SP
	26.00	1.0236	—	152T-26-SP	152A-26-SP	152N-26-SP
	26.20	1.0313	1-1/32	152T-0101-SP	152A-0101-SP	152N-0101-SP
	26.50	1.0433	—	152T-26.5-SP	152A-26.5-SP	152N-26.5-SP
	26.59	1.0469	1-3/64	152T-1.046-SP	152A-1.046-SP	152N-1.046-SP
	26.99	1.0625	1-1/16	152T-0102-SP	152A-0102-SP	152N-0102-SP
	27.00	1.0630	—	152T-27-SP	152A-27-SP	152N-27-SP
	27.50	1.0827	—	152T-27.5-SP	152A-27.5-SP	152N-27.5-SP
	27.78	1.0938	1-3/32	152T-0103-SP	152A-0103-SP	152N-0103-SP
	28.00	1.1024	—	152T-28-SP	152A-28-SP	152N-28-SP
	28.18	1.1094	1-7/64	152T-1.109-SP	152A-1.109-SP	152N-1.109-SP
	28.50	1.1220	—	152T-28.5-SP	152A-28.5-SP	152N-28.5-SP
	28.58	1.1250	1-1/8	152T-0104-SP	152A-0104-SP	152N-0104-SP
	29.00	1.1417	—	152T-29-SP	152A-29-SP	152N-29-SP
	29.37	1.1563	1-5/32	152T-0105-SP	152A-0105-SP	152N-0105-SP
	29.50	1.1614	—	152T-29.5-SP	152A-29.5-SP	152N-29.5-SP
	30.00	1.1811	—	152T-30-SP	152A-30-SP	152N-30-SP

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

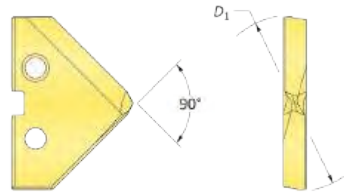


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



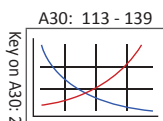
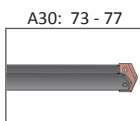
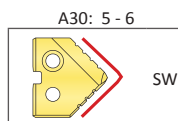
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Inserts



Series	Insert			90° Spot & Chamfer Geometry		
	D ₁ mm	D ₁ inch	Fractional Equivalent	HSS: Super Cobalt		
				Part No.	Part No.	Part No.
				TIN	TiAIN	TiCN
2.5	30.16	1.1875	1-3/16	152T-0106-SP	152A-0106-SP	152N-0106-SP
	30.50	1.2008	—	152T-30.5-SP	152A-30.5-SP	152N-30.5-SP
	30.96	1.2188	1-7/32	152T-0107-SP	152A-0107-SP	152N-0107-SP
	31.00	1.2205	—	152T-31-SP	152A-31-SP	152N-31-SP
	31.27	1.2310	—	152T-1.226-SP	152A-1.226-SP	152N-1.226-SP
	31.35	1.2344	1-15/64	152T-1.231-SP	152A-1.231-SP	152N-1.231-SP
	31.35	1.2344	1-15/64	152T-1.234-SP	152A-1.234-SP	152N-1.234-SP
	31.50	1.2402	—	152T-31.5-SP	152A-31.5-SP	152N-31.5-SP
	31.75	1.2500	1-1/4	152T-0108-SP	152A-0108-SP	152N-0108-SP
	32.00	1.2598	—	152T-32-SP	152A-32-SP	152N-32-SP
	32.50	1.2795	—	152T-32.5-SP	152A-32.5-SP	152N-32.5-SP
	32.55	1.2813	1-9/32	152T-0109-SP	152A-0109-SP	152N-0109-SP
	33.00	1.2992	—	152T-33-SP	152A-33-SP	152N-33-SP
	33.34	1.3125	1-5/16	152T-0110-SP	152A-0110-SP	152N-0110-SP
	33.50	1.3189	—	152T-33.5-SP	152A-33.5-SP	152N-33.5-SP
	34.00	1.3386	—	152T-34-SP	152A-34-SP	152N-34-SP
	34.13	1.3438	1-11/32	152T-0111-SP	152A-0111-SP	152N-0111-SP
	34.50	1.3583	—	152T-34.5-SP	152A-34.5-SP	152N-34.5-SP
	34.93	1.3750	1-3/8	152T-0112-SP	152A-0112-SP	152N-0112-SP
	35.00	1.3780	—	152T-35-SP	152A-35-SP	152N-35-SP

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.

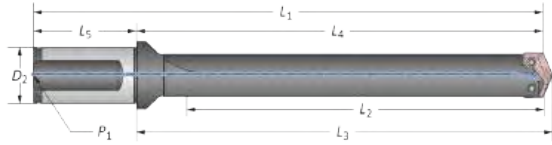
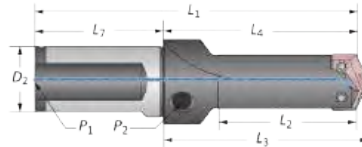


2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



Stub Length



Metric Flange Shank Holders

Flute	Series	Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	2	Stub	63.5	88.5	92.0	148.5	60.0	32	1/4 BSPT	21020S-32FM
		Short	86.1	128.6	132.2	188.6	60.0	32	1/4 BSPT	22020S-32FM
		Intermediate	136.9	179.4	183.0	239.4	60.0	32	1/4 BSPT	23020S-32FM
		Standard	187.7	230.2	233.8	290.2	60.0	32	1/4 BSPT	24020S-32FM
		Extended	289.3	331.8	335.4	391.8	60.0	32	1/4 BSPT	25020S-32FM
	2.5	XL	511.6	554.1	557.6	614.0	60.0	32	1/4 BSPT	27020S-32FM
		3XL	692.6	735.0	738.6	795.0	60.0	32	1/4 BSPT	29020S-32FM
		Stub	100.6	123.4	127.0	183.4	60.0	32	1/4 BSPT	21025S-32FM
		Short	84.7	128.6	132.2	188.6	60.0	32	1/4 BSPT	22025S-32FM
		Intermediate	135.5	179.4	183.0	239.4	60.0	32	1/4 BSPT	23025S-32FM
Helical	2	Standard	186.3	230.2	233.8	290.2	60.0	32	1/4 BSPT	24025S-32FM
		Extended	287.9	331.8	335.4	391.8	60.0	32	1/4 BSPT	25025S-32FM
		Intermediate	154.8	179.4	183.0	239.4	60.0	32	1/4 BSPT	23020H-32FM
		Standard	205.6	230.2	233.8	290.2	60.0	32	1/4 BSPT	24020H-32FM
		Standard Plus	256.3	280.9	284.5	340.9	60.0	32	1/4 BSPT	24520H-32FM
	2.5	Extended	307.2	331.8	335.4	391.8	60.0	32	1/4 BSPT	25020H-32FM
		Long	428.3	452.9	456.5	512.9	60.0	32	1/4 BSPT	26020H-32FM
		Intermediate	156.8	179.4	183.0	239.4	60.0	32	1/4 BSPT	23025H-32FM
		Standard	207.6	230.2	233.8	290.2	60.0	32	1/4 BSPT	24025H-32FM
		Extended	309.2	331.8	335.4	391.8	60.0	32	1/4 BSPT	25025H-32FM

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).

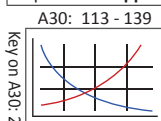
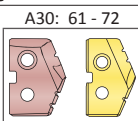
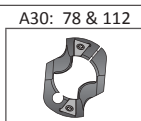
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

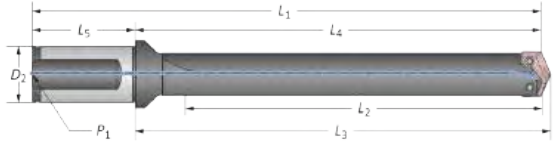
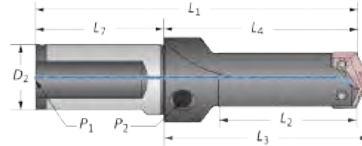


2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



Stub Length



A30

Imperial Flange Shank Holders

Flute	Series	Body					Shank			Part No.
		Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	2	Stub	2.500	3.484	3.624	5.764	2.280	1-1/4	1/4 NPT	21020S-125F
		Short	3.391	5.063	5.203	7.343	2.280	1-1/4	1/4 NPT	22020S-125F
		Intermediate	5.391	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	23020S-125F
		Standard	7.391	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	24020S-125F
		Extended	11.391	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	25020S-125F
	2.5	Stub	3.959	4.859	4.999	7.139	2.280	1-1/4	1/4 NPT	21025S-125F
		Short	3.334	5.063	5.203	7.343	2.280	1-1/4	1/4 NPT	22025S-125F
		Intermediate	5.334	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	23025S-125F
		Standard	7.334	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	24025S-125F
		Extended	11.334	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	25025S-125F
Helical	2	Intermediate	6.093	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	23020H-125F
		Standard	8.093	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	24020H-125F
		Standard Plus	10.089	11.059	11.199	13.339	2.280	1-1/4	1/4 NPT	24520H-125F
		Extended	12.093	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	25020H-125F
		Long	16.861	17.831	17.971	20.111	2.280	1-1/4	1/4 NPT	26020H-125F
	2.5	Intermediate	6.172	7.063	7.203	9.343	2.280	1-1/4	1/4 NPT	23025H-125F
		Standard	8.172	9.063	9.203	11.343	2.280	1-1/4	1/4 NPT	24025H-125F
		Extended	12.172	13.063	13.203	15.343	2.280	1-1/4	1/4 NPT	25025H-125F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).

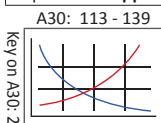
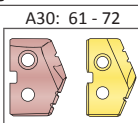
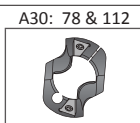
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A30: 146 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

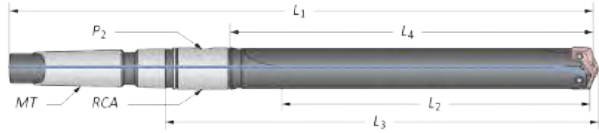

m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



Metric Taper Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	
Straight	2	Short	82.0	114.3	159.9	273.8	#4 MT ISO	1/8 BSPT	2T-3SRM	22020S-004M
	2.5	Short	76.5	114.3	167.1	281.0	#4 MT ISO	1/4 BSPT	2T-4SRM	22025S-004M
Helical	2	Intermediate	148.6	165.1	210.7	324.6	#4 MT ISO	1/8 BSPT	2T-3SRM	23020H-004M
		Standard	199.4	215.9	261.5	375.4	#4 MT ISO	1/8 BSPT	2T-3SRM	24020H-004M
		Extended	301.0	317.5	363.1	477.0	#4 MT ISO	1/8 BSPT	2T-3SRM	25020H-004M
	2.5	Intermediate	146.8	165.1	217.9	331.8	#4 MT ISO	1/4 BSPT	2T-4SRM	23025H-004M
		Standard	197.6	215.9	268.7	382.6	#4 MT ISO	1/4 BSPT	2T-4SRM	24025H-004M
		Extended	299.2	317.5	370.3	484.2	#4 MT ISO	1/4 BSPT	2T-4SRM	25025H-004M

*MT ISO 296 type BEK.

NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

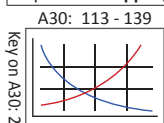
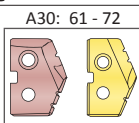
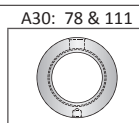
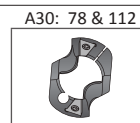
A30

Connection Accessories

					Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



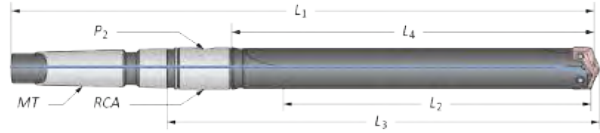
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



Imperial Taper Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	MT	P ₂	RCA	
Straight	2	Short	3.229	4.500	6.233	9.781	#3 MT	1/8 NPT	2T-3SR	22020S-003I
		Short	3.229	4.500	6.296	10.781	#4 MT	1/8 NPT	2T-3SR	22020S-004I
		Intermediate	5.229	6.500	8.296	12.781	#4 MT	1/8 NPT	2T-3SR	23020S-004I
		Standard	7.229	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	24020S-003I
		Standard	7.229	8.500	10.296	14.781	#4 MT	1/8 NPT	2T-3SR	24020S-004I
		Extended	11.229	12.500	14.296	18.781	#4 MT	1/8 NPT	2T-3SR	25020S-004I
	2.5	Short	3.380	4.500	6.233	9.781	#3 MT	1/8 NPT	2T-3SR	22025S-003I
		Short	3.013	4.500	6.577	11.062	#4 MT	1/4 NPT	2T-4SR	22025S-004I
		Intermediate	5.013	6.500	8.577	13.062	#4 MT	1/4 NPT	2T-4SR	23025S-004I
		Standard	7.380	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	24025S-003I
		Standard	7.013	8.500	10.577	15.062	#4 MT	1/4 NPT	2T-4SR	24025S-004I
Helical	2	Extended	11.013	12.500	14.577	19.062	#4 MT	1/4 NPT	2T-4SR	25025S-004I
		Intermediate	5.850	6.500	8.296	12.781	#4 MT	1/8 NPT	2T-3SR	23020H-004I
		Standard	7.850	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	24020H-003I
		Standard	7.850	8.500	10.296	14.781	#4 MT	1/8 NPT	2T-3SR	24020H-004I
		Extended	11.850	12.500	14.296	18.781	#4 MT	1/8 NPT	2T-3SR	25020H-004I
	2.5	Intermediate	5.781	6.500	8.577	13.062	#4 MT	1/4 NPT	2T-4SR	23025H-004I
		Standard	8.016	8.500	10.233	13.781	#3 MT	1/8 NPT	2T-3SR	24025H-003I
		Standard	7.781	8.500	10.577	15.062	#4 MT	1/4 NPT	2T-4SR	24025H-004I
		Extended	11.781	12.500	14.577	19.062	#4 MT	1/4 NPT	2T-4SR	25025H-004I

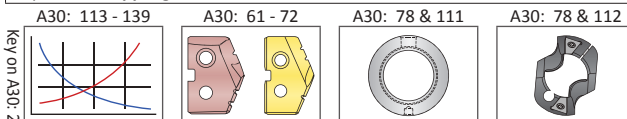
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



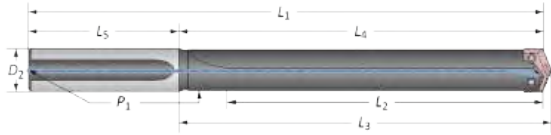
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Drill Holders



Straight Shank Holders

Flute	Series	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
Straight	2	Short	3.226	4.500	4.640	8.000	3.5000	1	1/8 NPT	22020S-100L
		Short	3.119	4.500	4.640	8.000	3.5000	1-1/4	1/8 NPT	22020S-125L
		Intermediate	5.119	6.500	6.640	10.000	3.5000	1-1/4	1/8 NPT	23020S-125L
		Standard	7.226	8.500	8.640	12.000	3.5000	1	1/8 NPT	24020S-100L
		Standard	7.119	8.500	8.640	12.000	3.5000	1-1/4	1/8 NPT	24020S-125L
		Extended	11.119	12.500	12.640	16.000	3.5000	1-1/4	1/8 NPT	25020S-125L
		XL	19.869	21.250	21.390	24.750	3.5000	1-1/4	1/8 NPT	27020S-125L
		3XL	26.994	28.375	28.515	31.875	3.5000	1-1/4	1/8 NPT	29020S-125L
	2.5	Short	3.395	4.500	4.640	8.000	3.5000	1	1/8 NPT	22025S-100L
		Short	3.015	4.500	4.640	8.000	3.5000	1-1/4	1/8 NPT	22025S-125L
		Intermediate	5.015	6.500	6.640	10.000	3.5000	1-1/4	1/8 NPT	23025S-125L
		Standard	7.395	8.500	8.640	12.000	3.5000	1	1/8 NPT	24025S-100L
		Standard	7.015	8.500	8.640	12.000	3.5000	1-1/4	1/8 NPT	24025S-125L
		Extended	11.015	12.500	12.640	16.000	3.5000	1-1/4	1/8 NPT	25025S-125L

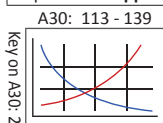
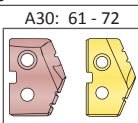
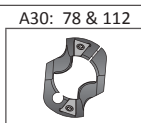
NOTE: 2.5 series inserts fit into both 2 and 2.5 series holders. However, 2 series inserts ONLY fit into 2 series holders. See page A30: 7 for visual.

Connection Accessories

					Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



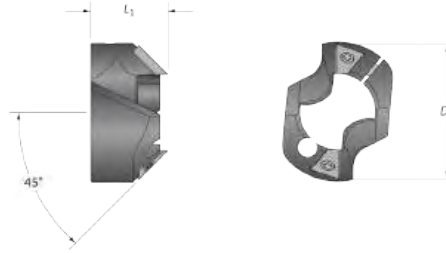
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

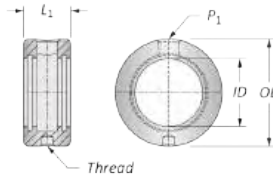
T-A® Drill Accessories



T-ACR 45 Chamfer Ring

Holder Series	D_1 Range	Chamfer Ring		Part No.	Insert Part No.	Insert Screw	Insert Driver	Clamping Screw	Insert Driver
		D_4	L_1						
2	0.9610 - 1.3800	1.598	1.000	T-ACR-45-2	T-ACRI-45-B-CSA	7255-IP8-1	8IP-8	7514-IP20-1	8IP-20

A30



Rotary Coolant Adapter (RCA) and Accessories

	ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
							Kit Part No.*	Replacements
m	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	⚠ 2T-3SRM	2T1-3SR	2T1-3OR-10
	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2T1-4SR	2T1-4OR-10
i	1.000	2.125	1.125	5/16" - 18	1/8 NPT	⚠ 2T-3SR	2T1-3SR	2T1-3OR-10
	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2T1-4SR	2T1-4OR-10

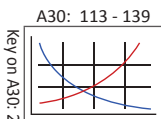
*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

⚠ WARNING

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury.

To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com

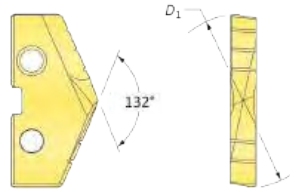


m = Metric (mm)
i = Imperial (in)

Chamfer ring inserts sold separately.
Screws sold in multiples of 10.
O-rings sold in packs of 10.

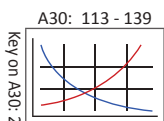
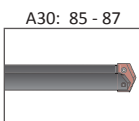
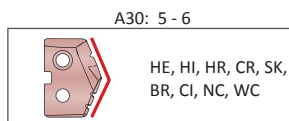
**3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")**

GEN2 T-A® Drill Inserts



A30

Insert			HSS: High-Speed Steel
D ₁ mm	D ₁ inch	Fractional Equivalent	
			Part No.
35.72	1.4063	1-13/32	433T-0113
36.00	1.4173	—	433T-36
36.51	1.4375	1-7/16	433T-0114
37.00	1.4567	—	433T-37
37.31	1.4688	1-15/32	433T-0115
38.00	1.4961	—	433T-38
38.10	1.5000	1-1/2	433T-0116
38.90	1.5313	1-17/32	433T-0117
39.00	1.5354	—	433T-39
39.29	1.5470	—	433T-1.547
39.69	1.5625	1-9/16	433T-0118
40.00	1.5748	—	433T-40
40.48	1.5938	1-19/32	433T-0119
41.00	1.6142	—	433T-41
41.28	1.6250	1-5/8	433T-0120
42.00	1.6535	—	433T-42
42.07	1.6563	1-21/32	433T-0121
42.86	1.6875	1-11/16	433T-0122
43.00	1.6929	—	433T-43
43.66	1.7188	1-23/32	433T-0123
44.00	1.7323	—	433T-44
44.45	1.7500	1-3/4	433T-0124
45.00	1.7717	—	433T-45
45.25	1.7813	1-25/32	433T-0125
45.50	1.7913	—	433T-45.5
45.64	1.7970	—	433T-1.797
46.00	1.8110	—	433T-46
46.04	1.8125	1-13/16	433T-0126
46.83	1.8438	1-27/32	433T-0127
47.00	1.8504	—	433T-47
47.63	1.8750	1-7/8	433T-0128

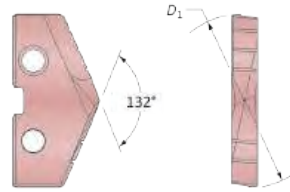


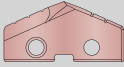
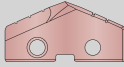
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.



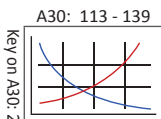
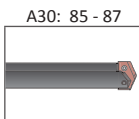
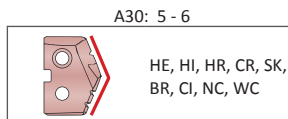
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

GEN2 T-A® Drill Inserts



Insert			HSS: Super Cobalt		HSS: Premium Cobalt	
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			AM200®	TiN	AM200®	TiN
35.72	1.4063	1-13/32	453H-0113	453T-0113	483H-0113	483T-0113
36.00	1.4173	—	453H-36	453T-36	483H-36	483T-36
36.51	1.4375	1-7/16	453H-0114	453T-0114	483H-0114	483T-0114
37.00	1.4567	—	453H-37	453T-37	483H-37	483T-37
37.31	1.4688	1-15/32	453H-0115	453T-0115	483H-0115	483T-0115
38.00	1.4961	—	453H-38	453T-38	483H-38	483T-38
38.10	1.5000	1-1/2	453H-0116	453T-0116	483H-0116	483T-0116
38.90	1.5313	1-17/32	453H-0117	453T-0117	483H-0117	483T-0117
39.00	1.5354	—	453H-39	453T-39	483H-39	483T-39
39.29	1.5470	—	453H-1.547	453T-1.547	483H-1.547	483T-1.547
39.69	1.5625	1-9/16	453H-0118	453T-0118	483H-0118	483T-0118
40.00	1.5748	—	453H-40	453T-40	483H-40	483T-40
40.48	1.5938	1-19/32	453H-0119	453T-0119	483H-0119	483T-0119
41.00	1.6142	—	453H-41	453T-41	483H-41	483T-41
41.28	1.6250	1-5/8	453H-0120	453T-0120	483H-0120	483T-0120
42.00	1.6535	—	453H-42	453T-42	483H-42	483T-42
42.07	1.6563	1-21/32	453H-0121	453T-0121	483H-0121	483T-0121
42.86	1.6875	1-11/16	453H-0122	453T-0122	483H-0122	483T-0122
43.00	1.6929	—	453H-43	453T-43	483H-43	483T-43
43.66	1.7188	1-23/32	453H-0123	453T-0123	483H-0123	483T-0123
44.00	1.7323	—	453H-44	453T-44	483H-44	483T-44
44.45	1.7500	1-3/4	453H-0124	453T-0124	483H-0124	483T-0124
45.00	1.7717	—	453H-45	453T-45	483H-45	483T-45
45.25	1.7813	1-25/32	453H-0125	453T-0125	483H-0125	483T-0125
45.50	1.7913	—	453H-45.5	453T-45.5	483H-45.5	483T-45.5
45.64	1.7970	—	453H-1.797	453T-1.797	483H-1.797	483T-1.797
46.00	1.8110	—	453H-46	453T-46	483H-46	483T-46
46.04	1.8125	1-13/16	453H-0126	453T-0126	483H-0126	483T-0126
46.83	1.8438	1-27/32	453H-0127	453T-0127	483H-0127	483T-0127
47.00	1.8504	—	453H-47	453T-47	483H-47	483T-47
47.63	1.8750	1-7/8	453H-0128	453T-0128	483H-0128	483T-0128

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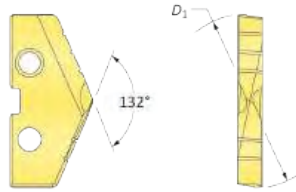


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.



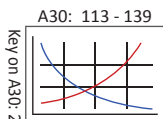
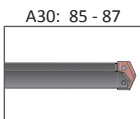
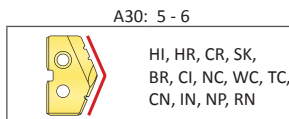
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts



A30

Insert			HSS: Super Cobalt
D ₁ mm	D ₁ inch	Fractional Equivalent	
			Part No.
			TiN
35.72	1.4063	1-13/32	153T-0113
36.00	1.4173	—	153T-36
36.51	1.4375	1-7/16	153T-0114
37.00	1.4567	—	153T-37
37.31	1.4688	1-15/32	153T-0115
38.00	1.4961	—	153T-38
38.10	1.5000	1-1/2	153T-0116
38.90	1.5313	1-17/32	153T-0117
39.00	1.5354	—	153T-39
39.29	1.5470	—	153T-1.547
39.69	1.5625	1-9/16	153T-0118
40.00	1.5748	—	153T-40
40.48	1.5938	1-19/32	153T-0119
41.00	1.6142	—	153T-41
41.28	1.6250	1-5/8	153T-0120
42.00	1.6535	—	153T-42
42.07	1.6563	1-21/32	153T-0121
42.86	1.6875	1-11/16	153T-0122
43.00	1.6929	—	153T-43
43.66	1.7188	1-23/32	153T-0123
44.00	1.7323	—	153T-44
44.45	1.7500	1-3/4	153T-0124
45.00	1.7717	—	153T-45
45.25	1.7813	1-25/32	153T-0125
45.50	1.7913	—	153T-45.5
45.64	1.7970	—	153T-1.797
46.00	1.8110	—	153T-46
46.04	1.8125	1-13/16	153T-0126
46.83	1.8438	1-27/32	153T-0127
47.00	1.8504	—	153T-47
47.63	1.8750	1-7/8	153T-0128

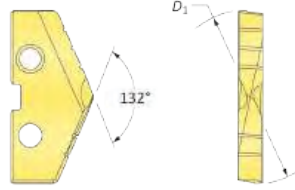


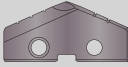
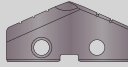
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.



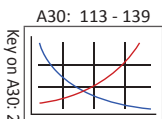
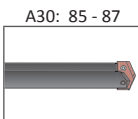
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts



Insert			Carbide: P40 (C5)		Carbide: K20 (C2)	
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	TiAlN	TiN	TiAlN
35.72	1.4063	1-13/32	1C53T-0113	1C53A-0113	1C23T-0113	1C23A-0113
36.00	1.4173	—	1C53T-36	1C53A-36	1C23T-36	1C23A-36
36.51	1.4375	1-7/16	1C53T-0114	1C53A-0114	1C23T-0114	1C23A-0114
37.00	1.4567	—	1C53T-37	1C53A-37	1C23T-37	1C23A-37
37.31	1.4688	1-15/32	1C53T-0115	1C53A-0115	1C23T-0115	1C23A-0115
38.00	1.4961	—	1C53T-38	1C53A-38	1C23T-38	1C23A-38
38.10	1.5000	1-1/2	1C53T-0116	1C53A-0116	1C23T-0116	1C23A-0116
38.90	1.5313	1-17/32	1C53T-0117	1C53A-0117	1C23T-0117	1C23A-0117
39.00	1.5354	—	1C53T-39	1C53A-39	1C23T-39	1C23A-39
39.29	1.5470	—	1C53T-1.547	1C53A-1.547	1C23T-1.547	1C23A-1.547
39.69	1.5625	1-9/16	1C53T-0118	1C53A-0118	1C23T-0118	1C23A-0118
40.00	1.5748	—	1C53T-40	1C53A-40	1C23T-40	1C23A-40
40.48	1.5938	1-19/32	1C53T-0119	1C53A-0119	1C23T-0119	1C23A-0119
41.00	1.6142	—	1C53T-41	1C53A-41	1C23T-41	1C23A-41
41.28	1.6250	1-5/8	1C53T-0120	1C53A-0120	1C23T-0120	1C23A-0120
42.00	1.6535	—	1C53T-42	1C53A-42	1C23T-42	1C23A-42
42.07	1.6563	1-21/32	1C53T-0121	1C53A-0121	1C23T-0121	1C23A-0121
42.86	1.6875	1-11/16	1C53T-0122	1C53A-0122	1C23T-0122	1C23A-0122
43.00	1.6929	—	1C53T-43	1C53A-43	1C23T-43	1C23A-43
43.66	1.7188	1-23/32	1C53T-0123	1C53A-0123	1C23T-0123	1C23A-0123
44.00	1.7323	—	1C53T-44	1C53A-44	1C23T-44	1C23A-44
44.45	1.7500	1-3/4	1C53T-0124	1C53A-0124	1C23T-0124	1C23A-0124
45.00	1.7717	—	1C53T-45	1C53A-45	1C23T-45	1C23A-45
45.25	1.7813	1-25/32	1C53T-0125	1C53A-0125	1C23T-0125	1C23A-0125
45.50	1.7913	—	1C53T-45.5	1C53A-45.5	1C23T-45.5	1C23A-45.5
45.64	1.7970	—	1C53T-1.797	1C53A-1.797	1C23T-1.797	1C23A-1.797
46.00	1.8110	—	1C53T-46	1C53A-46	1C23T-46	1C23A-46
46.04	1.8125	1-13/16	1C53T-0126	1C53A-0126	1C23T-0126	1C23A-0126
46.83	1.8438	1-27/32	1C53T-0127	1C53A-0127	1C23T-0127	1C23A-0127
47.00	1.8504	—	1C53T-47	1C53A-47	1C23T-47	1C23A-47
47.63	1.8750	1-7/8	1C53T-0128	1C53A-0128	1C23T-0128	1C23A-0128

A30

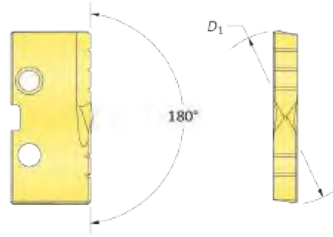


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.



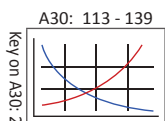
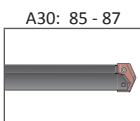
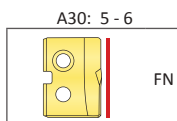
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts



A30

Insert			Flat Bottom Geometry
D ₁ mm	D ₁ inch	Fractional Equivalent	HSS: Super Cobalt
			Part No.
			TiN
35.72	1.4063	1-13/32	153T-0113-FB
36.00	1.4173	—	153T-36-FB
36.51	1.4375	1-7/16	153T-0114-FB
37.00	1.4567	—	153T-37-FB
37.31	1.4688	1-15/32	153T-0115-FB
38.00	1.4961	—	153T-38-FB
38.10	1.5000	1-1/2	153T-0116-FB
38.90	1.5313	1-17/32	153T-0117-FB
39.00	1.5354	—	153T-39-FB
39.29	1.5470	—	153T-1.547-FB
39.69	1.5625	1-9/16	153T-0118-FB
40.00	1.5748	—	153T-40-FB
40.48	1.5938	1-19/32	153T-0119-FB
41.00	1.6142	—	153T-41-FB
41.28	1.6250	1-5/8	153T-0120-FB
42.00	1.6535	—	153T-42-FB
42.07	1.6563	1-21/32	153T-0121-FB
42.86	1.6875	1-11/16	153T-0122-FB
43.00	1.6929	—	153T-43-FB
43.66	1.7188	1-23/32	153T-0123-FB
44.00	1.7323	—	153T-44-FB
44.45	1.7500	1-3/4	153T-0124-FB
45.00	1.7717	—	153T-45-FB
45.25	1.7813	1-25/32	153T-0125-FB
45.50	1.7913	—	153T-45.5-FB
45.64	1.7970	—	153T-1.797-FB
46.00	1.8110	—	153T-46-FB
46.04	1.8125	1-13/16	153T-0126-FB
46.83	1.8438	1-27/32	153T-0127-FB
47.00	1.8504	—	153T-47-FB
47.63	1.8750	1-7/8	153T-0128-FB

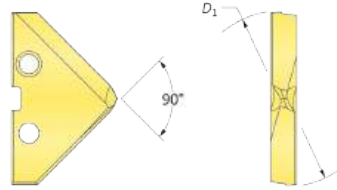


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.



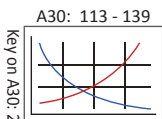
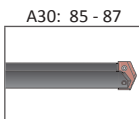
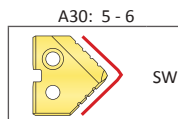
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Drill Inserts



Insert			90° Spot & Chamfer Geometry		
			HSS: Super Cobalt		
					
			Part No.	Part No.	Part No.
D ₁ mm	D ₁ inch	Fractional Equivalent	TiN	TiAlN	TiCN
35.72	1.4063	1-13/32	153T-0113-SP	153A-0113-SP	153N-0113-SP
36.00	1.4173	—	153T-36-SP	153A-36-SP	153N-36-SP
36.51	1.4375	1-7/16	153T-0114-SP	153A-0114-SP	153N-0114-SP
37.00	1.4567	—	153T-37-SP	153A-37-SP	153N-37-SP
37.31	1.4688	1-15/32	153T-0115-SP	153A-0115-SP	153N-0115-SP
38.00	1.4961	—	153T-38-SP	153A-38-SP	153N-38-SP
38.10	1.5000	1-1/2	153T-0116-SP	153A-0116-SP	153N-0116-SP
38.90	1.5313	1-17/32	153T-0117-SP	153A-0117-SP	153N-0117-SP
39.00	1.5354	—	153T-39-SP	153A-39-SP	153N-39-SP
39.29	1.5470	—	153T-1.547-SP	153A-1.547-SP	153N-1.547-SP
39.69	1.5625	1-9/16	153T-0118-SP	153A-0118-SP	153N-0118-SP
40.00	1.5748	—	153T-40-SP	153A-40-SP	153N-40-SP
40.48	1.5938	1-19/32	153T-0119-SP	153A-0119-SP	153N-0119-SP
41.00	1.6142	—	153T-41-SP	153A-41-SP	153N-41-SP
41.28	1.6250	1-5/8	153T-0120-SP	153A-0120-SP	153N-0120-SP
42.00	1.6535	—	153T-42-SP	153A-42-SP	153N-42-SP
42.07	1.6563	1-21/32	153T-0121-SP	153A-0121-SP	153N-0121-SP
42.86	1.6875	1-11/16	153T-0122-SP	153A-0122-SP	153N-0122-SP
43.00	1.6929	—	153T-43-SP	153A-43-SP	153N-43-SP
43.66	1.7188	1-23/32	153T-0123-SP	153A-0123-SP	153N-0123-SP
44.00	1.7323	—	153T-44-SP	153A-44-SP	153N-44-SP
44.45	1.7500	1-3/4	153T-0124-SP	153A-0124-SP	153N-0124-SP
45.00	1.7717	—	153T-45-SP	153A-45-SP	153N-45-SP
45.25	1.7813	1-25/32	153T-0125-SP	153A-0125-SP	153N-0125-SP
45.50	1.7913	—	153T-45.5-SP	153A-45.5-SP	153N-45.5-SP
45.64	1.7970	—	153T-1.797-SP	153A-1.797-SP	153N-1.797-SP
46.00	1.8110	—	153T-46-SP	153A-46-SP	153N-46-SP
46.04	1.8125	1-13/16	153T-0126-SP	153A-0126-SP	153N-0126-SP
46.83	1.8438	1-27/32	153T-0127-SP	153A-0127-SP	153N-0127-SP
47.00	1.8504	—	153T-47-SP	153A-47-SP	153N-47-SP
47.63	1.8750	1-7/8	153T-0128-SP	153A-0128-SP	153N-0128-SP

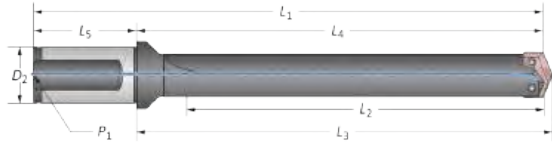
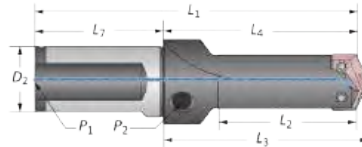
A30



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

**3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")**

T-A® Drill Holders



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**Flange Shank Holders**

Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m Straight	Stub	97.7	125.0	129.8	195.0	70.0	40	1/4 BSPT	21030S-40FM
	Short	114.6	173.1	177.8	243.1	70.0	40	1/4 BSPT	22030S-40FM
	Intermediate	159.1	217.5	222.3	287.5	70.0	40	1/4 BSPT	23030S-40FM
	Standard	203.5	262.0	266.7	332.0	70.0	40	1/4 BSPT	24030S-40FM
	Extended	343.2	401.7	406.4	471.7	70.0	40	1/4 BSPT	25030S-40FM
	XL	552.8	611.2	616.0	681.2	70.0	40	1/4 BSPT	27030S-40FM
	3XL	781.4	839.8	844.6	909.8	70.0	40	1/4 BSPT	29030S-40FM
Helical	Intermediate	185.7	217.5	222.3	287.5	70.0	40	1/4 BSPT	23030H-40FM
	Standard	230.2	262.0	266.7	332.0	70.0	40	1/4 BSPT	24030H-40FM
i Straight	Stub	3.846	4.922	5.109	7.610	2.688	1-1/2	1/4 NPT	21030S-150F
	Short	4.512	6.813	7.000	9.501	2.688	1-1/2	1/4 NPT	22030S-150F
	Intermediate	6.262	8.563	8.750	11.251	2.688	1-1/2	1/4 NPT	23030S-150F
	Standard	8.012	10.313	10.500	13.001	2.688	1-1/2	1/4 NPT	24030S-150F
	Intermediate	7.312	8.563	8.750	11.251	2.688	1-1/2	1/4 NPT	23030H-150F
	Standard	9.062	10.313	10.500	13.001	2.688	1-1/2	1/4 NPT	24030H-150F
	Helical								

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).**Connection Accessories**

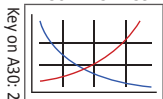
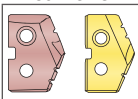
			Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.**WARNING**

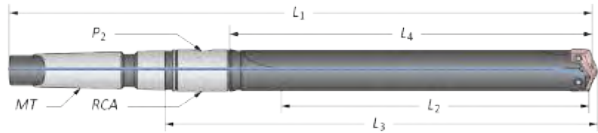
Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

A30: 113 - 139

A30: 79 - 84

**m** = Metric (mm)**i** = Imperial (in)

Screws sold in multiples of 10.

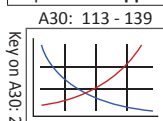
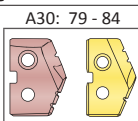
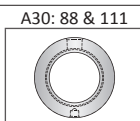


		Body					Shank			
Flute		Length	L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	Part No.
		Short	110.0	152.4	206.3	319.1	#4 MT ISO	1/4 BSPT	2T-4SRM	22030S-004M
		Extended	338.6	381.0	434.9	547.7	#4 MT ISO	1/4 BSPT	2T-4SRM	25030S-004M
		XL	548.1	590.6	644.5	757.2	#4 MT ISO	1/4 BSPT	2T-4SRM	27030S-004M
		3XL	776.7	819.2	873.1	985.8	#4 MT ISO	1/4 BSPT	2T-4SRM	29030S-004M
		Intermediate	179.8	196.9	250.8	363.5	#4 MT ISO	1/4 BSPT	2T-4SRM	23030H-004M
		Standard	224.3	241.3	295.2	408.0	#4 MT ISO	1/4 BSPT	2T-4SRM	24030H-004M
		Short	4.391	6.000	8.124	12.562	#4 MT	1/4 NPT	2T-4SR	22030S-004I
		Short	4.048	6.000	8.124	13.812	#5 MT	1/4 NPT	2T-5SR	22030S-005I
		Intermediate	6.141	7.750	9.874	14.312	#4 MT	1/4 NPT	2T-4SR	23030S-004I
		Standard	7.891	9.500	11.624	16.062	#4 MT	1/4 NPT	2T-4SR	24030S-004I
		Standard	7.548	9.500	11.624	17.312	#5 MT	1/4 NPT	2T-5SR	24030S-005I
		Extended	13.391	15.000	17.124	21.562	#4 MT	1/4 NPT	2T-4SR	25030S-004I
		XL	21.641	23.250	25.374	29.812	#4 MT	1/4 NPT	2T-4SR	27030S-004I
		3XL	30.641	32.250	34.374	38.812	#4 MT	1/4 NPT	2T-4SR	29030S-004I

A30

			Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

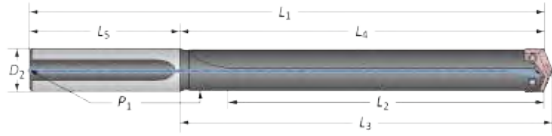


Screws sold in multiples of 10.

A30: 86

**3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")**

T-A® Drill Holders

**Straight Shank Holders**

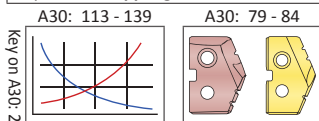
Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
Straight	Short	4.320	6.000	6.187	10.000	4.000	1-1/4	1/4 NPT	22030S-125L
	Short	3.838	6.000	6.187	10.000	4.000	1-1/2	1/4 NPT	22030S-150L
	Intermediate	5.798	7.750	7.937	11.750	4.000	1-1/2	1/4 NPT	23030S-150L
	Standard	7.820	9.500	9.687	13.500	4.000	1-1/4	1/4 NPT	24030S-125L
	Standard	7.548	9.500	9.687	13.500	4.000	1-1/2	1/4 NPT	24030S-150L
	Extended	13.320	15.000	15.187	19.000	4.000	1-1/4	1/4 NPT	25030S-125L
	XL	21.088	23.250	23.437	27.250	4.000	1-1/2	1/4 NPT	27030S-150L
	3XL	30.088	32.250	32.437	36.250	4.000	1-1/2	1/4 NPT	29030S-150L

Connection Accessories

			
Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

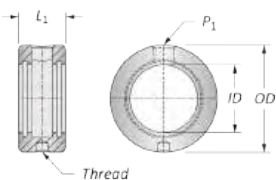


m = Metric (mm)
i = Imperial (in)
Screws sold in multiples of 10.



3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A Drill Accessories



Rotary Coolant Adapter (RCA) and Accessories

			RCA O-Rings					
	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Kit Part No.*	Replacements
m	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2T1-4SR	2T1-4OR-10
	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	2T1-5SR	2T1-5OR-10
i	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2T1-4SR	2T1-4OR-10
	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	2T1-5SR	2T1-5OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
⚠ Refer to page A30: 111 for proper RCA assembly and safety information.

A30

⚠ **WARNING**

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com

A30: 113 - 139

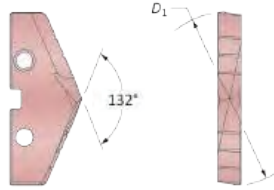
Key on A30: 2

m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.
A30: 88

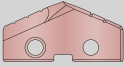


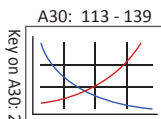
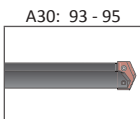
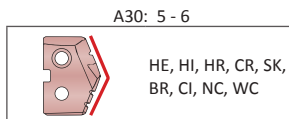
4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

GEN2 T-A® Drill Inserts



A30

Insert			HSS: High-Speed Steel	HSS: Super Cobalt	
D ₁ mm	D ₁ inch	Fractional Equivalent	 Part No.	 Part No.	 Part No.
			TIN	AM200®	TIN
48.00	1.8898	—	434T-48	454H-48	454T-48
48.42	1.9063	1-29/32	434T-0129	454H-0129	454T-0129
49.00	1.9291	—	434T-49	454H-49	454T-49
49.21	1.9375	1-15/16	434T-0130	454H-0130	454T-0130
50.00	1.9685	—	434T-50	454H-50	454T-50
50.01	1.9688	1-31/32	434T-0131	454H-0131	454T-0131
50.80	2.0000	2	434T-0200	454H-0200	454T-0200
51.00	2.0079	—	434T-51	454H-51	454T-51
51.60	2.0313	2-1/32	434T-0201	454H-0201	454T-0201
52.00	2.0472	2-3/64	434T-52	454H-52	454T-52
52.39	2.0625	2-1/16	434T-0202	454H-0202	454T-0202
53.00	2.0866	—	434T-53	454H-53	454T-53
53.18	2.0938	2-3/32	434T-0203	454H-0203	454T-0203
53.98	2.1250	2-1/8	434T-0204	454H-0204	454T-0204
54.00	2.1260	—	434T-54	454H-54	454T-54
54.77	2.1563	2-5/32	434T-0205	454H-0205	454T-0205
55.00	2.1654	—	434T-55	454H-55	454T-55
55.56	2.1875	2-3/16	434T-0206	454H-0206	454T-0206
56.00	2.2047	—	434T-56	454H-56	454T-56
56.36	2.2188	2-7/32	434T-0207	454H-0207	454T-0207
57.00	2.2441	—	434T-57	454H-57	454T-57
57.15	2.2500	2-1/4	434T-0208	454H-0208	454T-0208
57.95	2.2813	2-9/32	434T-0209	454H-0209	454T-0209
58.00	2.2835	—	434T-58	454H-58	454T-58
58.74	2.3125	2-5/16	434T-0210	454H-0210	454T-0210
59.00	2.3228	—	434T-59	454H-59	454T-59
59.53	2.3438	2-11/32	434T-0211	454H-0211	454T-0211
60.00	2.3622	—	434T-60	454H-60	454T-60
60.33	2.3750	2-3/8	434T-0212	454H-0212	454T-0212
61.00	2.4016	—	434T-61	454H-61	454T-61
61.12	2.4063	2-13/32	434T-0213	454H-0213	454T-0213
61.91	2.4375	2-7/16	434T-0214	454H-0214	454T-0214
62.00	2.4409	—	434T-62	454H-62	454T-62
62.71	2.4688	2-15/32	434T-0215	454H-0215	454T-0215
63.00	2.4803	—	434T-63	454H-63	454T-63
63.50	2.5000	2-1/2	434T-0216	454H-0216	454T-0216
64.00	2.5197	—	434T-64	454H-64	454T-64
64.30	2.5313	2-17/32	434T-0217	454H-0217	454T-0217
65.00	2.5591	—	434T-65	454H-65	454T-65
65.09	2.5625	2-9/16	434T-0218	454H-0218	454T-0218

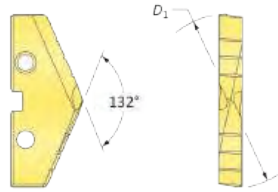


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

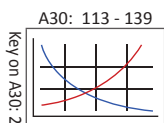
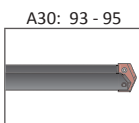
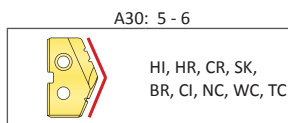


4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A® Drill Inserts



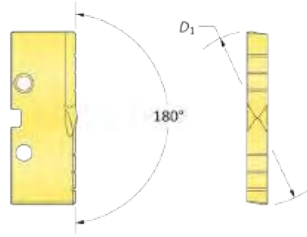
Insert			HSS: Super Cobalt
D_1 mm	D_1 inch	Fractional Equivalent	Part No.
48.00	1.8898	—	154T-48
48.42	1.9063	1-29/32	154T-0129
49.00	1.9291	—	154T-49
49.21	1.9375	1-15/16	154T-0130
50.00	1.9685	—	154T-50
50.01	1.9688	1-31/32	154T-0131
50.80	2.0000	2	154T-0200
51.00	2.0079	—	154T-51
51.60	2.0313	2-1/32	154T-0201
52.00	2.0472	2-3/64	154T-52
52.39	2.0625	2-1/16	154T-0202
53.00	2.0866	—	154T-53
53.18	2.0938	2-3/32	154T-0203
53.98	2.1250	2-1/8	154T-0204
54.00	2.1260	—	154T-54
54.77	2.1563	2-5/32	154T-0205
55.00	2.1654	—	154T-55
55.56	2.1875	2-3/16	154T-0206
56.00	2.2047	—	154T-56
56.36	2.2188	2-7/32	154T-0207
57.00	2.2441	—	154T-57
57.15	2.2500	2-1/4	154T-0208
57.95	2.2813	2-9/32	154T-0209
58.00	2.2835	—	154T-58
58.74	2.3125	2-5/16	154T-0210
59.00	2.3228	—	154T-59
59.53	2.3438	2-11/32	154T-0211
60.00	2.3622	—	154T-60
60.33	2.3750	2-3/8	154T-0212
61.00	2.4016	—	154T-61
61.12	2.4063	2-13/32	154T-0213
61.91	2.4375	2-7/16	154T-0214
62.00	2.4409	—	154T-62
62.71	2.4688	2-15/32	154T-0215
63.00	2.4803	—	154T-63
63.50	2.5000	2-1/2	154T-0216
64.00	2.5197	—	154T-64
64.30	2.5313	2-17/32	154T-0217
65.00	2.5591	—	154T-65
65.09	2.5625	2-9/16	154T-0218



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

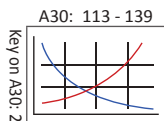
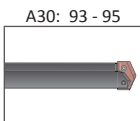
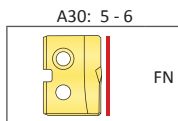
**4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")**

T-A® Drill Inserts



A30

Insert			Flat Bottom Geometry
			HSS: Super Cobalt
			
			Part No.
D ₁ mm	D ₁ inch	Fractional Equivalent	TiN
48.00	1.8898	—	154T-48-FB
48.42	1.9063	1-29/32	154T-0129-FB
49.00	1.9291	—	154T-49-FB
49.21	1.9375	1-15/16	154T-0130-FB
50.00	1.9685	—	154T-50-FB
50.01	1.9688	1-31/32	154T-0131-FB
50.80	2.0000	2	154T-0200-FB
51.00	2.0079	—	154T-51-FB
51.60	2.0313	2-1/32	154T-0201-FB
52.00	2.0472	2-3/64	154T-52-FB
52.39	2.0625	2-1/16	154T-0202-FB
53.00	2.0866	—	154T-53-FB
53.18	2.0938	2-3/32	154T-0203-FB
53.98	2.1250	2-1/8	154T-0204-FB
54.00	2.1260	—	154T-54-FB
54.77	2.1563	2-5/32	154T-0205-FB
55.00	2.1654	—	154T-55-FB
55.56	2.1875	2-3/16	154T-0206-FB
56.00	2.2047	—	154T-56-FB
56.36	2.2188	2-7/32	154T-0207-FB
57.00	2.2441	—	154T-57-FB
57.15	2.2500	2-1/4	154T-0208-FB
57.95	2.2813	2-9/32	154T-0209-FB
58.00	2.2835	—	154T-58-FB
58.74	2.3125	2-5/16	154T-0210-FB
59.00	2.3228	—	154T-59-FB
59.53	2.3438	2-11/32	154T-0211-FB
60.00	2.3622	—	154T-60-FB
60.33	2.3750	2-3/8	154T-0212-FB
61.00	2.4016	—	154T-61-FB
61.12	2.4063	2-13/32	154T-0213-FB
61.91	2.4375	2-7/16	154T-0214-FB
62.00	2.4409	—	154T-62-FB
62.71	2.4688	2-15/32	154T-0215-FB
63.00	2.4803	—	154T-63-FB
63.50	2.5000	2-1/2	154T-0216-FB
64.00	2.5197	—	154T-64-FB
64.30	2.5313	2-17/32	154T-0217-FB
65.00	2.5591	—	154T-65-FB
65.09	2.5625	2-9/16	154T-0218-FB

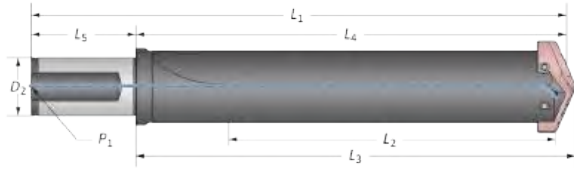


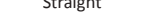
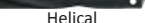
Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

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**4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")**

T-A® Drill Holders

**Flange Shank Holders**

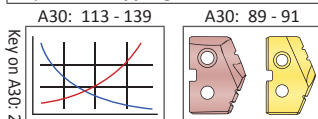
Flute	Length	Body				Shank			Part No.
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
 Straight	Short	121.9	179.4	184.2	249.4	70.0	40	1/4 BSPT	22040S-40FM
	Standard	223.5	281.0	285.8	351.0	70.0	40	1/4 BSPT	24040S-40FM
	Extended	414.0	471.5	476.3	541.5	70.0	40	1/4 BSPT	 25040S-40FM
	XL	617.2	674.7	679.5	744.7	70.0	40	1/4 BSPT	 27040S-40FM
	3XL	871.2	928.7	933.5	998.7	70.0	40	1/4 BSPT	 29040S-40FM
 Helical	Standard	252.7	281.0	285.8	351.0	70.0	40	1/4 BSPT	24040H-40FM
 Straight	Short	4.798	7.063	7.250	9.751	2.688	1-1/2	1/4 NPT	22040S-150F
	Standard	8.798	11.063	11.250	13.751	2.688	1-1/2	1/4 NPT	24040S-150F
	Standard	9.949	11.063	11.250	13.751	2.688	1-1/2	1/4 NPT	24040H-150F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P₂).**Connection Accessories**

 Insert Screws	 Nylon Locking Screws	 Insert Driver	 Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

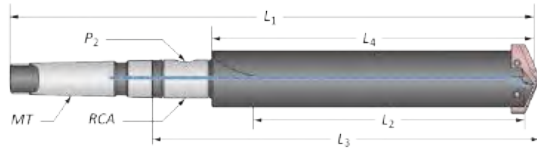
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

 **WARNING** Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



 = Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.



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			Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

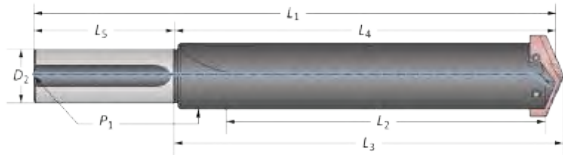
WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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**4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")**

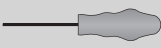
T-A® Drill Holders

**Straight Shank Holders**

Flute	Length	Body				Shank			Part No.
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
 Straight	Short	4.918	6.500	6.687	10.500	4.000	1-1/2	1/4 NPT	22040S-150L
	Short	4.600	6.500	6.687	10.500	4.000	1-3/4	1/4 NPT	22040S-175L
	Standard	8.918	10.500	10.687	14.500	4.000	1-1/2	1/4 NPT	24040S-150L
	Standard	8.600	10.500	10.687	14.500	4.000	1-3/4	1/4 NPT	24040S-175L
	Extended	16.418	18.000	18.187	22.000	4.000	1-1/2	1/4 NPT	 25040S-150L
	XL	24.418	26.000	26.187	30.000	4.000	1-1/2	1/4 NPT	 27040S-150L
	3XL	34.418	36.000	36.187	40.000	4.000	1-1/2	1/4 NPT	 29040S-150L

A30

Connection Accessories

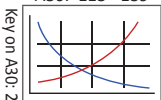
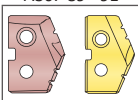
			Admissible Tightening Torque*
Insert Screws	Nylon Locking Screws	Insert Driver	
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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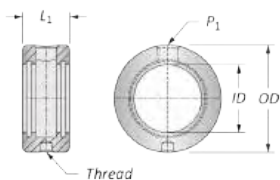
 = Metric (mm) = Imperial (in)

Screws sold in multiples of 10.



4 Series: 46.99 mm - 65.30 mm (1.8500" - 2.5709")

T-A Drill Accessories



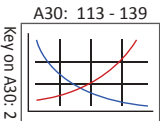
Rotary Coolant Adapter (RCA) and Accessories

							RCA O-Rings	
	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Kit Part No.*	Replacements
m	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2T1-4SR	2T1-4OR-10
	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	2T1-5SR	2T1-5OR-10
i	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2T1-4SR	2T1-4OR-10
	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	2T1-5SR	2T1-5OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
⚠ Refer to page A30: 111 for proper RCA assembly and safety information. RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling.

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⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



m = Metric (mm)
i = Imperial (in)
O-rings sold in packs of 10.
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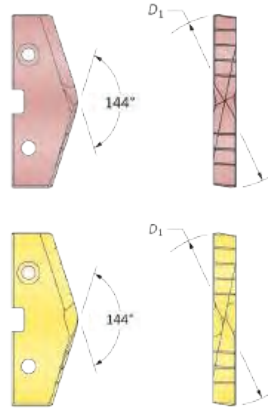


5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

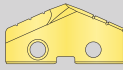
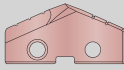
5 Series Replaceable Inserts

GEN2 T-A

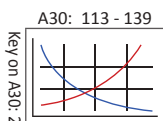
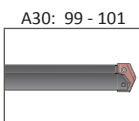
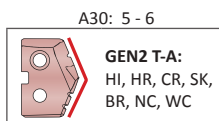
T-A



A30

Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	AM200®	TiN	TiN*
63.50	2.5000	2-1/2	435T-0216	455H-0216	135T-0216	155T-0216
64.00	2.5197	—	435T-64	455H-64	135T-64	155T-64
64.30	2.5313	2-17/32	435T-0217	455H-0217	135T-0217	155T-0217
65.09	2.5625	2-9/16	435T-0218	455H-0218	135T-0218	155T-0218
65.88	2.5938	2-19/32	435T-0219	455H-0219	135T-0219	155T-0219
66.00	2.5984	—	435T-66	455H-66	135T-66	155T-66
66.68	2.6250	2-5/8	435T-0220	455H-0220	135T-0220	155T-0220
67.47	2.6563	2-21/32	435T-0221	455H-0221	135T-0221	155T-0221
68.00	2.6772	—	435T-68	455H-68	135T-68	155T-68
68.26	2.6875	2-11/16	435T-0222	455H-0222	135T-0222	155T-0222
69.06	2.7188	2-23/32	435T-0223	455H-0223	135T-0223	155T-0223
69.85	2.7500	2-3/4	435T-0224	455H-0224	135T-0224	155T-0224
70.00	2.7559	—	435T-70	455H-70	135T-70	155T-70
70.65	2.7813	2-25/32	435T-0225	455H-0225	135T-0225	155T-0225
71.44	2.8125	2-13/16	435T-0226	455H-0226	135T-0226	155T-0226
72.00	2.8346	—	435T-72	455H-72	135T-72	155T-72
72.23	2.8438	2-27/32	435T-0227	455H-0227	135T-0227	155T-0227
73.03	2.8750	2-7/8	435T-0228	455H-0228	135T-0228	155T-0228
73.82	2.9063	2-29/32	435T-0229	455H-0229	135T-0229	155T-0229
74.00	2.9134	—	435T-74	455H-74	135T-74	155T-74
74.61	2.9375	2-15/16	435T-0230	455H-0230	135T-0230	155T-0230
75.41	2.9688	2-31/32	435T-0231	455H-0231	135T-0231	155T-0231
76.00	2.9921	—	435T-76	455H-76	135T-76	155T-76
76.20	3.0000	3	435T-0300	455H-0300	135T-0300	155T-0300

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

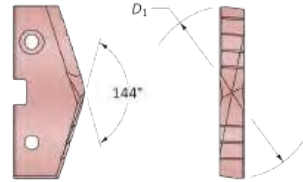
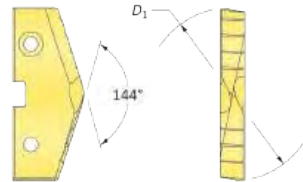
6 Series Replaceable Inserts
(for use with 5 series holders)



GEN2 T-A



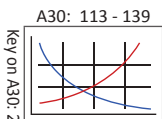
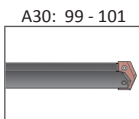
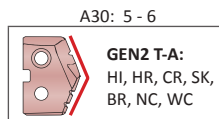
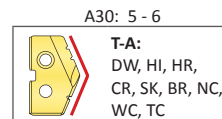
T-A



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Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	AM200®	TiN	TiN*
77.00	3.0313	3-1/32	436T-0301	456H-0301	136T-0301	156T-0301
77.79	3.0625	3-1/16	436T-0302	456H-0302	136T-0302	156T-0302
78.00	3.0709	—	436T-78	456H-78	136T-78	156T-78
78.58	3.0938	3-3/32	436T-0303	456H-0303	136T-0303	156T-0303
79.38	3.1250	3-1/8	436T-0304	456H-0304	136T-0304	156T-0304
80.00	3.1496	—	436T-80	456H-80	136T-80	156T-80
80.17	3.1563	3-5/32	436T-0305	456H-0305	136T-0305	156T-0305
80.96	3.1875	3-3/16	436T-0306	456H-0306	136T-0306	156T-0306
81.76	3.2188	3-7/32	436T-0307	456H-0307	136T-0307	156T-0307
82.00	3.2283	—	436T-82	456H-82	136T-82	156T-82
82.55	3.2500	3-1/4	436T-0308	456H-0308	136T-0308	156T-0308
83.35	3.2813	3-9/32	436T-0309	456H-0309	136T-0309	156T-0309
84.00	3.3071	—	436T-84	456H-84	136T-84	156T-84
84.14	3.3125	3-5/16	436T-0310	456H-0310	136T-0310	156T-0310
84.93	3.3438	3-11/32	436T-0311	456H-0311	136T-0311	156T-0311
85.73	3.3750	3-3/8	436T-0312	456H-0312	136T-0312	156T-0312
86.00	3.3858	—	436T-86	456H-86	136T-86	156T-86
86.52	3.4063	3-13/32	436T-0313	456H-0313	136T-0313	156T-0313
87.31	3.4375	3-7/16	436T-0314	456H-0314	136T-0314	156T-0314
88.00	3.4646	—	436T-88	456H-88	136T-88	156T-88
88.11	3.4688	3-15/32	436T-0315	456H-0315	136T-0315	156T-0315
88.90	3.5000	3-1/2	436T-0316	456H-0316	136T-0316	156T-0316

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.

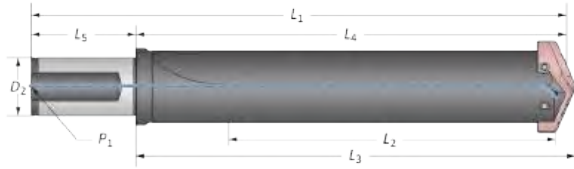


Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 2.



5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A® Drill Holders



Flange Shank Holders

Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
	Short	165.7	215.9	222.3	295.9	80.0	50	1/2 BSPT	22050S-50FM
	Extended	457.8	508.0	514.4	588.0	80.0	50	1/2 BSPT	25050S-50FM
	Standard	277.3	317.5	323.9	397.5	80.0	50	1/2 BSPT	24050H-50FM
	Short	6.523	8.500	8.750	13.000	4.500	2	1/2 NPT	22050S-200F
	Extended	18.023	20.000	20.250	24.500	4.500	2	1/2 NPT	25050S-200F
	Standard	10.918	12.500	12.750	17.000	4.500	2	1/2 NPT	24050H-200F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

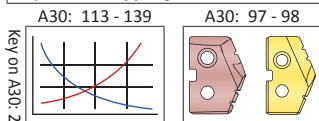
A30

Connection Accessories

Insert Screws	Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



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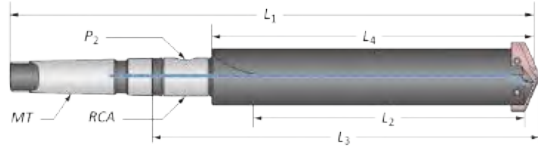
= Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.



5/6 Series: 62.38 mm - 89.09 mm (2.456" - 3.507")

T-A® Drill Holders

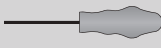


Taper Shank Holders

	Flute	Length	Body				Shank			Part No.
			L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	
m	Straight	Short	163.5	215.9	287.3	430.2	#5 MT ISO	1/2 BSPT	2T-6SRM	22050S-005M
		Extended	455.6	508.0	579.4	722.3	#5 MT ISO	1/2 BSPT	2T-6SRM	25050S-005M
		XL	652.4	704.9	776.3	919.1	#5 MT ISO	1/2 BSPT	2T-6SRM	27050S-005M
		3XL	881.0	933.5	1004.9	1147.7	#5 MT ISO	1/2 BSPT	2T-6SRM	29050S-005M
	Helical	Standard	286.3	317.5	388.9	531.8	#5 MT ISO	1/2 BSPT	2T-6SRM	24050H-005M
i	Straight	Short	6.438	8.500	11.312	16.937	#5 MT	1/2 NPT	2T-6SR	22050S-005I
		Standard	10.438	12.500	15.312	20.937	#5 MT	1/2 NPT	2T-6SR	24050S-005I
		Extended	17.938	20.000	22.812	28.437	#5 MT	1/2 NPT	2T-6SR	25050S-005I
		XL	25.688	27.750	30.562	36.187	#5 MT	1/2 NPT	2T-6SR	27050S-005I
		3XL	34.688	36.750	39.562	45.187	#5 MT	1/2 NPT	2T-6SR	29050S-005I

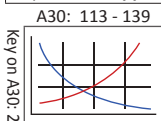
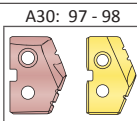
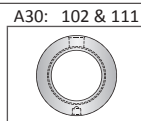
*MT ISO 296 type BEK.

Connection Accessories

		Admissible Tightening Torque*
Insert Screws	Insert Driver	
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

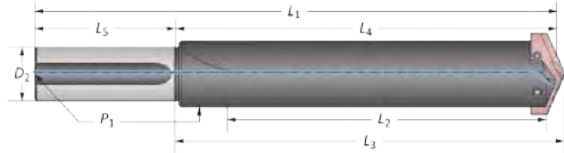
WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")**

T-A® Drill Holders

**Straight Shank Holders**

Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
Straight	Short	6.353	8.500	8.750	12.500	4.000	2	1/2 NPT	22050S-200L
	Standard	10.353	12.500	12.750	16.500	4.000	2	1/2 NPT	24050S-200L
	Extended	17.850	20.000	20.250	24.000	4.000	2	1/2 NPT	25050S-200L
	XL	25.603	27.750	28.000	31.750	4.000	2	1/2 NPT	27050S-200L
	3XL	34.603	36.750	37.000	40.750	4.000	2	1/2 NPT	29050S-200L

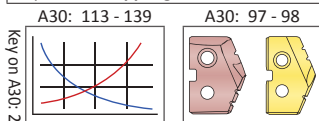
A30

Connection Accessories

		
Insert Screws	Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



A30: 101

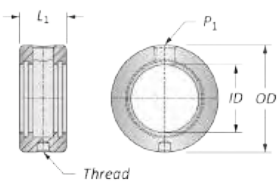
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m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

5/6 Series: 62.38 mm - 89.09 mm (2.4560" - 3.5079")

T-A Drill Accessories



Rotary Coolant Adapter (RCA) and Accessories

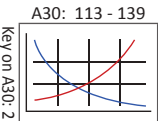
							RCA O-Rings	
	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Kit Part No.*	Replacements
	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	 2T-6SRM	2T1-6SR	2T1-6OR-10
	2.250	3.750	1.750	1/2" - 13	1/2 NPT	 2T-6SR	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
 Refer to page A30: 111 for proper RCA assembly and safety information.

A30

 **WARNING**

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



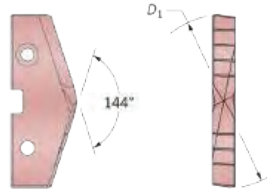
 = Metric (mm)
 = Imperial (in)
O-rings sold in packs of 10.

A30: 102

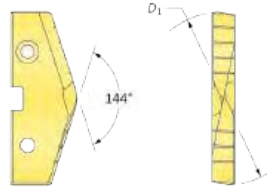
**7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")**

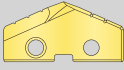
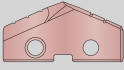
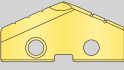
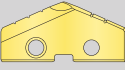
7 Series Replaceable Inserts

GEN2 T-A

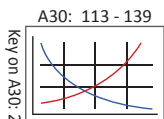
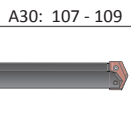
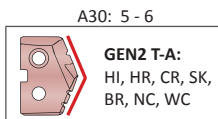


T-A



Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	AM200®	TiN	TiN*
89.70	3.5313	3-17/32	437T-0317	457H-0317	137T-0317	157T-0317
90.00	3.5433	—	437T-90	457H-90	137T-90	157T-90
90.49	3.5625	3-9/16	437T-0318	457H-0318	137T-0318	157T-0318
91.28	3.5938	3-19/32	437T-0319	457H-0319	137T-0319	157T-0319
92.00	3.6220	—	437T-92	457H-92	137T-92	157T-92
92.08	3.6250	3-5/8	437T-0320	457H-0320	137T-0320	157T-0320
92.87	3.6563	3-21/32	437T-0321	457H-0321	137T-0321	157T-0321
93.66	3.6875	3-11/16	437T-0322	457H-0322	137T-0322	157T-0322
94.00	3.7008	—	437T-94	457H-94	137T-94	157T-94
94.46	3.7188	3-23/32	437T-0323	457H-0323	137T-0323	157T-0323
95.25	3.7500	3-3/4	437T-0324	457H-0324	137T-0324	157T-0324
96.00	3.7795	—	437T-96	457H-96	137T-96	157T-96
96.05	3.7813	3-25/32	437T-0325	457H-0325	137T-0325	157T-0325
96.84	3.8125	3-13/16	437T-0326	457H-0326	137T-0326	157T-0326
97.63	3.8438	3-27/32	437T-0327	457H-0327	137T-0327	157T-0327
98.00	3.8583	—	437T-98	457H-98	137T-98	157T-98
98.43	3.8750	3-7/8	437T-0328	457H-0328	137T-0328	157T-0328
99.22	3.9063	3-29/32	437T-0329	457H-0329	137T-0329	157T-0329
100.00	3.9370	—	437T-100	457H-100	137T-100	157T-100
100.01	3.9375	3-15/16	437T-0330	457H-0330	137T-0330	157T-0330
100.81	3.9688	3-31/32	437T-0331	457H-0331	137T-0331	157T-0331
101.60	4.0000	4	437T-0400	457H-0400	137T-0400	157T-0400

*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

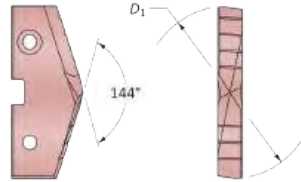


7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

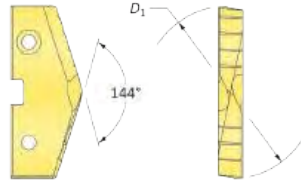
8 Series Replaceable Inserts
(for use with 7 series holders)



GEN2 T-A



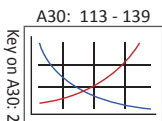
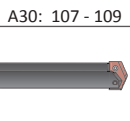
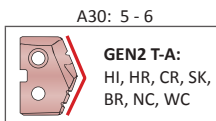
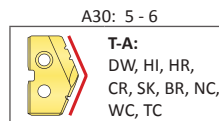
T-A



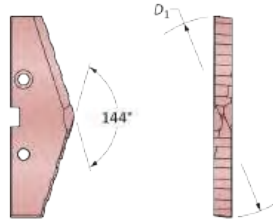
A30

Insert			GEN2 T-A Inserts		T-A Inserts	
			HSS: High-Speed Steel	HSS: Super Cobalt	HSS: High-Speed Steel	HSS: Super Cobalt
D ₁ mm	D ₁ inch	Fractional Equivalent				
			Part No.	Part No.	Part No.	Part No.
			TiN	AM200®	TiN	TiN*
102.00	4.0157	4-1/64	438T-102	458H-102	138T-102	158T-102
103.19	4.0625	4-1/16	438T-0402	458H-0402	138T-0402	158T-0402
104.00	4.0945	—	438T-104	458H-104	138T-104	158T-104
104.78	4.1250	4-1/8	438T-0404	458H-0404	138T-0404	158T-0404
106.00	4.1732	—	438T-106	458H-106	138T-106	158T-106
106.36	4.1875	4-3/16	438T-0406	458H-0406	138T-0406	158T-0406
107.95	4.2500	4-1/4	438T-0408	458H-0408	138T-0408	158T-0408
108.00	4.2520	—	438T-108	458H-108	138T-108	158T-108
109.54	4.3125	4-5/16	438T-0410	458H-0410	138T-0410	158T-0410
110.00	4.3307	—	438T-110	458H-110	138T-110	158T-110
111.13	4.3750	4-3/8	438T-0412	458H-0412	138T-0412	158T-0412
112.00	4.4094	—	438T-112	458H-112	138T-112	158T-112
112.71	4.4375	4-7/16	438T-0414	458H-0414	138T-0414	158T-0414
114.00	4.4882	—	438T-114	458H-114	138T-114	158T-114
114.30	4.5000	4-1/2	438T-0416	458H-0416	138T-0416	158T-0416

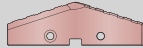
*Super cobalt T-A inserts with TiN are available as nonstocked standards. Process fees apply.



Coatings not listed above
can be supplied as
nonstocked standards.
Process fees apply.
Inserts sold in quantities of 1.

**Oversize: 110.00 mm - 152.40 mm (4.3307" - 6.0000")****8 Series Replaceable Inserts**
(for use with 7 series holders)

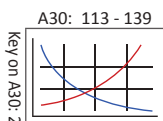
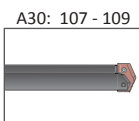
A30

Insert			Double Wide Chip Splitter
			HSS: Super Cobalt
			
			Part No.
			AM200®
D ₁ mm	D ₁ inch	Fractional Equivalent	
110.00	4.3307	—	158H-110-DW
114.30	4.5000	4-1/2	158H-0416-DW
115.00	4.5276	—	158H-115-DW
120.00	4.7244	—	158H-120-DW
120.65	4.7500	4-3/4	158H-0424-DW
125.00	4.9213	—	158H-125-DW
127.00	5.0000	5	158H-0500-DW
130.00	5.1181	—	158H-130-DW
133.35	5.2500	5-1/4	158H-0508-DW
135.00	5.3150	—	158H-135-DW
139.70	5.5000	5-1/2	158H-0516-DW
140.00	5.5118	—	158H-140-DW
145.00	5.7087	—	158H-145-DW
146.05	5.7500	5-3/4	158H-0524-DW
150.00	5.9055	—	158H-150-DW
152.40	6.0000	6	158H-0600-DW

Diameters available up to 200.00 mm (7.8740") upon request.

NOTE: 120.00 mm (4.7244") maximum for stainless steel applications.

Minimum order quantity of 1.

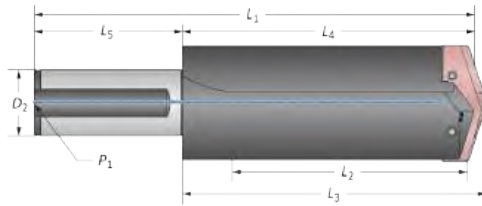


This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.



7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A® Drill Holders



Flange Shank Holders

Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
	Short	178.9	225.4	231.8	305.4	80.0	50	1/2 BSPT	22070S-50FM
	Extended	558.4	606.9	613.3	686.9	80.0	50	1/2 BSPT	25070S-50FM
	Standard	283.5	327.0	333.4	407.0	80.0	50	1/2 BSPT	24070H-50FM
	Short	6.042	8.875	9.125	13.375	4.500	2	1/2 NPT	22070S-200F
	Extended	21.986	23.894	24.144	28.394	4.500	2	1/2 NPT	25070S-200F
	Standard	11.161	12.875	13.125	17.375	4.500	2	1/2 NPT	24070H-200F

NOTE: Stub length holders have a 3.175 mm (1/8") side pipe tap (P_2).

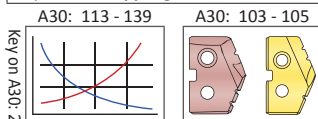
A30

Connection Accessories

Insert Screws	Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



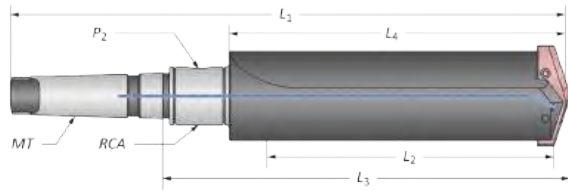
A30: 107

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= Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.

T-A® Drill Holders



Taper Shank Holders

		Body					Shank			
Flute		Length	L ₂	L ₄	L ₃	L ₁	MT*	P ₂	RCA	Part No.
		Short	177.2	225.4	296.8	439.7	#5 MT ISO	1/2 BSPT	2T-6SRM	22070S-005M
		Extended	561.3	609.6	681.0	823.9	#5 MT ISO	1/2 BSPT	2T-6SRM	 25070S-005M
		XL	691.5	739.8	811.2	954.1	#5 MT ISO	1/2 BSPT	2T-6SRM	 27070S-005M
		3XL	945.5	993.8	1065.2	1208.1	#5 MT ISO	1/2 BSPT	2T-6SRM	 29070S-005M
		Standard	290.5	327.0	398.4	541.3	#5 MT ISO	1/2 BSPT	2T-6SRM	24070H-005M
		Short	6.979	8.875	11.687	17.312	#5 MT	1/2 NPT	2T-6SR	22070S-005I
		Standard	10.979	12.875	15.687	21.312	#5 MT	1/2 NPT	2T-6SR	24070S-005I
		Extended	22.104	24.000	26.812	32.437	#5 MT	1/2 NPT	2T-6SR	 25070S-005I
		XL	27.229	29.125	31.937	37.562	#5 MT	1/2 NPT	2T-6SR	 27070S-005I
		3XL	37.229	39.125	41.937	47.562	#5 MT	1/2 NPT	2T-6SR	 29070S-005I

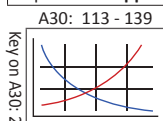
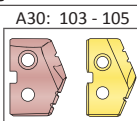
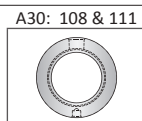
*MT ISO 296 type BEK.

Connection Accessories

 Insert Screws	 Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



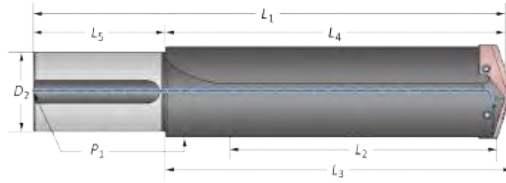
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A® Drill Holders



Straight Shank Holders

Flute	Length	Body				Shank			Part No.
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
i Straight	Short	6.217	8.875	9.125	13.875	5.000	3	1/2 NPT	22070S-300L
	Standard	10.217	12.875	13.125	17.875	5.000	3	1/2 NPT	24070S-300L
	Extended	21.342	24.000	24.250	29.000	5.000	3	1/2 NPT	⚠ 25070S-300L
	XL	26.467	29.125	29.375	34.125	5.000	3	1/2 NPT	⚠ 27070S-300L
	3XL	36.467	39.125	39.375	44.125	5.000	3	1/2 NPT	⚠ 29070S-300L

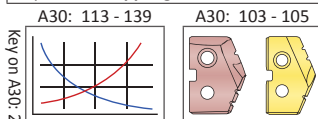
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Connection Accessories

		
Insert Screws	Insert Driver	Admissible Tightening Torque*
7619-IP25-1	8IP-25	1750 N-cm (155.0 in-lbs)

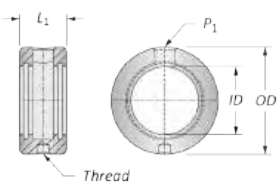
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **A30: 146** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



7/8 Series: 89.10 mm - 114.48 mm (3.5080" - 4.5070")

T-A Drill Accessories



Rotary Coolant Adapter (RCA) and Accessories

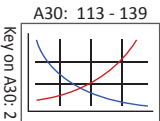
							RCA O-Rings	
	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Kit Part No.*	Replacements
	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	 2T-6SRM	2T1-6SR	2T1-6OR-10
	2.250	3.750	1.750	1/2" - 13	1/2 NPT	 2T-6SR	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.
 Refer to page A30: 111 for proper RCA assembly and safety information.

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 **WARNING**

RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



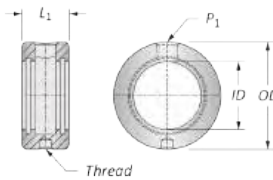
 = Metric (mm)
 = Imperial (in)
O-rings sold in packs of 10.

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Rotary Coolant Adapters (RCA)

Morse Taper Shanks



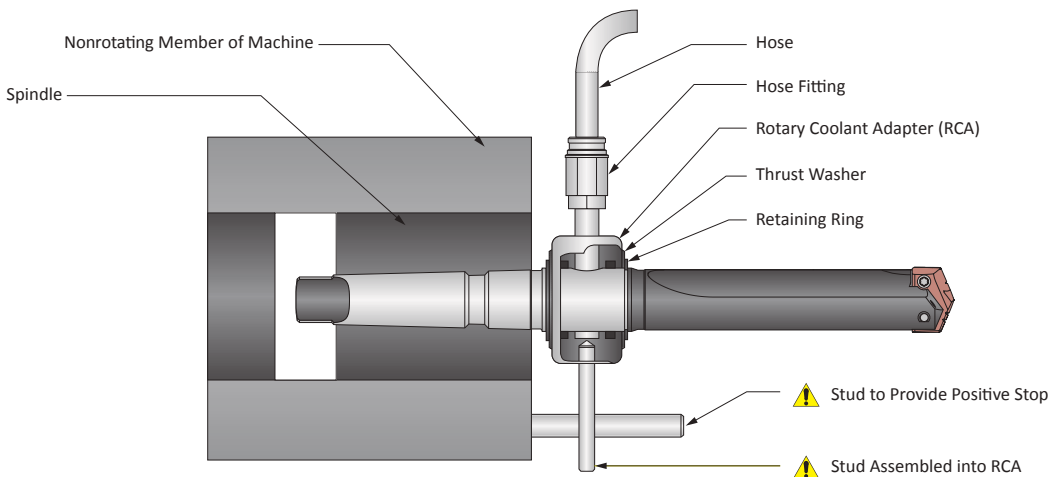
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	Holder Series	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	Max Recommended RPM	RCA O-Rings	
									Kit Part No.*	Replacements
i	Y, Z, 0	0.750	1.750	0.875	5/16" - 18	1/8 NPT	⚠ 2T-2SR	3500	2T1-2SR	2T1-2OR-10
	1, 2	1.000	2.125	1.125	5/16" - 18	1/8 NPT	⚠ 2T-3SR	2500	2T1-3SR	2T1-3OR-10
	2, 3, 4	1.250	2.500	1.375	3/8" - 16	1/4 NPT	⚠ 2T-4SR	2000	2T1-4SR	2T1-4OR-10
	3, 4	1.750	3.000	1.375	3/8" - 16	1/4 NPT	⚠ 2T-5SR	1500	2T1-5SR	2T1-5OR-10
	5, 7	2.250	3.750	1.750	1/2" - 13	1/2 NPT	⚠ 2T-6SR	1100	2T1-6SR	2T1-6OR-10
iii	Y, Z, 0	19.1	44.5	22.2	M8 x 1.25	1/8 BSPT	⚠ 2T-2SRM	3500	2T1-2SR	2T1-2OR-10
	1, 2	25.4	54.0	28.6	M8 x 1.25	1/8 BSPT	⚠ 2T-3SRM	2500	2T1-3SR	2T1-3OR-10
	2, 3, 4	31.8	63.5	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-4SRM	2000	2T1-4SR	2T1-4OR-10
	3, 4	44.5	76.2	34.9	M10 x 1.50	1/4 BSPT	⚠ 2T-5SRM	1500	2T1-5SR	2T1-5OR-10
	5, 7	57.2	95.3	44.5	M10 x 1.50	1/2 BSPT	⚠ 2T-6SRM	1100	2T1-6SR	2T1-6OR-10

*RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

NOTE: Max recommended pressure is 600 PSI (42 bar).

NOTE: Recommendations above are based on water and oil based coolants.



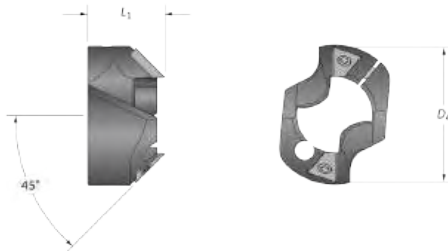
⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury.

To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications through our Application Engineering department: appeng@alliedmachine.com



T-ACR 45 Chamfer Rings

Straight Flute Holders



Holder Series	D_1 Range	Chamfer Ring		Part No.					
		D_4	L_1						
0	0.5118 - 0.6890	1.148	0.676	T-ACR-45-0	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7375-IP9-1	8IP-9
1	0.6900 - 0.8540	1.330	0.797	T-ACR-45-1	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
1.5	0.8540 - 0.9600	1.493	0.891	T-ACR-45-1.5	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7495-IP15-1	8IP-15
2	0.9610 - 1.3800	1.598	1.000	T-ACR-45-2	T-ACRI-45-B-C5A	7255-IP8-1	8IP-8	7514-IP20-1	8IP-20

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Highlights and Other Information

- Produces a 45° chamfer only.
- Clamping screw allows for setting at any length along the flute.
- Double effective cutting with face mounted inserts provides increased feed rates and greater insert strength.
- The ring is balanced to match the holder center of gravity to ensure stability.
- Inserts only available in C5 carbide and TiAlN coating.
- Ideal for short-run or time-sensitive jobs that require quick delivery.



IMPORTANT: T-A chamfer rings can only be used with straight flute T-A holders.

Inserts sold in quantities of 2.
Screws sold in quantities of 10.



Recommended Drilling Data | Metric (mm)

GEN2 T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min)		Feed Rate (mm/rev) by Diameter	
				TiN	AM200®	Y/Z Series 9.50 mm - 12.97 mm	O Series 12.98 mm - 17.67 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	61	99	0.20	0.30
		150 - 200	HSS	55	91	0.18	0.28
		200 - 250	HSS	49	85	0.15	0.25
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	88	0.20 ❖	0.25
		125 - 175	HSS	49	83	0.18 ❖	0.25
		175 - 225	HSS	46	79	0.15 ❖	0.23
		225 - 275	HSS	43	73	0.13 ❖	0.23
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	49	83	0.18	0.25
		175 - 225	HSS	46	79	0.15	0.23
		225 - 275	HSS	43	73	0.15	0.23
		275 - 325	SC, PC	40	68	0.13	0.20
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	46	73	0.18	0.25
		175 - 225	HSS	43	68	0.15	0.23
		225 - 275	HSS	40	64	0.15	0.23
		275 - 325	SC, PC	37	59	0.13	0.20
		325 - 375	SC, PC	34	54	0.10	0.18
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC, PC	24	38	0.15 ❖	0.23
		300 - 350	SC, PC	18	30	0.13 ❖	0.20
		350 - 400	PC	15	24	0.10 ❖	0.18
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	43	71	0.20 ❖	0.28
		150 - 250	HSS	37	57	0.15 ❖	0.25
		250 - 350	SC, PC	30	48	0.13 ❖	0.23
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	24	38	0.10	0.18
		200 - 250	SC, PC	18	32	0.10	0.18
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC, PC	23	35	0.15 ❖	0.20
		275 - 350	SC, PC	18	31	0.13 ❖	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	23	35	0.08 ❖	0.18
		185 - 275	SC, PC	18	31	0.08 ❖	0.15
	Super Duplex Stainless Steel	135 - 185	SC, PC	18	26	0.08 ❖	0.18
K	SG / Nodular Cast Iron	185 - 275	SC, PC	15	22	0.08 ❖	0.15
		120 - 150	HSS	52	84	0.20	0.30
		150 - 200	HSS	46	79	0.18	0.28
		200 - 220	HSS	40	68	0.15	0.23
		220 - 260	SC, PC	34	57	0.13	0.20
N	Cast Aluminum	260 - 320	SC, PC	27	47	0.13	0.18
		30	HSS	183	—	0.23	0.38
	Wrought Aluminum	180	HSS	91	—	0.20	0.33
		30	HSS	183	280	0.12	0.33
	Aluminum Bronze	180	HSS	91	200	0.12	0.18
		100 - 200	SC	52	82	0.15	0.24
	Brass	200 - 250	SC	40	65	0.12	0.18
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	HSS	91	144	0.18	0.27
		60	SC	40	58	0.07 ❖	0.10
	Titanium Alloy	140 - 220	SC, PC	9	13	0.10 ❖	0.18
		220 - 310	PC	8	12	0.10 ❖	0.15
	Aerospace Alloy S82	140 - 220	SC, PC	11	16	0.10 ❖	0.18
H	Wear Plate Hardox®, AR400, T-1, etc.	220 - 310	PC	10	15	0.08 ❖	0.15
		185 - 275	SC, PC	23	35	0.15 ❖	0.20
		275 - 350	SC, PC	18	31	0.13 ❖	0.18
	Hardened Steel	400	SC, PC	14	21	0.08 ❖	0.15
		500	PC	10	14	0.05 ❖	0.12
		600	N/A	—	—	—	—

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	50 m/min •	0.75 = 37.5 m/min
Feed	0.20 mm/rev	•	0.90 = 0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

GEN2 T-A | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter				
1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm	4 Series 46.99 mm - 65.30 mm	5 - 8 Series 62.38 mm - 114.48 mm
0.41	0.48	0.51	0.58	0.71
0.38	0.43	0.51	0.58	0.71
0.36	0.41	0.51	0.58	0.71
0.36	0.46	0.48	0.58	0.69
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.30	0.38	0.41	0.48	0.56
0.36	0.43	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.30	0.38	0.38	0.43	0.51
0.28	0.36	0.38	0.43	0.51
0.28	0.33	0.36	0.43	0.51
0.25	0.30	0.36	0.43	0.51
0.23	0.28	0.30	0.41	0.46
0.38	0.43	0.46	0.53	0.66
0.33	0.38	0.41	0.48	0.61
0.30	0.33	0.36	0.43	0.51
0.25	0.30	0.30	0.38	0.43
0.25	0.30	0.30	0.38	0.43
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.41	0.51	0.61	0.69	0.76
0.38	0.48	0.56	0.64	0.71
0.33	0.43	0.46	0.53	0.61
0.28	0.36	0.36	0.43	0.51
0.25	0.28	0.28	0.36	0.41
0.46	0.58	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.30	0.35	0.56	0.64	0.64
0.30	0.38	0.43	0.48	0.53
0.23	0.28	0.36	0.40	0.46
0.33	0.45	0.47	0.53	0.58
0.18	0.26	0.23	0.27	0.31
0.23	0.28	0.30	0.38	—
0.20	0.25	0.25	0.30	—
0.21	0.27	0.30	0.38	—
0.18	0.23	0.25	0.30	—
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.23	0.30	0.41	0.46
0.18	0.20	0.25	0.30	0.40
—	—	—	—	—
0.23	0.27	0.30	0.41	0.46
0.18	0.24	0.25	0.30	0.40

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⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Metric (mm)

GEN2 T-A | CARBIDE

ISO Material		Hardness (BHN)	Carbide Grade	Speed (m/min)
				AM300®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	K35 (C1)	146
		150 - 200	K35 (C1)	126
		200 - 250	K35 (C1)	119
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K35 (C1)	137
		125 - 175	K35 (C1)	119
		175 - 225	K35 (C1)	108
		225 - 275	K35 (C1)	95
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K35 (C1)	119
		175 - 225	K35 (C1)	108
		225 - 275	K35 (C1)	95
		275 - 325	K35 (C1)	80
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K35 (C1)	115
		175 - 225	K35 (C1)	105
		225 - 275	K35 (C1)	95
		275 - 325	K35 (C1)	87
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	K35 (C1)	78
		225 - 300	K35 (C1)	70
		300 - 350	K35 (C1)	63
		350 - 400	K35 (C1)	56
	Structural Steel A36, A285, A516, etc.	100 - 150	K35 (C1)	108
		150 - 250	K35 (C1)	87
		250 - 350	K35 (C1)	80
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K35 (C1)	78
		200 - 250	K35 (C1)	59
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	73
		275 - 350	K20 (C2)	56
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	73
		185 - 275	K20 (C2)	56
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	38
K	SG / Nodular Cast Iron	185 - 275	K20 (C2)	30
		120 - 150	K20 (C2)	152
		150 - 200	K20 (C2)	146
		200 - 220	K20 (C2)	131
		220 - 260	K20 (C2)	113
N	Cast Aluminum	260 - 320	K20 (C2)	102
		30	K20 (C2)	300
	Wrought Aluminum	180	K20 (C2)	225
		30	K20 (C2)	426
	Aluminum Bronze	180	K20 (C2)	300
		100 - 200	K20 (C2)	110
	200 - 250	K20 (C2)	90	
Brass	100	K20 (C2)	200	
Copper	60	K20 (C2)	130	
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	37
		220 - 310	K20 (C2)	29
	Titanium Alloy	140 - 220	K20 (C2)	42
		220 - 310	K20 (C2)	33
	Aerospace Alloy S82	185 - 275	K20 (C2)	73
275 - 350	K20 (C2)	56		
H	Wear Plate Hardox®, AR400, T-1, etc.	400	K20 (C2)	45
		500	K20 (C2)	37
		600	K20 (C2)	30
	Hardened Steel	300 - 400	K35 (C1)	47
		400 - 500	K35 (C1)	37

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	50 m/min • 0.75	= 37.5 m/min
Feed	0.20 mm/rev	• 0.90	= 0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

GEN2 T-A | CARBIDE

Feed Rate (mm/rev) by Diameter			
Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm
0.20	0.30	0.41	0.48
0.18	0.28	0.38	0.43
0.15	0.25	0.36	0.41
0.20 ❖	0.25	0.36	0.46
0.18 ❖	0.25	0.36	0.43
0.15 ❖	0.23	0.33	0.41
0.13 ❖	0.23	0.33	0.41
0.18	0.25	0.36	0.43
0.15	0.23	0.33	0.41
0.15	0.23	0.33	0.41
0.13	0.20	0.30	0.38
0.18	0.25	0.36	0.43
0.15	0.23	0.33	0.43
0.15	0.23	0.33	0.41
0.13	0.20	0.30	0.38
0.10	0.18	0.28	0.36
0.15 ❖	0.23	0.28	0.33
0.13 ❖	0.20	0.25	0.30
0.10 ❖	0.18	0.23	0.28
0.20 ❖	0.28	0.38	0.43
0.15 ❖	0.25	0.33	0.38
0.13 ❖	0.23	0.30	0.33
0.10	0.18	0.25	0.30
0.10	0.18	0.25	0.30
0.18 ❖	0.23	0.30	0.36
0.15 ❖	0.20	0.28	0.30
0.14 ❖	0.18	0.24	0.29
0.12 ❖	0.16	0.22	0.24
0.12 ❖	0.17	0.22	0.26
0.10 ❖	0.15	0.18	0.22
0.20	0.30	0.38	0.48
0.18	0.28	0.33	0.43
0.15	0.23	0.30	0.38
0.13	0.20	0.28	0.33
0.13	0.18	0.25	0.28
0.23	0.38	0.46	0.58
0.20	0.33	0.40	0.50
0.12	0.33	0.40	0.50
0.12	0.18	0.30	0.35
0.15	0.24	0.30	0.38
0.12	0.18	0.23	0.28
0.18	0.27	0.33	0.45
0.07 ❖	0.10	0.18	0.26
0.10 ❖	0.18	0.23	0.28
0.10 ❖	0.15	0.20	0.25
0.10 ❖	0.18	0.21	0.27
0.08 ❖	0.15	0.18	0.23
0.12 ❖	0.16	0.18	0.22
0.10 ❖	0.14	0.16	0.19
0.07 ❖	0.12	0.20	0.25
0.05 ❖	0.10	0.15	0.20
0.04 ❖	0.08	0.12	0.16
0.10	0.18	0.23	0.27
0.06 ❖	0.12	0.18	0.24

A30

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Metric (mm)

T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min)			Feed Rate (mm/rev) by Diameter	
				TiN	TiAlN	TiCN	Y/Z Series 9.50 mm - 12.97 mm	O Series 12.98 mm - 17.67 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	61	85	79	0.18	0.25
		150 - 200	HSS	55	79	72	0.18	0.25
		200 - 250	HSS	49	73	64	0.15	0.25
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	76	67	0.15 ❖	0.23
		125 - 175	HSS	49	73	64	0.15 ❖	0.23
		175 - 225	HSS	46	69	59	0.13 ❖	0.20
		225 - 275	HSS	43	64	55	0.13 ❖	0.20
		125 - 175	HSS	49	73	64	0.15	0.23
		175 - 225	HSS	46	69	59	0.13	0.20
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	HSS	43	64	55	0.13	0.20
		275 - 325	SC, PC	40	59	52	0.10	0.18
		125 - 175	HSS	46	64	59	0.15	0.20
	Alloy Steel 4140, 5140, 8640, etc.	175 - 225	HSS	43	59	55	0.13	0.20
		225 - 275	HSS	40	55	52	0.13	0.18
		275 - 325	SC, PC	37	52	47	0.10	0.15
		325 - 375	SC, PC	34	47	44	0.08	0.15
		225 - 300	SC, PC	24	34	30	0.13 ❖	0.18
		300 - 350	SC, PC	18	26	24	0.10 ❖	0.18
	High-Strength Alloy 4340, 4330V, 300M, etc.	350 - 400	PC	15	21	20	0.08 ❖	0.15
		100 - 150	HSS	43	61	55	0.15 ❖	0.25
		150 - 250	HSS	37	52	47	0.13 ❖	0.23
	Structural Steel A36, A285, A516, etc.	250 - 350	SC, PC	30	43	40	0.10 ❖	0.20
		150 - 200	SC	24	34	32	0.10	0.15
		200 - 250	SC, PC	18	27	26	0.10	0.15
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC, PC	23	32	29	0.15 ❖	0.20
		275 - 350	SC, PC	18	27	24	0.13 ❖	0.18
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	23	32	29	0.08 ❖	0.18
		185 - 275	SC, PC	18	27	24	0.08 ❖	0.15
	Super Duplex Stainless Steel	135 - 185	SC, PC	18	24	21	0.08 ❖	0.18
		185 - 275	SC, PC	15	20	18	0.08 ❖	0.15
K	SG / Nodular Cast Iron	120 - 150	HSS	52	76	67	0.18	0.30
		150 - 200	HSS	46	69	59	0.15	0.28
		200 - 220	HSS	40	59	52	0.15	0.23
		220 - 260	SC, PC	34	50	44	0.13	0.18
		260 - 320	SC, PC	27	41	37	0.10	0.15
N	Cast Aluminum	30	HSS	183	259	229	0.20	0.33
		180	HSS	91	137	122	0.20	0.33
	Wrought Aluminum	30	HSS	183	259	229	0.10	0.15
		180	HSS	91	137	122	0.20	0.33
	Aluminum Bronze	100 - 200	SC	52	76	67	0.15	0.28
		200 - 250	SC	40	58	52	0.13	0.18
Brass	100	HSS	91	136	122	0.18	0.30	
	Copper	60	SC	40	50	46	0.05 ❖	0.08
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	SC, PC	9	12	11	0.08 ❖	0.18
		220 - 310	PC	8	11	9	0.08 ❖	0.15
	Titanium Alloy	140 - 220	SC, PC	11	15	14	0.08 ❖	0.18
		220 - 310	PC	9	14	11	0.08 ❖	0.15
	Aerospace Alloy S82	185 - 275	SC, PC	23	32	29	0.15 ❖	0.20
275 - 350		SC, PC	18	27	24	0.13 ❖	0.18	
H	Wear Plate Hardox®, AR400, T-1, etc.	400	SC, PC	14	21	17	0.08 ❖	0.15
		500	PC	11	14	12	0.05 ❖	0.13
		600	N/A	—	—	—	—	—
	Hardened Steel	300 - 400	PC	15	29	21	0.08 ❖	0.15
400 - 500		PC	11	14	12	0.05 ❖	0.13	

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	50 m/min • 0.75	= 37.5 m/min
Feed	0.20 mm/rev • 0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

T-A | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Diameter				
1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm	4 Series 46.99 mm - 65.30 mm	5 - 8 Series 62.38 mm - 114.48 mm
0.41	0.48	0.51	0.58	0.71
0.38	0.43	0.51	0.58	0.71
0.36	0.41	0.51	0.58	0.71
0.36	0.46	0.48	0.58	0.69
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.36	0.43	0.48	0.58	0.69
0.33	0.41	0.46	0.53	0.61
0.33	0.41	0.46	0.53	0.61
0.30	0.38	0.41	0.48	0.56
0.36	0.43	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.33	0.41	0.43	0.48	0.56
0.30	0.38	0.38	0.43	0.51
0.28	0.36	0.38	0.43	0.51
0.28	0.33	0.36	0.43	0.51
0.25	0.30	0.36	0.43	0.51
0.23	0.28	0.30	0.41	0.46
0.38	0.43	0.46	0.53	0.66
0.33	0.38	0.41	0.48	0.61
0.30	0.33	0.36	0.43	0.51
0.25	0.30	0.30	0.38	0.43
0.25	0.30	0.30	0.38	0.43
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.28	0.36	0.41	0.51
0.18	0.25	0.30	0.36	0.46
0.41	0.51	0.61	0.69	0.76
0.38	0.48	0.56	0.64	0.71
0.33	0.43	0.46	0.53	0.61
0.28	0.36	0.36	0.43	0.51
0.25	0.28	0.28	0.36	0.41
0.46	0.58	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.40	0.50	0.56	0.64	0.64
0.30	0.35	0.56	0.64	0.64
0.30	0.38	0.43	0.48	0.53
0.23	0.28	0.36	0.40	0.46
0.33	0.45	0.47	0.53	0.58
0.18	0.26	0.23	0.27	0.31
0.23	0.28	0.30	0.38	—
0.20	0.25	0.25	0.30	—
0.21	0.27	0.30	0.38	—
0.18	0.23	0.25	0.30	—
0.23	0.28	0.36	0.41	0.51
0.20	0.25	0.30	0.36	0.46
0.20	0.23	0.30	0.41	0.46
0.18	0.20	0.25	0.30	0.40
—	—	—	—	—
0.23	0.27	0.30	0.41	0.46
0.18	0.24	0.25	0.30	0.40

NOTE: For diameters over 114.48 mm please reach out to our application engineering department.

⚠ WARNING Tool failure can cause serious injury. To prevent:

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Recommended Drilling Data | Metric (mm)

T-A | CARBIDE

		Speed (m/min)					
ISO	Material	Hardness (BHN)	Carbide Grade	TiN	TiAlN	TiCN	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	P40 (C5)	96	128	115	
		150 - 200	P40 (C5)	85	110	100	
		200 - 250	P40 (C5)	79	104	90	
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P40 (C5)	91	119	110	
		125 - 175	P40 (C5)	79	104	90	
		175 - 225	P40 (C5)	73	95	82	
		225 - 275	P40 (C5)	64	83	75	
		Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P40 (C5)	79	104	90
			175 - 225	P40 (C5)	73	95	84
	225 - 275		P40 (C5)	67	83	72	
		275 - 325	P40 (C5)	55	70	62	
		Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P40 (C5)	76	99	87
			175 - 225	P40 (C5)	70	92	80
	225 - 275		P40 (C5)	64	83	72	
	275 - 325		P40 (C5)	61	76	68	
		325 - 375	P40 (C5)	52	67	60	
		High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P40 (C5)	49	61	55
			300 - 350	P40 (C5)	43	55	49
	350 - 400		P40 (C5)	37	49	43	
	Structural Steel A36, A285, A516, etc.	100 - 150	P40 (C5)	73	95	84	
		150 - 250	P40 (C5)	61	76	68	
		250 - 350	P40 (C5)	55	70	62	
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P40 (C5)	49	67	58	
		200 - 250	P40 (C5)	37	52	45	
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	49	64	57	
		275 - 350	K20 (C2)	37	49	43	
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	49	64	57	
		185 - 275	K20 (C2)	37	49	43	
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	25	33	29	
	185 - 275	K20 (C2)	19	25	22		
K	SG / Nodular Cast Iron	120 - 150	K20 (C2), C3 (K10)	98	141	127	
		150 - 200	K20 (C2), C3 (K10)	82	122	102	
		200 - 220	K20 (C2), C3 (K10)	73	110	93	
		220 - 260	K20 (C2), C3 (K10)	64	95	79	
		260 - 320	K20 (C2), C3 (K10)	55	83	69	
N	Cast Aluminum	30	K20 (C2)	366	460	410	
		180	K20 (C2)	244	306	275	
	Wrought Aluminum	30	K20 (C2)	366	460	410	
		180	K20 (C2)	244	306	275	
	Aluminum Bronze	100 - 200	K20 (C2)	85	110	100	
		200 - 250	K20 (C2)	64	94	79	
Brass	100	K20 (C2)	130	184	160		
Copper	60	K20 (C2)	80	120	100		
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	24	32	28	
		220 - 310	K20 (C2)	18	26	22	
	Titanium Alloy	140 - 220	K20 (C2)	30	38	32	
		220 - 310	K20 (C2)	24	33	28	
	Aerospace Alloy S82	185 - 275	K20 (C2)	49	64	57	
275 - 350		K20 (C2)	37	49	43		
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P40 (C5)	23	35	30	
		500	P40 (C5)	15	26	21	
		600	P40 (C5)	11	22	16	
	Hardened Steel	300 - 400	P40 (C5)	34	43	39	
400 - 500		P40 (C5)	20	25	23		

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

Data		•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

T-A | CARBIDE

Y/Z Series 9.50 mm - 12.97 mm	Feed Rate (mm/rev) by Diameter			
	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm
0.20	0.30	0.38	0.45	0.53
0.18	0.28	0.35	0.40	0.48
0.15	0.25	0.33	0.38	0.43
0.20 ❖	0.25	0.33	0.43	0.48
0.18 ❖	0.25	0.33	0.40	0.45
0.15 ❖	0.23	0.30	0.38	0.43
0.13 ❖	0.23	0.30	0.38	0.43
0.18	0.25	0.33	0.40	0.45
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.35	0.40
0.18	0.25	0.33	0.40	0.45
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.35	0.40
0.10	0.18	0.25	0.33	0.38
0.15 ❖	0.23	0.25	0.30	0.38
0.13 ❖	0.20	0.23	0.28	0.35
0.10 ❖	0.18	0.20	0.25	0.30
0.20 ❖	0.28	0.35	0.40	0.45
0.15 ❖	0.25	0.30	0.35	0.40
0.13 ❖	0.23	0.28	0.30	0.35
0.10	0.18	0.23	0.28	0.33
0.10	0.18	0.23	0.28	0.33
0.17 ❖	0.22	0.29	0.35	0.40
0.14 ❖	0.19	0.27	0.30	0.35
0.13 ❖	0.17	0.22	0.26	0.30
0.11 ❖	0.14	0.20	0.22	0.25
0.11 ❖	0.15	0.19	0.23	0.27
0.09 ❖	0.13	0.18	0.20	0.23
0.20	0.30	0.38	0.48	0.58
0.18	0.28	0.33	0.43	0.53
0.15	0.23	0.30	0.38	0.45
0.13	0.20	0.28	0.33	0.38
0.13	0.18	0.25	0.28	0.33
0.25	0.38	0.45	0.50	0.55
0.23	0.33	0.40	0.45	0.50
0.10	0.15	0.25	0.30	0.36
0.20	0.28	0.36	0.45	0.50
0.13	0.20	0.25	0.36	0.42
0.10	0.15	0.18	0.25	0.33
0.15	0.23	0.28	0.38	0.45
0.05 ❖	0.08	0.10	0.15	0.25
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30
0.17 ❖	0.22	0.29	0.35	0.40
0.14 ❖	0.19	0.27	0.30	0.35
0.07	0.12	0.20	0.25	0.30
0.05	0.10	0.15	0.20	0.25
0.04	0.08	0.12	0.16	0.20
0.10 ❖	0.18	0.23	0.28	0.33
0.08 ❖	0.15	0.20	0.23	0.28

A30

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- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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**Recommended Drilling Data | Metric (mm)****T-A FLAT BOTTOM | HIGH-SPEED STEEL**

ISO	Material	Hardness (BHN)	HSS Grade	Speed (m/min)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	52	76	70	88
		150 - 200	HSS	47	70	62	81
		200 - 250	HSS	43	64	56	74
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	46	67	59	77
		125 - 175	HSS	43	64	56	74
		175 - 225	HSS	40	59	53	68
		225 - 275	HSS	37	56	47	65
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	43	64	56	74
		175 - 225	HSS	40	59	53	68
		225 - 275	HSS	37	56	47	65
		275 - 325	SC	34	53	46	61
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	40	56	53	65
		175 - 225	HSS	37	53	47	61
		225 - 275	HSS	34	47	44	54
		275 - 325	SC	32	44	41	51
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	SC	29	41	38	47
		225 - 300	SC	21	29	26	33
		300 - 350	SC	15	23	21	27
		350 - 400	SC	13	20	18	23
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	36	52	47	60
		150 - 250	HSS	32	44	41	51
		250 - 350	SC	26	37	34	43
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	21	29	27	33
		200 - 250	SC	15	24	23	28
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC	20	27	26	34
		275 - 350	SC	15	24	21	28
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	20	27	26	34
		185 - 275	SC	15	24	21	28
	Super Duplex Stainless Steel	135 - 185	SC	20	27	26	34
K	SG / Nodular Cast Iron	185 - 275	SC	15	24	21	28
		120 - 150	HSS	46	67	59	77
		150 - 200	HSS	40	59	53	68
		200 - 220	HSS	34	53	46	61
		220 - 260	SC	29	46	38	53
N	Cast Aluminum	260 - 320	SC	24	37	32	43
		30	HSS	160	228	198	-
	Wrought Aluminum	180	HSS	79	122	107	-
		30	HSS	160	228	198	261
	Aluminum Bronze	180	HSS	79	122	107	141
		100 - 200	SC	40	59	53	70
	Brass	200 - 250	SC	29	46	38	50
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	HSS	46	67	59	78
		60	SC	35	45	40	53
	Titanium Alloy	140 - 220	SC	7	10	9	13
		220 - 310	SC	6	9	7	10
		140 - 220	SC	10	14	12	16
H	Wear Plate Hardox®, AR400, T-1, etc.	220 - 310	SC	8	12	11	14
		185 - 275	SC	20	27	26	34
		275 - 350	SC	15	24	21	28
	Hardened Steel	300 - 400	SC	13	20	18	24

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	-	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

Data		•	Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	•	0.75	=	37.5 m/min
Feed	0.20 mm/rev	•	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | HIGH-SPEED STEEL

Y/Z Series 9.50 mm - 12.97 mm	Feed Rate (mm/rev) by Diameter				
	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm	4 Series 46.99 mm - 65.30 mm
0.15	0.23	0.28	0.35	0.41	0.46
0.15	0.23	0.28	0.35	0.41	0.46
0.13	0.23	0.28	0.35	0.38	0.43
0.13 ❖	0.20	0.25	0.33	0.38	0.43
0.13 ❖	0.20	0.25	0.33	0.38	0.41
0.10 ❖	0.18	0.23	0.30	0.36	0.41
0.10 ❖	0.18	0.23	0.30	0.36	0.38
0.13	0.20	0.25	0.33	0.38	0.46
0.10	0.18	0.23	0.30	0.36	0.43
0.10	0.18	0.23	0.30	0.36	0.43
0.10	0.15	0.20	0.25	0.33	0.38
0.13	0.18	0.23	0.30	0.33	0.41
0.10	0.18	0.23	0.30	0.33	0.41
0.10	0.15	0.23	0.30	0.33	0.41
0.10	0.13	0.20	0.25	0.30	0.38
0.08	0.13	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.20	0.23	0.25	0.30
0.08 ❖	0.15	0.20	0.23	0.25	0.30
0.08 ❖	0.13	0.18	0.20	0.23	0.28
0.13 ❖	0.23	0.25	0.30	0.38	0.43
0.10 ❖	0.20	0.23	0.25	0.33	0.41
0.10 ❖	0.18	0.20	0.23	0.30	0.38
0.10	0.13	0.18	0.23	0.25	0.30
0.10	0.13	0.18	0.23	0.23	0.28
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.18	0.23	0.25	0.28
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.10 ❖	0.15	0.18	0.23	0.25	0.28
0.15	0.25	0.36	0.43	0.48	0.51
0.13	0.23	0.30	0.41	0.46	0.48
0.13	0.20	0.25	0.36	0.41	0.43
0.10	0.15	0.20	0.25	0.33	0.33
0.10	0.13	0.15	0.20	0.25	0.25
0.18	0.28	0.36	0.43	0.46	0.48
0.18	0.28	0.36	0.41	0.43	0.48
0.18	0.28	0.36	0.43	0.46	0.48
0.18	0.28	0.36	0.41	0.43	0.48
0.13	0.23	0.30	0.41	0.51	0.61
0.10	0.15	0.20	0.25	0.31	0.38
0.15	0.25	0.36	0.43	0.53	0.63
0.05 ❖	0.08	0.15	0.20	0.25	0.35
0.08 ❖	0.15	0.18	0.23	0.25	0.30
0.08 ❖	0.13	0.15	0.18	0.20	0.25
0.08 ❖	0.15	0.18	0.23	0.25	0.30
0.08 ❖	0.13	0.15	0.18	0.20	0.25
0.13 ❖	0.18	0.20	0.25	0.30	0.38
0.10 ❖	0.15	0.18	0.23	0.25	0.30
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
0.08 ❖	0.13	0.18	0.20	0.27	0.38
0.06 ❖	0.10	0.15	0.18	0.23	0.28

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⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | CARBIDE

ISO Material		Hardness (BHN)	Carbide Grade	Speed (m/min)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	K20 (C2)	82	110	98	126
		150 - 200	K20 (C2)	73	94	85	110
		200 - 250	K20 (C2)	67	88	76	102
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K20 (C2)	79	102	94	117
		125 - 175	K20 (C2)	67	88	76	102
		175 - 225	K20 (C2)	61	81	70	93
		225 - 275	K20 (C2)	55	70	64	81
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K20 (C2)	67	88	76	102
		175 - 225	K20 (C2)	61	81	72	93
		225 - 275	K20 (C2)	55	70	61	81
		275 - 325	K20 (C2)	46	61	53	70
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K20 (C2)	64	85	75	99
		175 - 225	K20 (C2)	59	79	67	91
		225 - 275	K20 (C2)	55	70	61	81
		275 - 325	K20 (C2)	52	66	58	76
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	K20 (C2)	44	58	50	67
		225 - 300	K20 (C2)	41	52	47	59
		300 - 350	K20 (C2)	37	47	41	55
		350 - 400	K20 (C2)	30	41	37	47
	Structural Steel A36, A285, A516, etc.	100 - 150	K20 (C2)	62	81	72	93
		150 - 250	K20 (C2)	52	66	58	76
		250 - 350	K20 (C2)	47	61	53	70
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K20 (C2)	41	58	49	67
		200 - 250	K20 (C2)	30	44	37	50
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	43	56	50	64
		275 - 350	K20 (C2)	33	43	38	49
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	28	37	33	40
		185 - 275	K20 (C2)	21	28	25	32
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	22	29	26	33
K	SG / Nodular Cast Iron	185 - 275	K20 (C2)	17	22	19	26
		120 - 150	K20 (C2)	82	120	108	137
		150 - 200	K20 (C2)	70	104	87	119
		200 - 220	K20 (C2)	61	94	79	108
		220 - 260	K20 (C2)	55	81	67	93
N	Cast Aluminum	260 - 320	K20 (C2)	47	70	58	81
		30	K20 (C2)	160	228	198	-
	Wrought Aluminum	180	K20 (C2)	79	122	107	-
		30	K20 (C2)	292	368	328	390
	Aluminum Bronze	180	K20 (C2)	195	245	220	260
		100 - 200	K20 (C2)	73	95	85	105
	200 - 250	K20 (C2)	55	81	68	87	
S	Brass	100	K20 (C2)	112	160	138	185
	Copper	60	K20 (C2)	68	105	85	117
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	21	27	23	32
		220 - 310	K20 (C2)	15	21	18	24
	Titanium Alloy	140 - 220	K20 (C2)	26	33	28	40
220 - 310		K20 (C2)	21	29	25	30	
Aerospace Alloy S82	185 - 275	K20 (C2)	43	37	50	40	
	275 - 350	K20 (C2)	33	28	38	32	
H	Wear Plate Hardox®, AR400, T-1, etc.	400	K20 (C2)	20	31	26	39
		500	K20 (C2)	13	23	18	31
		600	K20 (C2)	10	19	14	25
	Hardened Steel	300 - 400	K20 (C2)	30	38	34	41
		400 - 500	K20 (C2)	18	22	20	33

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	-	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	50 m/min • 0.75	= 37.5 m/min
Feed	0.20 mm/rev	• 0.90	= 0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Metric (mm)

T-A FLAT BOTTOM | CARBIDE

Feed Rate (mm/rev) by Diameter			
Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm
0.17	0.26	0.32	0.39
0.15	0.24	0.30	0.35
0.13	0.22	0.28	0.32
0.17 ❖	0.22	0.28	0.37
0.15 ❖	0.22	0.28	0.35
0.13 ❖	0.19	0.26	0.32
0.11 ❖	0.19	0.26	0.32
0.15	0.22	0.28	0.35
0.13	0.19	0.26	0.32
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.30
0.15	0.22	0.28	0.35
0.13	0.19	0.26	0.32
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.30
0.09	0.15	0.22	0.28
0.13 ❖	0.19	0.22	0.26
0.11 ❖	0.17	0.19	0.24
0.09 ❖	0.15	0.17	0.22
0.17 ❖	0.24	0.30	0.35
0.13 ❖	0.22	0.28	0.30
0.11 ❖	0.19	0.25	0.26
0.09	0.15	0.19	0.24
0.09	0.15	0.19	0.24
0.15 ❖	0.20	0.25	0.30
0.13 ❖	0.18	0.23	0.25
0.13 ❖	0.17	0.21	0.25
0.11 ❖	0.15	0.19	0.21
0.10	0.14	0.17	0.20
0.08 ❖	0.12	0.15	0.17
0.17	0.26	0.32	0.41
0.15	0.24	0.28	0.38
0.13	0.19	0.26	0.32
0.11	0.17	0.24	0.28
0.11	0.15	0.22	0.24
0.22	0.32	0.41	0.43
0.19	0.28	0.35	0.39
0.12	0.18	0.23	0.25
0.10	0.16	0.20	0.22
0.10	0.16	0.20	0.29
0.08	0.12	0.14	0.20
0.12	0.18	0.22	0.30
0.04 ❖	0.06	0.08	0.12
0.09 ❖	0.15	0.19	0.24
0.09 ❖	0.13	0.17	0.22
0.08 ❖	0.14	0.17	0.20
0.08 ❖	0.12	0.15	0.18
0.15 ❖	0.17	0.25	0.30
0.13 ❖	0.15	0.23	0.25
0.06 ❖	0.10	0.16	0.20
0.04 ❖	0.08	0.12	0.16
0.03 ❖	0.06	0.10	0.13
0.08 ❖	0.14	0.18	0.22
0.06 ❖	0.12	0.16	0.18

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**Recommended Drilling Data | Metric (mm)****T-A DIAMOND COATED | CARBIDE**

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ISO	Material	Carbide Grade	Speed (m/min) Diamond Coating	Feed Rate (mm/rev) by Diameter			
				Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm
Polymer Matrix Composites	Carbon (hard)	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Carbon Fiber	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Carbon / Glass Fiber	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Fiberglass	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Graphite	N2	305 - 450	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Plastics	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Epoxy Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Bismaleimide Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Polyester Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Phenolic Resin	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Rubber	N2	76 - 305	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
Metal Matrix Composites	Aluminum	N2	305	0.20	0.33	0.41	0.51
	Si < 10%	N2	305	0.20	0.33	0.41	0.51
	10% < Si < 15%	N2	259 - 305	0.20	0.33	0.41	0.51
	15% < Si < 20%	N2	198 - 259	0.20	0.33	0.41	0.51
	20% < Si < 25%	N2	152 - 198	0.20	0.33	0.41	0.51
	25% < Si	N2	61 - 152	0.20	0.33	0.41	0.51
	Brass	N2	76 - 152	0.20	0.33	0.41	0.51
	Bronze	N2	76 - 152	0.20	0.33	0.41	0.51
	Copper	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Copper Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Lead Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Magnesium Alloys	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Precious Metals	N2	30 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
Ceramic Matrix Composites	Carbide (green)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Ceramic (green)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36
	Ceramic (pre-sintered)	N2	15 - 76	0.10 - 0.15	0.20 - 0.25	0.25 - 0.30	0.30 - 0.36

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

Data		Adjustment Value	=	Recommendation for Deep Holes
Speed	50 m/min	0.75	=	37.5 m/min
Feed	0.20 mm/rev	0.90	=	0.18 mm/rev

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

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This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.

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Recommended Drilling Data | Imperial (in)

GEN2 T-A | HIGH-SPEED STEEL

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ISO Material		Hardness (BHN)	HSS Grade	Speed (SFM)		Feed Rate (IPR) by Diameter	
				TiN	AM200®	Y/Z Series 0.3740" - 0.5109"	O Series 0.5110" - 0.6959"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	200	325	0.008	0.012
		150 - 200	HSS	180	300	0.007	0.011
		200 - 250	HSS	160	280	0.006	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	290	0.008 ❖	0.010
		125 - 175	HSS	160	275	0.007 ❖	0.010
		175 - 225	HSS	150	260	0.006 ❖	0.009
		225 - 275	HSS	140	240	0.005 ❖	0.009
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	275	0.007	0.010
		175 - 225	HSS	150	260	0.006	0.009
		225 - 275	HSS	140	240	0.006	0.009
		275 - 325	SC	130	225	0.005	0.008
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	240	0.007	0.010
		175 - 225	HSS	140	225	0.006	0.009
		225 - 275	HSS	130	210	0.006	0.009
		275 - 325	SC	120	195	0.005	0.008
		325 - 375	SC	110	180	0.004	0.007
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	80	125	0.006 ❖	0.009
		300 - 350	SC	60	100	0.005 ❖	0.008
		350 - 400	SC	50	80	0.004 ❖	0.007
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	235	0.008 ❖	0.011
		150 - 250	HSS	120	190	0.006 ❖	0.010
		250 - 350	SC	100	160	0.005 ❖	0.009
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	125	0.004	0.007
		200 - 250	SC	60	105	0.004	0.007
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC	75	110	0.006 ❖	0.008
		275 - 350	SC	60	100	0.005 ❖	0.007
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	75	110	0.003 ❖	0.007
		185 - 275	SC	60	100	0.003 ❖	0.006
	Super Duplex Stainless Steel	135 - 185	SC	60	85	0.003 ❖	0.007
		185 - 275	SC	50	70	0.003 ❖	0.006
K	SG / Nodular Cast Iron	120 - 150	HSS	170	290	0.008	0.012
		150 - 200	HSS	150	260	0.007	0.011
		200 - 220	HSS	130	225	0.006	0.009
		220 - 260	SC	110	190	0.005	0.008
		260 - 320	SC	90	155	0.005	0.007
N	Cast Aluminum	30	HSS	600	—	0.009	0.015
		180	HSS	300	—	0.008	0.013
	Wrought Aluminum	30	HSS	600	900	0.005	0.013
		180	HSS	300	650	0.005	0.007
	Aluminum Bronze	100 - 200	SC	170	270	0.006	0.009
		200 - 250	SC	130	210	0.005	0.007
Brass	100	HSS	300	470	0.007	0.011	
	Copper	60	SC	130	190	0.003 ❖	0.004
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	30	45	0.004 ❖	0.007
		220 - 310	SC	25	40	0.004 ❖	0.006
	Titanium Alloy	140 - 220	SC	35	55	0.004 ❖	0.007
		220 - 310	SC	30	50	0.003 ❖	0.006
	Aerospace Alloy S82	185 - 275	SC	75	110	0.006 ❖	0.008
	275 - 350	SC	60	100	0.005 ❖	0.007	
H	Wear Plate Hardox®, AR400, T-1, etc.	400	SC	45	70	0.003 ❖	0.006
		500	SC	35	45	0.002 ❖	0.005
		600	—	—	—	0.004 ❖	0.006
	Hardened Steel	300 - 400	SC	50	95	—	—
400 - 500		SC	35	45	0.002 ❖	0.005	

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	200 SFM • 0.75	= 150 SFM
Feed	0.008 IPR • 0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Imperial (in)

GEN2 T-A | HIGH-SPEED STEEL

Feed Rate (IPR) by Diameter				
1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"	4 Series 1.8500" - 2.5709"	5 - 8 Series 2.4560" - 4.5070"
0.016	0.019	0.020	0.023	0.028
0.015	0.017	0.020	0.023	0.028
0.014	0.016	0.020	0.023	0.028
0.014	0.018	0.019	0.023	0.027
0.014	0.017	0.019	0.023	0.027
0.013	0.016	0.018	0.021	0.024
0.013	0.016	0.018	0.021	0.024
0.014	0.017	0.019	0.023	0.027
0.013	0.016	0.018	0.021	0.024
0.013	0.016	0.018	0.021	0.024
0.012	0.015	0.016	0.019	0.022
0.014	0.017	0.017	0.019	0.022
0.013	0.016	0.017	0.019	0.022
0.013	0.016	0.017	0.019	0.022
0.012	0.015	0.015	0.017	0.020
0.011	0.014	0.015	0.017	0.020
0.011	0.013	0.014	0.017	0.020
0.010	0.012	0.014	0.017	0.020
0.009	0.011	0.012	0.015	0.018
0.015	0.017	0.018	0.021	0.026
0.013	0.015	0.016	0.019	0.024
0.012	0.013	0.014	0.017	0.020
0.010	0.012	0.012	0.015	0.017
0.010	0.012	0.012	0.015	0.017
0.009	0.011	0.014	0.016	0.020
0.008	0.010	0.012	0.014	0.018
0.008	0.011	0.014	0.016	0.020
0.007	0.010	0.012	0.014	0.018
0.016	0.020	0.024	0.027	0.030
0.015	0.019	0.022	0.025	0.028
0.013	0.017	0.018	0.021	0.024
0.011	0.014	0.014	0.017	0.020
0.010	0.012	0.012	0.014	0.016
0.018	0.023	0.022	0.025	0.025
0.016	0.020	0.022	0.025	0.025
0.016	0.020	0.022	0.025	0.025
0.012	0.014	0.022	0.025	0.025
0.012	0.015	0.017	0.019	0.021
0.009	0.011	0.014	0.016	0.018
0.013	0.018	0.019	0.021	0.023
0.007	0.010	0.009	0.011	0.012
0.009	0.011	0.012	0.015	0.017
0.008	0.010	0.010	0.012	0.014
0.008	0.010	0.012	0.015	0.017
0.007	0.009	0.010	0.012	0.014
0.009	0.011	0.014	0.016	0.020
0.008	0.010	0.012	0.014	0.018
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016
0.009	0.011	0.012	0.016	0.018
—	—	—	—	—
0.007	0.009	0.010	0.012	0.016

A30

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

GEN2 T-A | CARBIDE

A30

ISO Material		Hardness (BHN)	Carbide Grade	Speed (SFM)
				AM300®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	K35 (C1)	480
		150 - 200	K35 (C1)	415
		200 - 250	K35 (C1)	390
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K35 (C1)	450
		125 - 175	K35 (C1)	390
		175 - 225	K35 (C1)	355
		225 - 275	K35 (C1)	310
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K35 (C1)	390
		175 - 225	K35 (C1)	355
		225 - 275	K35 (C1)	310
		275 - 325	K35 (C1)	265
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K35 (C1)	375
		175 - 225	K35 (C1)	345
		225 - 275	K35 (C1)	310
		275 - 325	K35 (C1)	285
		325 - 375	K35 (C1)	255
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K35 (C1)	230
		300 - 350	K35 (C1)	205
		350 - 400	K35 (C1)	185
	Structural Steel A36, A285, A516, etc.	100 - 150	K35 (C1)	355
		150 - 250	K35 (C1)	285
		250 - 350	K35 (C1)	265
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K35 (C1)	255
		200 - 250	K35 (C1)	195
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	240
		275 - 350	K20 (C2)	180
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	240
		185 - 275	K20 (C2)	180
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	125
K	SG / Nodular Cast Iron	185 - 275	K20 (C2)	100
		120 - 150	K20 (C2)	500
		150 - 200	K20 (C2)	480
		200 - 220	K20 (C2)	430
		220 - 260	K20 (C2)	370
N	Cast Aluminum	260 - 320	K20 (C2)	335
		30	K20 (C2)	975
	Wrought Aluminum	180	K20 (C2)	730
		30	K20 (C2)	1385
	Aluminum Bronze	180	K20 (C2)	975
		100 - 200	K20 (C2)	360
	Brass	200 - 250	K20 (C2)	300
		100	K20 (C2)	650
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	60	K20 (C2)	420
		140 - 220	K20 (C2)	120
	Titanium Alloy	220 - 310	K20 (C2)	95
		140 - 220	K20 (C2)	140
	Aerospace Alloy S82	220 - 310	K20 (C2)	110
		185 - 275	K20 (C2)	240
H	Wear Plate Hardox®, AR400, T-1, etc.	275 - 350	K20 (C2)	180
		400	K20 (C2)	150
		500	K20 (C2)	120
	Hardened Steel	600	K20 (C2)	100
		300 - 400	K35 (C1)	150
		400 - 500	K35 (C1)	120

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	200 SFM	•	0.75	=	150 SFM
Feed	0.008 IPR	•	0.90	=	0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Imperial (in)

GEN2 T-A | CARBIDE

Y/Z Series 0.3740" - 0.5109"	Feed Rate (IPR) by Diameter		
	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"
0.008	0.012	0.016	0.019
0.007	0.011	0.015	0.017
0.006	0.010	0.014	0.016
0.008 ❖	0.010	0.014	0.018
0.007 ❖	0.010	0.014	0.017
0.006 ❖	0.009	0.013	0.016
0.005 ❖	0.009	0.013	0.016
0.007	0.010	0.014	0.017
0.006	0.009	0.013	0.016
0.006	0.009	0.013	0.016
0.005	0.008	0.012	0.015
0.007	0.010	0.014	0.017
0.006	0.009	0.013	0.016
0.006	0.009	0.013	0.016
0.005	0.008	0.012	0.015
0.004	0.007	0.011	0.014
0.006 ❖	0.009	0.011	0.013
0.005 ❖	0.008	0.010	0.012
0.004 ❖	0.007	0.009	0.011
0.008 ❖	0.011	0.015	0.017
0.006 ❖	0.010	0.013	0.015
0.005 ❖	0.009	0.012	0.013
0.007	0.007	0.010	0.012
0.007	0.007	0.010	0.012
0.007 ❖	0.009	0.012	0.014
0.006 ❖	0.008	0.011	0.012
0.006 ❖	0.007	0.009	0.012
0.005 ❖	0.006	0.008	0.009
0.005 ❖	0.007	0.008	0.010
0.004 ❖	0.006	0.007	0.009
0.008	0.012	0.015	0.019
0.007	0.011	0.013	0.017
0.006	0.009	0.012	0.015
0.005	0.008	0.011	0.013
0.005	0.007	0.010	0.011
0.009	0.015	0.018	0.023
0.008	0.013	0.016	0.020
0.005	0.013	0.016	0.020
0.005	0.007	0.012	0.014
0.006	0.009	0.012	0.015
0.005	0.007	0.009	0.011
0.007	0.011	0.013	0.018
0.003 ❖	0.004	0.007	0.010
0.004 ❖	0.007	0.009	0.011
0.004 ❖	0.006	0.008	0.010
0.004 ❖	0.007	0.008	0.011
0.003 ❖	0.006	0.007	0.009
0.005	0.006	0.007	0.009
0.004 ❖	0.005	0.006	0.008
0.003 ❖	0.005	0.008	0.010
0.002 ❖	0.004	0.006	0.008
0.001 ❖	0.003	0.005	0.006
0.004	0.006	0.009	0.011
0.003 ❖	0.005	0.008	0.010

A30

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Recommended Drilling Data | Imperial (in)

T-A | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (SFM)			Feed Rate (IPR) by Diameter	
				TiN	TiAlN	TiCN	Y/Z Series 0.3740" - 0.5109"	O Series 0.5110" - 0.6959"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	200	280	260	0.007	0.010
		150 - 200	HSS	180	260	235	0.007	0.010
		200 - 250	HSS	160	240	210	0.006	0.010
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	250	220	0.006 ❖	0.009
		125 - 175	HSS	160	240	210	0.006 ❖	0.009
		175 - 225	HSS	150	225	195	0.005 ❖	0.008
		225 - 275	HSS	140	210	180	0.005 ❖	0.008
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	240	210	0.006	0.009
		175 - 225	HSS	150	225	195	0.005	0.008
		225 - 275	HSS	140	210	180	0.005	0.008
		275 - 325	SC, PC	130	195	170	0.004	0.007
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	210	195	0.006	0.008
		175 - 225	HSS	140	195	180	0.005	0.008
		225 - 275	HSS	130	180	170	0.005	0.007
		275 - 325	SC, PC	120	170	155	0.004	0.006
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	SC, PC	110	155	145	0.003	0.006
		225 - 300	SC, PC	80	110	100	0.005 ❖	0.007
		300 - 350	SC, PC	60	85	80	0.004 ❖	0.007
		350 - 400	PC	50	70	65	0.003 ❖	0.006
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	200	180	0.006 ❖	0.010
		150 - 250	HSS	120	170	155	0.005 ❖	0.009
		250 - 350	SC, PC	100	140	130	0.003 ❖	0.008
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	110	105	0.004	0.006
		200 - 250	SC, PC	60	90	85	0.004	0.006
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC, PC	75	105	95	0.009	0.010
		275 - 350	SC, PC	60	90	80	0.008	0.009
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC, PC	75	105	95	0.007	0.007
		185 - 275	SC, PC	60	90	80	0.006	0.006
	Super Duplex Stainless Steel	135 - 185	SC, PC	60	80	70	0.005	0.005
K	SG / Nodular Cast Iron	185 - 275	SC, PC	50	65	60	0.004	0.005
		120 - 150	HSS	170	250	220	0.007	0.012
		150 - 200	HSS	150	225	195	0.006	0.011
		200 - 220	HSS	130	195	170	0.006	0.009
		220 - 260	SC, PC	110	165	145	0.005	0.007
N	Cast Aluminum	260 - 320	SC, PC	90	135	120	0.004	0.006
		30	HSS	600	850	750	0.008	0.013
	Wrought Aluminum	180	HSS	300	450	400	0.008	0.013
		30	HSS	600	850	750	0.004	0.006
	Aluminum Bronze	180	HSS	300	450	400	0.008	0.013
		100 - 200	SC	170	250	220	0.006	0.011
	Brass	200 - 250	SC	130	190	170	0.005	0.007
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	100	HSS	300	445	400	0.007	0.012
		60	SC	130	165	150	0.002 ❖	0.003
	Titanium Alloy	140 - 220	SC, PC	30	40	35	0.003 ❖	0.007
		220 - 310	PC	25	35	30	0.003 ❖	0.006
	Aerospace Alloy S82	140 - 220	SC, PC	35	50	45	0.003 ❖	0.007
H	Wear Plate Hardox®, AR400, T-1, etc.	220 - 310	PC	30	45	35	0.003 ❖	0.006
		185 - 275	SC, PC	75	105	95	0.006 ❖	0.008
		275 - 350	SC, PC	60	90	80	0.005 ❖	0.007
	Hardened Steel	400	SC, PC	45	70	55	0.003 ❖	0.006
		500	PC	35	45	40	0.002 ❖	0.005

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	200 SFM	• 0.75 = 150 SFM
Feed	0.008 IPR	• 0.90	= 0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Recommended Drilling Data | Imperial (in)

T-A | HIGH-SPEED STEEL

Feed Rate (IPR) by Diameter				
1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"	4 Series 1.8500" - 2.5709"	5 - 8 Series 2.4560" - 4.5070"
0.013	0.016	0.020	0.023	0.028
0.013	0.016	0.020	0.023	0.028
0.013	0.016	0.020	0.023	0.028
0.012	0.015	0.019	0.023	0.027
0.012	0.015	0.019	0.023	0.027
0.010	0.014	0.018	0.021	0.024
0.010	0.014	0.018	0.021	0.024
0.012	0.015	0.019	0.023	0.027
0.010	0.014	0.018	0.021	0.024
0.010	0.014	0.018	0.021	0.024
0.009	0.012	0.016	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.010	0.014	0.017	0.019	0.022
0.009	0.012	0.015	0.017	0.020
0.009	0.012	0.015	0.017	0.020
0.009	0.010	0.014	0.017	0.020
0.009	0.010	0.014	0.017	0.020
0.008	0.009	0.012	0.015	0.018
0.012	0.014	0.018	0.021	0.026
0.010	0.012	0.016	0.019	0.024
0.009	0.010	0.014	0.017	0.020
0.008	0.010	0.012	0.015	0.017
0.008	0.010	0.012	0.015	0.017
0.011	0.012	0.013	0.014	0.015
0.010	0.011	0.012	0.013	0.014
0.008	0.008	0.009	0.009	0.010
0.007	0.007	0.008	0.008	0.009
0.006	0.006	0.007	0.008	0.008
0.005	0.006	0.006	0.007	0.007
0.016	0.020	0.024	0.027	0.030
0.014	0.018	0.022	0.025	0.028
0.012	0.016	0.018	0.021	0.024
0.009	0.012	0.014	0.017	0.020
0.007	0.009	0.012	0.014	0.016
0.016	0.020	0.022	0.025	0.025
0.016	0.018	0.022	0.025	0.025
0.010	0.012	0.022	0.025	0.025
0.016	0.018	0.022	0.025	0.025
0.014	0.018	0.022	0.026	0.028
0.009	0.012	0.014	0.017	0.020
0.016	0.020	0.024	0.028	0.030
0.006	0.008	0.012	0.014	0.016
0.008	0.010	0.012	0.015	—
0.007	0.008	0.010	0.012	—
0.008	0.010	0.012	0.015	—
0.007	0.008	0.010	0.012	—
0.009	0.010	0.014	0.016	0.020
0.008	0.008	0.012	0.014	0.018
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016
—	—	—	—	—
0.008	0.009	0.012	0.016	0.018
0.007	0.008	0.010	0.012	0.016

NOTE: For diameters over 4.5070" please reach out to our application engineering department.

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Recommended Drilling Data | Imperial (in)

T-A | CARBIDE

		Hardness (BHN)	Carbide Grade	Speed (SFM)			
ISO	Material			TiN	TiAlN	TiCN	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	P40 (C5)	320	420	375	
		150 - 200	P40 (C5)	280	360	325	
		200 - 250	P40 (C5)	260	340	295	
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	P40 (C5)	300	390	360	
		125 - 175	P40 (C5)	260	340	295	
		175 - 225	P40 (C5)	240	310	270	
		225 - 275	P40 (C5)	210	270	245	
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	P40 (C5)	260	340	295	
		175 - 225	P40 (C5)	240	310	275	
		225 - 275	P40 (C5)	210	270	235	
		275 - 325	P40 (C5)	180	230	205	
		Alloy Steel 4140, 5140, 8640, etc.	125 - 175	P40 (C5)	250	325	285
			175 - 225	P40 (C5)	230	300	260
			225 - 275	P40 (C5)	210	270	235
	275 - 325		P40 (C5)	200	250	225	
		325 - 375	P40 (C5)	170	220	195	
		High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	P40 (C5)	160	200	180
			300 - 350	P40 (C5)	140	180	160
	350 - 400		P40 (C5)	120	160	140	
	Structural Steel A36, A285, A516, etc.	100 - 150	P40 (C5)	240	310	275	
		150 - 250	P40 (C5)	200	250	225	
		250 - 350	P40 (C5)	180	230	205	
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	P40 (C5)	160	220	190	
		200 - 250	P40 (C5)	120	170	145	
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	160	210	185	
		275 - 350	K20 (C2)	120	160	140	
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	160	210	185	
		185 - 275	K20 (C2)	120	160	140	
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	80	110	95	
	185 - 275	K20 (C2)	60	80	70		
K	SG / Nodular Cast Iron	120 - 150	K20 (C2), K10 (C3)	320	460	415	
		150 - 200	K20 (C2), K10 (C3)	270	400	335	
		200 - 220	K20 (C2), K10 (C3)	240	360	305	
		220 - 260	K20 (C2), K10 (C3)	210	310	260	
		260 - 320	K20 (C2), K10 (C3)	180	270	225	
N	Cast Aluminum	30	K20 (C2)	1200	1500	1330	
		180	K20 (C2)	800	1000	900	
	Wrought Aluminum	30	K20 (C2)	1200	1500	1330	
		180	K20 (C2)	800	1000	900	
	Aluminum Bronze	100 - 200	K20 (C2)	275	360	325	
		200 - 250	K20 (C2)	210	305	260	
Brass	100	K20 (C2)	425	600	520		
Copper	60	K20 (C2)	260	390	325		
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	80	105	90	
		220 - 310	K20 (C2)	60	85	70	
	Titanium Alloy	140 - 220	K20 (C2)	100	125	105	
		220 - 310	K20 (C2)	80	110	90	
	Aerospace Alloy S82	185 - 275	K20 (C2)	160	210	185	
	275 - 350	K20 (C2)	120	160	140		
H	Wear Plate Hardox®, AR400, T-1, etc.	400	P40 (C5)	75	115	100	
		500	P40 (C5)	50	85	70	
		600	P40 (C5)	35	75	55	
	Hardened Steel	300 - 400	P40 (C5)	110	140	130	
	400 - 500	P40 (C5)	65	85	75		

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	200 SFM	• 0.75 = 150 SFM
Feed	0.008 IPR	• 0.90	= 0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



T-A | CARBIDE

Y/Z Series 0.3740" - 0.5109"	Feed Rate (IPR) by Diameter			
	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"
0.008	0.012	0.015	0.018	0.021
0.007	0.011	0.014	0.016	0.019
0.006	0.010	0.013	0.015	0.017
0.008 ❖	0.010	0.013	0.017	0.019
0.007 ❖	0.010	0.013	0.016	0.018
0.006 ❖	0.009	0.012	0.015	0.017
0.005 ❖	0.009	0.012	0.015	0.017
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.004	0.007	0.010	0.013	0.015
0.006 ❖	0.009	0.010	0.012	0.015
0.005 ❖	0.008	0.009	0.011	0.014
0.004 ❖	0.007	0.008	0.010	0.012
0.008 ❖	0.011	0.014	0.016	0.018
0.006 ❖	0.010	0.012	0.014	0.016
0.005 ❖	0.009	0.011	0.012	0.014
0.004	0.007	0.009	0.011	0.013
0.004	0.007	0.009	0.011	0.013
0.007 ❖	0.008	0.011	0.014	0.016
0.006 ❖	0.007	0.010	0.012	0.014
0.005 ❖	0.007	0.009	0.010	0.012
0.004 ❖	0.006	0.008	0.009	0.010
0.004 ❖	0.007	0.008	0.009	0.011
0.003 ❖	0.006	0.007	0.008	0.009
0.008	0.012	0.015	0.019	0.023
0.007	0.011	0.013	0.017	0.021
0.006	0.009	0.012	0.015	0.018
0.005	0.008	0.011	0.013	0.015
0.005	0.007	0.010	0.011	0.013
0.010	0.013	0.018	0.020	0.022
0.009	0.013	0.016	0.018	0.020
0.004	0.006	0.010	0.012	0.014
0.008	0.013	0.014	0.018	0.020
0.005	0.008	0.010	0.014	0.017
0.004	0.007	0.007	0.010	0.013
0.006	0.009	0.011	0.015	0.018
0.002 ❖	0.003	0.004	0.006	0.010
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012
0.007 ❖	0.006	0.011	0.014	0.016
0.006 ❖	0.008	0.010	0.012	0.014
0.003 ❖	0.006	0.008	0.010	0.012
0.002 ❖	0.005	0.006	0.008	0.010
0.001 ❖	0.004	0.005	0.006	0.008
0.004 ❖	0.006	0.009	0.011	0.013
0.003 ❖	0.005	0.008	0.009	0.011

A30

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

T-A FLAT BOTTOM | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	HSS Grade	Speed (SFM)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	170	250	230	290
		150 - 200	HSS	155	230	205	265
		200 - 250	HSS	140	210	185	245
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	150	220	195	255
		125 - 175	HSS	140	210	185	245
		175 - 225	HSS	130	195	175	225
		225 - 275	HSS	120	185	155	215
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	140	210	185	245
		175 - 225	HSS	130	195	175	225
		225 - 275	HSS	120	185	155	215
		275 - 325	SC	110	175	150	205
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	130	185	175	215
		175 - 225	HSS	120	175	155	205
		225 - 275	HSS	110	155	145	180
		275 - 325	SC	105	145	135	170
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	SC	95	135	125	155
		225 - 300	SC	70	95	85	110
		300 - 350	SC	50	75	70	90
		350 - 400	SC	45	65	60	75
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	120	170	155	195
		150 - 250	HSS	105	145	135	170
		250 - 350	SC	85	120	110	140
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	70	95	90	110
		200 - 250	SC	50	80	75	95
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC	65	90	85	110
		275 - 350	SC	50	80	70	90
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	SC	65	90	85	110
		185 - 275	SC	50	80	70	90
	Super Duplex Stainless Steel	135 - 185	SC	65	90	85	110
K	SG / Nodular Cast Iron	185 - 275	SC	50	80	70	90
		120 - 150	HSS	150	220	195	255
		150 - 200	HSS	130	195	175	225
		200 - 220	HSS	110	175	150	205
		220 - 260	SC	95	150	125	175
N	Cast Aluminum	260 - 320	SC	80	120	105	140
		120 - 150	HSS	150	220	195	255
	Wrought Aluminum	150 - 200	HSS	130	195	175	225
		200 - 220	HSS	110	175	150	205
	Aluminum Bronze	220 - 260	SC	95	150	125	175
		260 - 320	SC	80	120	105	140
	Brass	100	HSS	150	220	190	250
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	60	SC	115	150	130	170
		100	HSS	150	220	190	250
	Titanium Alloy	30	HSS	520	750	650	-
		180	HSS	260	400	350	-
		30	HSS	520	750	650	850
	Aerospace Alloy S82	180	HSS	260	400	350	450
		100 - 200	SC	130	190	175	230
H	Wear Plate Hardox®, AR400, T-1, etc.	200 - 250	SC	95	150	125	165
		250 - 300	SC	85	120	110	140
		300 - 400	SC	75	110	100	130
	Hardened Steel	400	SC	—	—	—	—
		500	SC	—	—	—	—
		600	N/A	—	—	—	—
		300 - 400	SC	45	65	60	80

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	200 SFM • 0.75	= 150 SFM
	Feed	0.008 IPR • 0.90	= 0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



T-A FLAT BOTTOM | HIGH-SPEED STEEL

Y/Z Series 0.3740" - 0.5109"	Feed Rate (mm/rev) by Diameter				
	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"	4 Series 1.8500" - 2.5709"
0.006	0.009	0.011	0.014	0.016	0.018
0.006	0.009	0.011	0.014	0.016	0.018
0.005	0.009	0.011	0.014	0.015	0.017
0.005 ❖	0.008	0.010	0.013	0.015	0.017
0.005 ❖	0.008	0.010	0.013	0.015	0.016
0.004 ❖	0.007	0.009	0.012	0.014	0.016
0.004 ❖	0.007	0.009	0.012	0.014	0.015
0.005	0.008	0.010	0.013	0.015	0.018
0.004	0.007	0.009	0.012	0.014	0.017
0.004	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.008	0.010	0.013	0.015
0.005	0.007	0.009	0.012	0.013	0.016
0.004	0.007	0.009	0.012	0.013	0.016
0.004	0.006	0.009	0.012	0.013	0.016
0.004	0.005	0.008	0.010	0.012	0.015
0.003	0.005	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.008	0.009	0.010	0.012
0.003 ❖	0.006	0.008	0.009	0.010	0.012
0.003 ❖	0.005	0.007	0.008	0.009	0.011
0.005 ❖	0.009	0.010	0.012	0.015	0.017
0.004 ❖	0.008	0.009	0.010	0.013	0.016
0.004 ❖	0.007	0.008	0.009	0.012	0.015
0.004	0.005	0.007	0.009	0.010	0.012
0.004	0.005	0.007	0.009	0.009	0.011
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.007	0.009	0.010	0.011
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.004 ❖	0.006	0.007	0.009	0.010	0.011
0.007	0.012	0.016	0.020	0.024	0.027
0.006	0.011	0.014	0.018	0.022	0.025
0.006	0.009	0.012	0.016	0.018	0.021
0.005	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.007	0.009	0.012	0.014
0.007	0.011	0.014	0.017	0.018	0.019
0.007	0.011	0.014	0.016	0.017	0.019
0.007	0.011	0.014	0.017	0.018	0.019
0.007	0.011	0.014	0.016	0.017	0.019
0.005	0.009	0.012	0.016	0.020	0.024
0.004	0.006	0.008	0.010	0.012	0.015
0.006	0.010	0.014	0.017	0.021	0.025
0.002 ❖	0.003	0.006	0.008	0.010	0.014
0.003 ❖	0.006	0.007	0.009	0.010	0.012
0.003 ❖	0.005	0.006	0.007	0.008	0.010
0.003 ❖	0.006	0.007	0.009	0.010	0.012
0.003 ❖	0.005	0.006	0.007	0.008	0.010
0.005 ❖	0.007	0.008	0.010	0.012	0.015
0.004 ❖	0.006	0.007	0.009	0.010	0.012
—	—	—	—	—	—
—	—	—	—	—	—
—	—	—	—	—	—
0.003 ❖	0.005	0.007	0.008	0.011	0.015
0.002 ❖	0.004	0.006	0.007	0.009	0.011

A30

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Recommended Drilling Data | Imperial (in)

T-A FLAT BOTTOM | CARBIDE

ISO Material		Hardness (BHN)	Carbide Grade	Speed (SFM)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	K20 (C2)	270	380	325	425
		150 - 200	K20 (C2)	240	320	280	375
		200 - 250	K20 (C2)	220	300	260	350
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	K20 (C2)	260	345	315	410
		125 - 175	K20 (C2)	220	300	260	350
		175 - 225	K20 (C2)	200	280	235	320
		225 - 275	K20 (C2)	180	240	215	285
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	K20 (C2)	220	300	260	350
		175 - 225	K20 (C2)	200	280	240	320
		225 - 275	K20 (C2)	180	240	210	285
		275 - 325	K20 (C2)	150	210	180	240
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	K20 (C2)	215	290	250	340
		175 - 225	K20 (C2)	200	270	230	320
		225 - 275	K20 (C2)	180	230	205	290
		275 - 325	K20 (C2)	175	215	190	280
		325 - 375	K20 (C2)	145	190	170	230
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	K20 (C2)	140	170	160	220
		300 - 350	K20 (C2)	120	160	140	190
		350 - 400	K20 (C2)	100	145	120	160
	Structural Steel A36, A285, A516, etc.	100 - 150	K20 (C2)	205	265	240	325
		150 - 250	K20 (C2)	170	215	200	270
		250 - 350	K20 (C2)	155	200	180	240
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	K20 (C2)	140	190	160	220
		200 - 250	K20 (C2)	100	150	120	160
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	K20 (C2)	140	180	165	210
		275 - 350	K20 (C2)	110	140	125	160
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	K20 (C2)	90	120	110	130
		185 - 275	K20 (C2)	70	90	80	105
	Super Duplex Stainless Steel	135 - 185	K20 (C2)	70	95	85	110
K	SG / Nodular Cast Iron	185 - 275	K20 (C2)	55	70	60	85
		120 - 150	K20 (C2)	270	405	360	450
		150 - 200	K20 (C2)	230	350	290	390
		200 - 220	K20 (C2)	200	320	260	350
		220 - 260	K20 (C2)	180	270	220	300
N	Cast Aluminum	260 - 320	K20 (C2)	160	240	200	265
		30	K20 (C2)	520	750	650	—
	Wrought Aluminum	180	K20 (C2)	260	400	350	—
		30	K20 (C2)	950	1200	1070	1270
	Aluminum Bronze	180	K20 (C2)	630	800	715	850
		100 - 200	K20 (C2)	240	310	280	340
	200 - 250	K20 (C2)	180	265	220	285	
S	Brass	100	K20 (C2)	370	520	450	600
	Copper	60	K20 (C2)	220	345	280	380
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	K20 (C2)	70	90	80	110
		220 - 310	K20 (C2)	50	70	60	80
	Titanium Alloy	140 - 220	K20 (C2)	85	110	90	130
220 - 310		K20 (C2)	70	95	80	100	
Aerospace Alloy S82	185 - 275	K20 (C2)	140	120	165	130	
	275 - 350	K20 (C2)	110	90	125	105	
H	Wear Plate Hardox®, AR400, T-1, etc.	400	K20 (C2)	65	100	85	130
		500	K20 (C2)	45	75	60	100
		600	K20 (C2)	35	65	45	80
	Hardened Steel	300 - 400	K20 (C2)	100	125	110	135
400 - 500		K20 (C2)	60	75	65	110	

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example (3XL)

	Data • Adjustment Value = Recommendation for Deep Holes		
	Speed	200 SFM	• 0.75 = 150 SFM
Feed	0.008 IPR	• 0.90	= 0.007 IPR

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



T-A FLAT BOTTOM | CARBIDE

Feed Rate (IPR) by Diameter			
Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"
0.007	0.010	0.013	0.015
0.006	0.009	0.012	0.014
0.005	0.009	0.011	0.013
0.007 ❖	0.009	0.011	0.014
0.006 ❖	0.009	0.011	0.014
0.005 ❖	0.008	0.010	0.013
0.004 ❖	0.008	0.010	0.013
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.012
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.012
0.003	0.006	0.009	0.011
0.005 ❖	0.008	0.009	0.010
0.004 ❖	0.007	0.008	0.009
0.003 ❖	0.006	0.007	0.009
0.007 ❖	0.009	0.012	0.014
0.005 ❖	0.009	0.010	0.012
0.004 ❖	0.008	0.009	0.010
0.003	0.006	0.008	0.009
0.003	0.006	0.008	0.009
0.006 ❖	0.008	0.010	0.012
0.005 ❖	0.007	0.009	0.010
0.005 ❖	0.007	0.008	0.010
0.004 ❖	0.006	0.007	0.009
0.004 ❖	0.006	0.007	0.008
0.003 ❖	0.005	0.006	0.007
0.007	0.010	0.013	0.016
0.006	0.009	0.011	0.014
0.005	0.008	0.010	0.013
0.004	0.007	0.009	0.011
0.004	0.006	0.009	0.009
0.009	0.013	0.016	0.017
0.008	0.012	0.014	0.015
0.005	0.007	0.009	0.010
0.004	0.006	0.008	0.009
0.004	0.006	0.008	0.011
0.003	0.005	0.006	0.008
0.005	0.006	0.008	0.012
0.002 ❖	0.002	0.003	0.005
0.003 ❖	0.006	0.008	0.009
0.003 ❖	0.005	0.007	0.009
0.003 ❖	0.005	0.006	0.008
0.003 ❖	0.004	0.005	0.007
0.006 ❖	0.006	0.010	0.012
0.005 ❖	0.005	0.009	0.010
0.003 ❖	0.004	0.006	0.008
0.002 ❖	0.003	0.005	0.006
0.001 ❖	0.002	0.004	0.005
0.004 ❖	0.006	0.007	0.009
0.003 ❖	0.005	0.006	0.007

A30

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

**Recommended Drilling Data | Imperial (in)****T-A DIAMOND COATED | CARBIDE**

ISO	Material	Carbide Grade	Speed (SFM) Diamond Coating	Feed Rate (IPR) by Diameter			
				Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"
A30 Polymer Matrix Composites	Carbon (hard)	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Carbon Fiber	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Carbon / Glass Fiber	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Fiberglass	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Graphite	N2	1000 - 1500	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Plastics	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Epoxy Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Bismaleimide Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Polyester Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Phenolic Resin	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Rubber	N2	250 - 1000	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
Metal Matrix Composites	Aluminum	N2	1000	0.008	0.013	0.016	0.020
	Si < 10%	N2	1000	0.008	0.013	0.016	0.020
	10% < Si < 15%	N2	850 - 1000	0.008	0.013	0.016	0.020
	15% < Si < 20%	N2	650 - 850	0.008	0.013	0.016	0.020
	20% < Si < 25%	N2	500 - 650	0.008	0.013	0.016	0.020
	25% < Si	N2	200 - 500	0.008	0.013	0.016	0.020
	Brass	N2	250 - 500	0.008	0.013	0.016	0.020
	Bronze	N2	250 - 500	0.008	0.013	0.016	0.020
	Copper	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Copper Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Lead Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Magnesium Alloys	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Precious Metals	N2	100 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
Ceramic Matrix Composites	Carbide (green)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Ceramic (green)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014
	Ceramic (pre-sintered)	N2	50 - 250	0.004 - 0.006	0.008 - 0.010	0.010 - 0.012	0.012 - 0.014

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Speed and Feed Adjustment

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Speed	0.90	0.85	0.80	0.80	0.75
Feed	—	0.95	0.90	0.90	0.90

Recommended Speed and Feed Example

If the recommended speed and feed is 200 SFM and 0.008 IPR for a standard length holder, then the speed and feed using a 3XL holder in the same application would be 150 SFM and 0.007 IPR.

$$200 \bullet 0.75 = 150 \text{ SFM}$$

$$0.008 \bullet 0.90 = 0.007 \text{ IPR}$$

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.

A30

**Coolant Recommendations | Metric (mm)****T-A | HIGH-SPEED STEEL**

ISO	Material	Pressure or Flow Rate	Y/Z Series	0 Series	1 Series	2 Series	3 Series	4 Series	5 - 8 Series
			9.50 mm - 12.97 mm	12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm	46.99 mm - 65.30 mm	62.38 mm - 114.48 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	BAR	12 - 13	7 - 8	7 - 10	6 - 8	5 - 7	4	5 - 6
		LPM	9.5 - 9.8	10.6 - 11.4	16.7 - 19.7	26.5 - 30.3	45.4 - 53.0	114 - 125	144 - 167
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11 - 12	5 - 6	5 - 7	4 - 6	4 - 5	2 - 3	3 - 5
		LPM	9.1 - 9.5	9.1 - 9.8	14.0 - 15.9	22.7 - 26.5	41.6 - 45.4	98 - 114	125 - 144
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	11	5 - 6	5 - 6	4 - 5	3 - 5	2 - 3	3 - 5
		LPM	8.7 - 9.1	8.7 - 9.8	13.6 - 15.5	18.9 - 22.7	37.9 - 45.4	98 - 114	125 - 144
	Alloy Steel 4140, 5140, 8640, etc.	BAR	11	5	5 - 6	3 - 5	3 - 4	2	3
		LPM	8.7 - 9.1	8.3 - 9.1	13.2 - 14.8	18.9 - 22.7	31.9 - 41.6	98 - 106	114 - 125
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	10 - 11	4	3	2	2	1 - 2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87	87 - 98
M	Structural Steel A36, A285, A516, etc.	BAR	11	5 - 6	5 - 6	3 - 4	3	2	3
		LPM	8.7 - 9.1	9.1 - 9.8	13.2 - 14.8	18.9 - 22.7	34.1 - 37.9	87 - 98	114 - 125
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	10 - 11	4	3	2	2	1 - 2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87	87 - 98
	Stainless Steel 400 Series 416, 420, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
	Super Duplex Stainless Steel	BAR	11.8	5.9	5.2	3.8	3.5	2	3.1
		LPM	9.5	9.8	14	23	38	98	117
K	SG / Nodular Cast Iron	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
	Grey / White Iron	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
N	Cast Aluminum	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5
		LPM	10	14	23	34	61	125	159
	Wrought Aluminum	BAR	14.5	12.4	15.8	11	8.6	3.5	5.5
		LPM	10	14	23	34	61	125	159
	Aluminum Bronze	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2
		LPM	9.6	11.4	19.7	30.3	53	125	167
	Brass	BAR	11	4.5	4.2	2.8	2.4	2	2.4
		LPM	9.1	8.7	12.5	19	34	98	106
	Copper	BAR	12.8	8.3	9.65	7.95	6.9	3.5	6.2
		LPM	9.6	11.4	19.7	30.3	53	125	167
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
	Titanium Alloy	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
	Aerospace Alloy S82	BAR	10 - 11	4 - 5	3 - 4	2	2	2	3
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98	125
H	Wear Plate Hardox®, AR400, T-1, etc.	BAR	10.7	4.2	3.5	2	2	1.7	2
		LPM	9.1	8.3	11.7	19	30	87	98
	Hardened Steel	BAR	10.7	4.2	3.5	2	2	1.7	2
		LPM	9.1	8.3	11.7	19	30	87	98

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

$$12 \times 3 = 36 \text{ bar}$$

$$22 \times 3 = 66 \text{ LPM}$$

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Coolant Recommendations | Metric (mm)

T-A | CARBIDE

ISO	Material	Pressure or Flow Rate	Y/Z Series 9.50 mm - 12.97 mm	0 Series 12.98 mm - 17.67 mm	1 Series 17.53 mm - 24.40 mm	2 Series 24.41 mm - 35.06 mm	3 Series 34.37 mm - 47.82 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	BAR	17 - 20	17	15	15	20
		LPM	12.2	16.3	25.2	41.5	71.9
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	18	11	11	12	9
		LPM	11.4	13.3	20.6	36.5	62.0
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	17	10	10	10	8
		LPM	11.3	12.5	20.0	33.8	57.0
	Alloy Steel 4140, 5140, 8640, etc.	BAR	17	9	10	8	7
		LPM	11.1	12.3	19.3	30.0	55.8
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	15	5	4	3	3
		LPM	10.4	9.1	12.6	18.8	33.6
M	Structural Steel A36, A285, A516, etc.	BAR	16	9	8	7	5
		LPM	10.8	12.0	17.5	27.8	47.1
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
	Stainless Steel 400 Series 416, 420, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
	Super Duplex Stainless Steel	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
K	SG / Nodular Cast Iron	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
	Grey / White Iron	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
N	Cast Aluminum	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Wrought Aluminum	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Aluminum Bronze	BAR	20	16.5	16.5	15.2	12
		LPM	12.2	16.3	25.2	41.5	71.9
	Brass	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
	Copper	BAR	20	16.5	16.5	15.2	12
		LPM	12.2	16.3	25.2	41.5	71.9
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
	Titanium Alloy	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
	Aerospace Alloy S82	BAR	17	11	12	11	9
		LPM	11.1	13.5	21.9	35.4	62.0
H	Wear Plate Hardox®, AR400, T-1, etc.	BAR	14.5	5.2	4.8	3.4	3.1
		LPM	10.4	9.1	13.6	19.7	36.5
	Hardened Steel	BAR	14.5	5.2	4.8	3.4	3.1
		LPM	10.4	9.1	13.6	19.7	36.5

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

1 Holder Length					
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 12 bar and 22 LPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 36 bar and 66 LPM.

$$12 \bullet 3 = 36 \text{ bar}$$

$$22 \bullet 3 = 66 \text{ LPM}$$

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

1 WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Coolant Recommendations | Imperial (in)

T-A | HIGH-SPEED STEEL

ISO	Material	Pressure or Flow Rate	Y/Z Series	0 Series	1 Series	2 Series	3 Series	4 Series	5 - 8 Series
			0.3740" - 0.5109"	0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"	1.8500" - 2.5709"	2.4560" - 4.5070"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	PSI	175 - 185	100 - 120	105 - 140	80 - 115	75 - 100	40 - 50	65 - 90
		GPM	2.5 - 2.6	2.8 - 3.0	4.4 - 5.2	7 - 8	12 - 14	30 - 33	38 - 44
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	165 - 170	75 - 90	75 - 95	60 - 80	55 - 75	30 - 40	50 - 65
		GPM	2.4 - 2.5	2.4 - 2.6	3.7 - 4.2	6 - 7	11 - 12	26 - 30	33 - 38
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	160 - 165	70 - 85	70 - 90	55 - 75	50 - 70	30 - 40	50 - 65
		GPM	2.3 - 2.4	2.3 - 2.6	3.7 - 4.2	5 - 6	10 - 12	26 - 30	33 - 38
	Alloy Steel 4140, 5140, 8640, etc.	PSI	160 - 165	65 - 75	65 - 80	50 - 70	45 - 60	30 - 35	40 - 50
		GPM	2.3 - 2.4	2.2 - 2.4	3.5 - 3.9	5 - 6	10 - 11	26 - 28	30 - 33
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25	40 - 50
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23	23 - 26
M	Structural Steel A36, A285, A516, etc.	PSI	160 - 165	75 - 85	65 - 80	40 - 55	40 - 50	25 - 30	40 - 50
		GPM	2.3 - 2.4	2.4 - 2.6	3.5 - 3.9	5 - 6	9 - 10	23 - 26	30 - 33
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25	25 - 30
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23	23 - 26
K	Stainless Steel 400 Series 416, 420, etc.	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
N	Super Duplex Stainless Steel	PSI	171	86	75	55	51	29	45
		GPM	3	3	4	6	10	26	31
K	SG / Nodular Cast Iron	PSI	160	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
	Grey / White Iron	PSI	160	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
N	Cast Aluminum	PSI	210	180	230	159	125	51	80
		GPM	3	4	6	9	16	33	42
	Wrought Aluminum	PSI	210	180	230	159	125	51	80
		GPM	3	4	6	9	16	33	42
	Aluminum Bronze	PSI	186	120	140	115	100	51	90
		GPM	2.5	3	5	8	14	33	44
	Brass	PSI	159	65	61	41	35	29	35
		GPM	2	2	3	5	9	26	28
	Copper	PSI	186	120	140	115	100	51	90
		GPM	2.5	3	5	8	14	33	44
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
	Titanium Alloy	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
	Aerospace Alloy S82	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30	44
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26	33
H	Wear Plate Hardox®, AR400, T-1, etc.	PSI	155	61	51	29	29	25	29
		GPM	2	2	3	5	8	23	26
	Hardened Steel	PSI	155	61	51	29	29	25	29
		GPM	2	2	3	5	8	23	26

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Deep Hole Drilling Coolant Adjustment

	Holder Length				
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

$$150 \times 3 = 450 \text{ PSI} \quad 2.4 \times 3 = 7.2 \text{ GPM}$$

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

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Coolant Recommendations | Imperial (in)

T-A | CARBIDE

ISO	Material	Pressure or Flow Rate	Y/Z Series 0.3740" - 0.5109"	0 Series 0.5110" - 0.6959"	1 Series 0.6900" - 0.9609"	2 Series 0.9610" - 1.3809"	3 Series 1.3530" - 1.8829"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	PSI	195	140	160	140	155
		GPM	2.6	3.3	5.5	9	18
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	180	105	105	110	115
		GPM	2.5	2.9	4.4	8	15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	175	100	90	70	75
		GPM	2.5	2.8	4.1	7	13
	Alloy Steel 4140, 5140, 8640, etc.	PSI	165	85	100	75	70
		GPM	2.4	2.6	4.3	6	12
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	175	115	105	75	70
		GPM	2.4	2.3	3.2	5	8
	Structural Steel A36, A285, A516, etc.	PSI	175	115	105	75	70
		GPM	2.5	3.0	4.4	6	12
M	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	155	60	55	40	35
		GPM	2.4	2.2	3.2	5	8
	Stainless Steel 400 Series 416, 420, etc.	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
	Super Duplex Stainless Steel	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
	SG / Nodular Cast Iron	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
	Grey / White Iron	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
N	Cast Aluminum	PSI	350	319	315	284	200
		GPM	4	5	8	12	20
	Wrought Aluminum	PSI	350	319	315	284	200
		GPM	4	5	8	12	20
	Aluminum Bronze	PSI	290	239	239	220	174
		GPM	3	4	7	11	19
	Brass	PSI	350	319	315	284	200
		GPM	4	5	7	12	20
	Copper	PSI	290	239	239	220	174
		GPM	3	4	7	11	19
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
S	Titanium Alloy	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
	Aerospace Alloy S82	PSI	247	160	174	160	130
		GPM	3	4	6	9	16
H	Wear Plate Hardox®, AR400, T-1, etc.	PSI	210	75	70	49	45
		GPM	3	2	4	5	10
	Hardened Steel	PSI	210	75	70	49	45
		GPM	3	2	4	5	10

❖ Contact our Application Engineering department for assistance when machining these materials.

Deep Hole Drilling Coolant Adjustment

Holder Length					
	Extended	Long	Long Plus	XL	3XL
Pressure and Flow	1.3	1.5	2	2	3

Recommended Coolant Example

If the recommended pressure and flow is 150 PSI and 2.4 GPM for a standard length holder, then the adjusted pressure and flow for a 3XL holder would be 450 PSI and 7.2 GPM.

$$150 \times 3 = 450 \text{ PSI} \quad 2.4 \times 3 = 7.2 \text{ GPM}$$

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the T-A® drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Technical Formulas

Formulas

1.	RPM	= (3.82 • SFM) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)
2.	IPM	= RPM • IPR
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)
3.	SFM	= RPM • 0.262 • DIA
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)
4.	Thrust	= 153,700 • IPR • DIA • K_m
	where:	
	Thrust	= axial thrust (lbs)
	IPR	= feed rate (in/rev)
	DIA	= diameter of drill (inch)
	K _m	= specific cutting energy (lbs/in ²)
5.	Tool Power	= .6991 • IPR • RPM • K_m • DIA²
	where:	
	Tool Power	= tool power (HP)
	IPR	= feed rate (in/rev)
	RPM	= revolutions per minute (rev/min)
	K _m	= specific cutting energy (lbs/in ²)
	DIA	= diameter of drill (inch)

Formulas

1.	RPM	= (318.47 • m/min) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	m/min	= speed (m/min)
	DIA	= diameter of drill (mm)
2.	mm/min	= RPM • mm/rev
	where:	
	mm/min	= mm per minute (mm/min)
	RPM	= revolutions per minute (rev/min)
	mm/rev	= feed rate (mm/rev)
3.	m/min	= RPM • 0.003 • DIA
	where:	
	m/min	= speed (m/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (mm)
4.	Thrust	= 154 • (mm/rev) • DIA • K_m
	where:	
	Thrust	= axial thrust (N)
	mm/rev	= feed rate (mm/rev)
	DIA	= diameter of drill (mm)
	K _m	= specific cutting energy (kPa)
5.	Tool Power	= ((mm/rev) • RPM • K_m • DIA²)/218604.8
	where:	
	Tool Power	= tool power (HP)
	mm/rev	= feed rate (mm/rev)
	RPM	= revolutions per minute (rev/min)
	K _m	= specific cutting energy (kPa)
	DIA	= diameter of drill (mm)

Material Constants

Type of Material	Hardness	K _m (lbs/in ²)
Plain Carbon and Alloy Steel	85 - 200 BHN	0.79
	200 - 275 BHN	0.94
	275 - 375 BHN	1.00
	375 - 425 BHN	1.15
Stainless Steels	135 - 275 BHN	0.94
	30 - 45 RC	1.08
Cast Iron	100 - 200 BHN	0.50
	200 - 300 BHN	1.08
Copper Alloy	20 - 80 RB	0.43
	80 - 100 RB	0.72
Aluminum Alloy	–	0.22
Magnesium Alloy	–	0.16
High-Temperature Alloys	–	1.44
Titanium Alloy	–	0.72

Material Constants

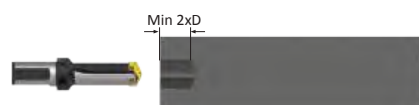
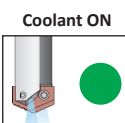
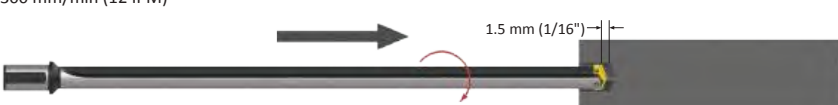
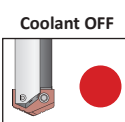
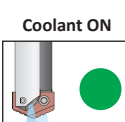
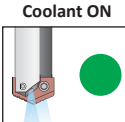
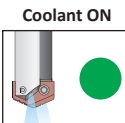
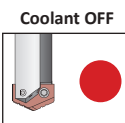
Type of Material	Hardness	K _m (kPa)
Plain Carbon and Alloy Steel	85 - 200 BHN	5.45
	200 - 275 BHN	6.48
	275 - 375 BHN	6.89
	375 - 425 BHN	7.93
Stainless Steels	135 - 275 BHN	6.48
	30 - 45 RC	7.45
Cast Iron	100 - 200 BHN	3.45
	200 - 300 BHN	7.45
Copper Alloy	20 - 80 RB	2.96
	80 - 100 RB	4.96
Aluminum Alloy	–	1.52
Magnesium Alloy	–	1.10
High-Temperature Alloys	–	9.93
Titanium Alloy	–	4.96

The table and equations on this page are found in the “Machinery’s Handbook.” Permission to simplify and print the equations is granted by the Editor of the “Machinery’s Handbook.”



Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	 
2. Feed-in ⚠️ 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	 
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	 
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	 
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not breakout more than 3 mm (1/8") past the full diameter of the drill.	 
6. Drill Retract ⚠️ 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	 

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⚠️ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

	Potential Problem																						
	Accelerated corner wear	Barber pole	Bell-mouthed hole	Insert chipping	Blue chips	Built-up Edge (BUE)	Chatter	Chip packing	Chipping of point	Damaged or broken tools	Excessive margin wear	High flank wear	Hole lead off	Hole out of position	Hole out of round	Notching of insert	Oversize hole	Poor hole finish	Poor tool life	Power spikes - Load meter	Step burned on insert		
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Possible Solutions	
<p>⚠ Use of Standard, Standard Plus, Extended, Long, Long Plus, XL, and 3XL holders</p> <p>See page 146 for Deep Hole Drilling guidelines</p>			2	3			7		9				13	14			17					<ul style="list-style-type: none">Start with short holder and drill a minimum depth equal to 2xD (see page A30: 146 for instructions).Spot hole with stub tool of same or greater included angle as T-A® drill insert.Decrease feed a minimum of 50% until establishing full diameter.Use special holder with wear pads or chrome bearing area to work with drill bushings.	
Starting on an inclined surface			2				7		9	10	11		13		15							<ul style="list-style-type: none">Spot face surface to provide a flat entry surface.Spot hole with stub tool of same or greater included angle as T-A® drill insert.Decrease feed a minimum of 50% until establishing full diameter.Use special holder with wear pads or chrome bearing area to work with drill bushings.	
Worn or misaligned spindle (lathe, screw machine, chucker)	1	2	3				7		9	10	11		13				17	18				<ul style="list-style-type: none">Align spindle and turret or tailstock.Repair spindle.Spot hole with stub tool of same or greater included angle as T-A® drill insert.	
Use of low rigidity machine tools (radial drills, multi-spindle drill press, etc.)			2	3	4		7		9	10			13	14								<ul style="list-style-type: none">Spot hole with stub tool of same or greater included angle as T-A® drill insert.Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).Use special holder with wear pads or chrome bearing area to work with drill bushings.Use tougher tool steel grades with high wear-resistant coatings.	
Poor workpiece support.			2		4		7			10	11				15			18				<ul style="list-style-type: none">Provide additional support for the workpiece. Reduce penetration rate to fall within the physical limits of the machine or setup (NOTICE: Do not reduce feed below threshold of good chip formation).Use tougher tool steel grades with high wear-resistant coatings.	
Flood coolant, low coolant pressure or low coolant volume	1					5	6		8		10		12					17	18	19	20	21	<ul style="list-style-type: none">Run coolant through tool holder when drilling greater than one times diameter.Increase coolant pressure and volume through the tool holder.Reduce penetration rate to fall within the coolant limitations (NOTICE: Do not reduce feed below threshold of good chip formation).Add a peck cycle to help clear chips.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

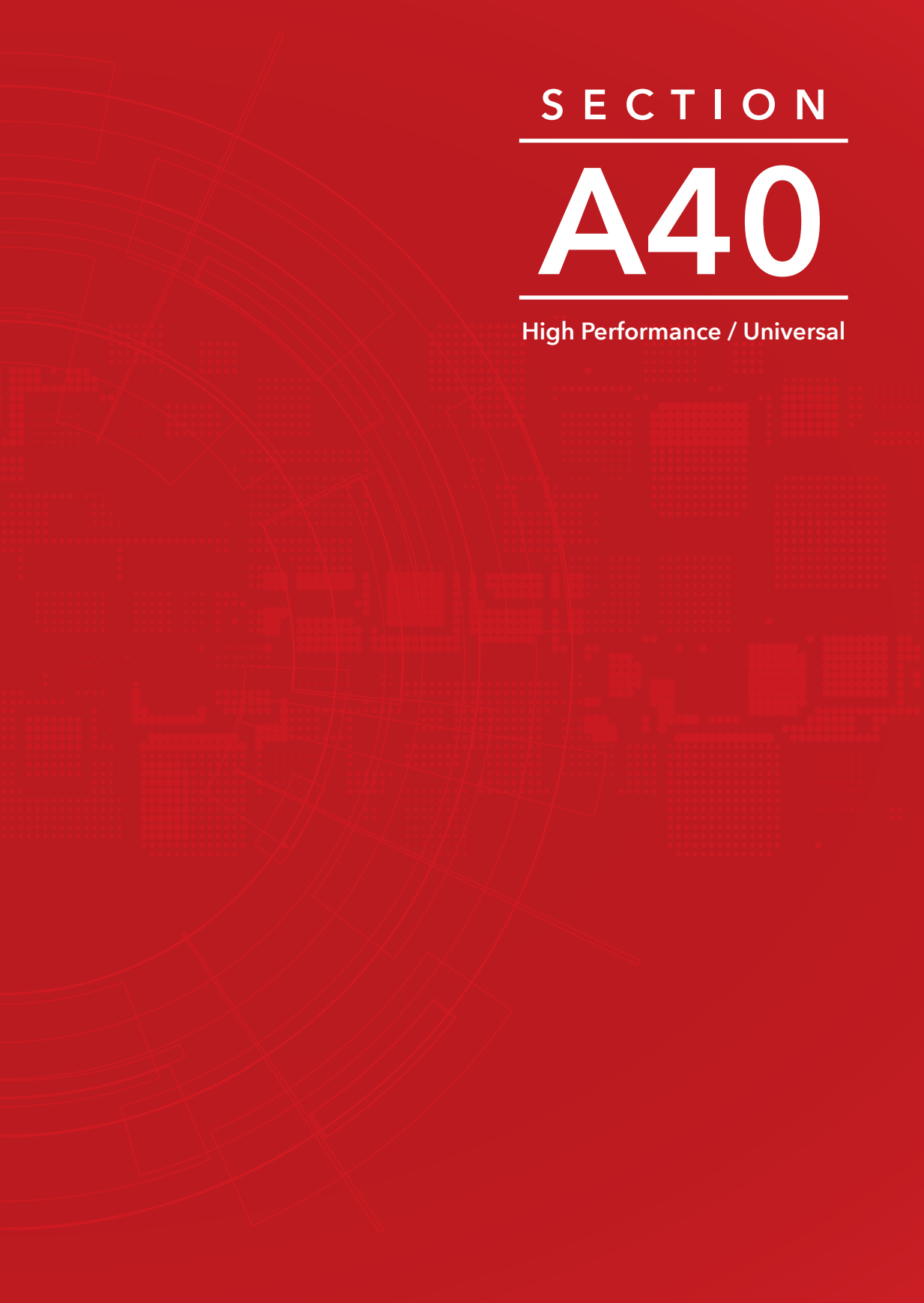
Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

	Potential Problem																					
	Step burned on insert	Power spikes - Load meter	Poor tool life	Poor hole finish	Oversize hole	Notching of insert	Hole out of round	Hole out of position	Hole lead off	High flank wear	Excessive margin wear	Damaged or broken tools	Chipping of point	Chip packing	Chatter	Built-up Edge (BUE)	Blue chips	Insert chipping	Bell-mouthed hole	Barber pole		Accelerated corner wear
Setup Condition	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	Possible Solutions
Interrupted cuts. Entry or exit surfaces that are not perpendicular to the spindle (draft angles, stepped surfaces, cross holes, and cast or forged surfaces)				4			7		9	10	11		13	14	15		17	18	19			<ul style="list-style-type: none">● Premill (spot face) entry or exit surface to remove interruption.● Spot hole with stub tool of same or greater included angle as T-A® drill insert.● Decrease feed as much as 50% through entry or exit interruption.● Use short holders in low impact entry cuts.
Material harder than expected or running tools beyond recommended speeds	1				5	6				10		12							19		21	<ul style="list-style-type: none">● Reduce speed if a step is worn in the insert, calculate SFM at the worn diameter. Reduce this value by 10% and apply this new value to the original tool diameter.● Increase coolant pressure and volume.● Improve coolant condition by use of quality products and regular maintenance.● Select an insert grade (premium, super cobalt, or carbide) or coating (TiAlN, TiCN, or AM200®) that is more wear- and heat-resistant.
Poor material microstructure or foreign particles (forgings and castings that have not been normalized or annealed, poorly prepared steel, flame cut parts and sand casting)				4		6				10		12	13			16			19			<ul style="list-style-type: none">● Compare performance of other tools for similar wear problems, which may indicate poor microstructure. Anneal or normalize parts to improve microstructure for machining.● To improve tool life in materials with poor microstructure, try carbide grades.● For hard spots or inclusions, use the tougher insert steel grade with high wear-resistant coatings (TiAlN, TiCN, AM200®).● Reduce feeds (NOTICE: Do not reduce feed below threshold of good chip formation).
Poor chip control								8		10	11		13					17	18	19	20	<ul style="list-style-type: none">● Increase feed to recommended levels. Contact Allied's Application Engineering team for technical recommendations.● Increase coolant pressure and volume.● Improve coolant condition by use of quality products and regular maintenance.● See pages A30: 5 - 6 for special purpose geometries.
Spot drilled holes with included angle less than that matching T-A® or cored holes	1			4			7						13			16			19			<ul style="list-style-type: none">● Spot hole with short tool of same or greater included angle as T-A® drill insert.● Reduce feed (NOTICE: Do not reduce feed below threshold of good chip formation)● If possible, drill from solid.
Use of high wear-resistant insert grades				4						10												<ul style="list-style-type: none">● Use tougher grade of T-A® (from carbide to cobalt to HSS). See wear versus toughness chart on page A30: 10.● Increase rigidity of setup.

A30

The background of the entire page is a solid red color. Overlaid on this are several geometric patterns. On the left side, there are several concentric circles of varying radii, centered towards the left edge. Overlaid on these circles and the rest of the page is a grid of thin, light red lines. The grid consists of both horizontal and vertical lines, creating a series of small squares. The lines are not perfectly uniform in thickness and are slightly offset in some areas, giving it a technical or architectural feel.

SECTION

A40

High Performance / Universal

High Performance & Universal

0.9688" - 8.5000"



High Performance and Universal

The Universal spade drill is the original design that launched Allied Machine into the holemaking industry. After the T-A® was introduced, customers who already owned the Universal style holders wanted the same benefits offered by the T-A without having to invest in an entirely new system.

The High Performance (HP) insert was created to provide similar performance as the T-A. The HP insert (along with an adapter for larger sizes) fits into existing Universal style holders.

When the customers speak, we listen.

Since the Beginning

- ▶ Utilizes ANSI specs.
- ▶ High Performance inserts for T-A benefits in Universal holders.

Applicable Industries



Aerospace



Agriculture



Automotive



Defense



General Production



Heavy Equipment



Hydraulics



Marine



Oil and Gas



Renewable Energy/ Energy



Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



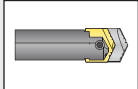
High Performance / Universal Inserts

Refers to the range of inserts that connect with the corresponding holders.



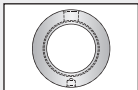
Universal Insert Coating Options

Details and overview of the different coatings available for Universal spade drill inserts.



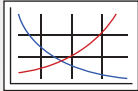
High Performance / Universal Holders

Refers to the range of holders that connect with the corresponding inserts.



Rotary Coolant Adapter (RCA) Information

Detailed instructions and information regarding the corresponding RCA part.



Recommended Cutting Data

Speed and feed recommendations for optimum and safe drilling.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:



WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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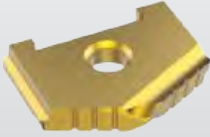
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System Overview

Inserts

High Performance Inserts



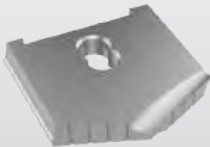
A - C Series

High Performance Inserts

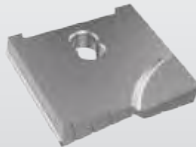
- Increase production 100 - 500% compared to uncoated Universal spade drill inserts.
- Fit into Universal style holders.
- Available in TiN and TiAlN coatings.
- Single-piece design (A - C series) eliminates the need for adapters, which maximizes tool performance in these smaller sizes.

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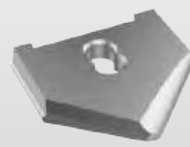
Universal Inserts



130° CPM-M4



Flat Bottom



90° Spot and Chamfer

Universal Inserts

- Standard inserts stocked uncoated.
- Also available in TiN, TiAlN, and TiCN coatings, which improve tool life when compared to uncoated inserts.

TiN Coating

Ordering Code: T Example: 10224-0116**T**



TiAlN Coating

Ordering Code: A Example: 10224-0116**A**



TiCN Coating

Ordering Code: N Example: 10224-0116**N**





System Overview

Holders



Straight Shank Holders

- Stub (#125)
- Short (#150)
- Short (#100)
- Standard (#200)
- Long (#250)



Taper Shank Holders

- Short (#300)
- Short (#300 TSC)
- Short (#400 SR)
- Standard (#500 SR)
- Long (#600 SR)
- XL (#700 SR)

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Product Nomenclature

High Performance Spade Drill Inserts

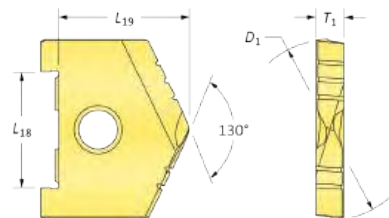
1	02	8	T	—	0406
	Material	Series	Coating		Diameter (by 1/32")
	02 = High-speed steel	1 = A series 2 = B series 3 = C series	T = TiN A = TiAlN N = TiCN		0406 = Inch 4.3593 = Decimal

Universal Spade Drill Inserts

1	02	8	4	—	0406	T
	Insert Style	Series	Material		Diameter (by 1/32")	Coating
	02 = 130° Spade 04 = Flat Bottom 12 = 90° Spot & Chamfer	1 = A series 2 = B series 3 = C series 4 = D series 5 = E series 6 = F series 7 = G series 8 = H1 - H2 series 9 = H3 - H9 series	4 = High-speed steel (SPM-M4 HSS)		0406 = Fractional 4.3593 = Decimal	Blank = Uncoated T = TiN A = TiAlN N = TiCN

Reference Key

Symbol	Attribute
D_1	Insert diameter
L_{18}	Holder locating area
L_{19}	Reference length



Series	A	B	C	D	E
$D_{1 \text{ Max}}$	0.9688"	1.2500"	1.5000"	2.0000"	2.5000"
$D_{1 \text{ Min}}$	1.2500"	1.7500"	2.3750"	2.8750"	3.3750"

Series	F	G	H1 - H2	H3 - H9
$D_{1 \text{ Max}}$	3.0000"	3.5000"	4.0000"	5.1250"
$D_{1 \text{ Min}}$	3.8750"	4.5000"	5.0000"	8.5000"



Product Nomenclature

High Performance / Universal Spade Drill Insert Holders

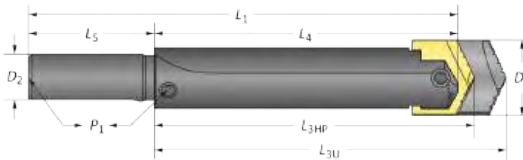
2	22	8	1 -	004
Classification		Series		Shank Designator
Straight Shank 02 = Stub #125 (NC) 04 = Short #150 (NC) 06 = Short #100 (C) 08 = Standard #200 (C) 10 = Long #250 (C) ⚠		1 = A 2 = B 3 = C 4 = D 5 = E 6 = F 7 = G 8 = H		Straight Shank 0750 = 0.750" 1000 = 1.000" 1250 = 1.250" 1500 = 1.500" 2000 = 2.000" 3000 = 3.000"
Taper Shank 14 = Short #300 (NC) 15 = Short #300 (TSC) 16 = Short #400 SR (RCA) 18 = Standard #500 SR (RCA) 20 = Long #600 SR (RCA) ⚠ 22 = XL #700 SR SR (RCA) ⚠				Taper Shank 0002 = #2 MT 0003 = #3 MT 0004 = #4 MT 0005 = #5 MT 0006 = #6 MT

C = Coolant **NC** = No Coolant **TSC** = Through-Shank Coolant **RCA** = Rotary Coolant Adapter

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Reference Key

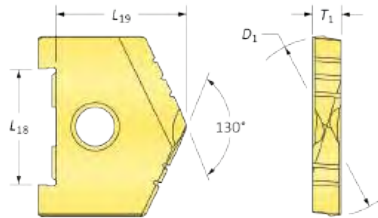
Symbol	Attribute
D_1	Insert diameter
D_2	Shank diameter
L_1	Overall length
L_{3HP}	Reference length (High Performance)
L_{3U}	Reference length (Universal)
L_4	Flute length
L_5	Shank length
P_1	Pipe tap





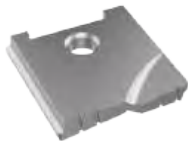
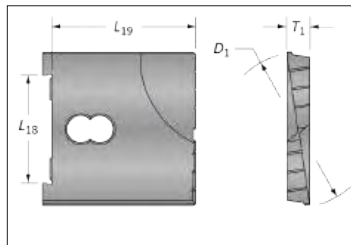
A Series: 0.9688" - 1.3750"

High Performance and Universal Inserts

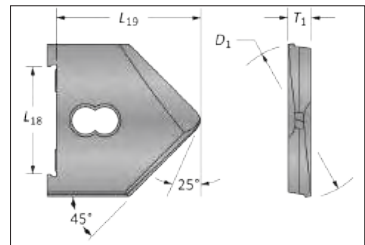


High Performance Inserts

Series	D ₁ inch		Inserts				
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.	Part No.
					TiN	TiAlN	TiCN
A	0.9688	31/32	3/4	7/8	1021T-0031	1021A-0031	1021N-0031
	1.0000	1	3/4	7/8	1021T-0100	1021A-0100	1021N-0100
	1.0313	1-1/32	3/4	7/8	1021T-0101	1021A-0101	1021N-0101
	1.0625	1-1/16	3/4	7/8	1021T-0102	1021A-0102	1021N-0102
	1.0938	1-3/32	3/4	7/8	1021T-0103	1021A-0103	1021N-0103
	1.1250	1-1/8	3/4	7/8	1021T-0104	1021A-0104	1021N-0104
	1.1563	1-5/32	3/4	7/8	1021T-0105	1021A-0105	1021N-0105
	1.1875	1-3/16	3/4	7/8	1021T-0106	1021A-0106	1021N-0106
A Oversize	1.2188	1-7/32	3/4	7/8	1021T-0107	1021A-0107	1021N-0107
	1.2500	1-1/4	3/4	7/8	1021T-0108	1021A-0108	1021N-0108
	1.2813	1-9/32	3/4	7/8	1021T-0109	1021A-0109	1021N-0109
	1.3125	1-5/16	3/4	7/8	1021T-0110	1021A-0110	1021N-0110
	1.3438	1-11/32	3/4	7/8	1021T-0111	1021A-0111	1021N-0111
	1.3750	1-3/8	3/4	7/8	1021T-0112	1021A-0112	1021N-0112



Flat Bottom



90° Spot & Chamfer

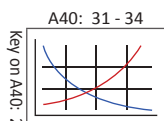
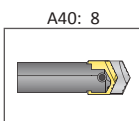
Universal Inserts

Series	D ₁ inch		Inserts			
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.
					Uncoated	Uncoated
A	1.0000	1	3/4	1-5/32	10414-0100	—
	1.0625	1-1/16	3/4	1-5/32	10414-0102	—
	1.1250	1-1/8	3/4	1-5/32	10414-0104	—
	1.1875	1-3/16	3/4	1-5/32	10414-0106	—
	1.2500	1-1/4	3/4	1-5/32	10414-0108	11214-0108

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

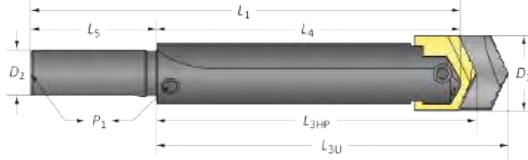
Inch:	1-3/64", High Performance (A series), TiN = 1021T-1.0469
Decimal:	1.2125", High Performance (A series), TiN = 1021T-1.2125





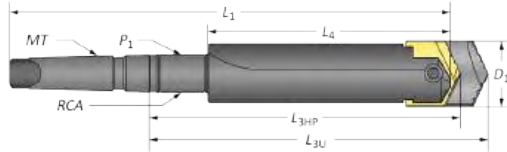
A Series: 0.9688" - 1.3750"

High Performance / Universal Insert Holders



Straight Shank Holders

Body						Shank				
Length	L_{3HP}	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style	Part No.	
Short	3.250	3.531	3.000	6.500	3.500	3/4	—	#150	20411-0750	
Short	3.250	3.531	3.000	6.500	3.500	1	—	#150	20411-1000	
Short	3.250	3.531	3.000	6.500	3.500	1	1/8 NPT	#100	20611-1000	
Short	3.250	3.531	3.000	6.500	3.500	1-1/2	1/8 NPT	#100	20611-1500	
Standard	8.000	8.281	7.750	11.250	3.500	3/4	1/8 NPT	#200	20811-0750	
Standard	8.000	8.281	7.750	11.250	3.500	1	1/8 NPT	#200	20811-1000	
Standard	8.000	8.281	7.750	11.250	3.500	1-1/2	1/8 NPT	#200	20811-1500	
Long	15.250	15.531	15.000	18.500	3.500	1	1/8 NPT	#250	21011-1000	



Taper Shank Holders

	Body					Shank				Part No.
	Length	L_{3HP}	L_{3U}	L_4	L_1	MT	P_1	RCA	Style	
	Short	3.437	3.719	3.000	6.875	#3 MT	—	—	#300	21411-0003
	Short	3.500	3.719	3.000	7.875	#4 MT	—	—	#300	21411-0004
	Short	3.437	3.719	3.000	6.875	#3 MT	—	—	#300 TSC	21511-0003*
I	Short	5.188	5.469	3.000	9.563	#4 MT	1/4 NPT	2T-4SR	#400 SR	21611-0004
	Standard	9.938	10.219	7.750	14.313	#4 MT	1/4 NPT	2T-4SR	#500 SR	21811-0004
	Long	17.188	17.469	15.000	21.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	22011-0004
	XL	23.188	23.469	21.000	27.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	22211-0004

*Through-shank coolant, coolant inlet diameter = 1/4".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	2T-4SR	2T1-4SR	2T1-4OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

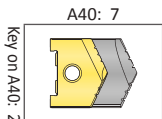
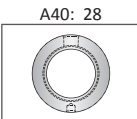
Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
				Part No.	Key	Part No.	Key
772074-1	5/64"	—	—	710004-1	5/32"	710006-1	7/32"

ⓘ = Imperial (in)

Ⓜ = Metric (mm)

O-rings sold in packs of 10.



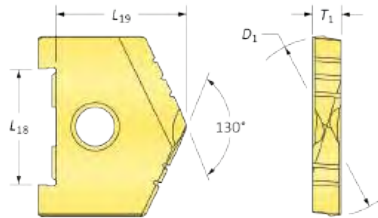
WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



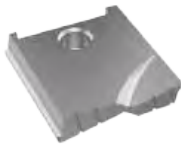
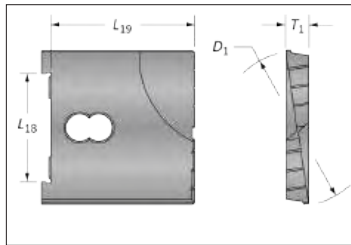
B Series: 1.2500" - 1.7500"

High Performance and Universal Inserts

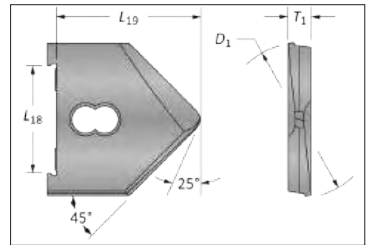


High Performance Inserts

Series	D ₁ inch		Inserts				
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.	Part No.
					TiN	TiAlN	TiCN
B	1.2500	1-1/4	1-1/16	1-3/32	1022T-0108	1022A-0108	1022N-0108
	1.2813	1-9/32	1-1/16	1-3/32	1022T-0109	1022A-0109	1022N-0109
	1.3125	1-5/16	1-1/16	1-3/32	1022T-0110	1022A-0110	1022N-0110
	1.3438	1-11/32	1-1/16	1-3/32	1022T-0111	1022A-0111	1022N-0111
	1.3750	1-3/8	1-1/16	1-3/32	1022T-0112	1022A-0112	1022N-0112
	1.4063	1-13/32	1-1/16	1-3/32	1022T-0113	1022A-0113	1022N-0113
	1.4375	1-7/16	1-1/16	1-3/32	1022T-0114	1022A-0114	1022N-0114
	1.4688	1-15/32	1-1/16	1-3/32	1022T-0115	1022A-0115	1022N-0115
B Oversize	1.5000	1-1/2	1-1/16	1-3/32	1022T-0116	1022A-0116	1022N-0116
	1.5313	1-17/32	1-1/16	1-3/32	1022T-0117	1022A-0117	1022N-0117
	1.5625	1-9/16	1-1/16	1-3/32	1022T-0118	1022A-0118	1022N-0118
	1.5938	1-19/32	1-1/16	1-3/32	1022T-0119	1022A-0119	1022N-0119
	1.6250	1-5/8	1-1/16	1-3/32	1022T-0120	1022A-0120	1022N-0120
	1.6563	1-21/32	1-1/16	1-3/32	1022T-0121	1022A-0121	1022N-0121
	1.6875	1-11/16	1-1/16	1-3/32	1022T-0122	1022A-0122	1022N-0122
	1.7188	1-23/32	1-1/16	1-3/32	1022T-0123	1022A-0123	1022N-0123
	1.7500	1-3/4	1-1/16	1-3/32	1022T-0124	1022A-0124	1022N-0124



Flat Bottom

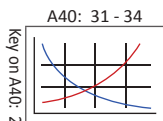
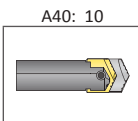


90° Spot & Chamfer

Universal Inserts

Series	D ₁ inch		Inserts			
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.
					Uncoated	Uncoated
B	1.2500	1-1/4	1-1/16	1-13/32	10424-0108	—
	1.3125	1-5/16	1-1/16	1-13/32	10424-0110	—
	1.3750	1-3/8	1-1/16	1-13/32	10424-0112	—
	1.4375	1-7/16	1-1/16	1-13/32	10424-0114	—
	1.5000	1-1/2	1-1/16	1-13/32	10424-0116	11224-0116

Inserts sold in quantities of 1.



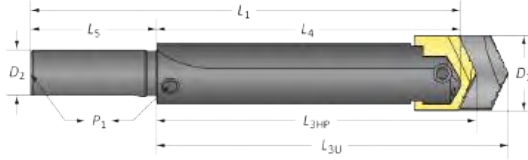
Sizes not shown are available upon request. Example:

Inch:	1-21/64", High Performance (B series), TiN = 1022T-1.3281
Decimal:	1.4500", High Performance (B series), TiN = 1022T-1.4500



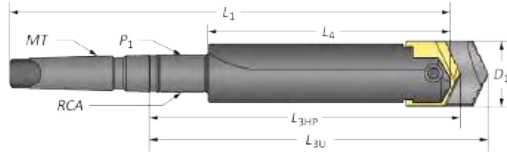
B Series: 1.2500" - 1.7500"

High Performance / Universal Insert Holders



Straight Shank Holders

Body						Shank				Part No.
Length	L_{3HP}	L_{3U}	L_4	L_1	L_5	D_2	P_1	Style		
1	Short	3.781	4.094	3.500	7.000	3.500	1	—	#150	20421-1000
	Short	3.781	4.094	3.500	7.000	3.500	1	1/4 NPT	#100	20621-1000
	Short	3.781	4.094	3.500	7.000	3.500	1-1/4	1/4 NPT	#100	20621-1250
	Short	3.781	4.094	3.500	7.000	3.500	1-1/2	1/4 NPT	#100	20621-1500
	Standard	8.406	8.719	8.125	11.625	3.500	1	1/4 NPT	#200	20821-1000
	Standard	8.406	8.719	8.125	11.625	3.500	1-1/4	1/4 NPT	#200	20821-1250
	Standard	8.406	8.719	8.125	11.625	3.500	1-1/2	1/4 NPT	#200	20821-1500
	Long	15.281	15.594	15.000	18.500	3.500	1-1/4	1/4 NPT	#250	21021-1250



Taper Shank Holders

①	Body					Shank			Style	Part No.
	Length	L_{3HP}	L_{3U}	L_4	L_1	MT	P_1	RCA		
	Short	3.969	4.281	3.500	7.375	#3 MT	—	—	#300	21421-0003
	Short	4.031	4.344	3.500	8.375	#4 MT	—	—	#300	21421-0004
	Short	4.031	4.344	3.500	8.375	#4 MT	—	—	#300 TSC	21521-0004*
	Short	5.719	6.031	3.500	10.063	#4 MT	1/4 NPT	2T-4SR	#400 SR	21621-0004
	Standard	10.344	10.656	8.125	14.688	#4 MT	1/4 NPT	2T-4SR	#500 SR	21821-0004
	Long	17.219	17.531	15.000	21.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	22021-0004
	XL	24.219	24.531	22.000	28.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	22221-0004

*Through-shank coolant, coolant inlet diameter = 5/16".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L_1	Driving Rod Thread	P_1	Part No.	Kit Part No.	RCA O-Rings
1.250	2.500	1.375	3/8" - 16	1/4 NPT	2T-4SR	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	2T-5SR	2T1-5SR	2T1-5OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772098-1	3/16"	—	—	710006-1	7/32"	710006-1	7/32"

i = Imperial (in)

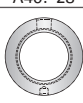
m = Metric (mm)

O-rings sold in packs of 10.

Key on A40: 2



A40: 28

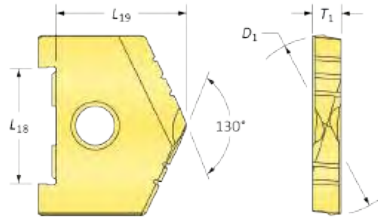


WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



C Series: 1.5000" - 2.3750"

High Performance Inserts



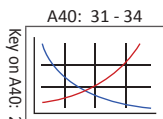
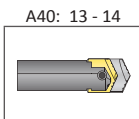
A40

Series	D ₁ inch		Inserts				
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No. TiN	Part No. TiAlN	Part No. TiCN
C	1.5000	1-1/2	1-1/4	1-19/64	1023T-0116	1023A-0116	1023N-0116
	1.5313	1-17/32	1-1/4	1-19/64	1023T-0117	1023A-0117	1023N-0117
	1.5625	1-9/16	1-1/4	1-19/64	1023T-0118	1023A-0118	1023N-0118
	1.5938	1-19/32	1-1/4	1-19/64	1023T-0119	1023A-0119	1023N-0119
	1.6250	1-5/8	1-1/4	1-19/64	1023T-0120	1023A-0120	1023N-0120
	1.6563	1-21/32	1-1/4	1-19/64	1023T-0121	1023A-0121	1023N-0121
	1.6875	1-11/16	1-1/4	1-19/64	1023T-0122	1023A-0122	1023N-0122
	1.7188	1-23/32	1-1/4	1-19/64	1023T-0123	1023A-0123	1023N-0123
	1.7500	1-3/4	1-1/4	1-19/64	1023T-0124	1023A-0124	1023N-0124
	1.7813	1-25/32	1-1/4	1-19/64	1023T-0125	1023A-0125	1023N-0125
	1.8125	1-13/16	1-1/4	1-19/64	1023T-0126	1023A-0126	1023N-0126
	1.8438	1-27/32	1-1/4	1-19/64	1023T-0127	1023A-0127	1023N-0127
	1.8750	1-7/8	1-1/4	1-19/64	1023T-0128	1023A-0128	1023N-0128
	1.9063	1-29/32	1-1/4	1-19/64	1023T-0129	1023A-0129	1023N-0129
C Oversize	1.9375	1-15/16	1-1/4	1-19/64	1023T-0130	1023A-0130	1023N-0130
	1.9688	1-31/32	1-1/4	1-19/64	1023T-0131	1023A-0131	1023N-0131
	2.0000	2	1-1/4	1-19/64	1023T-0200	1023A-0200	1023N-0200
	2.0313	2-1/32	1-1/4	1-19/64	1023T-0201	1023A-0201	1023N-0201
	2.0625	2-1/16	1-1/4	1-19/64	1023T-0202	1023A-0202	1023N-0202
	2.0938	2-3/32	1-1/4	1-19/64	1023T-0203	1023A-0203	1023N-0203
	2.1250	2-1/8	1-1/4	1-19/64	1023T-0204	1023A-0204	1023N-0204
	2.1563	2-5/32	1-1/4	1-19/64	1023T-0205	1023A-0205	1023N-0205
	2.1875	2-3/16	1-1/4	1-19/64	1023T-0206	1023A-0206	1023N-0206
	2.2188	2-7/32	1-1/4	1-19/64	1023T-0207	1023A-0207	1023N-0207
	2.2500	2-1/4	1-1/4	1-19/64	1023T-0208	1023A-0208	1023N-0208
	2.2813	2-9/32	1-1/4	1-19/64	1023T-0209	1023A-0209	1023N-0209
	2.3125	2-5/16	1-1/4	1-19/64	1023T-0210	1023A-0210	1023N-0210
	2.3438	2-11/32	1-1/4	1-19/64	1023T-0211	1023A-0211	1023N-0211
	2.3750	2-3/8	1-1/4	1-19/64	1023T-0212	1023A-0212	1023N-0212

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

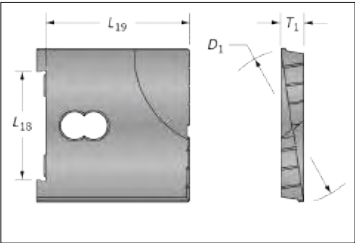
Inch:	1-63/64", High Performance (C series), TiN = 1023T-1.9844
Decimal:	1.9763", High Performance (C series), TiN = 1023T-1.9763



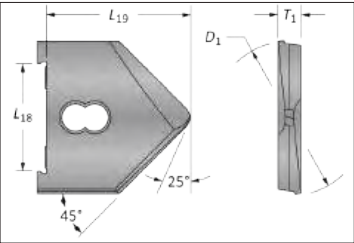


C Series: 1.5000" - 2.3750"

Universal Inserts



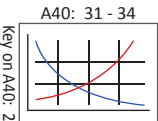
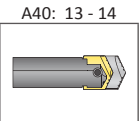
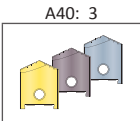
Flat Bottom



90° Spot & Chamfer

Series	D_1 inch		Inserts		Flat Bottom	90° Spot & Chamfer
						
	Decimal	Fractional Equivalent	L_{18}	L_{19}	Part No.	Part No.
C	1.5000	1-1/2	1-1/4	2	10434-0116	—
	1.5625	1-9/16	1-1/4	2	10434-0118	—
	1.6250	1-5/8	1-1/4	2	10434-0120	—
	1.6875	1-11/16	1-1/4	2	10434-0122	—
	1.7500	1-3/4	1-1/4	2	10434-0124	—
	1.8125	1-13/16	1-1/4	2	10434-0126	—
	1.8750	1-7/8	1-1/4	2	10434-0128	—
	1.9375	1-15/16	1-1/4	2	10434-0130	—
	2.0000	2	1-1/4	2	10434-0200	11234-0200

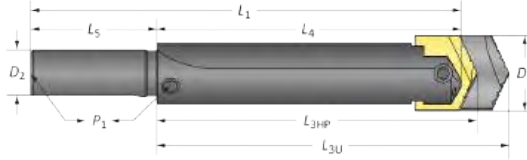
A40



Inserts sold in quantities of 1.

**C Series: 1.5000" - 2.3750"**

High Performance / Universal Insert Holders

**Straight Shank Holders**

Body						Shank				Part No.
Length	L _{3HP}	L _{3U}	L ₄	L ₁	L ₅	D ₂	P ₁	Style		
Stub	2.297	3.000	2.000	6.000	4.000	1-1/2	—	#125	20231-1500	
Short	4.297	5.000	4.000	8.000	4.000	1-1/4	—	#150	20431-1250	
Short	4.297	5.000	4.000	8.000	4.000	1-1/4	1/4 NPT	#100	20631-1250	
Short	4.297	5.000	4.000	8.000	4.000	1-1/2	1/4 NPT	#100	20631-1500	
Standard	8.797	9.500	8.500	12.500	4.000	1-1/4	1/4 NPT	#200	20831-1250	
Standard	8.797	9.500	8.500	12.500	4.000	1-1/2	1/4 NPT	#200	20831-1500	
Long	18.297	19.000	18.000	22.000	4.000	1-1/2	1/4 NPT	#250	21031-1500	

A40

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772074-1	5/64"	—	—	710004-1	5/32"	710006-1	7/32"

i = Imperial (in)**m** = Metric (mm)

O-rings sold in packs of 10.

A40: 11 - 12



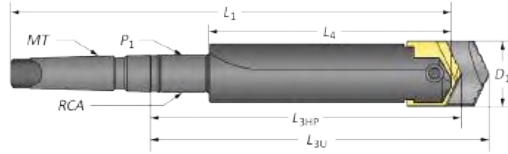
Key on A40: 2

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



C Series: 1.5000" - 2.3750"

High Performance / Universal Insert Holders



Taper Shank Holders

Body						Shank				
Length	L_{3HP}	L_{3U}	L_4	L_1	MT	P_1	RCA	Style	Part No.	
Short	4.547	5.250	4.000	8.875	#4 MT	—	—	#300	21431-0004	
Short	4.547	5.250	4.000	8.875	#4 MT	—	—	#300 TSC	21531-0004*	
Short	4.547	5.250	4.000	10.125	#5 MT	—	—	#300 TSC	21531-0005*	
Short	6.234	6.938	4.000	10.563	#4 MT	1/4 NPT	2T-4SR	#400 SR	21631-0004	
①	Standard	10.734	11.438	8.500	15.063	#4 MT	1/4 NPT	2T-4SR	#500 SR	21831-0004
	Standard	10.734	11.438	8.500	16.313	#5 MT	1/4 NPT	2T-5SR	#500 SR	21831-0005
	Long	20.234	20.938	18.000	24.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	⚠ 22031-0004
	Long	20.234	20.938	18.000	25.813	#5 MT	1/4 NPT	2T-5SR	#600 SR	⚠ 22031-0005
	XL	28.234	28.938	26.000	32.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	⚠ 22231-0004
	XL	28.234	28.938	26.000	33.813	#5 MT	1/4 NPT	2T-5SR	#700 SR	⚠ 22231-0005

*Through-shank coolant, coolant inlet diameter = 5/16".

A40

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	2T-4SR	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	2T-5SR	2T1-5SR	2T1-5OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

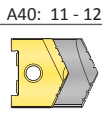
Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
				Part No.	Key	Part No.	Key
772100-1	3/16"	—	—	710006-1	7/32"	710006-1	7/32"

i = Imperial (in)

m = Metric (mm)

O-rings sold in packs of 10.

Key on A40: 2



A40: 28



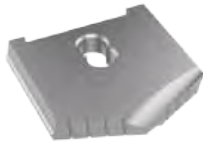
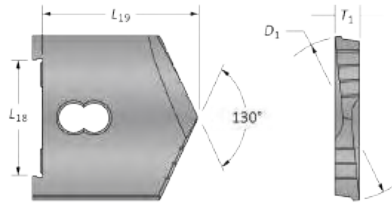
WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



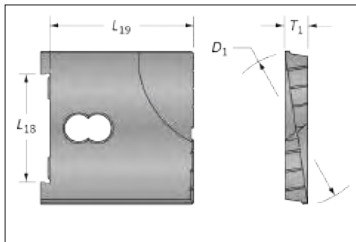
D Series: 2.0000" - 2.8750"

Universal Inserts

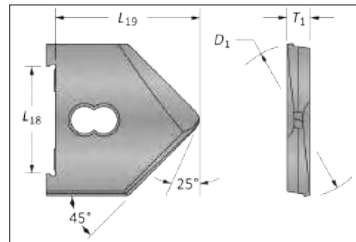


A40

Series	D ₁ inch		Inserts			Flat Bottom	90° Spot & Chamfer
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.	Part No.
					Uncoated	Uncoated	Uncoated
D	2	2.0000	1-3/4	2-3/8	10244-0200	10444-0200	—
	2-1/32	2.0313	1-3/4	2-3/8	10244-0201	—	—
	2-1/16	2.0625	1-3/4	2-3/8	10244-0202	10444-0202	—
	2-3/32	2.0938	1-3/4	2-3/8	10244-0203	—	—
	2-1/8	2.1250	1-3/4	2-3/8	10244-0204	10444-0204	—
	2-5/32	2.1563	1-3/4	2-3/8	10244-0205	—	—
	2-3/16	2.1875	1-3/4	2-3/8	10244-0206	10444-0206	—
	2-7/32	2.2188	1-3/4	2-3/8	10244-0207	—	—
	2-1/4	2.2500	1-3/4	2-3/8	10244-0208	10444-0208	—
	2-9/32	2.2813	1-3/4	2-3/8	10244-0209	—	—
	2-5/16	2.3125	1-3/4	2-3/8	10244-0210	10444-0210	—
	2-11/32	2.3438	1-3/4	2-3/8	10244-0211	—	—
	2-3/8	2.3750	1-3/4	2-3/8	10244-0212	10444-0212	—
	2-13/32	2.4063	1-3/4	2-3/8	10244-0213	—	—
	2-7/16	2.4375	1-3/4	2-3/8	10244-0214	10444-0214	—
	2-15/32	2.4688	1-3/4	2-3/8	10244-0215	—	—
2-1/2	2.5000	1-3/4	2-3/8	10244-0216	10444-0216	11244-0216	
D Oversize	2-17/32	2.5313	1-3/4	2-3/8	10244-0217	—	—
	2-9/16	2.5625	1-3/4	2-3/8	10244-0218	—	—
	2-19/32	2.5938	1-3/4	2-3/8	10244-0219	—	—
	2-5/8	2.6250	1-3/4	2-3/8	10244-0220	—	—
	2-21/32	2.6563	1-3/4	2-3/8	10244-0221	—	—
	2-11/16	2.6875	1-3/4	2-3/8	10244-0222	—	—
	2-23/32	2.7188	1-3/4	2-3/8	10244-0223	—	—
	2-3/4	2.7500	1-3/4	2-3/8	10244-0224	—	—
	2-25/35	2.7813	1-3/4	2-3/8	10244-0225	—	—
	2-13/16	2.8125	1-3/4	2-3/8	10244-0226	—	—
	2-27/32	2.8438	1-3/4	2-3/8	10244-0227	—	—
	2-7/8	2.8750	1-3/4	2-3/8	10244-0228	—	—



Flat Bottom

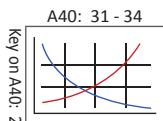
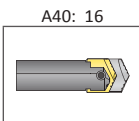


90° Spot & Chamfer

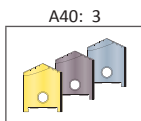
Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

Inch:	2-21/64", Universal (D series), 130° CPM-M4 = 10244-2.3281
Decimal:	2.4500", Universal (D series), 130° CPM-M4 = 10244-2.4500



A40: 16

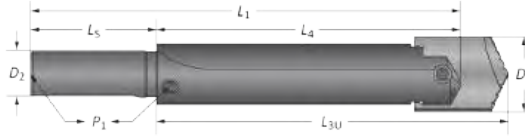


A40: 3



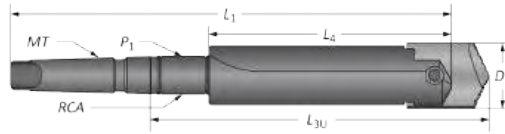
D Series: 2.0000" - 2.8750"

Universal Insert Holders



Straight Shank Holders

	Body				Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	L ₅	D ₂	P ₁		
i	Stub	3.250	2.250	6.250	4.000	1-1/2	—	#125	20241-1500
	Short	5.500	4.500	8.500	4.000	1-1/2	—	#150	20441-1500
	Short	5.500	4.500	8.500	4.000	1-1/2	1/4 NPT	#100	20641-1500
	Standard	10.000	9.000	13.000	4.000	1-1/2	1/4 NPT	#200	20841-1500
	Long	19.000	18.000	22.000	4.000	1-1/2	1/4 NPT	#250	21041-1500



Taper Shank Holders

	Body				Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	MT	P ₁	RCA		
i	Short	5.750	4.500	9.375	#4 MT	—	—	#300	21441-0004
	Short	5.750	4.500	10.625	#5 MT	—	—	#300	21441-0005
	Short	5.750	4.500	9.375	#4 MT	—	—	#300 TSC	21541-0004*
	Short	7.438	4.500	11.063	#4 MT	1/4 NPT	2T-4SR	#400 SR	21641-0004
	Standard	11.938	9.000	15.563	#4 MT	1/4 NPT	2T-4SR	#500 SR	21841-0004
	Standard	11.938	9.000	16.813	#5 MT	1/4 NPT	2T-5SR	#500 SR	21841-0005
	Long	20.938	18.000	24.563	#4 MT	1/4 NPT	2T-4SR	#600 SR	22041-0004
	Long	20.938	18.000	25.813	#5 MT	1/4 NPT	2T-5SR	#600 SR	22041-0005
	XL	30.938	28.000	34.563	#4 MT	1/4 NPT	2T-4SR	#700 SR	22241-0004
	XL	30.938	28.000	35.813	#5 MT	1/4 NPT	2T-5SR	#700 SR	22241-0005

*Through-shank coolant, coolant inlet diameter = 5/16".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
1.250	2.500	1.375	3/8" - 16	1/4 NPT	2T-4SR	2T1-4SR	2T1-4OR-10
1.750	3.000	1.375	3/8" - 16	1/4 NPT	2T-5SR	2T1-5SR	2T1-5OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772160-1	7/16"	724050-1	1/8"	710006-1	7/32"	710006-1	7/32"

i = Imperial (in)

m = Metric (mm)

O-rings sold in packs of 10.

A40: 15



A40: 28



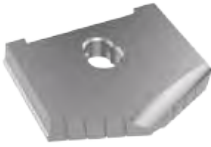
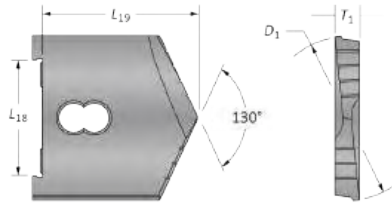
WARNING

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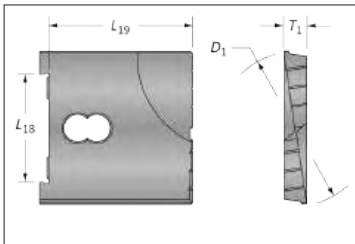
E Series: 2.5000" - 3.3750"

Universal Inserts

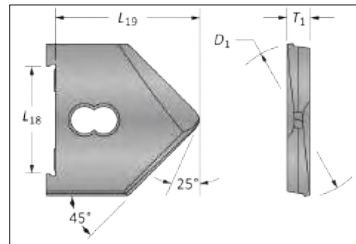


A40

Series	D_1 inch		Inserts		 Part No.	 Part No.	 Part No.
	Decimal	Fractional Equivalent	L_{18}	L_{19}	Uncoated	Uncoated	Uncoated
E	2-1/2	2.5000	2-1/16	2-5/8	10254-0216	10454-0216	—
	2-17/32	2.5313	2-1/16	2-5/8	10254-0217	—	—
	2-9/16	2.5625	2-1/16	2-5/8	10254-0218	10454-0218	—
	2-19/32	2.5938	2-1/16	2-5/8	10254-0219	—	—
	2-5/8	2.6250	2-1/16	2-5/8	10254-0220	10454-0220	—
	2-21/32	2.6563	2-1/16	2-5/8	10254-0221	—	—
	2-11/16	2.6875	2-1/16	2-5/8	10254-0222	10454-0222	—
	2-23/32	2.7188	2-1/16	2-5/8	10254-0223	—	—
	2-3/4	2.7500	2-1/16	2-5/8	10254-0224	10454-0224	—
	2-25/32	2.7813	2-1/16	2-5/8	10254-0225	—	—
	2-13/16	2.8125	2-1/16	2-5/8	10254-0226	10454-0226	—
	2-27/32	2.8438	2-1/16	2-5/8	10254-0227	—	—
	2-7/8	2.8750	2-1/16	2-5/8	10254-0228	10454-0228	—
	2-29/32	2.9063	2-1/16	2-5/8	10254-0229	—	—
	2-15/16	2.9375	2-1/16	2-5/8	10254-0230	10454-0230	—
	2-31/32	2.9688	2-1/16	2-5/8	10254-0231	—	—
E Oversize	3	3.0000	2-1/16	2-5/8	10254-0300	10454-0300	11254-0300
	3-1/32	3.0313	2-1/16	2-5/8	10254-0301	—	—
	3-1/16	3.0625	2-1/16	2-5/8	10254-0302	—	—
	3-3/32	3.0938	2-1/16	2-5/8	10254-0303	—	—
	3-1/8	3.1250	2-1/16	2-5/8	10254-0304	—	—
	3-5/32	3.1563	2-1/16	2-5/8	10254-0305	—	—
	3-3/16	3.1875	2-1/16	2-5/8	10254-0306	—	—
	3-7/32	3.2188	2-1/16	2-5/8	10254-0307	—	—
	3-1/4	3.2500	2-1/16	2-5/8	10254-0308	—	—
	3-9/32	3.2813	2-1/16	2-5/8	10254-0309	—	—
	3-5/16	3.3125	2-1/16	2-5/8	10254-0310	—	—
	3-11/32	3.3438	2-1/16	2-5/8	10254-0311	—	—
	3-3/8	3.3750	2-1/16	2-5/8	10254-0312	—	—



Flat Bottom

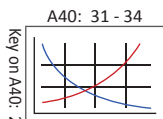
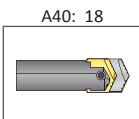
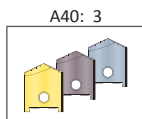


90° Spot & Chamfer

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

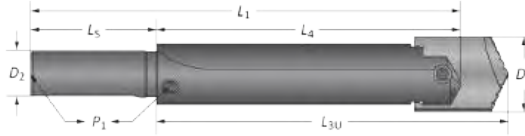
Inch:	2-63/64", Universal (E series), 130° CPM-M4 = 10254-2.9844
Decimal:	2.9763", Universal (E series), 130° CPM-M4 = 10254-2.9763





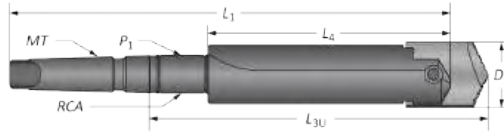
E Series: 2.5000" - 3.3750"

Universal Insert Holders



Straight Shank Holders

	Body				Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	L ₅	D ₂	P ₁		
i	Stub	3.563	2.500	6.500	4.000	2	—	#125	20251-2000
	Short	6.063	5.000	9.000	4.000	1-3/4	—	#150	20451-1750
	Short	6.063	5.000	9.000	4.000	1-3/4	1/2 NPT	#100	20651-1750
	Standard	11.063	10.000	14.000	4.000	2	1/2 NPT	#200	20851-2000
	Long	21.063	20.000	24.000	4.000	2	1/2 NPT	#250	21051-2000



Taper Shank Holders

	Body				Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	MT	P ₁	RCA		
i	Short	6.313	5.000	9.875	#4 MT	—	—	#300	21451-0004
	Short	6.313	5.000	11.125	#5 MT	—	—	#300	21451-0005
	Short	6.313	5.000	11.125	#5 MT	—	—	#300 TSC	21551-0005*
	Short	6.626	5.000	13.438	#5 MT	1/2 NPT	2T-6SR	#400 SR	21651-0005
	Standard	13.626	10.000	18.438	#5 MT	1/2 NPT	2T-6SR	#500 SR	21851-0005
	Long	23.626	20.000	28.438	#5 MT	1/2 NPT	2T-6SR	#600 SR	22051-0005
	XL	33.626	30.000	38.438	#5 MT	1/2 NPT	2T-6SR	#700 SR	22251-0005

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	2T-6SR	2T1-6SR	2T1-6OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772232-1	3/8"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"

i = Imperial (in)

m = Metric (mm)

O-rings sold in packs of 10.

A40: 17



A40: 28

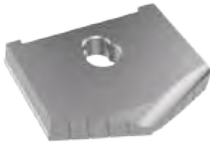
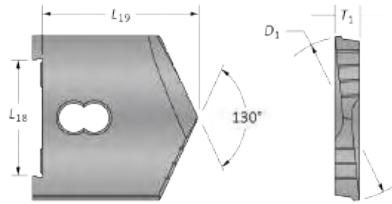


WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



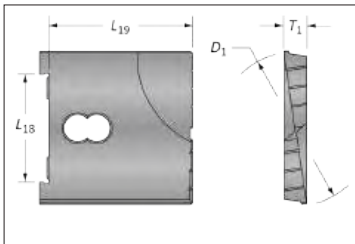
F Series: 3.0000" - 3.8750"

Universal Inserts

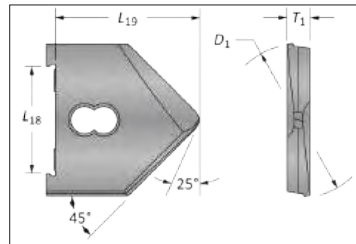


A40

Series	D ₁ inch		Inserts			
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.
					Uncoated	Uncoated
F	3	3.0000	2-5/8	3-1/8	10264-0300	10464-0300
	3-1/32	3.0313	2-5/8	3-1/8	10264-0301	—
	3-1/16	3.0625	2-5/8	3-1/8	10264-0302	10464-0302
	3-3/32	3.0938	2-5/8	3-1/8	10264-0303	—
	3-1/8	3.1250	2-5/8	3-1/8	10264-0304	10464-0304
	3-5/32	3.1563	2-5/8	3-1/8	10264-0305	—
	3-3/16	3.1875	2-5/8	3-1/8	10264-0306	10464-0306
	3-7/32	3.2188	2-5/8	3-1/8	10264-0307	—
	3-1/4	3.2500	2-5/8	3-1/8	10264-0308	—
	3-9/32	3.2813	2-5/8	3-1/8	10264-0309	—
	3-5/16	3.3125	2-5/8	3-1/8	10264-0310	10464-0310
	3-11/32	3.3438	2-5/8	3-1/8	10264-0311	—
	3-3/8	3.3750	2-5/8	3-1/8	10264-0312	—
	3-13/32	3.4063	2-5/8	3-1/8	10264-0313	—
	3-7/16	3.4375	2-5/8	3-1/8	10264-0314	10464-0314
	3-15/32	3.4688	2-5/8	3-1/8	10264-0315	—
	3-1/2	3.5000	2-5/8	3-1/8	10264-0316	10464-0316
F Oversize	3-17/32	3.5313	2-5/8	3-1/8	10264-0317	—
	3-9/16	3.5625	2-5/8	3-1/8	10264-0318	—
	3-19/32	3.5938	2-5/8	3-1/8	10264-0319	—
	3-5/8	3.6250	2-5/8	3-1/8	10264-0320	—
	3-21/32	3.6563	2-5/8	3-1/8	10264-0321	—
	3-11/16	3.6875	2-5/8	3-1/8	10264-0322	—
	3-23/32	3.7188	2-5/8	3-1/8	10264-0323	—
	3-3/4	3.7500	2-5/8	3-1/8	10264-0324	—
	3-25/32	3.7813	2-5/8	3-1/8	10264-0325	—
	3-13/16	3.8125	2-5/8	3-1/8	10264-0326	—
	3-27/32	3.8438	2-5/8	3-1/8	10264-0327	—
	3-7/8	3.8750	2-5/8	3-1/8	10264-0328	—



Flat Bottom

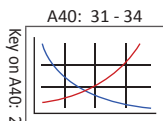
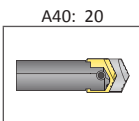


90° Spot & Chamfer

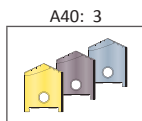
Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

Inch:	3-21/64", Universal (F series), 130° CPM-M4 = 10264-3.3281
Decimal:	3.4500", Universal (F series), 130° CPM-M4 = 10264-3.4500



A40: 20

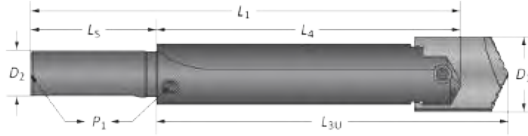


A40: 3



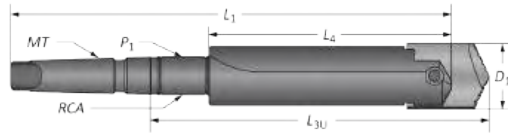
F Series: 3.0000" - 3.8750"

Universal Insert Holders



Straight Shank Holders

Length	Body			Shank				Style	Part No.
	L _{3U}	L ₄	L ₁	L ₅	D ₂	P ₁			
Stub	4.000	2.750	6.750	4.000	2-1/2	—		#125	20261-2500
Short	6.750	5.500	9.500	4.000	2	—		#150	20461-2000
Short	6.750	5.500	9.500	4.000	2	1/2 NPT		#100	20661-2000
Short	6.750	5.500	9.500	4.000	2-1/2	1/2 NPT		#100	20661-2500
Standard	12.750	11.500	15.500	4.000	2	1/2 NPT		#200	20861-2000
Long	21.250	20.000	24.000	4.000	2-1/2	1/2 NPT		#250	21061-2500



Taper Shank Holders

Length	Body			Shank			Style	Part No.
	L _{3U}	L ₄	L ₁	MT	P ₁	RCA		
Short	7.000	5.500	11.625	#5 MT	—	—	#300	21461-0005
Short	7.000	5.500	11.625	#5 MT	—	—	#300 TSC	21561-0005*
Short	9.313	5.500	13.938	#5 MT	1/2 NPT	2T-6SR	#400 SR	21661-0005
Standard	15.313	11.500	19.938	#5 MT	1/2 NPT	2T-6SR	#500 SR	21861-0005
Long	23.813	20.000	28.438	#5 MT	1/2 NPT	2T-6SR	#600 SR	22061-0005
XL	36.813	33.000	41.438	#5 MT	1/2 NPT	2T-6SR	#700 SR	22261-0005

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	2T-6SR	2T1-6SR	2T1-6OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

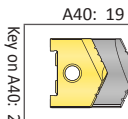
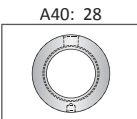
Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
				Part No.	Key	Part No.	Key
772272-1	7/16"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"

i = Imperial (in)

m = Metric (mm)

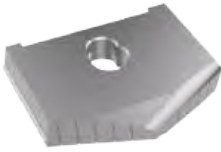
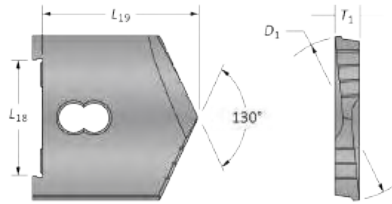
O-rings sold in packs of 10.



WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

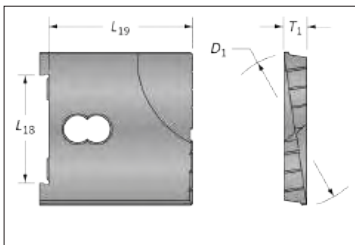
**G Series: 3.5000" - 4.5000"**

Universal Inserts

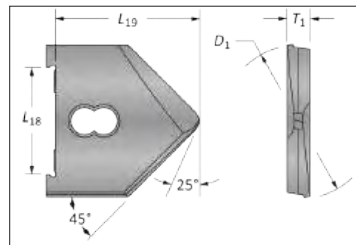


A40

Series	D ₁ inch		Inserts			Flat Bottom
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	
					Uncoated	Part No.
G	3-1/2	3.5000	3-1/16	3-3/8	10274-0316	10474-0316
	3-17/32	3.5313	3-1/16	3-3/8	10274-0317	—
	3-9/16	3.5625	3-1/16	3-3/8	10274-0318	10474-0318
	3-19/32	3.5938	3-1/16	3-3/8	10274-0319	—
	3-5/8	3.6250	3-1/16	3-3/8	10274-0320	10474-0320
	3-21/32	3.6563	3-1/16	3-3/8	10274-0321	—
	3-11/16	3.6875	3-1/16	3-3/8	10274-0322	10474-0322
	3-23/32	3.7188	3-1/16	3-3/8	10274-0323	—
	3-3/4	3.7500	3-1/16	3-3/8	10274-0324	10474-0324
	3-25/32	3.7813	3-1/16	3-3/8	10274-0325	—
	3-13/16	3.8125	3-1/16	3-3/8	10274-0326	10474-0326
	3-27/32	3.8438	3-1/16	3-3/8	10274-0327	—
	3-7/8	3.8750	3-1/16	3-3/8	10274-0328	10474-0328
	3-29/32	3.9063	3-1/16	3-3/8	10274-0329	—
	3-15/16	3.9375	3-1/16	3-3/8	10274-0330	10474-0330
	3-31/32	3.9688	3-1/16	3-3/8	10274-0331	—
G Oversize	4	4.0000	3-1/16	3-3/8	10274-0400	10474-0400
	4-1/16	4.0625	3-1/16	3-3/8	10274-0402	—
	4-1/8	4.1250	3-1/16	3-3/8	10274-0404	—
	4-3/16	4.1875	3-1/16	3-3/8	10274-0406	—
	4-1/4	4.2500	3-1/16	3-3/8	10274-0408	—
	4-5/16	4.3125	3-1/16	3-3/8	10274-0410	—
	4-3/8	4.3750	3-1/16	3-3/8	10274-0412	—
	4-7/16	4.4375	3-1/16	3-3/8	10274-0414	—
	4-1/2	4.5000	3-1/16	3-3/8	10274-0416	—



Flat Bottom

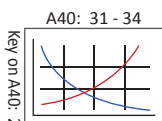
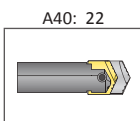
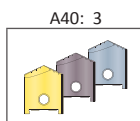


90° Spot & Chamfer

Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

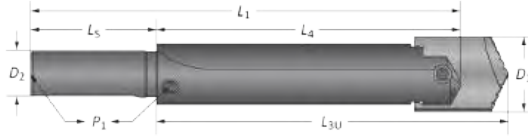
Inch:	3-63/64", Universal (G series), 130° CPM-M4 = 10274-3.9844
Decimal:	3.9763", Universal (G series), 130° CPM-M4 = 10274-3.9763





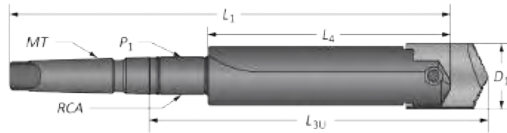
G Series: 3.5000" - 4.5000"

Universal Insert Holders



Straight Shank Holders

	Body			Shank				Style	Part No.
	Length	L_{3U}	L_4	L_1	L_5	D_2	P_1		
i	Short	7.438	6.000	11.000	2-1/2	5.000	1/2 NPT	#100	20671-2500
	Standard	14.438	13.000	18.000	2-1/2	5.000	1/2 NPT	#200	20871-2500



Taper Shank Holders

	Body			Shank			Style	Part No.
	Length	L_{3U}	L_4	L_1	MT	P_1	RCA	
i	Short	7.688	6.000	12.125	#5 MT	—	—	#300 21471-0005
	Short	7.688	6.000	12.125	#5 MT	—	—	#300 TSC 21571-0005*
	Short	10.000	6.000	14.438	#5 MT	1/2 NPT	2T-6SR	#400 SR 21671-0005
	Standard	17.000	13.000	21.438	#5 MT	1/2 NPT	2T-6SR	#500 SR 21871-0005
	Long	28.000	24.000	32.438	#5 MT	1/2 NPT	2T-6SR	#600 SR 22071-0005
	XL	41.000	37.000	45.438	#5 MT	1/2 NPT	2T-6SR	#700 SR 22271-0005

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L_1	Driving Rod Thread	P_1	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	2T-6SR	2T1-6SR	2T1-6OR-10

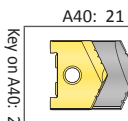
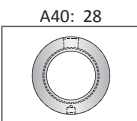
Refer to page A40: 28 for proper RCA assembly and safety information.

Connection Accessories

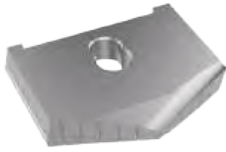
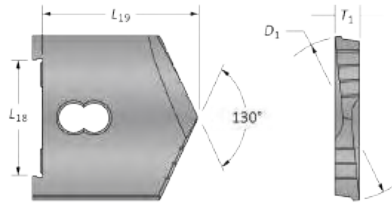
Clamping Screw		Blade-Loc Screw		Pipe Plug			
Part No.	Key	Part No.	Key	Straight Shank		MT Shank (with RCA)	
				Part No.	Key	Part No.	Key
772312-1	5/8"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"

i = Imperial (in)
m = Metric (mm)

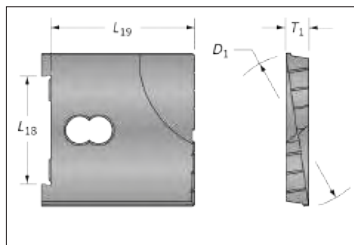
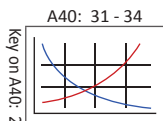
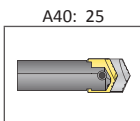
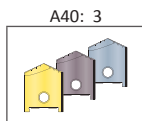
O-rings sold in packs of 10.



WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.

**H Series: 4.0000" - 8.5000"**H¹ - H² Universal Inserts | Diameter Range: 4.0000" - 5.0000"**H¹ - H² Universal Inserts**

Series	D ₁ inch		Inserts			Flat Bottom 
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Part No.	Part No.
					Uncoated	Uncoated
H ¹	4	4.0000	3-1/2	3-11/16	10284-0400	10484-0400
	4-1/16	4.0625	3-1/2	3-11/16	10284-0402	—
	4-1/8	4.1250	3-1/2	3-11/16	10284-0404	10484-0404
	4-3/16	4.1875	3-1/2	3-11/16	10284-0406	—
	4-1/4	4.2500	3-1/2	3-11/16	10284-0408	10484-0408
	4-5/16	4.3125	3-1/2	3-11/16	10284-0410	—
	4-3/8	4.3750	3-1/2	3-11/16	10284-0412	10484-0412
	4-7/16	4.4375	3-1/2	3-11/16	10284-0414	—
H ²	4-1/2	4.5000	3-1/2	3-11/16	10284-0416	10484-0416
	4-9/16	4.5625	3-1/2	3-11/16	10284-0418	—
	4-5/8	4.6250	3-1/2	3-11/16	10284-0420	10484-0420
	4-11/16	4.6875	3-1/2	3-11/16	10284-0422	—
	4-3/4	4.7500	3-1/2	3-11/16	10284-0424	10484-0424
	4-13/16	4.8125	3-1/2	3-11/16	10284-0426	—
	4-7/8	4.8750	3-1/2	3-11/16	10284-0428	10484-0428
	4-15/16	4.9375	3-1/2	3-11/16	10284-0430	—
	5	5.0000	3-1/2	3-11/16	10284-0500	10484-0500

**Flat Bottom**

Inserts sold in quantities of 1.

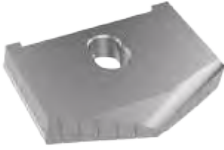
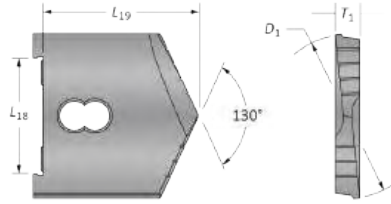
Sizes not shown are available upon request. Example:

Inch:	4-21/64", Universal (H1 series), 130° CPM-M4 = 10284-4.3281
Decimal:	4.4500", Universal (H1 series), 130° CPM-M4 = 10284-4.4500



H Series: 4.0000" - 8.5000"

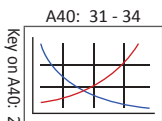
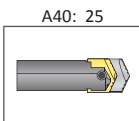
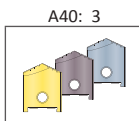
H³ - H⁹ Universal Inserts | Diameter Range: 5.0001" - 8.5000"



H³ - H⁹ Universal Inserts

Series	D ₁ inch		Inserts		Part No.
	Decimal	Fractional Equivalent	L ₁₈	L ₁₉	Uncoated
H ³	5-1/8	5.1250	3-1/2	3-11/16	10294-0504
	5-1/4	5.2500	3-1/2	3-11/16	10294-0508
	5-3/8	5.3750	3-1/2	3-11/16	10294-0512
	5-1/2	5.5000	3-1/2	3-11/16	10294-0516
H ⁴	5-5/8	5.6250	3-1/2	3-11/16	10294-0520
	5-3/4	5.7500	3-1/2	3-11/16	10294-0524
	5-7/8	5.8750	3-1/2	3-11/16	10294-0528
	6	6.0000	3-1/2	3-11/16	10294-0600
H ⁵	6-1/8	6.1250	3-1/2	3-11/16	10294-0604
	6-1/4	6.2500	3-1/2	3-11/16	10294-0608
	6-3/8	6.3750	3-1/2	3-11/16	10294-0612
	6-1/2	6.5000	3-1/2	3-11/16	10294-0616
H ⁶	6-5/8	6.6250	3-1/2	3-11/16	10294-0620
	6-3/4	6.7500	3-1/2	3-11/16	10294-0624
	6-7/8	6.8750	3-1/2	3-11/16	10294-0628
	7	7.0000	3-1/2	3-11/16	10294-0700
H ⁷	7-1/8	7.1250	3-1/2	3-11/16	10294-0704
	7-1/4	7.2500	3-1/2	3-11/16	10294-0708
	7-3/8	7.3750	3-1/2	3-11/16	10294-0712
	7-1/2	7.5000	3-1/2	3-11/16	10294-0716
H ⁸	7-5/8	7.6250	3-1/2	3-11/16	10294-0720
	7-3/4	7.7500	3-1/2	3-11/16	10294-0724
	7-7/8	7.8750	3-1/2	3-11/16	10294-0728
	8	8.0000	3-1/2	3-11/16	10294-0800
H ⁹	8-1/8	8.1250	3-1/2	3-11/16	10294-0804
	8-1/4	8.2500	3-1/2	3-11/16	10294-0808
	8-3/8	8.3750	3-1/2	3-11/16	10294-0812
	8-1/2	8.5000	3-1/2	3-11/16	10294-0816

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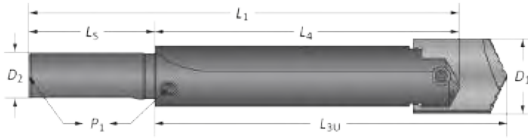
Inserts sold in quantities of 1.

Sizes not shown are available upon request. Example:

Inch:	5-21/64", Universal (H3 series), 130° CPM-M4 = 10294-5.3281
Decimal:	5.4500", Universal (H3 series), 130° CPM-M4 = 10294-5.4500

**H Series: 4.0000" - 8.5000"**

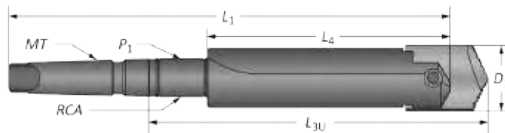
Universal Insert Holders



Straight Shank Holders

	Body			Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	L ₅	D ₂		
i	Short	8.562	7.000	13.000	2-1/2	6.000	#100	20681-2500
	Standard	16.562	15.000	21.000	2-1/2	6.000	#200	20881-2500

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Taper Shank Holders

	Body			Shank			Style	Part No.
	Length	L _{3U}	L ₄	L ₁	MT	P ₁	RCA	
i	Short	8.812	7.000	13.125	#5 MT	—	-	#300 21481-0005
	Short	11.125	7.000	15.438	#5 MT	1/2 NPT	2T-6SR	#400 SR 21681-0005
	Standard	19.125	15.000	23.438	#5 MT	1/2 NPT	2T-6SR	#500 SR 21881-0005
	Standard	19.187	15.000	25.875	#6 MT	1/2 NPT	2T-55SR	#500 SR 21881-0006
	Long	28.187	24.000	34.875	#6 MT	1/2 NPT	2T-55SR	#600 SR 22081-0006
	XL	44.187	40.000	50.875	#6 MT	1/2 NPT	2T-55SR	#700 SR 22281-0006

*Through-shank coolant, coolant inlet diameter = 3/8".

Rotary Coolant Adapter (RCA) and Accessories

ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.	RCA O-Rings	
						Kit Part No.	Replacements
2.250	3.750	1.750	1/2" - 13	1/2 NPT	2T-6SR	2T1-6SR	2T1-6OR-10
2.500	4.000	1.750	1/2" - 13	1/2 NPT	2T-55SR	2T1-55SR	2T1-55OR-10

Refer to page A40: 28 for proper RCA assembly and safety information.

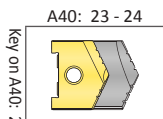
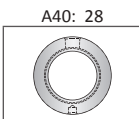
Connection Accessories

Clamping Screw		Blade-Loc Screw		Pipe Plug			
				Straight Shank		MT Shank (with RCA)	
Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
772312-1	5/8"	724062-1	3/16"	710010-1	3/8"	710010-1	3/8"

i = Imperial (in)

m = Metric (mm)

O-rings sold in packs of 10.



WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A40: 35 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering Team.



Notes

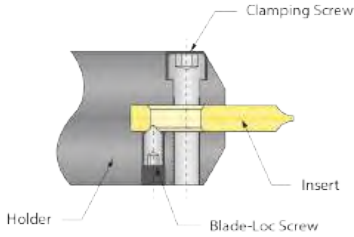
This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

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Accessories

Blade-Loc Drill Insert Holders | Pipe Plugs



Blade-Loc Drill Holders - Universal

- Helps align the spade drill while locking it in place.
- Protects against tool movement during the drilling cycle and when the tool is being retracted from the hole.
- Standard feature in D - H series holders.

Connection Accessories

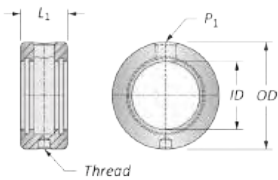
Series	 Clamping Screw		 Blade-Loc Screw		Pipe Plug			
					Straight Shank		MT Shank (with RCA)	
	Part No.	Key	Part No.	Key	Part No.	Key	Part No.	Key
A	772074-1	5/64"	—	—	710004-1	5/32"	710006-1	7/32"
B	772098-1	3/16"	—	—	710006-1	7/32"	710006-1	7/32"
C	772100-1	3/16"	—	—	710006-1	7/32"	710006-1	7/32"
D	772160-1	7/16"	724050-1	1/8"	710006-1	7/32"	710006-1	7/32"
E	772232-1	3/8"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"
F	772272-1	7/16"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"
G	772312-1	5/8"	724050-1	1/8"	710010-1	3/8"	710010-1	3/8"
H	772312-1	5/8"	724062-1	3/16"	710010-1	3/8"	710010-1	3/8"

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Accessories

Rotary Coolant Adapters (RCA)



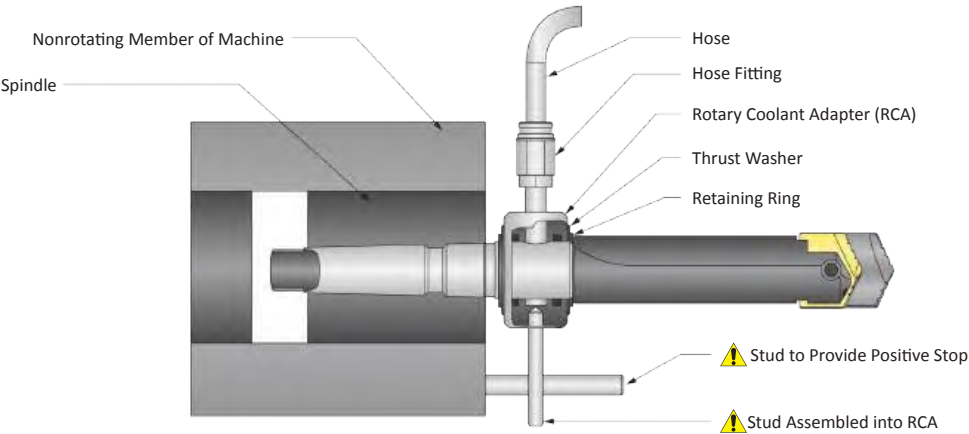
Holder Series	ID	OD	L ₁	Driving Rod Thread	P ₁	Part No.*	Max Recommended RPM	RCA O-Rings	
								Kit Part No.**	Replacements
A, B, C, D	1.250	2.500	1.375	3/8" - 16	1/4 NPT	2T-4SR	2000	2T1-4SR	2T1-4OR-10
B, C, D	1.750	3.000	1.375	3/8" - 16	1/4 NPT	2T-5SR	1500	2T1-5SR	2T1-5OR-10
E, F, G, H	2.250	3.750	1.750	1/2" - 13	1/2 NPT	2T-6SR	1100	2T1-6SR	2T1-6OR-10
H	2.500	4.000	1.750	1/2" - 13	1/2 NPT	2T-5SSR	1100	2T1-5SSR	2T1-55OR-10

*RCA comes complete with (1) RCA, (2) O-rings, (2) snap rings, and (2) thrust washers.

**RCA Repair Kit includes (2) O-rings, (2) snap rings, and (2) thrust washers.

NOTE: Max recommended pressure is 600 PSI (42 bar).

NOTE: Recommendations above are based on water and oil based coolants.



= Imperial (in)

= Metric (mm)

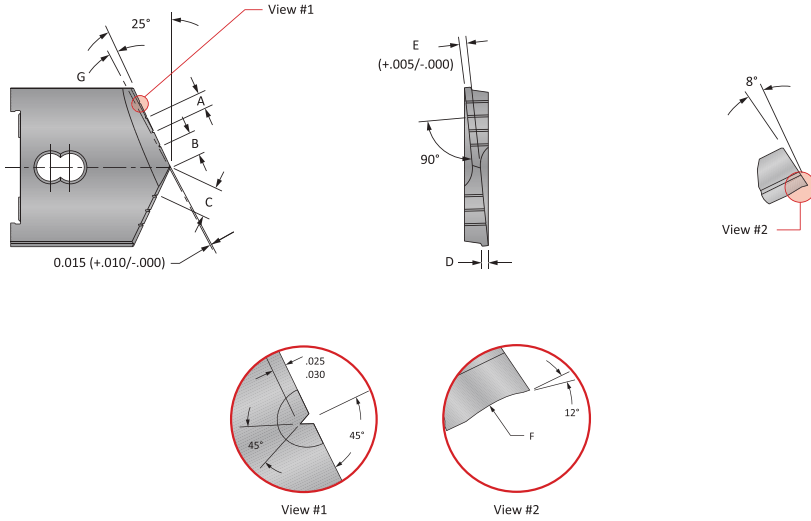
O-rings sold in packs of 10.

⚠ WARNING RCA rotation during drilling can cause hose and/or hose fitting failure, machinery damage, and/or serious injury. To prevent, use RCA and positive stop studs when drilling. Factory technical assistance is also available for your specific applications.



Regrind Charts

Universal Inserts



Universal (130°) Spade Drill Inserts

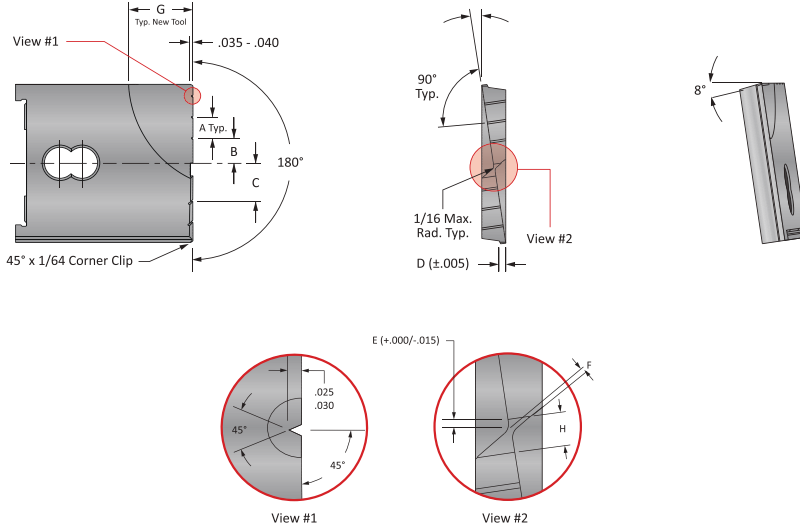
Series	Insert Thickness	Size Range	A	B	C	D	E	F	G
D	3/8	2 - 2-7/8	0.250	0.375	0.500	0.100	0.120	3/8	3°
E	7/16	2-1/2 - 3-3/8	0.300	0.437	0.587	0.100	0.140	3/8	3°
F	1/2	3 - 3-7/8	0.350	0.437	0.612	0.125	0.170	3/8	3°
G	5/8	3-1/2 - 4-1/2	0.350	0.500	0.675	0.140	0.200	3/8	3°
H ¹ - H ²	11/16	4 - 5	0.400	0.500	0.700	0.165	0.225	1/2	3°
H ³	11/16	5-1/8 - 5-1/2	0.500	0.500	0.750	0.185	0.250	1/2	3°
H ⁴ - H ⁹	11/16	5-5/8 - 8-1/2	0.500	0.500	0.750	0.185	0.250	1/2	2°

NOTE: Maintain cutting edges of the tool within 0.001" T.I.R.



Regrind Charts

Universal Inserts



Flat Bottom Spade Drill Inserts

Series	Insert Thickness	Size Range	A	B	C	D	E	F	G	H
A	3/16	31/32 - 1-3/8	0.150	0.250	0.325	0.065	1/64 - 1/32	0.075	7/16	1/8
B	9/32	1-1/4 - 1-3/4	0.200	0.250	0.350	0.070	1/64 - 1/32	0.075	1/2	1/8
C	5/16	1-1/2 - 2-3/8	0.200	0.250	0.350	0.080	1/32 - 3/64	0.075	5/8	1/8
D	3/8	2 - 2-7/8	0.300	0.375	0.525	0.100	1/32 - 3/64	0.129	7/8	3/16
E	7/16	2-1/2 - 3-3/8	0.300	0.375	0.525	0.100	1/32 - 1/16	0.129	1-1/8	3/16
F	1/2	3 - 3-7/8	0.300	0.500	0.650	0.125	1/32 - 1/16	0.156	1-1/4	1/4
G	5/8	3-1/2 - 4-1/2	0.400	0.500	0.700	0.140	1/32 - 1/16	0.156	1-1/2	1/4
H ¹ - H ²	11/16	4 - 5	0.500	0.500	0.750	0.165	1/32 - 1/16	0.156	1-1/2	1/4

NOTE: Grind cutting edge 0.005" above center line at the center of the new tool.

NOTE: Maintain flatness and height across the cutting edges of the tool within 0.001" T.I.R.



Recommended Drilling Data | Imperial (in)

HIGH PERFORMANCE | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	Speed (SFM)			Feed Rate (IPR) by Diameter			
			TiN	TiAlN	TiCN	A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	200	280	260	0.016	0.020	0.023	0.028
		150 - 200	180	260	235	0.016	0.020	0.023	0.028
		200 - 250	160	240	210	0.016	0.020	0.023	0.028
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	170	250	220	0.015	0.019	0.023	0.027
		125 - 175	160	240	210	0.015	0.019	0.023	0.027
		175 - 225	150	225	195	0.014	0.018	0.021	0.024
		225 - 275	140	210	180	0.014	0.018	0.021	0.024
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	160	240	210	0.015	0.019	0.023	0.027
		175 - 225	150	225	195	0.014	0.018	0.021	0.024
		225 - 275	140	210	180	0.014	0.018	0.021	0.024
		275 - 325	130	195	170	0.012	0.016	0.019	0.022
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	150	210	195	0.014	0.017	0.019	0.022
		175 - 225	140	195	180	0.014	0.017	0.019	0.022
		225 - 275	130	180	170	0.014	0.017	0.019	0.022
		275 - 325	120	170	155	0.012	0.015	0.017	0.020
		325 - 375	110	155	145	0.012	0.015	0.017	0.020
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	80	110	100	0.010	0.014	0.017	0.020
		300 - 350	60	85	80	0.010	0.014	0.017	0.020
		350 - 400	50	70	65	0.009	0.012	0.015	0.018
	Structural Steel A36, A285, A516, etc.	100 - 150	140	200	180	0.014	0.018	0.021	0.026
		150 - 250	120	170	155	0.012	0.016	0.019	0.024
		250 - 350	100	140	130	0.010	0.014	0.017	0.020
	Tool Steel H-13, H-21, A-4, O-2, S-3, etc.	150 - 200	80	110	105	0.010	0.012	0.015	0.017
		200 - 250	60	90	85	0.010	0.012	0.015	0.017
M	Stainless Steel 303, 416, 420, 17-4 PH, etc.	135 - 185	75	105	95	0.011	0.014	0.016	0.020
		185 - 275	60	90	80	0.010	0.012	0.014	0.018
K	Cast Iron	120 - 150	170	250	220	0.020	0.024	0.027	0.030
		150 - 200	150	225	195	0.018	0.022	0.025	0.028
		200 - 220	130	195	170	0.016	0.018	0.021	0.024
		220 - 260	110	165	145	0.012	0.014	0.017	0.020
		260 - 320	90	135	120	0.009	0.012	0.014	0.016
N	Aluminum	30	600	850	750	0.020	0.022	0.025	0.025
		180	300	450	400	0.018	0.022	0.025	0.025
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	30	40	35	0.010	0.012	0.015	—
		220 - 310	25	35	30	0.008	0.010	0.012	—

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Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length	
	Long	XL
Speed	0.90	0.80
Feed	—	0.90

Recommended Speed and Feed Example (XL)

Data	• Adjustment Value	= Recommendation for Deep Holes
Speed	200 SFM • 0.80	= 160 SFM
Feed	0.016 IPR • 0.90	= 0.014 IPR

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
 - Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.
- Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Coolant Recommendations | Imperial (in)

HIGH PERFORMANCE HIGH-SPEED STEEL						
			Data by Diameter			
ISO	Material	Data Metrics	A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	Hardness (BHN)	100 - 250	100 - 250	100 - 250	100 - 250
		Coolant Pressure (PSI)	105 - 150	55 - 75	45 - 60	35 - 45
		Coolant Volumetric Flow Rate (GPM)	6.3 - 7.6	15 - 18	31 - 36	47 - 53
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	Hardness (BHN)	85 - 275	85 - 275	85 - 275	85 - 275
		Coolant Pressure (PSI)	80 - 115	45 - 55	35 - 45	30 - 35
		Coolant Volumetric Flow Rate (GPM)	5.5 - 6.6	14 - 15	28 - 31	43 - 46
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	Hardness (BHN)	125 - 325	125 - 325	125 - 325	125 - 325
		Coolant Pressure (PSI)	70 - 100	40 - 50	35 - 40	30 - 35
		Coolant Volumetric Flow Rate (GPM)	5.2 - 6.2	13 - 15	28 - 30	43 - 46
	Alloy Steel 4140, 5140, 8640, etc.	Hardness (BHN)	125 - 375	125 - 375	125 - 375	125 - 375
		Coolant Pressure (PSI)	60 - 85	30 - 40	30 - 35	25 - 30
		Coolant Volumetric Flow Rate (GPM)	4.8 - 5.7	11 - 13	26 - 28	39 - 43
	High-Strength Alloy 4340, 4330V, 300M, etc.	Hardness (BHN)	225 - 400	225 - 400	225 - 400	225 - 400
		Coolant Pressure (PSI)	25 - 30	20 - 25	20 - 25	20 - 25
		Coolant Volumetric Flow Rate (GPM)	3.1 - 3.4	9 - 10	21 - 23	35 - 39
Structural Steel A36, A285, A516, etc.	Hardness (BHN)	100 - 350	100 - 350	100 - 350	100 - 350	
	Coolant Pressure (PSI)	50 - 70	30 - 35	25 - 30	25 - 30	
	Coolant Volumetric Flow Rate (GPM)	4.4 - 5.2	11 - 12	23 - 26	39 - 43	
Tool Steel H-13, H-21, A-4, O-2, S-3, etc.	Hardness (BHN)	150 - 250	150 - 250	150 - 250	150 - 250	
	Coolant Pressure (PSI)	25 - 30	20 - 25	20 - 25	20 - 25	
	Coolant Volumetric Flow Rate (GPM)	3.1 - 3.4	9 - 10	21 - 23	35 - 43	
M	Stainless Steel 303, 416, 420, 17-4 PH, etc.	Hardness (BHN)	135 - 275	135 - 275	135 - 275	135 - 275
		Coolant Pressure (PSI)	50 - 65	30 - 35	25 - 30	25 - 30
		Coolant Volumetric Flow Rate (GPM)	4.4 - 5.0	11 - 12	23 - 26	39 - 43
K	Cast Iron	Hardness (BHN)	120 - 320	120 - 320	120 - 320	120 - 320
		Coolant Pressure (PSI)	40 - 50	25 - 30	25 - 30	20 - 25
		Coolant Volumetric Flow Rate (GPM)	3.9 - 4.4	10 - 11	23 - 26	35 - 43
N	Aluminum	Hardness (BHN)	30 - 180	30 - 180	30 - 180	30 - 180
		Coolant Pressure (PSI)	150 - 220	80 - 115	60 - 80	55 - 70
		Coolant Volumetric Flow Rate (GPM)	7.6 - 9.1	19 - 22	36 - 42	59 - 66
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	Hardness (BHN)	140 - 310	140 - 310	140 - 310	140 - 310
		Coolant Pressure (PSI)	35 - 40	25 - 30	25 - 30	—
		Coolant Volumetric Flow Rate (GPM)	3.6 - 3.9	10 - 11	23 - 26	—

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Deep Hole Drilling Coolant Adjustment Values

	1. Holder Length	
	Long	XL
Pressure and Flow	1.3	2

Recommended Coolant Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Pressure	150 PSI	•	2	=	300 PSI
Flow	6.3 GPM	•	2	=	12.6 GPM

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
 - Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.
- Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at the recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the HP/Universal drilling system will still function at reduced penetration rates. Contact our Application Engineering department for more specific recommendations of coolant requirements and/or speeds and feeds.



Recommended Drilling Data | Imperial (in)

UNIVERSAL | HIGH-SPEED STEEL

ISO	Material	Hardness (BHN)	SFM	Feed Rate (IPR) by Diameter			
				A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	100	0.014	0.016	0.020	0.024
		150 - 200	90	0.013	0.015	0.019	0.022
		200 - 250	80	0.012	0.014	0.018	0.020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	80	0.012	0.015	0.018	0.020
		125 - 175	75	0.012	0.014	0.017	0.020
		175 - 225	60	0.010	0.014	0.016	0.018
		225 - 275	55	0.010	0.013	0.016	0.018
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	65	0.010	0.014	0.018	0.020
		175 - 225	60	0.010	0.014	0.016	0.020
		225 - 275	50	0.008	0.013	0.016	0.018
		275 - 325	45	0.008	0.012	0.014	0.016
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	60	0.010	0.014	0.018	0.020
		175 - 225	55	0.010	0.014	0.016	0.020
		225 - 275	45	0.008	0.013	0.016	0.018
		275 - 325	35	0.008	0.012	0.014	0.016
		325 - 375	30	0.008	0.012	0.014	0.016
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	40	0.008	0.012	0.014	0.016
		300 - 350	30	0.006	0.010	0.014	0.016
		350 - 400	25	0.006	0.008	0.014	0.016
	Structural Steel A36, A285, A516, etc.	100 - 150	70	0.012	0.016	0.018	0.020
		150 - 250	60	0.010	0.014	0.016	0.018
		250 - 350	50	0.008	0.012	0.014	0.016
	Tool Steel H-13, H-21, A-4, O-2, S-3, etc.	150 - 200	50	0.009	0.011	0.014	0.016
		200 - 250	40	0.008	0.010	0.013	0.015
M	Stainless Steel 303, 416, 420, 17-4 PH, etc.	135 - 185	45	0.008	0.012	0.015	0.018
		185 - 275	35	0.007	0.010	0.013	0.016
K	Cast Iron	120 - 150	100	0.016	0.020	0.022	0.025
		150 - 200	80	0.015	0.018	0.020	0.022
		200 - 220	70	0.011	0.014	0.018	0.020
		220 - 260	60	0.008	0.012	0.015	0.017
		260 - 320	45	0.008	0.010	0.012	0.014
N	Aluminum	30	275	0.018	0.026	0.032	0.042
		180	200	0.018	0.026	0.032	0.042
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	20	0.008	0.010	0.012	—
		220 - 310	15	0.007	0.009	0.011	—

A40

Deep Hole Drilling Speed and Feed Adjustment Values

	Holder Length	
	Long	XL
Speed	0.90	0.80
Feed	—	0.90

Recommended Speed and Feed Example (XL)

Data	•	Adjustment Value	=	Recommendation for Deep Holes
Speed	100 SFM	• 0.80	=	80 SFM
Feed	0.016 IPR	• 0.90	=	0.014 IPR

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department. See adjustment examples above.



Coolant Recommendations | Imperial (in)

UNIVERSAL | HIGH-SPEED STEEL

ISO	Material	Data Metrics	Data by Diameter			
			A Series 1" - 1-1/4"	B - C Series 1-1/4" - 2"	C - E Series 2" - 3"	E - H Series 3" - 5"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	Hardness (BHN)	100 - 250	100 - 250	100 - 250	100 - 250
		Coolant Pressure (PSI)	40	25	25	20
		Coolant Volumetric Flow Rate (GPM)	3.9	10	23	35
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	Hardness (BHN)	85 - 275	85 - 275	85 - 275	85 - 275
		Coolant Pressure (PSI)	30	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.4	9	21	35
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	Hardness (BHN)	125 - 325	125 - 325	125 - 325	125 - 325
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Alloy Steel 4140, 5140, 8640, etc.	Hardness (BHN)	125 - 375	125 - 375	125 - 375	125 - 375
		Coolant Pressure (PSI)	20	20	20	20
		Coolant Volumetric Flow Rate (GPM)	2.8	9	21	35
	High-Strength Alloy 4340, 4330V, 300M, etc.	Hardness (BHN)	225 - 400	225 - 400	225 - 400	225 - 400
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
M	Structural Steel A36, A285, A516, etc.	Hardness (BHN)	100 - 350	100 - 350	100 - 350	100 - 350
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Tool Steel H-13, H-21, A-4, O-2, S-3, etc.	Hardness (BHN)	150 - 250	150 - 250	150 - 250	150 - 250
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Stainless Steel 303, 416, 420, 17-4 PH, etc.	Hardness (BHN)	135 - 275	135 - 275	135 - 275	135 - 275
		Coolant Pressure (PSI)	25	25	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	10	21	35
	Cast Iron	Hardness (BHN)	120 - 320	120 - 320	120 - 320	120 - 320
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35
	Aluminum	Hardness (BHN)	30 - 180	30 - 180	30 - 180	30 - 180
		Coolant Pressure (PSI)	55	35	30	30
		Coolant Volumetric Flow Rate (GPM)	4.6	12	26	40
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	Hardness (BHN)	140 - 310	140 - 310	140 - 310	140 - 310
		Coolant Pressure (PSI)	25	20	20	20
		Coolant Volumetric Flow Rate (GPM)	3.1	9	21	35

A40

Deep Hole Drilling Coolant Adjustment Values

	1. Holder Length	
	Long	XL
Pressure and Flow	1.3	2

Recommended Coolant Example (XL)

	Data	•	Adjustment Value	=	Recommendation for Deep Holes
Pressure	150 PSI	•	2	=	300 PSI
Flow	6.3 GPM	•	2	=	12.6 GPM

⚠ WARNING Tool failure can cause serious injury. To prevent:

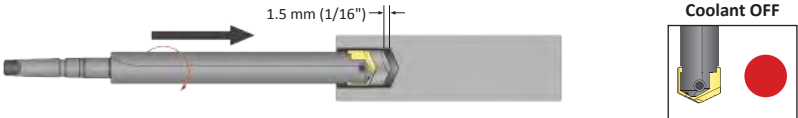
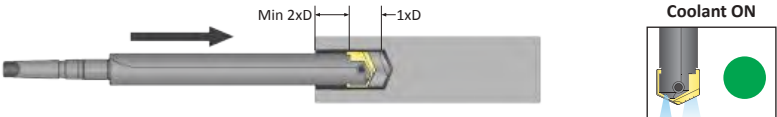
- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
 - Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.
- Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at the recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the HP/Universal drilling system will still function at reduced penetration rates. Contact our Application Engineering department for more specific recommendations of coolant requirements and/or speeds and feeds.



Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	
2. Feed-in  50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.	
6. Drill Retract  50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	

⚠ WARNING

Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short length holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

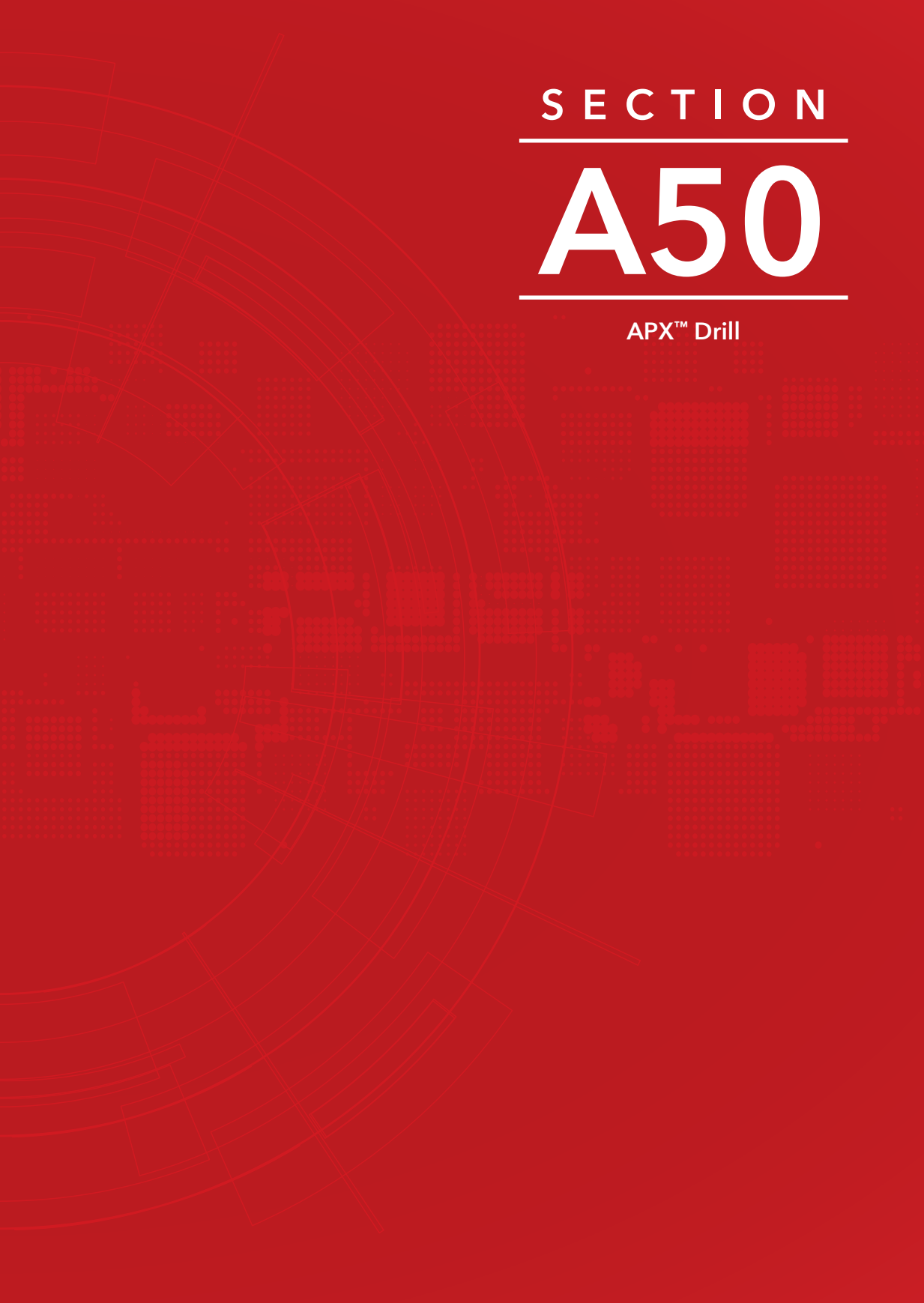
Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Notes

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SECTION

A50

APX™ Drill

APX™ Drill

33.00 mm - 101.60 mm (1.2991" - 4.0001")



APX Drill

The APX deep hole/large diameter drilling system delivers the strength and versatility needed for any deep hole drilling application. The breakthrough geometry is designed to increase penetration rates and tool life. By allowing for higher spindle speeds, the APX lets you take advantage of the power curve on modern CNC machines.

Deep hole/Large diameter | Reliable performance

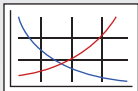
- Improves hole quality and surface finish.
- Provides maximum durability and stability.
- Excellent chip control.

Applicable Industries

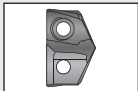
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Structural Steel Fabricator
-  Tool, Mold, and Die

Reference Icons

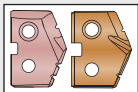
The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



GEN3SYS® Pilot Inserts
Lists the GEN3SYS XT Pro pilot ISO insert options for each APX drill series.



T-A® Pilot Inserts
Lists the T-A® and T-A Pro® pilot insert options for each APX drill series.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

	WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.
	NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
	NOTE and IMPORTANT are also used. These are important that you read and follow but are not safety-related.
	Visit www.alliedmachine.com for the most up-to-date information and procedures.

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System Overview

Series	33	38	44	51	57
					
D ₁ mm	33.00 - 37.99	38.00 - 43.99	44.00 - 50.99	51.00 - 56.99	57.00 - 62.99
D ₁ inch	1.2991 - 1.4958	1.4959 - 1.7320	1.7321 - 2.0076	2.0077 - 2.2438	2.2439 - 2.4801
ISO Material					
IC Insert Size (mm)	7.94	9.53	9.53, 12.70	12.70, 14.29	14.29
IC Insert Size (inch)	5/16	3/8	3/8, 1/2	1/2, 9/16	9/16
Cutting Style	Double Effective	Double Effective	Double Effective	Double Effective	Double Effective
Wear Pads	✗	✗	✗	✗	✗
Holders					
Drill Depth (mm)	131.4 - 397.4	149.3 - 457.3	169.7 - 526.7	180.3 - 579.2	197.4 - 638.4
Drill Depth (inch)	5.174 - 15.646	5.878 - 18.003	6.681 - 20.735	7.097 - 22.805	7.772 - 25.133
Pilot Insert Series					
T-A	0, 1	0, 1	1	1	1, 2
GEN3SYS XT Pro	—	15, 17, 18, 20	17, 18, 22	18, 20, 22	22, 24, 26

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T-A® Style Head

- Utilizes both T-A Pro and T-A inserts (0 - 2 series).
- Multiple geometry options are available to achieve optimal results in different types of applications.



GEN3SYS® Style Head

- Utilizes both GEN3SYS XT and XT Pro inserts (15 - 32 series).
- ISO geometry options are available to achieve optimal results in different types of applications.



IC Insert AM300®

- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM300 coatings increase tool life above competitors' premium coatings.

Insert Application Recommendations

Carbide Grade Options

P35 (C5)	General purpose carbide grade suitable for most applications. ▶ <i>Common application in steels and stainless steels.</i>
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ <i>Recommended for less rigid applications.</i>
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ <i>Recommended for grey, ductile, and nodular irons.</i>

Additional Geometry Option

High Rake (HR)	Provides superior chip control and tool life in long-chipping carbon and alloy steels below 200 BHN.
----------------	--



Flanged Straight Shank



CAT40 / CAT50 Integral Shank



System Overview

63	70	76	83	89	95
					
63.00 - 69.99	70.00 - 75.99	76.00 - 82.99	83.00 - 88.99	89.00 - 94.99	95.00 - 101.60
2.4802 - 2.7557	2.7558 - 2.9919	2.9920 - 3.2675	3.2676 - 3.5037	3.5038 - 3.7399	3.7400 - 4.0001
					
14.29	9.53	12.70	12.70	14.29	14.29
9/16	3/8	1/2	1/2	9/16	9/16
Double Effective	Single Effective	Single Effective	Single Effective	Single Effective	Single Effective
X	✓	✓	✓	✓	✓
217.1 - 695.3	235.1 - 716.5	255.8 - 836.7	272.8 - 895.7	291.4 - 913.7	316.9 - 916.3
8.549 - 27.375	9.258 - 28.207	10.070 - 32.942	10.741 - 35.262	11.474 - 35.971	12.477 - 36.077
2	2	2	2	2	2
26, 29, 32	29	29	32	29	32

Assembly Instructions



Step 1:
Lower the APX head assembly onto the APX holder.



Step 2:
Insert the head mounting screws into points A and B. Tighten until the head is properly secured to the holder.



Step 3:
Tighten with the head mounting driver using the torque setting chart below.

Torque Setting Chart

Series	Screw	Driver	Torque
33 - 63	75020-IP20-1	 8IP-20	678 N-cm (60 in-lb)
70 - 95	78027-IP30-1	 8IP-30B	2825 N-cm (250 in-lb)

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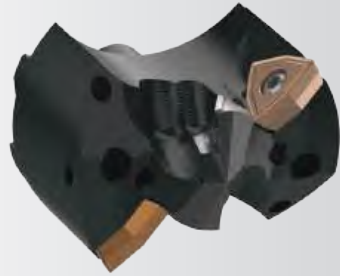
System Overview

T-A® Style Pilot Inserts



T-A Pro®

GEN3SYS® Style Pilot Inserts



GEN3SYS® XT Pro

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- Serves as the perfect solution for high penetration drilling applications where chip formation and tool life are critical.
- Utilizes material-specific geometries for ISO material classes:
P M K N X



- Combines a coating and geometry specifically designed to achieve optimal results in ISO material drilling applications:
P M K N

GEN2 T-A®



- Notch Point®, curved cutting edge, and cam ground clearance provide superior hole centering, lower drilling forces, and improved chip formation.
- Features Allied's exclusive AM300® and AM200® coatings for increased tool life.

GEN3SYS® XT



- Available in 4 geometries: Standard (XT), Austenitic Stainless Steel (AS), Cast Iron (CI) and Low Rake (LR).
- Provides excellent chip control, improved durability, and added stability.

T-A®



- Available in both high-speed steel and carbide options.
- Offers common industry coating options such as TiN, TiCN, TiAlN, as well as Allied's proprietary AM200 coating.
- Geometry, substrate, and coating options can be mixed and matched to target a specific need.



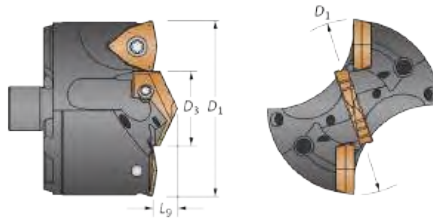
Product Nomenclature

APX Drill Heads

V	38	15	D	—	0116
	Series	Pilot Series	Effective Cutting		Major Diameter
33	70	T-A® Pilot Insert	D = Double effective S = Single effective		0116 = Fractional (in) 1.5153 = Decimal (in) 68 = Metric (mm)
38	76	GEN3SYS® XT Pro Pilot Insert			
44	83	00 = 0 series			
51	89	01 = 1 series			
57	95	02 = 2 series			
63		15 = 15 series			
		17 = 17 series			
		18 = 18 series			
		20 = 20 series			
		22 = 22 series			
		24 = 24 series			
		26 = 26 series			
		29 = 29 series			
		32 = 32 series			

Reference Key

Symbol	Attribute
D_1	Major cutting diameter
D_3	Pilot insert diameter
L_9	Pilot insert length

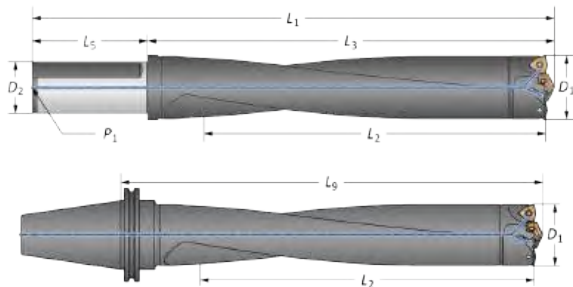


APX Drill Holders

W	38	05	H	—	200F
	Series	Drill Length	Flute Style		Shank
33	70	03 = 3xD	H = Helical		150F = 1-1/2" flanged straight shank
38	76	05 = 5xD			200F = 2" flanged straight shank
44	83	08 = 8xD ⚠			40FM = 40 mm flanged straight shank
51	89	10 = 10xD ⚠			50FM = 50 mm flanged straight shank
57	95				CV40 = CAT40 integral shank
63					CV50 = CAT50 integral shank

Reference Key

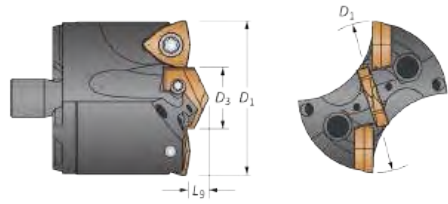
Symbol	Attribute
D_1	Major cutting diameter
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_5	Shank length
L_9	Gauge Length
P_1	Rear pipe tap





33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")

Heads



T-A® Style Head

APX Heads

					T-A Style Head				
D_1			D_3		L_9			IC Insert Size	
mm	inch	Fractional	mm	inch	mm	inch	Part No.	mm	inch
33.00	1.2992	—	16.00	0.6299	5.6	0.221	V3300D-33	7.94	5/16
33.34	1.3125	1-5/16	16.00	0.6299	5.6	0.221	V3300D-0110	7.94	5/16
34.00	1.3386	—	18.00	0.7087	6.1	0.239	V3301D-34	7.94	5/16
34.13	1.3438	1-11/32	18.00	0.7087	6.1	0.239	V3301D-0111	7.94	5/16
34.93	1.3750	1-3/8	18.00	0.7087	6.1	0.239	V3301D-0112	7.94	5/16
35.00	1.3780	—	18.00	0.7087	6.1	0.239	V3301D-35	7.94	5/16
35.72	1.4063	1-13/32	18.00	0.7087	6.1	0.239	V3301D-0113	7.94	5/16
36.00	1.4173	—	20.00	0.7874	6.5	0.256	V3301D-36	7.94	5/16
36.51	1.4375	1-7/16	20.00	0.7874	6.5	0.256	V3301D-0114	7.94	5/16
37.00	1.4567	—	20.00	0.7874	6.5	0.256	V3301D-37	7.94	5/16
37.31	1.4688	1-15/32	20.00	0.7874	6.5	0.256	V3301D-0115	7.94	5/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head		
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)
33.00 - 33.99	1.2991 - 1.3383	16.00	0.6299	0	TA#0-16.00	1C10H-16-TC
34.00 - 35.99	1.3384 - 1.4171	18.00	0.7087	1	TA#1-18.00	1C11H-18-TC
36.00 - 37.99	1.4172 - 1.4958	20.00	0.7874	1	TA#1-20.00	1C11H-20-TC

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). Please note, X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
7.94	5/16	Standard	OP-05T308-1PW	OP-05T308-PW	OP-05T308-2PW	IS-10-1	8T-9	305 N-cm (27.0 in-lbs)
		High Rake	—	OP-05T308-PWHR	—			

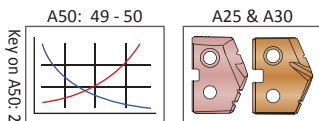
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
0	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

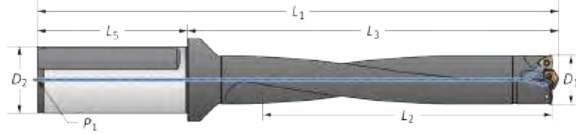
For nonstocked diameters, follow the below examples:

Metric	33 series, T-A (1 series), 34.25 mm	= V3301D-34.25
Inch	33 series, T-A (1 series), 1.3400"	= V3301D-1.3400



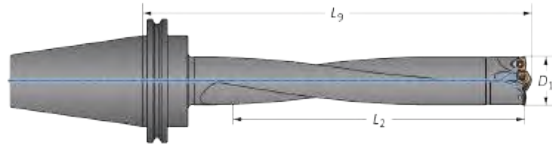
33 Series: 33.00 mm - 37.99 mm (1.2991" - 1.4958")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	131.4	167.4	237.4	70.0	40	1/4 BSPT	W3303H-40FM
	5xD	207.4	243.4	313.4	70.0	40	1/4 BSPT	W3305H-40FM
	8xD	321.4	357.4	427.4	70.0	40	1/4 BSPT	⚠ W3308H-40FM
	10xD	397.4	433.4	503.4	70.0	40	1/4 BSPT	⚠ W3310H-40FM
i	3xD	5.174	6.590	9.278	2.688	1-1/2	1/4 NPT	W3303H-150F
	5xD	8.166	9.582	12.270	2.688	1-1/2	1/4 NPT	W3305H-150F
	8xD	12.654	14.070	16.758	2.688	1-1/2	1/4 NPT	⚠ W3308H-150F
	10xD	15.646	17.062	19.750	2.688	1-1/2	1/4 NPT	⚠ W3310H-150F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_9		
3xD	5.174	7.473	CAT40	W3303H-CV40
5xD	8.166	10.465	CAT40	W3305H-CV40
8xD	12.654	14.953	CAT40	⚠ W3308H-CV40
10xD	15.646	17.945	CAT40	⚠ W3310H-CV40
3xD	5.174	7.473	CAT50	W3303H-CV50
5xD	8.166	10.465	CAT50	W3305H-CV50
8xD	12.654	14.953	CAT50	⚠ W3308H-CV50
10xD	15.646	17.945	CAT50	⚠ W3310H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

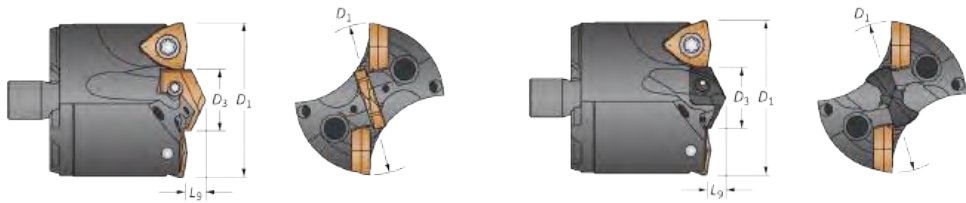
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head			GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	mm	inch	Part No.	mm	inch
38.00	1.4961	—	15.88	5/8	5.7	0.226	V3800D-38	4.9	0.195	V3815D-38	9.53	3/8
38.10	1.5000	1-1/2	15.88	5/8	5.7	0.226	V3800D-0116	4.9	0.195	V3815D-0116	9.53	3/8
38.90	1.5313	1-17/32	15.88	5/8	5.7	0.226	V3800D-0117	4.9	0.195	V3815D-0117	9.53	3/8
39.00	1.5354	—	15.88	5/8	5.7	0.226	V3800D-39	4.9	0.195	V3815D-39	9.53	3/8
39.69	1.5625	1-9/16	15.88	5/8	5.7	0.226	V3800D-0118	4.9	0.195	V3815D-0118	9.53	3/8
40.00	1.5748	—	17.46	11/16	6.1	0.240	V3800D-40	5.2	0.205	V3817D-40	9.53	3/8
40.48	1.5938	1-19/32	17.46	11/16	6.1	0.240	V3800D-0119	5.2	0.205	V3817D-0119	9.53	3/8
41.00	1.6142	—	17.46	11/16	6.1	0.240	V3800D-41	5.2	0.205	V3817D-41	9.53	3/8
41.28	1.6250	1-5/8	17.46	11/16	6.1	0.240	V3800D-0120	5.2	0.205	V3817D-0120	9.53	3/8
42.00	1.6535	—	19.05	3/4	6.5	0.254	V3801D-42	5.5	0.216	V3818D-42	9.53	3/8
42.07	1.6563	1-21/32	19.05	3/4	6.5	0.254	V3801D-0121	5.5	0.216	V3818D-0121	9.53	3/8
42.86	1.6875	1-11/16	19.05	3/4	6.5	0.254	V3801D-0122	5.5	0.216	V3818D-0122	9.53	3/8
43.00	1.6929	—	20.64	13/16	6.8	0.268	V3801D-43	5.8	0.227	V3820D-43	9.53	3/8
43.66	1.7188	1-23/32	20.64	13/16	6.8	0.268	V3801D-0123	5.8	0.227	V3820D-0123	9.53	3/8

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
38.00 - 39.72	1.4959 - 1.5639	15.88	5/8	0	TA#0-15.50	1C10H-0020-TC	15	XT#15-15.88
39.73 - 41.30	1.5640 - 1.6261	17.46	11/16	0	TA#0-17.46	1C10H-0022-TC	17	XT#17-17.46
41.31 - 42.90	1.6262 - 1.6891	19.05	3/4	1	TA#1-19.05	1C11H-0024-TC	18	XT#18-19.05
42.91 - 43.99	1.6892 - 1.7320	20.64	13/16	1	TA#1-20.64	1C11H-0026-TC	20	XT#20-20.64

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). Please note, X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
9.53	3/8	Standard	OP-060408-1PW	OP-060408-PW	OP-060408-2PW	7359S-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
		High Rake	—	OP-060408-PWHR	—			

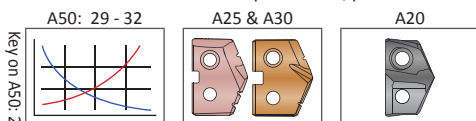
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	15	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
0	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	20			

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

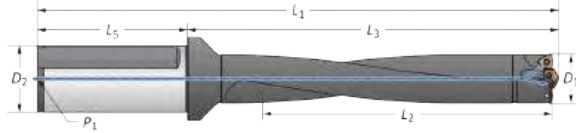
For nonstocked diameters, follow the below examples:

Metric	38 series, T-A (0 series), 41.25 mm	= V3800D-41.25
Inch	38 series, GEN3 (17 series), 1.6200"	= V3817D-1.6200



38 Series: 38.00 mm - 43.99 mm (1.4959" - 1.7320")

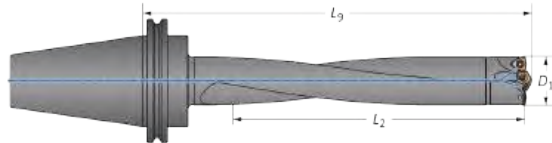
Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	149.3	195.7	265.7	70.0	40	1/4 BSPT	W3803H-40FM
	5xD	237.3	283.7	353.7	70.0	40	1/4 BSPT	W3805H-40FM
	8xD	369.3	415.7	485.7	70.0	40	1/4 BSPT	W3808H-40FM
	10xD	457.3	503.7	573.7	70.0	40	1/4 BSPT	W3810H-40FM
m	3xD	149.3	195.7	275.7	80.0	50	1/4 BSPT	W3803H-50FM
	5xD	237.3	283.7	363.7	80.0	50	1/4 BSPT	W3805H-50FM
	8xD	369.3	415.7	495.7	80.0	50	1/4 BSPT	W3808H-50FM
	10xD	457.3	503.7	583.7	80.0	50	1/4 BSPT	W3810H-50FM
i	3xD	5.878	7.704	10.392	2.688	1-1/2	1/4 NPT	W3803H-150F
	5xD	9.342	11.168	13.856	2.688	1-1/2	1/4 NPT	W3805H-150F
	8xD	14.539	16.365	19.053	2.688	1-1/2	1/4 NPT	W3808H-150F
	10xD	18.003	19.829	22.517	2.688	1-1/2	1/4 NPT	W3810H-150F
i	3xD	5.878	7.704	12.204	4.500	2	1/4 NPT	W3803H-200F
	5xD	9.342	11.168	15.668	4.500	2	1/4 NPT	W3805H-200F
	8xD	14.539	16.365	20.865	4.500	2	1/4 NPT	W3808H-200F
	10xD	18.003	19.829	24.329	4.500	2	1/4 NPT	W3810H-200F

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CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	5.878	8.304	CAT40	W3803H-CV40
5xD	9.342	11.768	CAT40	W3805H-CV40
8xD	14.539	16.965	CAT40	W3808H-CV40
10xD	18.003	20.429	CAT40	W3810H-CV40
3xD	5.878	8.304	CAT50	W3803H-CV50
5xD	9.342	11.768	CAT50	W3805H-CV50
8xD	14.539	16.965	CAT50	W3808H-CV50
10xD	18.003	20.429	CAT50	W3810H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page A50: 34 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

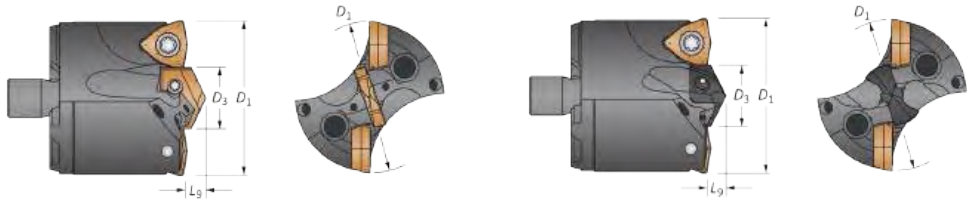
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D ₁			D ₃		T-A Style Head			GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L ₉		Part No.	L ₉		Part No.	mm	inch
44.00	1.7323	—	22.23	7/8	7.2	0.282	V4401D-44	6.0	0.238	V4422D-44	9.53	3/8
44.45	1.7500	1-3/4	22.23	7/8	7.2	0.282	V4401D-0124	6.0	0.238	V4422D-0124	9.53	3/8
45.00	1.7717	—	22.23	7/8	7.2	0.282	V4401D-45	6.0	0.238	V4422D-45	9.53	3/8
45.25	1.7813	1-25/32	22.23	7/8	7.2	0.282	V4401D-0125	6.0	0.238	V4422D-0125	9.53	3/8
46.00	1.8110	—	23.81	15/16	7.5	0.296	V4401D-46	6.3	0.248	V4422D-46	9.53	3/8
46.04	1.8125	1-13/16	23.81	15/16	7.5	0.296	V4401D-0126	6.3	0.248	V4422D-0126	9.53	3/8
46.83	1.8438	1-27/32	23.81	15/16	7.5	0.296	V4401D-0127	6.3	0.248	V4422D-0127	9.53	3/8
47.00	1.8504	—	23.81	15/16	7.5	0.296	V4401D-47	6.3	0.248	V4422D-47	9.53	3/8
47.63	1.8750	1-7/8	23.81	15/16	7.5	0.296	V4401D-0128	6.3	0.248	V4422D-0128	9.53	3/8
48.00	1.8898	—	17.86	45/64	6.6	0.258	V4401D-48	5.7	0.223	V4417D-48	12.70	1/2
48.42	1.9063	1-29/32	17.86	45/64	6.6	0.258	V4401D-0129	5.7	0.223	V4417D-0129	12.70	1/2
49.00	1.9291	—	17.86	45/64	6.6	0.258	V4401D-49	5.7	0.223	V4417D-49	12.70	1/2
49.21	1.9375	1-15/16	17.86	45/64	6.6	0.258	V4401D-0130	5.7	0.223	V4417D-0130	12.70	1/2
50.00	1.9685	—	18.65	47/64	6.7	0.265	V4401D-50	5.8	0.228	V4418D-50	12.70	1/2
50.01	1.9688	1-31/32	18.65	47/64	6.7	0.265	V4401D-0131	5.8	0.228	V4418D-0131	12.70	1/2
50.80	2.0000	2	18.65	47/64	6.7	0.265	V4401D-0200	5.8	0.228	V4418D-0200	12.70	1/2

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro	T-A (-TC)	Pilot Series	XT Pro
44.00 - 45.26	1.7321 - 1.7820	22.23	7/8	1**	TA#1-22.23	1C11H-0028-TC	22	XT#22-22.23
45.27 - 47.90	1.7821 - 1.8860	23.81	15/16	1**	TA#1-23.81	1C11H-0030-TC	22	XT#22-23.81
47.91 - 49.99	1.8861 - 1.9683	17.86	45/64	1	TA#1-17.86	1C11H-703-TC	17	XT#17-17.86
50.00 - 50.99	1.9684 - 2.0076	18.65	47/64	1	TA#1-18.65	1C11H-734-TC	18	XT#18-18.65

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

**NOTE: Coordinating screw in accessory table below.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
9.53	3/8	Standard	OP-060408-1PW	OP-060408-PW	OP-060408-2PW	73595-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
		High Rake	—	OP-060408-PWHR	—			
12.70	1/2	Standard	OP-080508-1PW	OP-080508-PW	OP-080508-2PW	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	OP-080508-PWHR	—			

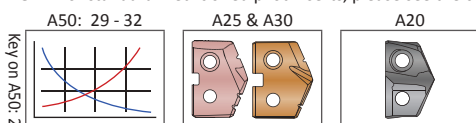
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
1**	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on pg. A50: 33.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

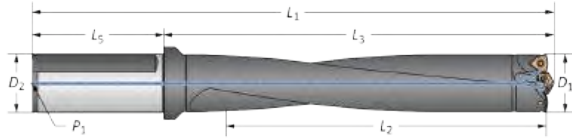
For nonstocked diameters, follow the below examples:

Metric	44 series, T-A (1 series), 47.25 mm	= V4401D-47.25
Inch	44 series, GEN3 (22 series), 1.8450"	= V4422D-1.8450



44 Series: 44.00 mm - 50.99 mm (1.7321" - 2.0076")

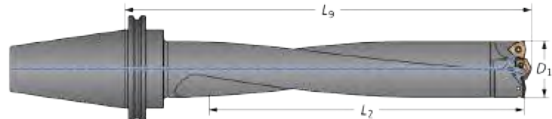
Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	169.7	216.9	286.9	70.0	40	1/4 BSPT	W4403H-40FM
	5xD	271.7	318.9	388.9	70.0	40	1/4 BSPT	W4405H-40FM
	8xD	424.7	471.9	541.9	70.0	40	1/4 BSPT	W4408H-40FM
	10xD	526.7	573.8	643.8	70.0	40	1/4 BSPT	W4410H-40FM
	3xD	169.7	216.9	296.9	80.0	50	1/4 BSPT	W4403H-50FM
	5xD	271.7	318.9	398.9	80.0	50	1/4 BSPT	W4405H-50FM
	8xD	424.7	471.9	551.9	80.0	50	1/4 BSPT	W4408H-50FM
	10xD	526.7	573.8	653.8	80.0	50	1/4 BSPT	W4410H-50FM
	3xD	6.681	8.538	11.226	2.688	1-1/2	1/4 NPT	W4403H-150F
	5xD	10.697	12.554	15.242	2.688	1-1/2	1/4 NPT	W4405H-150F
i	8xD	16.720	18.577	21.265	2.688	1-1/2	1/4 NPT	W4408H-150F
	10xD	20.735	22.592	25.280	2.688	1-1/2	1/4 NPT	W4410H-150F
	3xD	6.681	8.538	13.038	4.500	2	1/4 NPT	W4403H-200F
	5xD	10.697	12.554	17.054	4.500	2	1/4 NPT	W4405H-200F
	8xD	16.720	18.577	23.077	4.500	2	1/4 NPT	W4408H-200F
	10xD	20.735	22.592	27.092	4.500	2	1/4 NPT	W4410H-200F

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CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	6.681	9.253	CAT40	W4403H-CV40
5xD	10.697	13.269	CAT40	W4405H-CV40
8xD	16.720	19.292	CAT40	W4408H-CV40
10xD	20.735	23.307	CAT40	W4410H-CV40
3xD	6.681	9.253	CAT50	W4403H-CV50
5xD	10.697	13.269	CAT50	W4405H-CV50
8xD	16.720	19.292	CAT50	W4408H-CV50
10xD	20.735	23.307	CAT50	W4410H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page A50: 34 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

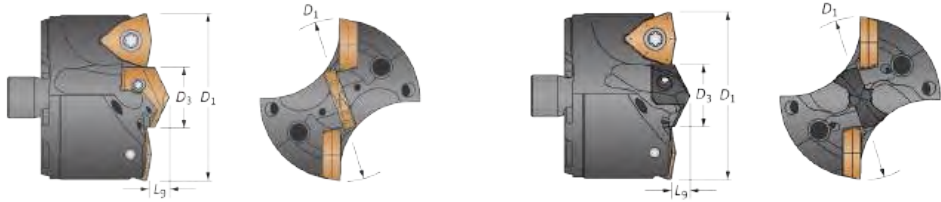
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head				GEN3SYS Style Head				IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	L_9		Part No.	mm		inch	
51.00	2.0079	—	19.84	25/32	7.0	0.275	V5101D-51	6.0	0.236	V5118D-51	12.70	1/2		
51.60	2.0313	2-1/32	19.84	25/32	7.0	0.275	V5101D-0201	6.0	0.236	V5118D-0201	12.70	1/2		
52.00	2.0472	—	19.84	25/32	7.0	0.275	V5101D-52	6.0	0.236	V5118D-52	12.70	1/2		
52.39	2.0625	2-1/16	19.84	25/32	7.0	0.275	V5101D-0202	6.0	0.236	V5118D-0202	12.70	1/2		
53.00	2.0866	—	21.43	27/32	7.3	0.289	V5101D-53	6.3	0.247	V5120D-53	12.70	1/2		
53.18	2.0938	2-3/32	21.43	27/32	7.3	0.289	V5101D-0203	6.3	0.247	V5120D-0203	12.70	1/2		
53.98	2.1250	2-1/8	21.43	27/32	7.3	0.289	V5101D-0204	6.3	0.247	V5120D-0204	12.70	1/2		
54.00	2.1260	—	23.81	15/16	7.9	0.310	V5101D-54	6.7	0.263	V5122D-54	12.70	1/2		
54.77	2.1563	2-5/32	23.81	15/16	7.9	0.310	V5101D-0205	6.7	0.263	V5122D-0205	12.70	1/2		
55.00	2.1654	—	23.81	15/16	7.9	0.310	V5101D-55	6.7	0.263	V5122D-55	12.70	1/2		
55.56	2.1875	2-3/16	23.81	15/16	7.9	0.310	V5101D-0206	6.7	0.263	V5122D-0206	12.70	1/2		
56.00	2.2047	—	23.81	15/16	7.9	0.310	V5101D-56	6.7	0.263	V5122D-56	12.70	1/2		
56.36	2.2188	2-7/32	20.64	13/16	7.3	0.288	V5101D-0207	6.3	0.247	V5120D-0207	14.29	9/16		

A50

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
51.00 - 52.42	2.0077 - 2.0639	19.84	25/32	1	TA#1-19.84	1C11H-0025-TC	18	XT#18-19.84
52.43 - 53.99	2.0640 - 2.1257	21.43	27/32	1	TA#1-21.43	1C11H-0027-TC	20	XT#20-21.43
54.00 - 56.15	2.1258 - 2.2108	23.81	15/16	1**	TA#1-23.81	1C11H-0030-TC	22	XT#22-23.81
56.16 - 56.99	2.2109 - 2.2438	20.64	13/16	1	TA#1-20.64	1C11H-0026-TC	20	XT#20-20.64

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

**NOTE: Coordinating screw in accessory table below.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
12.70	1/2	Standard	OP-080508-1PW	OP-080508-PW	OP-080508-2PW	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	OP-080508-PWHR	—			
14.29	9/16	Standard	OP-090608-1PW	OP-090608-PW	OP-090608-2PW	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	OP-090608-PWHR	—			

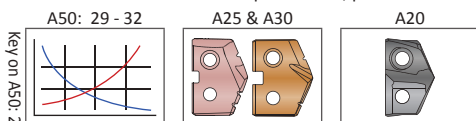
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
1	18	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
	20			
1**	22	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

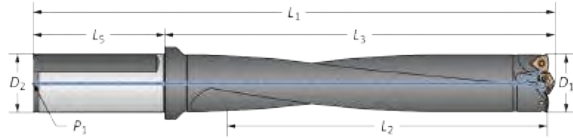
For nonstocked diameters, follow the below examples:

Metric	51 series, T-A (1 series), 53.25 mm	= V5101D-53.25
Inch	51 series, GEN3 (20 series), 2.1000"	= V5120D-2.1000



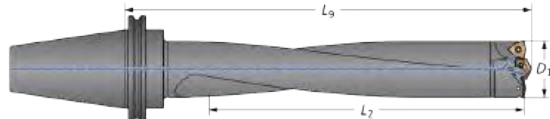
51 Series: 51.00 mm - 56.99 mm (2.0077" - 2.2438")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	180.3	225.6	305.6	80.0	50	1/4 BSPT	W5103H-50FM
	5xD	294.2	339.5	419.6	80.0	50	1/4 BSPT	W5105H-50FM
	8xD	465.2	510.5	590.6	80.0	50	1/4 BSPT	⚠ W5108H-50FM
	10xD	579.2	624.5	704.5	80.0	50	1/4 BSPT	⚠ W5110H-50FM
i	3xD	7.097	8.880	13.380	4.500	2	1/4 NPT	W5103H-200F
	5xD	11.585	13.368	17.868	4.500	2	1/4 NPT	W5105H-200F
	8xD	18.317	20.100	24.600	4.500	2	1/4 NPT	⚠ W5108H-200F
	10xD	22.805	24.588	29.088	4.500	2	1/4 NPT	⚠ W5110H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	7.097	9.732	CAT50	W5103H-CV50
5xD	11.585	14.220	CAT50	W5105H-CV50
8xD	18.317	20.952	CAT50	⚠ W5108H-CV50
10xD	22.805	25.440	CAT50	⚠ W5110H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

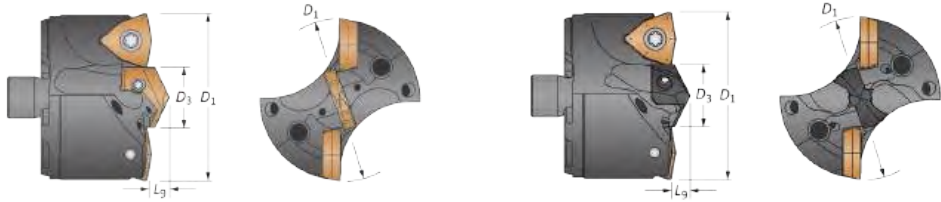
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



57 Series: 57.00 mm - 62.99 mm (2.2439" - 2.4801")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head			GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	mm	inch	Part No.	mm	inch
57.00	2.2441	—	23.02	29/32	7.9	0.309	V5701D-57	6.7	0.263	V5722D-57	14.29	9/16
57.15	2.2500	2-1/4	23.02	29/32	7.9	0.309	V5701D-0208	6.7	0.263	V5722D-0208	14.29	9/16
57.95	2.2813	2-9/32	23.02	29/32	7.9	0.309	V5701D-0209	6.7	0.263	V5722D-0209	14.29	9/16
58.00	2.2835	—	23.02	29/32	7.9	0.309	V5701D-58	6.7	0.263	V5722D-58	14.29	9/16
58.74	2.3125	2-5/16	23.02	29/32	7.9	0.309	V5701D-0210	6.7	0.263	V5722D-0210	14.29	9/16
59.00	2.3228	—	23.81	15/16	8.0	0.316	V5701D-59	6.8	0.269	V5722D-59	14.29	9/16
59.53	2.3438	2-11/32	23.81	15/16	8.0	0.316	V5701D-0211	6.8	0.269	V5722D-0211	14.29	9/16
60.00	2.3622	—	23.81	15/16	8.0	0.316	V5701D-60	6.8	0.269	V5722D-60	14.29	9/16
60.33	2.3750	2-3/8	23.81	15/16	8.0	0.316	V5701D-0212	6.8	0.269	V5722D-0212	14.29	9/16
61.00	2.4016	—	25.40	1	8.4	0.330	V5702D-61	7.1	0.280	V5724D-61	14.29	9/16
61.12	2.4063	2-13/32	25.40	1	8.4	0.330	V5702D-0213	7.1	0.280	V5724D-0213	14.29	9/16
61.91	2.4375	2-7/16	25.40	1	8.4	0.330	V5702D-0214	7.1	0.280	V5724D-0214	14.29	9/16
62.00	2.4409	—	26.99	1-1/16	8.7	0.344	V5702D-62	7.4	0.290	V5726D-62	14.29	9/16
62.71	2.4688	2-15/32	26.99	1-1/16	8.7	0.344	V5702D-0215	7.4	0.290	V5726D-0215	14.29	9/16

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
57.00 - 58.77	2.2439 - 2.3139	23.02	29/32	1	TA#1-23.02	1C11H-0029-TC	22	XT#22-23.02
58.78 - 60.35	2.3140 - 2.3761	23.81	15/16	1	TA#1-23.81	1C11H-0030-TC	22	XT#22-23.81
60.36 - 61.95	2.3762 - 2.4391	25.40	1	2	TA#2-25.40	1C12H-0100-TC	24	XT#24-25.40
61.96 - 62.99	2.4392 - 2.4801	26.99	1-1/16	2	TA#2-26.99	1C12H-0102-TC	26	XT#26-26.99

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	OP-090608-1PW	OP-090608-PW	OP-090608-2PW	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	OP-090608-PWHR	—			

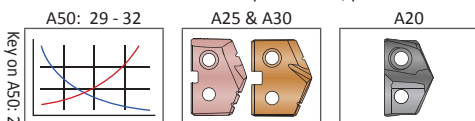
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
1	22 24	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
2	26	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

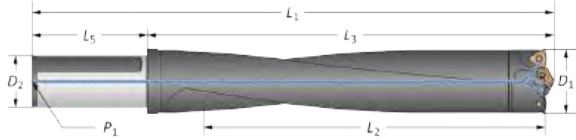
For nonstocked diameters, follow the below examples:

Metric	57 series, T-A (1 series), 60.25 mm	= V5701D-60.25
Inch	57 series, GEN3 (22 series), 2.3450"	= V5722D-2.3450



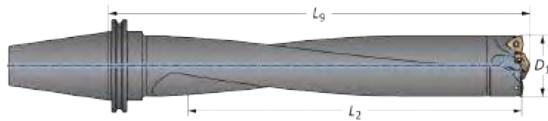
57 Series: 57.00 mm - 62.99 mm (2.2439" - 2.4801")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	197.4	242.7	322.7	80.0	50	1/4 BSPT	W5703H-50FM
	5xD	323.4	368.7	448.7	80.0	50	1/4 BSPT	W5705H-50FM
	8xD	512.4	557.7	637.7	80.0	50	1/4 BSPT	⚠ W5708H-50FM
	10xD	638.4	683.7	763.7	80.0	50	1/4 BSPT	⚠ W5710H-50FM
i	3xD	7.772	9.556	14.056	4.500	2	1/4 NPT	W5703H-200F
	5xD	12.732	14.516	19.016	4.500	2	1/4 NPT	W5705H-200F
	8xD	20.173	21.957	26.457	4.500	2	1/4 NPT	⚠ W5708H-200F
	10xD	25.133	26.917	31.417	4.500	2	1/4 NPT	⚠ W5710H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_9		
3xD	7.772	10.528	CAT50	W5703H-CV50
5xD	12.732	15.489	CAT50	W5705H-CV50
8xD	20.173	22.929	CAT50	⚠ W5708H-CV50
10xD	25.133	27.890	CAT50	⚠ W5710H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

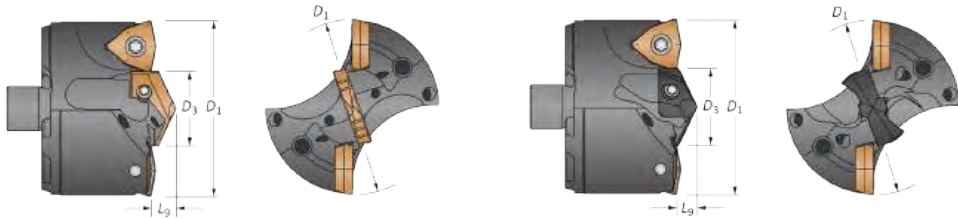
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



63 Series: 63.00 mm - 69.99 mm (2.4802" - 2.7557")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D ₁			D ₃		T-A Style Head				GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L _g		Part No.	L _g		Part No.	mm	inch	
63.00	2.4803	—	28.58	1-1/8	9.1	0.358	V6302D-63	7.6	0.301	V6326D-63	14.29	9/16	
63.50	2.5000	2-1/2	28.58	1-1/8	9.1	0.358	V6302D-0216	7.6	0.301	V6326D-0216	14.29	9/16	
64.00	2.5197	—	28.58	1-1/8	9.1	0.358	V6302D-64	7.6	0.301	V6326D-64	14.29	9/16	
64.30	2.5313	2-17/32	28.58	1-1/8	9.1	0.358	V6302D-0217	7.6	0.301	V6326D-0217	14.29	9/16	
65.00	2.5591	—	28.58	1-1/8	9.1	0.358	V6302D-65	7.6	0.301	V6326D-65	14.29	9/16	
65.09	2.5625	2-9/16	30.16	1-3/16	9.4	0.372	V6302D-0218	7.9	0.312	V6329D-0218	14.29	9/16	
65.88	2.5938	2-19/32	30.16	1-3/16	9.4	0.372	V6302D-0219	7.9	0.312	V6329D-0219	14.29	9/16	
66.00	2.5984	—	30.16	1-3/16	9.4	0.372	V6302D-66	7.9	0.312	V6329D-66	14.29	9/16	
66.68	2.6250	2-5/8	30.16	1-3/16	9.4	0.372	V6302D-0220	7.9	0.312	V6329D-0220	14.29	9/16	
67.00	2.6378	—	31.75	1-1/4	9.8	0.386	V6302D-67	8.2	0.323	V6329D-67	14.29	9/16	
67.47	2.6563	2-21/32	31.75	1-1/4	9.8	0.386	V6302D-0221	8.2	0.323	V6329D-0221	14.29	9/16	
68.00	2.6772	—	31.75	1-1/4	9.8	0.386	V6302D-68	8.2	0.323	V6329D-68	14.29	9/16	
68.26	2.6875	2-11/16	31.75	1-1/4	9.8	0.386	V6302D-0222	8.2	0.323	V6329D-0222	14.29	9/16	
69.00	2.7165	—	33.34	1-5/16	10.1	0.400	V6302D-69	8.5	0.333	V6332D-69	14.29	9/16	
69.06	2.7188	2-23/32	33.34	1-5/16	10.1	0.400	V6302D-0223	8.5	0.333	V6332D-0223	14.29	9/16	
69.85	2.7500	2-3/4	33.34	1-5/16	10.1	0.400	V6302D-0224	8.5	0.333	V6332D-0224	14.29	9/16	

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
63.00 - 65.07	2.4802 - 2.5620	28.58	1-1/8	2	TA#2-28.58	1C12H-0104-TC	26	XT#26-28.58
65.08 - 66.70	2.5621 - 2.6261	30.16	1-3/16	2	TA#2-30.16	1C12H-0106-TC	29	XT#29-30.16
66.71 - 68.30	2.6262 - 2.6891	31.75	1-1/4	2	TA#2-31.75	1C12H-0108-TC	29	XT#29-31.75
68.31 - 69.99	2.6892 - 2.7557	33.34	1-5/16	2	TA#2-33.34	1C12H-0110-TC	32	XT#32-33.34

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	OP-090608-1PW	OP-090608-PW	OP-090608-2PW	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	OP-090608-PWHR	—			

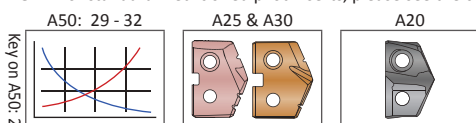
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	26	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
	29			
	32			

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

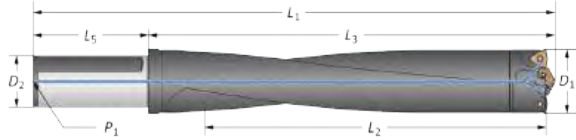
For nonstocked diameters, follow the below examples:

Metric	63 series, T-A (2 series), 66.25 mm	= V6302D-66.25
Inch	63 series, GEN3 (29 series), 2.5450"	= V6329D-2.5450



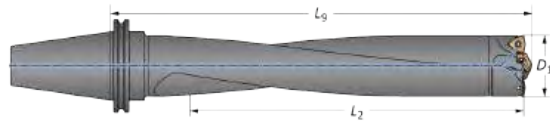
63 Series: 63.00 mm - 69.99 mm (2.4802" - 2.7557")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	217.1	262.6	342.6	80.0	50	1/4 BSPT	W6303H-50FM
	5xD	357.2	402.6	482.7	80.0	50	1/4 BSPT	W6305H-50FM
	8xD	567.1	612.6	692.6	80.0	50	1/4 BSPT	⚠ W6308H-50FM
	10xD	695.3	740.8	820.8	80.0	50	1/4 BSPT	⚠ W6310H-50FM
i	3xD	8.549	10.340	14.840	4.500	2	1/4 NPT	W6303H-200F
	5xD	14.061	15.852	20.352	4.500	2	1/4 NPT	W6305H-200F
	8xD	22.328	24.119	28.619	4.500	2	1/4 NPT	⚠ W6308H-200F
	10xD	27.375	29.166	33.666	4.500	2	1/4 NPT	⚠ W6310H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_9		
3xD	8.549	11.430	CAT50	W6303H-CV50
5xD	14.061	16.942	CAT50	W6305H-CV50
8xD	22.328	25.209	CAT50	⚠ W6308H-CV50
10xD	26.785	29.665	CAT50	⚠ W6310H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

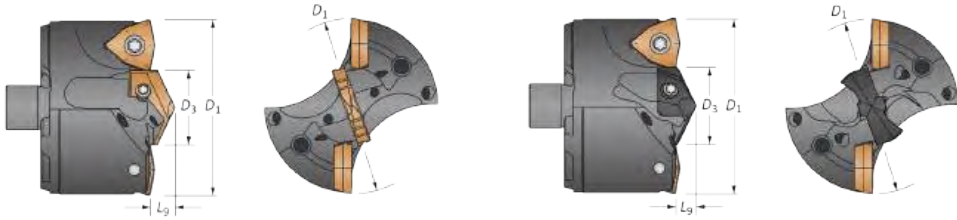
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



70 Series: 70.00 mm - 75.99 mm (2.7558" - 2.9919")

Heads



T-A® Style Head

GEN3SYS® Style Head

APX Heads

D_1			D_3		T-A Style Head			GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	L_9		Part No.	mm	inch
70.00	2.7559	—	30.96	1-7/32	9.1	0.358	V7002S-70	7.5	0.297	V7029S-70	9.53	3/8
71.44	2.8125	2-13/16	30.96	1-7/32	9.1	0.358	V7002S-0226	7.5	0.297	V7029S-0226	9.53	3/8
72.00	2.8346	—	30.96	1-7/32	9.1	0.358	V7002S-72	7.5	0.297	V7029S-72	9.53	3/8
73.03	2.8750	2-7/8	30.96	1-7/32	9.1	0.358	V7002S-0228	7.5	0.297	V7029S-0228	9.53	3/8
74.00	2.9134	—	30.96	1-7/32	9.1	0.358	V7002S-74	7.5	0.297	V7029S-74	9.53	3/8
74.61	2.9375	2-15/16	30.96	1-7/32	9.1	0.358	V7002S-0230	7.5	0.297	V7029S-0230	9.53	3/8

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
70.00 - 75.99	2.7558 - 2.9919	30.96	1-7/32	2	TA#2-30.96	1C12H-0107-TC	29	XT#29-30.96

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
9.53	3/8	Standard	OP-060408-1PW	OP-060408-PW	OP-060408-2PW	73595-IP15-1	8IP-15	465 N-cm (41.0 in-lbs)
9.53	3/8	High Rake	—	OP-060408-PWHR	—			

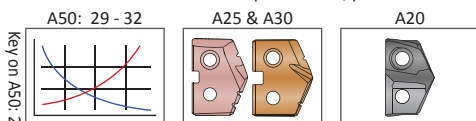
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

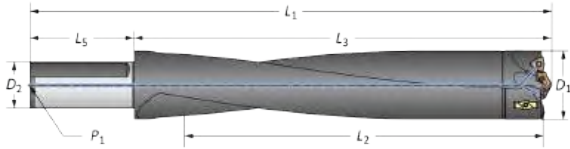
For nonstocked diameters, follow the below examples:

Metric	70 series, T-A (2 series), 73.25 mm	= V7002S-73.25
Inch	70 series, GEN3 (29 series), 2.8450"	= V7029S-2.8450



70 Series: 70.00 mm - 75.99 mm (2.7558" - 2.9919")

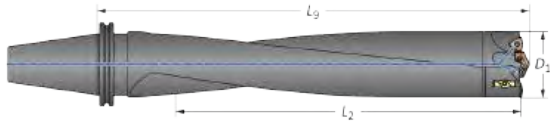
Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	235.1	269.1	349.1	80.0	50	1/4 BSPT	W7003H-50FM
	5xD	387.1	421.1	501.1	80.0	50	1/4 BSPT	W7005H-50FM
	8xD	615.1	649.1	729.1	80.0	50	1/4 BSPT	⚠ W7008H-50FM
	10xD	716.5	750.4	830.4	80.0	50	1/4 BSPT	⚠ W7010H-50FM
i	3xD	9.258	10.594	15.094	4.500	2	1/4 NPT	W7003H-200F
	5xD	15.242	16.578	21.078	4.500	2	1/4 NPT	W7005H-200F
	8xD	24.218	25.554	30.054	4.500	2	1/4 NPT	⚠ W7008H-200F
	10xD	28.207	29.543	34.043	4.500	2	1/4 NPT	⚠ W7010H-200F

A50



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	9.258	12.219	CAT50	W7003H-CV50
5xD	15.242	18.203	CAT50	W7005H-CV50
8xD	24.218	27.179	CAT50	⚠ W7008H-CV50
10xD	27.080	29.948	CAT50	⚠ W7010H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

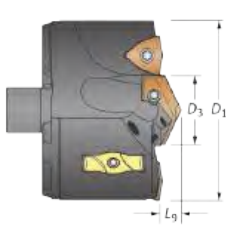
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.

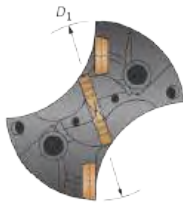
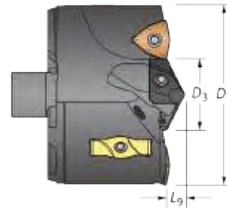


76 Series: 76.00 mm - 82.99 mm (2.9920" - 3.2675")

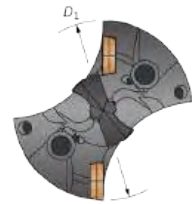
Heads



T-A® Style Head



GEN3SYS® Style Head



APX Heads

D_1			D_3		T-A Style Head				GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	L_9		Part No.	mm	inch	
76.00	2.9921	—	30.96	1-7/32	9.5	0.373	V7602S-76	7.9	0.311	V7629S-76	12.70	1/2	
76.20	3.0000	3	30.96	1-7/32	9.5	0.373	V7602S-0300	7.9	0.311	V7629S-0300	12.70	1/2	
77.79	3.0625	3-1/16	30.96	1-7/32	9.5	0.373	V7602S-0302	7.9	0.311	V7629S-0302	12.70	1/2	
78.00	3.0709	—	30.96	1-7/32	9.5	0.373	V7602S-78	7.9	0.311	V7629S-78	12.70	1/2	
79.38	3.1250	3-1/8	30.96	1-7/32	9.5	0.373	V7602S-0304	7.9	0.311	V7629S-0304	12.70	1/2	
80.00	3.1496	—	30.96	1-7/32	9.5	0.373	V7602S-80	7.9	0.311	V7629S-80	12.70	1/2	
80.96	3.1875	3-3/16	30.96	1-7/32	9.5	0.373	V7602S-0306	7.9	0.311	V7629S-0306	12.70	1/2	
82.00	3.2283	—	30.96	1-7/32	9.5	0.373	V7602S-82	7.9	0.311	V7629S-82	12.70	1/2	
82.55	3.2500	3-1/4	30.96	1-7/32	9.5	0.373	V7602S-0308	7.9	0.311	V7629S-0308	12.70	1/2	

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
76.00 - 82.99	2.9920 - 3.2675	30.96	1-7/32	2	TA#2-30.96	1C12H-0107-TC	29	XT#29-30.96

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
12.70	1/2	Standard	OP-080508-1PW	OP-080508-PW	OP-080508-2PW	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	OP-080508-PWHR	—			

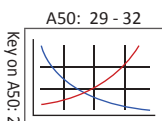
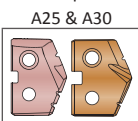
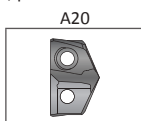
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on pg. A50: 33.



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

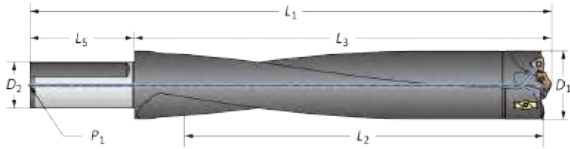
For nonstocked diameters, follow the below examples:

Metric	76 series, T-A (2 series), 79.25 mm	= V76025-79.25
Inch	76 series, GEN3 (29 series), 3.1450"	= V7629S-3.1450



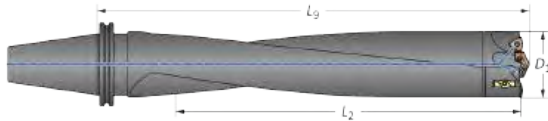
76 Series: 76.00 mm - 82.99 mm (2.9920" - 3.2675")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	255.8	292.4	372.4	80.0	50	1/4 BSPT	W7603H-50FM
	5xD	421.8	458.4	538.4	80.0	50	1/4 BSPT	W7605H-50FM
	8xD	670.7	707.4	787.4	80.0	50	1/4 BSPT	⚠ W7608H-50FM
	10xD	836.7	873.4	953.4	80.0	50	1/4 BSPT	⚠ W7610H-50FM
i	3xD	10.070	11.513	16.013	4.500	2	1/4 NPT	W7603H-200F
	5xD	16.605	18.048	22.548	4.500	2	1/4 NPT	W7605H-200F
	8xD	26.407	27.850	32.350	4.500	2	1/4 NPT	⚠ W7608H-200F
	10xD	32.942	34.385	38.885	4.500	2	1/4 NPT	⚠ W7610H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	10.070	12.888	CAT50	W7603H-CV50
5xD	16.605	19.422	CAT50	W7605H-CV50
8xD	26.407	29.225	CAT50	⚠ W7608H-CV50
10xD	32.942	35.760	CAT50	⚠ W7610H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page A50: 34 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

m = Metric (mm)

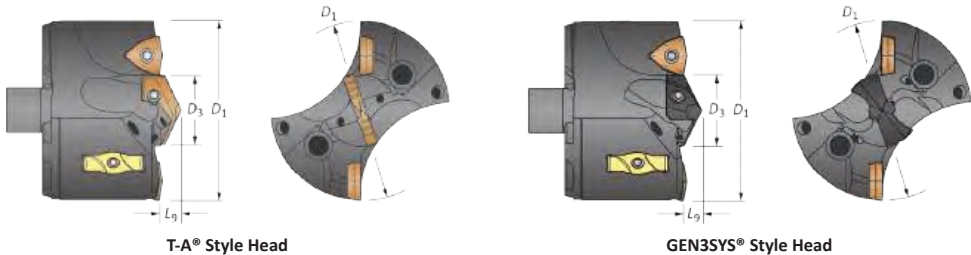
i = Imperial (in)

Mounting screws sold in multiples of 4.



83 Series: 83.00 mm - 88.99 mm (3.2676" - 3.5037")

Heads



APX Heads

D_1			D_3		T-A Style Head			GEN3SYS Style Head			IC Insert Size	
mm	inch	Fractional	mm	inch	L_9		Part No.	L_9		Part No.	mm	inch
84.00	3.3071	—	34.93	1-3/8	10.4	0.408	V8302S-84	8.6	0.338	V8332S-84	12.70	1/2
84.14	3.3125	3-5/16	34.93	1-3/8	10.4	0.408	V8302S-0310	8.6	0.338	V8332S-0310	12.70	1/2
85.73	3.3750	3-3/8	34.93	1-3/8	10.4	0.408	V8302S-0312	8.6	0.338	V8332S-0312	12.70	1/2
86.00	3.3858	—	34.93	1-3/8	10.4	0.408	V8302S-86	8.6	0.338	V8332S-86	12.70	1/2
87.31	3.4375	3-7/16	34.93	1-3/8	10.4	0.408	V8302S-0314	8.6	0.338	V8332S-0314	12.70	1/2
88.00	3.4646	—	34.93	1-3/8	10.4	0.408	V8302S-88	8.6	0.338	V8332S-88	12.70	1/2
88.90	3.5000	3-1/2	34.93	1-3/8	10.4	0.408	V8302S-0316	8.6	0.338	V8332S-0316	12.70	1/2

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
83.00 - 88.99	3.2676 - 3.5037	34.93	1-3/8	2	TA#2-34.93	1C12H-0112-TC	32	XT#32-34.93

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
12.70	1/2	Standard	OP-080508-1PW	OP-080508-PW	OP-080508-2PW	74012-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
		High Rake	—	OP-080508-PWHR	—			

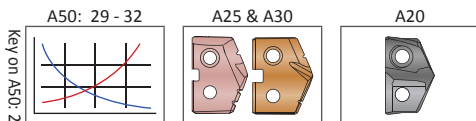
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	32	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

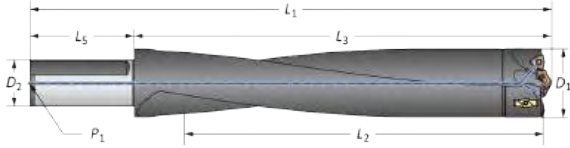
For nonstocked diameters, follow the below examples:

Metric	83 series, T-A (2 series), 86.25 mm	= V83025-86.25
Inch	83 series, GEN3 (32 series), 3.3250"	= V83325-3.3250



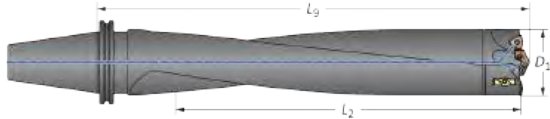
83 Series: 83.00 mm - 88.99 mm (3.2676" - 3.5037")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	272.8	312.6	392.6	80.0	50	1/4 BSPT	W8303H-50FM
	5xD	450.8	490.6	570.6	80.0	50	1/4 BSPT	W8305H-50FM
	8xD	710.8	750.5	830.5	80.0	50	1/4 BSPT	⚠ W8308H-50FM
	10xD	895.7	935.4	1015.4	80.0	50	1/4 BSPT	⚠ W8310H-50FM
i	3xD	10.741	12.307	16.807	4.500	2	1/4 NPT	W8303H-200F
	5xD	17.747	19.313	23.813	4.500	2	1/4 NPT	W8305H-200F
	8xD	27.982	29.548	34.048	4.500	2	1/4 NPT	⚠ W8308H-200F
	10xD	35.262	36.828	41.328	4.500	2	1/4 NPT	⚠ W8310H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	10.741	13.682	CAT50	W8303H-CV50
5xD	17.747	20.687	CAT50	W8305H-CV50
8xD	27.102	30.042	CAT50	⚠ W8308H-CV50
10xD	35.262	38.203	CAT50	⚠ W8310H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
75020-IP20-1	8IP-20	678 N-cm (60 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleDrillingGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

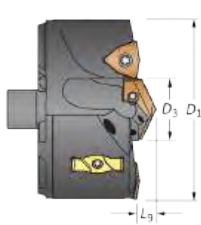
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.

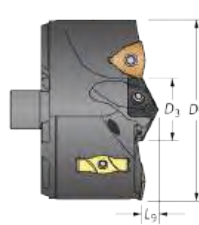


89 Series: 89.00 mm - 94.99 mm (3.5038" - 3.7399")

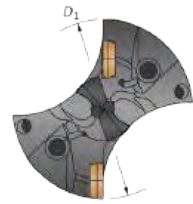
Heads



T-A® Style Head



GEN3SYS® Style Head



APX Heads

D ₁			D ₃		T-A Style Head				GEN3SYS Style Head				IC Insert Size	
mm	inch	Fractional	mm	inch	L ₉		Part No.	L ₉		Part No.		mm	inch	
90.00	3.5433	—	31.75	1-1/4	9.8	0.386	V89025-90	8.2	0.323	V89295-90	14.29	9/16		
90.49	3.5625	3-9/16	31.75	1-1/4	9.8	0.386	V89025-0318	8.2	0.323	V89295-0318	14.29	9/16		
92.00	3.6220	—	31.75	1-1/4	9.8	0.386	V89025-92	8.2	0.323	V89295-92	14.29	9/16		
92.08	3.6250	3-5/8	31.75	1-1/4	9.8	0.386	V89025-0320	8.2	0.323	V89295-0320	14.29	9/16		
93.66	3.6875	3-11/16	31.75	1-1/4	9.8	0.386	V89025-0322	8.2	0.323	V89295-0322	14.29	9/16		
94.00	3.7008	—	31.75	1-1/4	9.8	0.386	V89025-94	8.2	0.323	V89295-94	14.29	9/16		

Pilot Inserts

D ₁ Range		D ₃		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
89.00 - 94.99	3.5038 - 3.7399	31.75	1-1/4	2	TA#2-31.75	1C12H-0108-TC	29	XT#29-31.75

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
			K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	OP-090608-1PW	OP-090608-PW	OP-090608-2PW	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	OP-090608-PWHR	—			

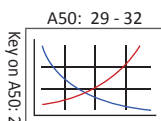
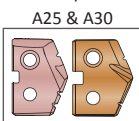
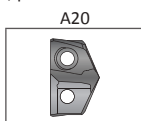
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	29	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

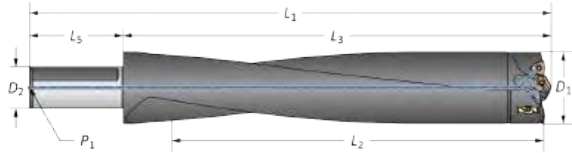
For nonstocked diameters, follow the below examples:

Metric	89 series, T-A (2 series), 91.25 mm	= V89025-91.25
Inch	89 series, GEN3 (29 series), 3.6500"	= V89295-3.6500



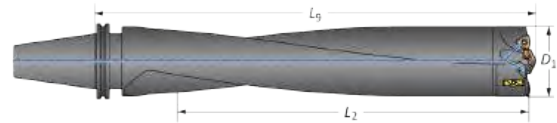
89 Series: 89.00 mm - 94.99 mm (3.5038" - 3.7399")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	291.4	333.6	413.6	80.0	50	1/4 BSPT	W8903H-50FM
	5xD	481.4	523.6	603.6	80.0	50	1/4 BSPT	W8905H-50FM
	8xD	708.1	750.3	830.3	80.0	50	1/4 BSPT	⚠ W8908H-50FM
	10xD	913.7	955.9	1035.9	80.0	50	1/4 BSPT	⚠ W8910H-50FM
i	3xD	11.474	13.135	17.635	4.500	2	1/4 NPT	W8903H-200F
	5xD	18.954	20.615	25.115	4.500	2	1/4 NPT	W8905H-200F
	8xD	27.879	29.540	34.040	4.500	2	1/4 NPT	⚠ W8908H-200F
	10xD	35.971	37.632	42.132	4.500	2	1/4 NPT	⚠ W8910H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	11.474	14.510	CAT50	W8903H-CV50
5xD	18.954	21.990	CAT50	W8905H-CV50
8xD	26.999	30.035	CAT50	⚠ W8908H-CV50
10xD	35.971	39.007	CAT50	⚠ W8910H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

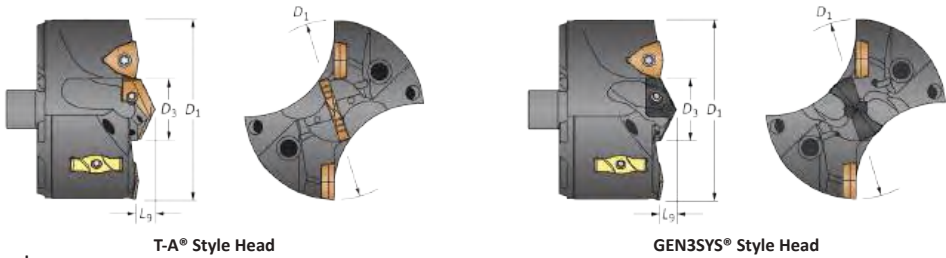
m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



95 Series: 95.00 mm - 101.60 mm (3.7400" - 4.0001")

Heads



APX Heads

D_1			D_3			L_9		T-A Style Head		L_9		GEN3SYS Style Head		IC Insert Size	
mm	inch	Fractional	mm	inch		mm	inch	Part No.		mm	inch	Part No.		mm	inch
95.25	3.7500	3-3/4	34.93	1-3/8		10.5	0.414	V95025-0324		8.7	0.344	V95325-0324		14.29	9/16
96.00	3.7795	—	34.93	1-3/8		10.5	0.414	V95025-96		8.7	0.344	V95325-96		14.29	9/16
96.84	3.8125	3-13/16	34.93	1-3/8		10.5	0.414	V95025-0326		8.7	0.344	V95325-0326		14.29	9/16
98.00	3.8583	—	34.93	1-3/8		10.5	0.414	V95025-98		8.7	0.344	V95325-98		14.29	9/16
98.43	3.8750	3-7/8	34.93	1-3/8		10.5	0.414	V95025-0328		8.7	0.344	V95325-0328		14.29	9/16
100.00	3.9370	—	34.93	1-3/8		10.5	0.414	V95025-100		8.7	0.344	V95325-100		14.29	9/16
100.01	3.9375	3-15/16	34.93	1-3/8		10.5	0.414	V95025-0330		8.7	0.344	V95325-0330		14.29	9/16
101.60	4.0000	4	34.93	1-3/8		10.5	0.414	V95025-0400		8.7	0.344	V95325-0400		14.29	9/16

Pilot Inserts

D_1 Range		D_3		T-A Style Head			GEN3SYS Style Head	
mm	inch	mm	inch	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
95.00 - 101.60	3.7400 - 4.0001	34.93	1-3/8	2	TA#2-34.93	1C12H-0112-TC	29	XT#32-34.93

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

IC Inserts - AM300® Coated

Size		Geometry	Part No.			Insert Screw	Insert Driver	Admissible Tightening Torque*
mm	inch		K35 (C1)	P35 (C5)	K25 (C2)			
14.29	9/16	Standard	OP-090608-1PW	OP-090608-PW	OP-090608-2PW	75014-IP20-1	8IP-20	1370 N-cm (121.0 in-lbs)
		High Rake	—	OP-090608-PWHR	—			

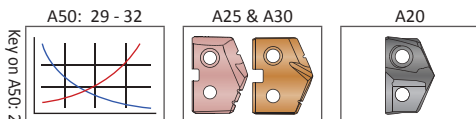
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
2	32	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

NOTE: For standard metric sized pilot inserts, please see the cross reference on **pg. A50: 33**.



Wear pads sold in multiples of 2.
Wear pad screws sold in multiples of 4.
IC inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

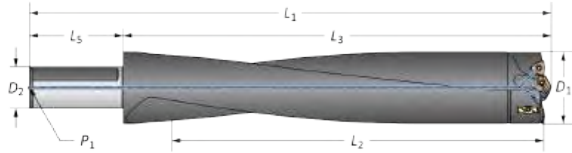
For nonstocked diameters, follow the below examples:

Metric	95 series, T-A (2 series), 100.25 mm	= V95025-100.25
Inch	95 series, GEN3 (32 series), 3.9450"	= V95325-3.9450



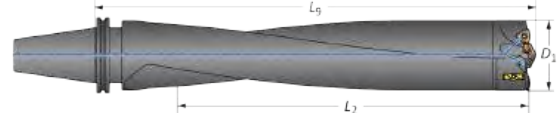
95 Series: 95.00 mm - 101.60 mm (3.7400" - 4.0001")

Holders



Straight Shank

	Length	Body			Shank			Part No.
		L_2	L_3	L_1	L_5	D_2	P_1	
m	3xD	316.9	362.8	442.8	80.0	50	1/4 BSPT	W9503H-50FM
	5xD	520.1	566.0	646.0	80.0	50	1/4 BSPT	W9505H-50FM
	8xD	712.0	756.7	836.7	80.0	50	1/4 BSPT	⚠ W9508H-50FM
	10xD	916.3	962.3	1042.3	80.0	50	1/4 BSPT	⚠ W9510H-50FM
i	3xD	12.477	14.285	18.785	4.500	2	1/4 NPT	W9503H-200F
	5xD	20.477	22.285	26.785	4.500	2	1/4 NPT	W9505H-200F
	8xD	27.982	29.790	34.290	4.500	2	1/4 NPT	⚠ W9508H-200F
	10xD	36.077	37.885	42.385	4.500	2	1/4 NPT	⚠ W9510H-200F



CAT Integral Shank

Length	Body		Shank	Part No.
	L_2	L_3		
3xD	12.477	15.660	CAT50	W9503H-CV50
5xD	20.477	23.660	CAT50	W9505H-CV50
8xD	27.102	30.285	CAT50	⚠ W9508H-CV50
10xD	36.077	39.260	CAT50	⚠ W9510H-CV50

Connection Accessories

Mounting Screw	Mounting Screw Driver	Admissible Tightening Torque*
78027-IP30-1	8IP-30B	2825 N-cm (250 in-lb)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds and page **A50: 34** for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

m = Metric (mm)
i = Imperial (in)

Mounting screws sold in multiples of 4.



Recommended Drilling Data | Metric (mm)

APX DRILL					
ISO	Material	Hardness (BHN)	Outboard Insert		Feed Rate (mm/rev)
			Speed (m/min)	Pilot Style	7.94 mm IC
					33 Series 33.00 mm - 37.99 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	137 - 229	T-A/GEN3SYS	0.15 - 0.28
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	137 - 229	T-A/GEN3SYS	0.15 - 0.28
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	137 - 229	T-A/GEN3SYS	0.15 - 0.28
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	122 - 213	T-A/GEN3SYS	0.13 - 0.18
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	91 - 152	T-A/GEN3SYS	0.13 - 0.15
	Structural Steel A36, A285, A516, etc.	100 - 350	137 - 229	T-A/GEN3SYS	0.15 - 0.20
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	91 - 152	T-A/GEN3SYS	0.13 - 0.15
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	91 - 152	T-A/GEN3SYS	0.15 - 0.20
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	91 - 152	T-A/GEN3SYS	0.13 - 0.18
	Super Duplex Stainless Steel	135 - 275	76 - 137	T-A/GEN3SYS	0.10 - 0.15
K	SG / Nodular Cast Iron	120 - 320	152 - 244	T-A/GEN3SYS	0.13 - 0.23
N	Cast Aluminum	30 - 180	183 - 244	T-A/GEN3SYS	0.23 - 0.30
	Wrought Aluminum	30 - 180	183 - 244	T-A/GEN3SYS	0.18 - 0.28
	Aluminum Bronze	100 - 250	123 - 213	T-A/GEN3SYS	0.13 - 0.18
	Brass	30 - 100	244	T-A/GEN3SYS	0.15 - 0.20
	Copper	60	213	T-A/GEN3SYS	0.05 - 0.13
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	61 - 122	T-A	0.10 - 0.13
	Titanium Alloy	140 - 310	91 - 152	T-A	0.13 - 0.18
	Aerospace Alloy S82	185 - 350	122 - 183	T-A/GEN3SYS	0.10 - 0.15
H	Wear Plate Hardox®, AR400, T-1, etc.	400 - 600	91 - 152	T-A	0.07 - 0.13
	Hardened Steel	300 - 500	91 - 152	T-A	0.10 - 0.13

Coolant Recommendations

Series	33	38	44	51	57	63	70	76	83	89	95
Pressure (BAR)	24	21	19	17	16	14	10	7	7	7	7
Flow Rate (LPM)	38	38	45	68	76	83	95	106	114	125	125

Calculations

Value	m/min	RPM	mm/min
Formula	$RPM \cdot 0.003 \cdot \text{Diameter}$	$(m/min \cdot 318.47) / \text{Diameter}$	$RPM \cdot mm/rev$

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the APX drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.
Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Metric (mm)

APX DRILL					
Feed Rate (mm/rev)					
9.53 mm IC	12.70 mm IC	14.29 mm IC	9.53 mm IC	12.70 mm IC	14.29 mm IC
38 - 44 Series 38.00 mm - 47.89 mm	44 - 51 Series 47.90 mm - 56.15 mm	51 - 63 Series 56.16 mm - 69.99 mm	70 Series 70.00 mm - 75.99 mm	76 - 83 Series 76.00 mm - 88.99 mm	89 - 95 Series 89.00 mm - 101.60 mm
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.18 - 0.30	0.23 - 0.30	0.23 - 0.30	0.15 - 0.25	0.18 - 0.28	0.18 - 0.30
0.13 - 0.23	0.18 - 0.25	0.18 - 0.28	0.13 - 0.23	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.13 - 0.20	0.15 - 0.23	0.13 - 0.18	0.13 - 0.20	0.15 - 0.20
0.18 - 0.23	0.20 - 0.25	0.23 - 0.28	0.13 - 0.23	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.18 - 0.23	0.20 - 0.25	0.13 - 0.18	0.15 - 0.23	0.18 - 0.25
0.18 - 0.23	0.20 - 0.25	0.23 - 0.28	0.13 - 0.18	0.18 - 0.23	0.18 - 0.25
0.15 - 0.20	0.18 - 0.23	0.20 - 0.25	0.10 - 0.20	0.15 - 0.25	0.15 - 0.25
0.13 - 0.18	0.18 - 0.23	0.18 - 0.23	0.10 - 0.18	0.15 - 0.23	0.18 - 0.25
0.15 - 0.25	0.20 - 0.30	0.25 - 0.30	0.20 - 0.25	0.23 - 0.28	0.25 - 0.30
0.25 - 0.36	0.30 - 0.40	0.30 - 0.40	0.15 - 0.23	0.20 - 0.28	0.20 - 0.30
0.20 - 0.30	0.25 - 0.36	0.25 - 0.36	0.15 - 0.23	0.20 - 0.28	0.20 - 0.30
0.13 - 0.20	0.18 - 0.25	0.23 - 0.28	0.15 - 0.23	0.18 - 0.25	0.20 - 0.30
0.18 - 0.23	0.20 - 0.25	0.23 - 0.30	0.15 - 0.20	0.18 - 0.23	0.20 - 0.25
0.08 - 0.15	0.15 - 0.20	0.20 - 0.25	0.08 - 0.15	0.15 - 0.20	0.15 - 0.20
0.10 - 0.18	0.15 - 0.23	0.18 - 0.23	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.15 - 0.20	0.18 - 0.23	0.20 - 0.25	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.13 - 0.18	0.15 - 0.20	0.15 - 0.20	0.10 - 0.15	0.13 - 0.18	0.13 - 0.18
0.10 - 0.15	0.15 - 0.20	0.18 - 0.23	0.08 - 0.13	0.10 - 0.15	0.10 - 0.15
0.13 - 0.15	0.15 - 0.20	0.15 - 0.20	0.08 - 0.13	0.10 - 0.20	0.10 - 0.20

A50

⚠ WARNING

Tool failure can cause serious injury. To prevent:

- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.

Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

APX DRILL

ISO	Material	Hardness (BHN)	Outboard Insert		Feed Rate (IPR)
			Speed (SFM)	Pilot Style	5/16" IC 33 Series 1.2992" - 1.4960"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	450 - 750	T-A/GEN3SYS	0.006 - 0.011
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 275	450 - 750	T-A/GEN3SYS	0.006 - 0.011
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 325	450 - 750	T-A/GEN3SYS	0.006 - 0.011
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	400 - 700	T-A/GEN3SYS	0.005 - 0.007
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	300 - 500	T-A/GEN3SYS	0.005 - 0.006
	Structural Steel A36, A285, A516, etc.	100 - 350	450 - 750	T-A/GEN3SYS	0.006 - 0.008
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	300 - 500	T-A/GEN3SYS	0.005 - 0.006
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	300 - 500	T-A/GEN3SYS	0.006 - 0.008
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	300 - 500	T-A/GEN3SYS	0.005 - 0.007
	Super Duplex Stainless Steel	135 - 275	250 - 450	T-A/GEN3SYS	0.004 - 0.006
K	SG / Nodular Cast Iron	120 - 320	500 - 800	T-A/GEN3SYS	0.005 - 0.009
N	Cast Aluminum	30 - 180	600 - 800	T-A/GEN3SYS	0.009 - 0.012
	Wrought Aluminum	30 - 180	600 - 800	T-A/GEN3SYS	0.007 - 0.011
	Aluminum Bronze	100 - 250	400 - 700	T-A/GEN3SYS	0.005 - 0.007
	Brass	30 - 100	800	T-A/GEN3SYS	0.006 - 0.008
	Copper	60	700	T-A/GEN3SYS	0.002 - 0.005
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	200 - 400	T-A	0.004 - 0.005
	Titanium Alloy	140 - 310	300 - 500	T-A	0.005 - 0.007
	Aerospace Alloy S82	185 - 350	400 - 600	T-A/GEN3SYS	0.004 - 0.006
H	Wear Plate Hardox®, AR400, T-1, etc.	400 - 600	300 - 500	T-A	0.003 - 0.005
	Hardened Steel	300 - 500	300 - 500	T-A	0.004 - 0.005

Coolant Recommendations

Series	33	38	44	51	57	63	70	76	83	89	95
Pressure (PSI)	350	300	275	250	225	200	150	100	100	100	100
Flow Rate (GPM)	10	10	12	18	20	22	25	28	30	33	33

Calculations

Value	SFM	RPM	IPM
Formula	$RPM \bullet 0.262 \bullet \text{Diameter}$	$(SFM \bullet 3.82) / \text{Diameter}$	$RPM \bullet IPR$

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation chart for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the APX drilling system will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

⚠ WARNING Tool failure can cause serious injury. To prevent:

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Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

APX DRILL					
Feed Rate (IPR)					
3/8" IC	1/2" IC	9/16" IC	3/8" IC	1/2" IC	9/16" IC
38 - 44 Series 1.4961" - 1.8859"	44 - 51 Series 1.8860" - 2.2109"	51 - 63 Series 2.2110" - 2.7558"	70 Series 2.7559" - 2.9920"	76 - 83 Series 2.9921" - 3.5038"	89 - 95 Series 3.5039" - 4.0000"
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.007 - 0.012	0.009 - 0.012	0.009 - 0.012	0.006 - 0.010	0.007 - 0.011	0.007 - 0.012
0.005 - 0.009	0.007 - 0.010	0.007 - 0.011	0.005 - 0.009	0.006 - 0.010	0.006 - 0.010
0.005 - 0.007	0.005 - 0.008	0.006 - 0.009	0.005 - 0.007	0.005 - 0.008	0.006 - 0.008
0.007 - 0.009	0.008 - 0.010	0.009 - 0.011	0.005 - 0.009	0.006 - 0.010	0.007 - 0.010
0.005 - 0.007	0.007 - 0.009	0.008 - 0.010	0.005 - 0.007	0.006 - 0.009	0.007 - 0.010
0.007 - 0.009	0.008 - 0.010	0.009 - 0.011	0.005 - 0.007	0.007 - 0.009	0.007 - 0.010
0.006 - 0.008	0.007 - 0.009	0.008 - 0.010	0.004 - 0.008	0.006 - 0.010	0.006 - 0.010
0.005 - 0.007	0.007 - 0.009	0.007 - 0.009	0.004 - 0.007	0.006 - 0.009	0.007 - 0.010
0.006 - 0.010	0.008 - 0.012	0.010 - 0.012	0.008 - 0.010	0.009 - 0.011	0.010 - 0.012
0.010 - 0.014	0.012 - 0.016	0.012 - 0.016	0.006 - 0.009	0.008 - 0.011	0.008 - 0.012
0.008 - 0.012	0.010 - 0.014	0.010 - 0.014	0.006 - 0.009	0.008 - 0.011	0.008 - 0.012
0.005 - 0.008	0.007 - 0.010	0.009 - 0.011	0.006 - 0.009	0.007 - 0.010	0.008 - 0.012
0.007 - 0.009	0.008 - 0.010	0.009 - 0.012	0.006 - 0.008	0.007 - 0.009	0.008 - 0.012
0.003 - 0.006	0.006 - 0.008	0.008 - 0.010	0.006 - 0.008	0.006 - 0.008	0.006 - 0.008
0.004 - 0.007	0.006 - 0.009	0.007 - 0.009	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.006 - 0.008	0.007 - 0.009	0.008 - 0.010	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.005 - 0.007	0.006 - 0.008	0.006 - 0.008	0.004 - 0.006	0.005 - 0.007	0.005 - 0.007
0.004 - 0.006	0.006 - 0.008	0.007 - 0.009	0.003 - 0.005	0.004 - 0.006	0.004 - 0.006
0.005 - 0.006	0.006 - 0.008	0.006 - 0.008	0.003 - 0.005	0.004 - 0.006	0.004 - 0.006

A50

⚠ WARNING

Tool failure can cause serious injury. To prevent:

- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.
Refer to page A50: 34 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Metric Standard Pilot Cross Reference

Pilot Inserts

APX Series	D _i Range		T-A® Style Head			GEN3SYS® Style Head	
	mm	Fractional	Pilot Series	T-A Pro®	T-A (-TC)	Pilot Series	XT Pro
33	33.00 - 33.99	1.2991 - 1.3383	0	TA#0-16.00	1C10H-16-TC	—	—
	34.00 - 35.99	1.3384 - 1.4171	1	TA#1-18.00	1C11H-18-TC	—	—
	36.00 - 37.99	1.4172 - 1.4958	1	TA#1-20.00	1C11H-20-TC	—	—
38	38.00 - 39.72	1.4959 - 1.5639	0	TA#0-15.90	1C10H-15.9-TC	15	XT#15-15.90
	39.73 - 41.30	1.5640 - 1.6261	0	TA#0-17.50	1C10H-17.5-TC	17	XT#17-17.50
	41.31 - 42.90	1.6262 - 1.6891	1	TA#1-19.50	1C11H-19.5-TC	18	XT#18-19.50
	42.91 - 43.99	1.6892 - 1.7320	1	TA#1-21.00	1C11H-21-TC	20	XT#20-21.00
44	44.00 - 45.26	1.7321 - 1.7820	1**	TA#1-23.00	1C11H-23-TC	22	XT#22-23.00
	45.27 - 47.90	1.7821 - 1.8860	1**	TA#1-24.00	1C11H-24-TC	22	XT#22-23.80
	47.91 - 49.99	1.8861 - 1.9683	1	TA#1-18.00	1C11H-18-TC	17	XT#17-17.90
	50.00 - 50.99	1.9684 - 2.0076	1	TA#1-19.00	1C11H-19-TC	18	XT#18-19.00
	51.00 - 52.42	2.0077 - 2.0639	1	TA#1-20.00	1C11H-20-TC	18	XT#18-19.80
51	52.43 - 53.99	2.0640 - 2.1257	1**	TA#1-21.50	1C11H-21.5-TC	20	XT#20-21.50
	54.00 - 56.15	2.1258 - 2.2108	1**	TA#1-24.00	1C11H-24-TC	22	XT#22-23.80
	56.16 - 56.99	2.2109 - 2.2438	1**	TA#1-21.00	1C11H-21-TC	20	XT#20-21.00
57	57.00 - 58.77	2.2439 - 2.3139	1	TA#1-23.00	1C11H-23-TC	22	XT#22-23.00
	58.78 - 60.35	2.3140 - 2.3761	1	TA#1-24.00	1C11H-24-TC	22	XT#22-23.80
	60.36 - 61.95	2.3762 - 2.4391	2	TA#2-25.50	1C12H-25.5-TC	24	XT#24-25.50
	61.96 - 62.99	2.4392 - 2.4801	2	TA#2-27.00	1C12H-27-TC	26	XT#26-27.00
63	63.00 - 65.07	2.4802 - 2.5620	2	TA#2-28.50	1C12H-28.5-TC	26	XT#26-28.50
	65.08 - 66.70	2.5621 - 2.6261	2	TA#2-31.00	1C12H-31-TC	29	XT#29-31.00
	66.71 - 68.30	2.6262 - 2.6891	2	TA#2-32.00	1C12H-32-TC	29	XT#29-31.80
	68.31 - 69.99	2.6892 - 2.7557	2	TA#2-34.00	1C12H-34-TC	32	XT#32-34.00
70	70.00 - 75.99	2.7558 - 2.9919	2	TA#2-31.00	1C12H-31-TC	29	XT#29-31.00
76	76.00 - 82.99	2.9920 - 3.2675	2	TA#2-31.00	1C12H-315-TC	29	XT#29-31.00
83	83.00 - 88.99	3.2676 - 3.5037	2	TA#2-35.00	1C12H-35-TC	32	XT#32-35.00
89	89.00 - 94.99	3.5038 - 3.7399	2	TA#2-32.00	1C12H-32-TC	29	XT#29-31.80
95	95.00 - 101.60	3.7400 - 4.0001	2	TA#2-35.00	1C12H-35-TC	29	XT#32-35.00

#: Denotes ISO material/geometry (P= steel, M= stainless steel, K= cast iron, N= nonferrous, and X= high-speed steel substrate). X is only available in T-A Pro inserts.

**NOTE: coordinating screw in accessory table below.

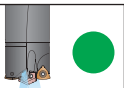
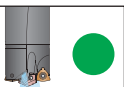
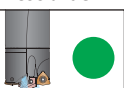
Pilot Accessories

T-A Series	GEN3SYS Series	Insert Screws	Insert Driver	Admissible Tightening Torque*
—	15	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
0	17	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
1	18 20	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
1**	22 24	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
2	26 29 32	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



Deep Hole Drilling Guidelines

1. Approach  50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the workpiece at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	Coolant OFF 
2. Feed-in 75% Speed 50% Feed	Drill 19.05 mm (0.75") deep at 75% recommended speed and 50% recommended feed to establish the hole.	Coolant ON 
3. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	Coolant ON 
4. Deep Hole Drilling - at Breakout 50% RPM 100% mm/rev (IPR)	For through holes only: Reduce speed by 50% prior to breakout. Do not break out more than 3.00 mm (0.125") past the full diameter of the drill.	Coolant ON 
5. Drill Retract  50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	Coolant OFF 

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 WARNING Tool failure can cause serious injury. To prevent:

- Do not rotate tool more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

The background of the entire page is a solid red color. Overlaid on this background is a complex geometric pattern. It consists of several concentric circles that are centered on the left side of the page. These circles are intersected by a series of straight lines that radiate from the center, creating a grid-like structure. The lines and circles are a lighter shade of red than the background, creating a subtle but intricate pattern.

SECTION

A55

4TEX® Drill

4TEX[®] Drill

12.00 mm - 47.00 mm (0.472" - 1.850")



4TEX Drill

The 4TEX indexable carbide drill provides increased penetration rates on light duty machines due to the single effective design. With twisted coolant outlets and increased core strength, the design provides improved hole size and finish.

The four-sided 4TEX inserts are designed to use two sides in the center pocket and two sides in the periphery pocket for an improved cost per hole. With insert geometries available for all ISO material classes and a robust body design, the 4TEX is suited for your difficult applications.

Don't Let Your Machine Slow You Down

- Improved hole size and finish.
- Superior chip evacuation.
- Increased penetration rates.

Applicable Industries

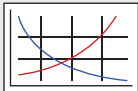
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Oil and Gas
-  Renewable Energy/ Energy
-  Structural Steel Fabricator
-  Tool, Mold, and Die

Reference Icons

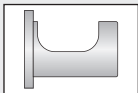
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Eccentric Sleeves
Refers to the corresponding eccentric sleeve for the holder.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")	
Metric Shank	13
Imperial Shank	14
07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")	
Metric Shank	15
Imperial Shank	16
09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")	
Metric Shank	17
Imperial Shank	19
11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")	
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Safety Information



Mechanical / Physical Hazards

Operating cutting tools may present both mechanical and physical hazards. These hazards can result in serious injury to workers or those near machines and damage to machines and the cutting tools. Cutting tools and/or assemblies may break or come loose when in operation causing projectile metal fragments. Metal chips produced by cutting tools have sharp edges and may be very hot. To minimize the risk of mechanical or physical hazards:

- Always secure all components of the cutting tool assembly before operating.
- Wear cut-resistant gloves when handling cutting tool components and assemblies.
- Do not touch metal chips produced by the cutting tools with your hands.
- Always wear appropriate personal protective equipment including safety goggles or glasses with side shields.
- Immediately discontinue use of damaged cutting tools.
- To avoid machine tool damage, make sure the machine has adequate power and torque for the cutting tool when operating. See catalog for power and torque requirements.
- Operating long cutting tools at high spindle speeds can result in a high risk of tool failure and serious injury.

Dust and Fume Hazards

Grinding, welding, cutting, or burning hard metals such as high-speed steel, cobalt, or carbides produces hazardous dust and/or fumes. Continued long-term exposure to hazardous dust and fumes can cause serious health issues. To minimize the risk of dust and fume hazards:

- Do not regrind or sharpen cutting tools without using adequate ventilation.
- Use appropriate personal protective equipment such as approved respirator to avoid inhalation, swallowing, or skin contact with the hazardous dust and/or fumes.
- Do not eat, drink, or smoke in the machine operation area. Always wash skin prior to eating, drinking, or smoking to avoid hazardous ingestion.

Sensitizing Hazards

Components of an assembled cutting tool are made from a variety of metal elements that may cause allergic skin reactions with prolonged skin contact. To minimize the risk of allergic skin reactions:

- Avoid skin contact with cutting tools.
- Wear appropriate gloves and protective clothing.
- Wash skin and launder clothing after handling cutting tools to reduce the risk of skin allergies.

Preventive Safety Measure Applicable to all Hazards

- Prior to using cutting tools, always read Allied Machine's Safety Data Sheets, product catalog, and product labels for additional warnings for the Allied Machine product being used.
- For machining safety, only operate equipment when all necessary guards, interlocks, and other safety devices are in place and functional. Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may become projectiles.

Through Hole

- With through holes, a **sharp-edged disk** is created as tool breakout occurs.
- ⚠ Proper personal protective equipment must be used to prevent injury (e.g. wear cut-resistant gloves).





Case Study

4TEX® DRILL INDEXABLE CARBIDE



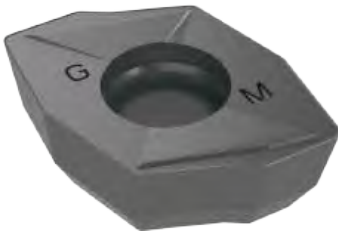
Pump Bodies | Ductile Iron

A55

Hole Ø: 29.36 mm (1.1560")
Hole Depth: 50.80 mm (2.0000")

Holder, 2xD length: D2091156I-125F
Insert, K (cast iron): 4T-09T306-K

K - Cast Iron



- ✓ 400% increase in tool life.
- ✓ 59% decrease in cycle time.



RPM



SPEED



FEED IN



CYCLE TIME



TOOL LIFE

Competitor

991

91.44 m/min
(300 SFM)

0.04 mm/rev
(0.0015 IPR)

1 min 20 sec

56 holes

Allied

770

71.02 m/min
(233 SFM)

0.12 mm/rev
(0.0048 IPR)

32 sec

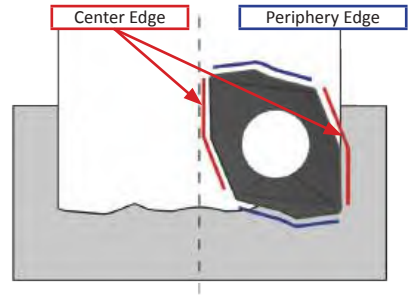
280 holes



Insert Information

4 CUTTING EDGES

- Each insert has two inner cutting edges and two outer cutting edges.
- Economical solution that increases tool life because of the rotation ability of the inserts.
- Available in ISO material-specific geometry/coating combinations.



Periphery Insert



Periphery edge chip formation:



Center Insert



Center edge chip formation:



180°

A55

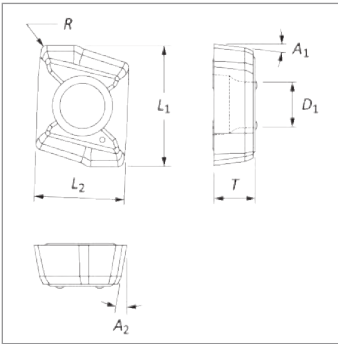
ISO	Geometry	Coating	Description
P	General Rake	AM480	A general purpose geometry that provides excellent chip formation in most steels including free-machining, medium- and high-carbon steels. A P30 carbide substrate for improved toughness and AM480 coating, a proprietary wear-resistant multilayer PVD coating to improve tool life.
S M	High Rake	AM485	A higher rake geometry that provides excellent chip formation in both stainless steels and high-temperature alloys. A tough M25 carbide substrate coated with AM485, a high heat-resistant proprietary multilayer PVD coating.
K	General Rake	AM480	With a general purpose geometry, the K inserts can be used in grey cast irons as well as ductile irons. A high wear-resistant K10 carbide substrate to improve tool life and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.
N	High Rake	TiCN	A higher rake cutting geometry provides excellent chip formation in nonferrous materials. An M15/K15 carbide substrate paired with TiCN coating for improved lubricity to resist built-up material, increasing tool life and maintaining chip formation.
H	Low Rake	AM480	A lower rake geometry to improve edge strength in both hardened tool steels and high-strength alloys. With a P30 carbide substrate for improved toughness and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.



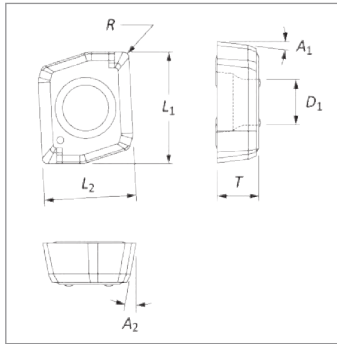
Insert Information

Series	Insert Prefix	Dimension (mm)					Angle		Shape
		L_1	L_2	T	D_1	R	A_1	A_2	
03	4T-030203C-x	5.60	4.80	2.30	2.40	0.30	7°	10°	 Style 1
	4T-030203P-x	6.38	4.77	2.30	2.40	0.30	7°	10°	 Style 2
04	4T-040203-x	6.21	5.06	2.60	2.45	0.30	13°	10°	 Style 3
05	4T-05T203-x	7.26	5.48	2.76	2.55	0.30	13°	7°	
06	4T-06T204-x	8.59	6.44	2.89	2.79	0.40	13°	7°	
07	4T-070305-x	10.21	8.02	3.24	3.00	0.50	13°	7°	
09	4T-09T306-x	12.18	9.55	4.03	3.64	0.60	13°	7°	
11	4T-11T306-x	14.50	11.61	4.06	4.62	0.60	13°	7°	 Style 3
14	4T-140408-x	17.99	14.40	4.88	5.76	0.80	13°	7°	

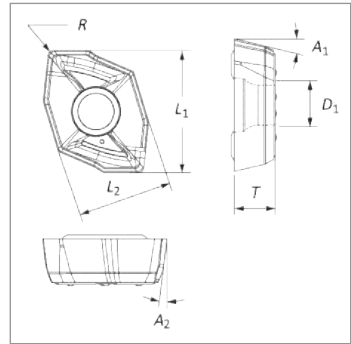
Style 1



Style 2



Style 3

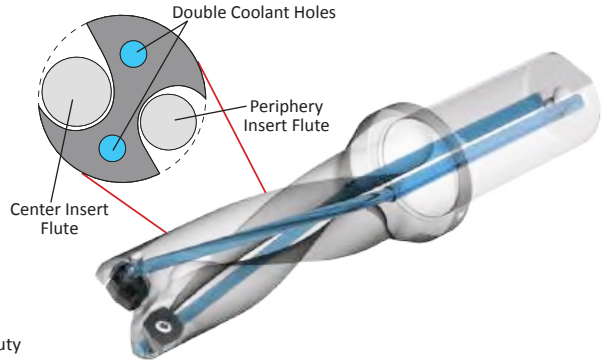




System Overview

4TEX Drill **Advantages**

- ✓ **Superior chip evacuation**
provided by the two twisted coolant holes.
- ✓ **Improved hole size**
from the increased holder rigidity.
- ✓ **Longer tool life**
provided by the four-sided insert design.
- ✓ **Optimal chip formation**
with ISO-specific insert geometry/coating combinations.
- ✓ **Competitive cycle times**
due to single effective cutting when using light duty machines.



DESIGNED TO GIVE YOU **IMPROVED** HOLE SIZE AND STRAIGHTNESS

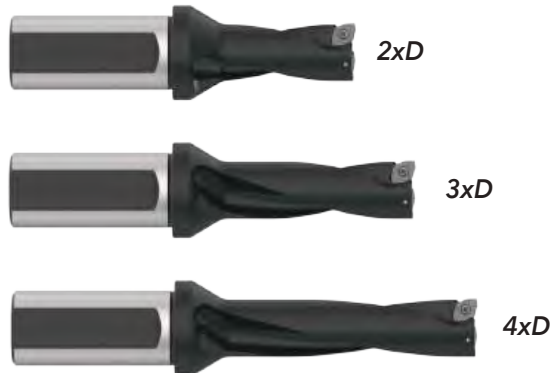
- The two twisted coolant holes allow the core to remain intact, making the core thicker and stronger for improved hole straightness even in uneven surfaces.
- The enlarged dual coolant outlets increase the coolant volume, which improves the chip evacuation resulting in improved hole size.
- The flute space of the internal cutting edge side (where chips get stuck most often) is 1.6x larger than typical IC drills, helping to mitigate catastrophic failures and improve hole size.

A55

LONGER TOOL LIFE



AVAILABLE **LENGTHS**





Product Nomenclature

4TEX Drill Holders

D4	03	1200	M	—	075	F
Drill Length	Series	Diameter*	Diameter Style		Shank Diameter	Shank Style
D2 = 2xD	03 09	1200 = 12 mm	M = Metric		Metric	FM = Metric flanged shank
D3 = 3xD	04 11	0750 = 0.075"	I = Imperial		Imperial	F = Imperial flanged shank
D4 = 4xD	05 14					
	06					
	07					
					20 = 20 mm 25 = 25 mm 32 = 32 mm 40 = 40 mm	075 = 0.075" 100 = 1.000" 125 = 1.250" 150 = 1.500"

*Ordering Nonstocked Diameters:

Nonstocked diameters are available upon request. Please refer to price list for applicable process fees.

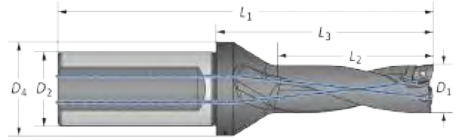
Ordering example:

Metric: 03 Series (12.65 mm) = D2031265M-20FM

Inch: 03 Series (Ø 0.480") = D2030480I-075F

Reference Key

Symbol	Attribute
D_1	Drill diameter
D_2	Shank diameter
D_4	Flange diameter
L_1	Assembled overall length
L_2	Drill depth
L_3	Reference length



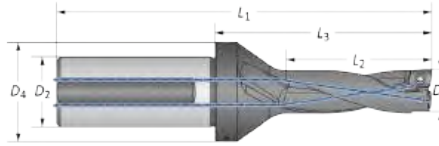
Series Details

Series		3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	11 Series	14 Series
Cutter Ø	mm	12.00 - 13.49	13.50 - 15.49	15.50 - 18.49	18.50 - 21.99	22.00 - 26.49	26.50 - 31.99	32.00 - 38.99	39.00 - 47.00
	inch	0.472 - 0.531	0.532 - 0.610	0.611 - 0.728	0.728 - 0.866	0.867 - 1.043	1.044 - 1.259	1.260 - 1.535	1.536 - 1.850
Shank Ø	mm	20.00	20.00	25.00	25.00	25.00	32.00	40.00	40.00
	inch	0.750	0.750	1.000	1.000	1.000	1.250	1.500	1.500
Insert Prefix		4T-030203C-x	4T-040203-x	4T-05T203-x	4T-06T204-x	4T-070305-x	4T-09T306-x	4T-11T306-x	4T-140408-x
		4T-030203P-x							
# of Inserts		2	2	2	2	2	2	2	2



03 Series: 12.00 mm - 13.49 mm (0.472" - 0.531")

Holders



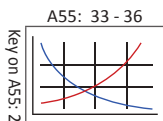
		D ₁		Body			Shank		Max Offset	
Length		mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		Part No.
m	2xD	12.00	0.472	24.00	45.40	88.40	20.00	27.00	0.50	D2031200M-20FM
		12.50	0.492	25.00	46.40	89.40	20.00	27.00	0.40	D2031250M-20FM
		12.70	0.500	25.40	46.40	89.40	20.00	27.00	0.35	D2030500I-20FM
		13.00	0.512	26.00	47.40	90.40	20.00	27.00	0.30	D2031300M-20FM
	3xD	12.00	0.472	36.00	57.40	100.40	20.00	27.00	0.50	D3031200M-20FM
		12.50	0.492	37.50	58.90	101.90	20.00	27.00	0.40	D3031250M-20FM
		12.70	0.500	38.10	58.90	101.90	20.00	27.00	0.35	D3030500I-20FM
		13.00	0.512	39.00	60.40	103.40	20.00	27.00	0.30	D3031300M-20FM
	4xD	12.00	0.472	48.00	69.40	112.40	20.00	27.00	0.50	D4031200M-20FM
		12.50	0.492	50.00	71.40	114.40	20.00	27.00	0.40	D4031250M-20FM
		12.70	0.500	50.80	71.40	114.40	20.00	27.00	0.35	D4030500I-20FM
		13.00	0.512	52.00	73.40	116.40	20.00	27.00	0.30	D4031300M-20FM
i	2xD	12.00	0.472	0.945	1.787	3.480	0.750	1.063	0.020	D2031200M-075F
		12.50	0.492	0.984	1.827	3.520	0.750	1.063	0.016	D2031250M-075F
		12.70	0.500	1.000	1.827	3.520	0.750	1.063	0.014	D2030500I-075F
		13.00	0.512	1.024	1.866	3.559	0.750	1.063	0.012	D2031300M-075F
	3xD	12.00	0.472	1.417	2.260	3.953	0.750	1.063	0.020	D3031200M-075F
		12.50	0.492	1.476	2.319	4.012	0.750	1.063	0.016	D3031250M-075F
		12.70	0.500	1.500	2.319	4.012	0.750	1.063	0.014	D3030500I-075F
		13.00	0.512	1.535	2.378	4.071	0.750	1.063	0.012	D3031300M-075F
	4xD	12.00	0.472	1.890	2.732	4.425	0.750	1.063	0.020	D4031200M-075F
		12.50	0.492	1.969	2.811	4.504	0.750	1.063	0.016	D4031250M-075F
		12.70	0.500	2.000	2.811	4.504	0.750	1.063	0.014	D4030500I-075F
		13.00	0.512	2.047	2.890	4.583	0.750	1.063	0.012	D4031300M-075F

IC Inserts

ISO	Style	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	Center	4T-030203C-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
	Periphery	4T-030203P-P			
S	Center	4T-030203C-M			
M	Periphery	4T-030203P-M			
K	Center	4T-030203C-K			
	Periphery	4T-030203P-K			
N	Center	4T-030203C-N			
	Periphery	4T-030203P-N			
H	Center	4T-030203C-H			
	Periphery	4T-030203P-H			

Expected Hole Tolerances

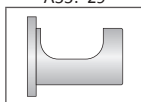
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



A55: 33 - 36



A55: 30 - 32



A55: 29

m = Metric (mm)

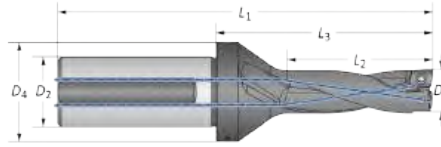
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



04 Series: 13.50 mm - 15.49 mm (0.532" - 0.610")

Holders



Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	13.50	0.531	27.00	48.40	91.40	20.00	27.00	20.00	D2041350M-20FM
	14.00	0.551	28.00	49.40	92.40	20.00	27.00	20.00	D2041400M-20FM
	14.29	0.563	28.55	49.40	92.40	20.00	27.00	20.00	D2040562I-20FM
	14.50	0.571	29.00	50.40	93.40	20.00	27.00	20.00	D2041450M-20FM
3xD	15.00	0.591	30.00	51.40	94.40	20.00	27.00	20.00	D2041500M-20FM
	13.50	0.531	40.50	61.90	104.90	20.00	27.00	20.00	D3041350M-20FM
	14.00	0.551	42.00	63.40	106.40	20.00	27.00	20.00	D3041400M-20FM
	14.29	0.563	42.82	63.40	106.40	20.00	27.00	20.00	D3040562I-20FM
4xD	14.50	0.571	43.50	64.90	107.90	20.00	27.00	20.00	D3041450M-20FM
	15.00	0.591	45.00	66.40	109.40	20.00	27.00	20.00	D3041500M-20FM
	13.50	0.531	54.00	75.40	118.40	20.00	27.00	20.00	D4041350M-20FM
	14.00	0.551	56.00	77.40	120.40	20.00	27.00	20.00	D4041400M-20FM
4xD	14.29	0.563	57.10	77.40	120.40	20.00	27.00	20.00	D4040562I-20FM
	14.50	0.571	58.00	79.40	122.40	20.00	27.00	20.00	D4041450M-20FM
	15.00	0.591	60.00	81.40	124.40	20.00	27.00	20.00	D4041500M-20FM
2xD	13.50	0.531	1.063	1.906	3.598	0.750	1.063	0.020	D2041350M-075F
	14.00	0.551	1.102	1.945	3.638	0.750	1.063	0.016	D2041400M-075F
	14.29	0.563	1.124	1.945	3.638	0.750	1.063	0.013	D2040562I-075F
	14.50	0.571	1.142	1.984	3.677	0.750	1.063	0.012	D2041450M-075F
3xD	15.00	0.591	1.181	2.024	3.717	0.750	1.063	0.008	D2041500M-075F
	13.50	0.531	1.594	2.437	4.130	0.750	1.063	0.020	D3041350M-075F
	14.00	0.551	1.654	2.496	4.189	0.750	1.063	0.016	D3041400M-075F
	14.29	0.563	1.686	2.496	4.189	0.750	1.063	0.013	D3040562I-075F
4xD	14.50	0.571	1.713	2.555	4.248	0.750	1.063	0.012	D3041450M-075F
	15.00	0.591	1.772	2.614	4.307	0.750	1.063	0.008	D3041500M-075F
	13.50	0.531	2.126	2.969	4.661	0.750	1.063	0.020	D4041350M-075F
	14.00	0.551	2.205	3.047	4.740	0.750	1.063	0.016	D4041400M-075F
4xD	14.29	0.563	2.248	3.047	4.740	0.750	1.063	0.013	D4040562I-075F
	14.50	0.571	2.283	3.126	4.819	0.750	1.063	0.012	D4041450M-075F
	15.00	0.591	2.362	3.205	4.898	0.750	1.063	0.008	D4041500M-075F

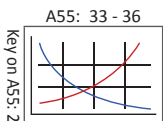
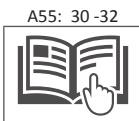
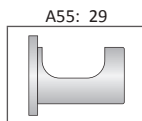
A55

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-040203-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S	4T-040203-M			
K	4T-040203-K			
N	4T-040203-N			
H	4T-040203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.004 + 0.008	- 0.10 + 0.20
3xD	- 0.004 + 0.008	- 0.10 + 0.20
4xD	- 0.004 + 0.010	- 0.10 + 0.25



m = Metric (mm)

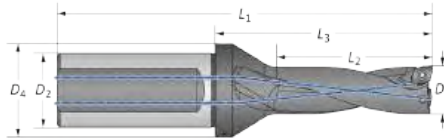
i = Imperial (in)

 IC inserts sold in quantities of 10.
 Insert screws sold in quantities of 10.



05 Series: 15.50 mm - 18.49 mm (0.611" - 0.728")

Holders



Metric Shank

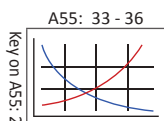
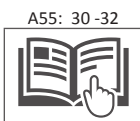
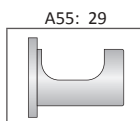
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.50	0.610	31.00	54.50	108.50	25.00	32.00	0.80	D2051550M-25FM
	15.88	0.625	31.75	54.50	108.50	25.00	32.00	0.70	D2050625I-25FM
	16.00	0.630	32.00	55.50	109.50	25.00	32.00	0.70	D2051600M-25FM
	16.50	0.650	33.00	56.50	110.50	25.00	32.00	0.50	D2051650M-25FM
	16.66	0.656	33.32	56.49	110.50	25.00	32.00	0.40	D2050656I-25FM
	17.00	0.669	34.00	57.50	111.50	25.00	32.00	0.40	D2051700M-25FM
	17.46	0.687	34.90	57.50	111.50	25.00	32.00	0.30	D2050687I-25FM
	17.50	0.689	35.00	58.50	112.50	25.00	32.00	0.30	D2051750M-25FM
	18.00	0.709	36.00	59.50	113.50	25.00	32.00	0.20	D2051800M-25FM
3xD	18.24	0.718	36.47	59.51	113.51	25.00	32.00	0.15	D2050718I-25FM
	15.50	0.610	46.50	70.00	124.00	25.00	32.00	0.80	D3051550M-25FM
	15.88	0.625	47.63	70.00	124.00	25.00	32.00	0.70	D3050625I-25FM
	16.00	0.630	48.00	71.50	125.50	25.00	32.00	0.70	D3051600M-25FM
	16.50	0.650	49.50	73.00	127.00	25.00	32.00	0.50	D3051650M-25FM
	16.66	0.656	49.98	73.00	127.00	25.00	32.00	0.40	D3050656I-25FM
	17.00	0.669	51.00	74.50	128.50	25.00	32.00	0.40	D3051700M-25FM
	17.46	0.687	52.35	74.50	128.50	25.00	32.00	0.30	D3050687I-25FM
	17.50	0.689	52.50	76.00	130.00	25.00	32.00	0.30	D3051750M-25FM
4xD	18.00	0.709	54.00	77.50	131.50	25.00	32.00	0.20	D3051800M-25FM
	18.24	0.718	54.71	77.50	131.50	25.00	32.00	0.15	D3050718I-25FM
	15.50	0.610	62.00	85.50	139.50	25.00	32.00	0.80	D4051550M-25FM
	15.88	0.625	63.50	85.50	139.50	25.00	32.00	0.70	D4050625I-25FM
	16.00	0.630	64.00	87.50	141.50	25.00	32.00	0.70	D4051600M-25FM
	16.50	0.650	66.00	89.50	143.50	25.00	32.00	0.50	D4051650M-25FM
	16.66	0.656	66.64	89.51	143.51	25.00	32.00	0.40	D4050656I-25FM
	17.00	0.669	68.00	91.50	145.50	25.00	32.00	0.40	D4051700M-25FM
	17.46	0.687	69.80	91.50	145.50	25.00	32.00	0.30	D4050687I-25FM
	17.50	0.689	70.00	93.50	147.50	25.00	32.00	0.30	D4051750M-25FM
	18.00	0.709	72.00	95.50	149.50	25.00	32.00	0.20	D4051800M-25FM
	18.24	0.718	72.95	95.50	149.50	25.00	32.00	0.15	D4050718I-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



Key on A55: 2

= Metric (mm)

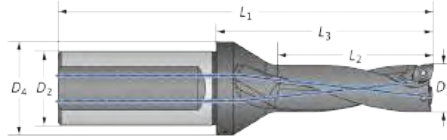
= Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



05 Series: 15.50 mm - 18.49 mm (0.611" - 0.728")

Holders



Imperial Shank

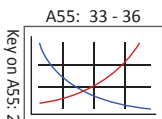
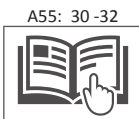
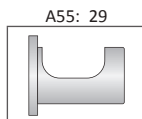
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.50	0.610	1.220	2.146	4.272	1.000	1.260	0.031	D2051550M-100F
	15.88	0.625	1.250	2.146	4.272	1.000	1.260	0.029	D2050625I-100F
	16.00	0.630	1.260	2.185	4.311	1.000	1.260	0.028	D2051600M-100F
	16.50	0.650	1.299	2.224	4.350	1.000	1.260	0.020	D2051650M-100F
	16.66	0.656	1.312	2.224	4.350	1.000	1.260	0.016	D2050656I-100F
	17.00	0.669	1.339	2.264	4.390	1.000	1.260	0.016	D2051700M-100F
	17.46	0.687	1.374	2.264	4.390	1.000	1.260	0.012	D2050687I-100F
	17.50	0.689	1.378	2.303	4.429	1.000	1.260	0.012	D2051750M-100F
3xD	18.00	0.709	1.417	2.343	4.469	1.000	1.260	0.008	D2051800M-100F
	18.24	0.718	1.436	2.343	4.469	1.000	1.260	0.006	D2050718I-100F
	15.50	0.610	1.831	2.756	4.882	1.000	1.260	0.031	D3051550M-100F
	15.88	0.625	1.875	2.756	4.882	1.000	1.260	0.029	D3050625I-100F
	16.00	0.630	1.890	2.815	4.941	1.000	1.260	0.028	D3051600M-100F
	16.50	0.650	1.949	2.874	5.000	1.000	1.260	0.020	D3051650M-100F
	16.66	0.656	1.968	2.784	5.000	1.000	1.260	0.016	D3050656I-100F
	17.00	0.669	2.008	2.933	5.059	1.000	1.260	0.016	D3051700M-100F
4xD	17.46	0.687	2.061	2.933	5.059	1.000	1.260	0.012	D3050687I-100F
	17.50	0.689	2.067	2.992	5.118	1.000	1.260	0.012	D3051750M-100F
	18.00	0.709	2.126	3.051	5.177	1.000	1.260	0.008	D3051800M-100F
	18.24	0.718	2.154	3.051	5.177	1.000	1.260	0.006	D3050718I-100F
	15.50	0.610	2.441	3.366	5.492	1.000	1.260	0.031	D4051550M-100F
	15.88	0.625	2.500	3.366	5.492	1.000	1.260	0.029	D4050625I-100F
	16.00	0.630	2.520	3.445	5.571	1.000	1.260	0.028	D4051600M-100F
	16.50	0.650	2.598	3.524	5.650	1.000	1.260	0.020	D4051650M-100F
4xD	16.66	0.656	2.624	3.524	5.650	1.000	1.260	0.016	D4050656I-100F
	17.00	0.669	2.677	3.602	5.728	1.000	1.260	0.016	D4051700M-100F
	17.46	0.687	2.748	3.602	5.728	1.000	1.260	0.012	D4050687I-100F
	17.50	0.689	2.756	3.681	5.807	1.000	1.260	0.012	D4051750M-100F
	18.00	0.709	2.835	3.760	5.886	1.000	1.260	0.008	D4051800M-100F
	18.24	0.718	2.872	3.760	5.886	1.000	1.260	0.006	D4050718I-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



Key on A55: 2

= Metric (mm)

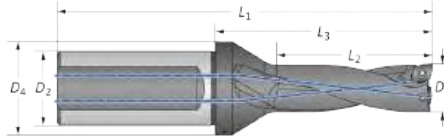
= Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")

Holders



Metric Shank

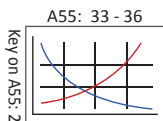
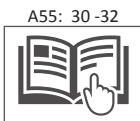
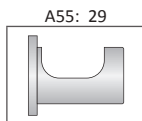
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	18.50	0.728	37.00	58.40	112.40	25.00	32.00	0.90	D2061850M-25FM
	19.00	0.748	38.00	59.40	113.40	25.00	32.00	0.80	D2061900M-25FM
	19.05	0.750	38.10	59.40	113.40	25.00	32.00	0.80	D2060750I-25FM
	19.43	0.765	38.86	59.41	113.41	25.00	32.00	0.70	D2060765I-25FM
	19.50	0.768	39.00	60.40	114.40	25.00	32.00	0.70	D2061950M-25FM
	20.00	0.787	40.00	61.40	115.40	25.00	32.00	0.50	D2062000M-25FM
	20.50	0.807	41.00	62.40	116.40	25.00	32.00	0.40	D2062050M-25FM
	20.64	0.813	41.25	62.40	116.40	25.00	32.00	0.40	D2060812I-25FM
	21.00	0.827	42.00	63.40	117.40	25.00	32.00	0.30	D2062100M-25FM
3xD	21.50	0.846	43.00	64.40	118.40	25.00	32.00	0.20	D2062150M-25FM
	18.50	0.728	55.00	76.90	130.90	25.00	32.00	0.90	D3061850M-25FM
	19.00	0.748	57.00	78.40	132.40	25.00	32.00	0.80	D3061900M-25FM
	19.05	0.750	57.15	78.40	132.40	25.00	32.00	0.80	D3060750I-25FM
	19.43	0.765	58.29	78.41	132.41	25.00	32.00	0.70	D3060765I-25FM
	19.50	0.768	58.50	79.90	133.90	25.00	32.00	0.70	D3061950M-25FM
	20.00	0.787	60.00	81.40	135.40	25.00	32.00	0.50	D3062000M-25FM
	20.50	0.807	61.50	82.90	136.90	25.00	32.00	0.40	D3062050M-25FM
	20.64	0.813	61.87	82.90	136.90	25.00	32.00	0.40	D3060812I-25FM
4xD	21.00	0.827	63.00	84.40	138.40	25.00	32.00	0.30	D3062100M-25FM
	21.50	0.846	64.50	85.90	139.90	25.00	32.00	0.20	D3062150M-25FM
	18.50	0.728	74.00	95.40	149.40	25.00	32.00	0.90	D4061850M-25FM
	19.00	0.748	76.00	97.40	151.40	25.00	32.00	0.80	D4061900M-25FM
	19.05	0.750	76.20	97.40	151.40	25.00	32.00	0.80	D4060750I-25FM
	19.43	0.765	77.72	97.41	151.41	25.00	32.00	0.70	D4060765I-25FM
	19.50	0.768	78.00	99.40	153.40	25.00	32.00	0.70	D4061950M-25FM
	20.00	0.787	80.00	101.40	155.40	25.00	32.00	0.50	D4062000M-25FM
	20.50	0.807	82.00	103.40	157.40	25.00	32.00	0.40	D4062050M-25FM
	20.64	0.813	82.49	103.40	157.40	25.00	32.00	0.40	D4060812I-25FM
	21.00	0.827	84.00	105.40	159.40	25.00	32.00	0.30	D4062100M-25FM
	21.50	0.846	86.00	107.40	161.40	25.00	32.00	0.20	D4062150M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



Ⓜ = Metric (mm)

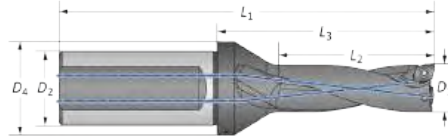
Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



06 Series: 18.50 mm - 21.99 mm (0.728" - 0.866")

Holders



Imperial Shank

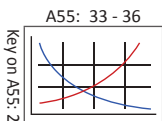
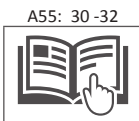
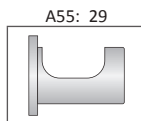
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	18.50	0.728	1.457	2.299	4.425	1.000	1.260	0.035	D2061850M-100F
	19.00	0.748	1.496	2.339	4.465	1.000	1.260	0.031	D2061900M-100F
	19.05	0.750	1.500	2.339	4.465	1.000	1.260	0.031	D2060750I-100F
	19.43	0.765	1.530	2.339	4.465	1.000	1.260	0.028	D2060765I-100F
	19.50	0.768	1.535	2.378	4.504	1.000	1.260	0.028	D2061950M-100F
	20.00	0.787	1.575	2.417	4.543	1.000	1.260	0.020	D2062000M-100F
	20.50	0.807	1.614	2.457	4.583	1.000	1.260	0.016	D2062050M-100F
	20.64	0.813	1.624	2.457	4.583	1.000	1.260	0.015	D2060812I-100F
	21.00	0.827	1.654	2.496	4.622	1.000	1.260	0.012	D2062100M-100F
	21.50	0.846	1.693	2.535	4.661	1.000	1.260	0.008	D2062150M-100F
3xD	18.50	0.728	2.165	3.028	5.154	1.000	1.260	0.035	D3061850M-100F
	19.00	0.748	2.244	3.087	5.213	1.000	1.260	0.031	D3061900M-100F
	19.05	0.750	2.250	3.087	5.213	1.000	1.260	0.031	D3060750I-100F
	19.43	0.765	2.295	3.087	5.213	1.000	1.260	0.028	D3060765I-100F
	19.50	0.768	2.303	3.146	5.272	1.000	1.260	0.028	D3061950M-100F
	20.00	0.787	2.362	3.205	5.331	1.000	1.260	0.020	D3062000M-100F
	20.50	0.807	2.421	3.264	5.390	1.000	1.260	0.016	D3062050M-100F
	20.64	0.813	2.436	3.264	5.390	1.000	1.260	0.015	D3060812I-100F
	21.00	0.827	2.480	3.323	5.449	1.000	1.260	0.012	D3062100M-100F
	21.50	0.846	2.539	3.382	5.508	1.000	1.260	0.008	D3062150M-100F
4xD	18.50	0.728	2.913	3.756	5.882	1.000	1.260	0.035	D4061850M-100F
	19.00	0.748	2.992	3.835	5.961	1.000	1.260	0.031	D4061900M-100F
	19.05	0.750	3.000	3.835	5.961	1.000	1.260	0.031	D4060750I-100F
	19.43	0.765	3.060	3.835	5.961	1.000	1.260	0.028	D4060765I-100F
	19.50	0.768	3.071	3.913	6.039	1.000	1.260	0.028	D4061950M-100F
	20.00	0.787	3.150	3.992	6.118	1.000	1.260	0.020	D4062000M-100F
	20.50	0.807	3.228	4.071	6.197	1.000	1.260	0.016	D4062050M-100F
	20.64	0.813	3.248	4.071	6.197	1.000	1.260	0.015	D4060812I-100F
	21.00	0.827	3.307	4.150	6.276	1.000	1.260	0.012	D4062100M-100F
	21.50	0.846	3.386	4.228	6.354	1.000	1.260	0.008	D4062150M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



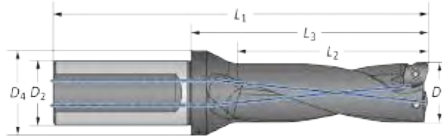
Ⓜ = Metric (mm)

Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")**

Holders



Metric Shank

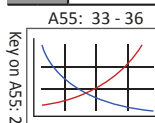
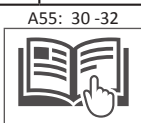
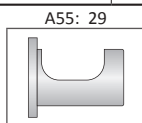
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	44.00	64.90	118.90	25.00	33.00	1.20	D2072200M-25FM
	22.22	0.875	44.45	64.90	118.90	25.00	33.00	1.10	D2070875I-25FM
	22.50	0.886	45.00	65.90	119.90	25.00	33.00	1.00	D2072250M-25FM
	23.00	0.906	46.00	66.90	120.90	25.00	33.00	0.90	D2072300M-25FM
	23.50	0.925	47.00	67.90	121.90	25.00	33.00	0.80	D2072350M-25FM
	23.81	0.937	47.60	67.90	121.90	25.00	33.00	0.740	D2070937I-25FM
	24.00	0.945	48.00	68.90	122.90	25.00	33.00	0.70	D2072400M-25FM
	24.50	0.965	49.00	69.90	123.90	25.00	33.00	0.50	D2072450M-25FM
	25.00	0.984	50.00	70.90	124.90	25.00	33.00	0.40	D2072500M-25FM
	25.40	1.000	50.80	70.90	124.90	25.00	33.00	0.30	D2071000I-25FM
3xD	25.50	1.004	51.00	71.90	125.90	25.00	33.00	0.30	D2072550M-25FM
	26.00	1.024	52.00	72.90	126.90	25.00	33.00	0.20	D2072600M-25FM
	22.00	0.866	66.00	86.90	140.90	25.00	33.00	1.20	D3072200M-25FM
	22.22	0.875	66.68	86.90	140.90	25.00	33.00	1.10	D3070875I-25FM
	22.50	0.886	67.50	88.40	142.40	25.00	33.00	1.00	D3072250M-25FM
	23.00	0.906	69.00	89.90	143.90	25.00	33.00	0.90	D3072300M-25FM
	23.50	0.925	70.50	91.40	145.40	25.00	33.00	0.80	D3072350M-25FM
	23.81	0.937	71.40	91.40	145.40	25.00	33.00	0.740	D3070937I-25FM
	24.00	0.945	72.00	92.90	146.90	25.00	33.00	0.70	D3072400M-25FM
	24.50	0.965	73.50	94.40	148.40	25.00	33.00	0.50	D3072450M-25FM
4xD	25.00	0.984	75.00	95.90	149.90	25.00	33.00	0.40	D3072500M-25FM
	25.40	1.000	76.20	95.90	149.90	25.00	33.00	0.30	D3071000I-25FM
	25.50	1.004	76.50	97.00	151.00	25.00	33.00	0.30	D3072550M-25FM
	26.00	1.024	78.00	99.00	153.00	25.00	33.00	0.20	D3072600M-25FM
	22.00	0.866	88.00	109.00	163.00	25.00	33.00	1.20	D4072200M-25FM
	22.22	0.875	88.90	108.90	162.90	25.00	33.00	1.10	D4070875I-25FM
	22.50	0.886	90.00	111.00	165.00	25.00	33.00	1.00	D4072250M-25FM
	23.00	0.906	92.00	113.00	167.00	25.00	33.00	0.90	D4072300M-25FM
	23.50	0.925	94.00	115.00	169.00	25.00	33.00	0.80	D4072350M-25FM
	23.81	0.937	95.20	114.90	168.90	25.00	33.00	0.740	D4070937I-25FM
4xD	24.00	0.945	96.00	117.00	171.00	25.00	33.00	0.70	D4072400M-25FM
	24.50	0.965	98.00	119.00	173.00	25.00	33.00	0.50	D4072450M-25FM
	25.00	0.984	100.00	121.00	175.00	25.00	33.00	0.40	D4072500M-25FM
	25.40	1.000	101.60	120.90	174.90	25.00	33.00	0.30	D4071000I-25FM
	25.50	1.004	102.00	123.00	177.00	25.00	33.00	0.30	D4072550M-25FM
	26.00	1.024	104.00	125.00	179.00	25.00	33.00	0.20	D4072600M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
	- 0.10 + 0.25	- 0.004 + 0.010



Key on A55: 2

M = Metric (mm)

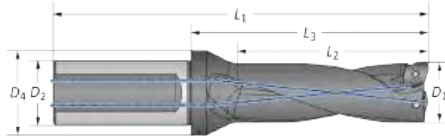
I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



07 Series: 22.00 mm - 26.49 mm (0.867" - 1.043")

Holders



Imperial Shank

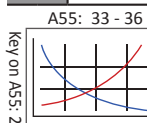
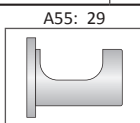
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	1.732	2.555	4.681	1.000	1.299	0.047	D2072200M-100F
	22.22	0.875	1.750	2.555	4.681	1.000	1.299	0.043	D2070875I-100F
	22.50	0.886	1.772	2.594	4.720	1.000	1.299	0.039	D2072250M-100F
	23.00	0.906	1.811	2.634	4.760	1.000	1.299	0.035	D2072300M-100F
	23.50	0.925	1.850	2.673	4.799	1.000	1.299	0.031	D2072350M-100F
	23.81	0.937	1.874	2.673	4.799	1.000	1.299	0.292	D2070937I-100F
	24.00	0.945	1.890	2.713	4.839	1.000	1.299	0.028	D2072400M-100F
	24.50	0.965	1.929	2.752	4.878	1.000	1.299	0.020	D2072450M-100F
	25.00	0.984	1.969	2.791	4.917	1.000	1.299	0.016	D2072500M-100F
	25.40	1.000	2.000	2.791	4.917	1.000	1.299	0.013	D2071000I-100F
3xD	25.50	1.004	2.008	2.831	4.957	1.000	1.299	0.012	D2072550M-100F
	26.00	1.024	2.047	2.870	4.996	1.000	1.299	0.008	D2072600M-100F
	22.00	0.866	2.598	3.421	5.547	1.000	1.299	0.047	D3072200M-100F
	22.22	0.875	2.625	3.421	5.547	1.000	1.299	0.043	D3070875I-100F
	22.50	0.886	2.657	3.480	5.606	1.000	1.299	0.039	D3072250M-100F
	23.00	0.906	2.717	3.539	5.665	1.000	1.299	0.035	D3072300M-100F
	23.50	0.925	2.776	3.598	5.724	1.000	1.299	0.031	D3072350M-100F
	23.81	0.937	2.811	3.598	5.724	1.000	1.299	0.292	D3070937I-100F
	24.00	0.945	2.835	3.657	5.783	1.000	1.299	0.028	D3072400M-100F
	24.50	0.965	2.894	3.717	5.843	1.000	1.299	0.020	D3072450M-100F
4xD	25.00	0.984	2.953	3.776	5.902	1.000	1.299	0.016	D3072500M-100F
	25.40	1.000	3.000	3.776	5.902	1.000	1.299	0.013	D3071000I-100F
	25.50	1.004	3.012	3.835	5.961	1.000	1.299	0.012	D3072550M-100F
	26.00	1.024	3.071	3.894	6.020	1.000	1.299	0.008	D3072600M-100F
	22.00	0.866	3.465	4.287	6.413	1.000	1.299	0.047	D4072200M-100F
	22.22	0.875	3.500	4.287	6.413	1.000	1.299	0.043	D4070875I-100F
	22.50	0.886	3.543	4.366	6.492	1.000	1.299	0.039	D4072250M-100F
	23.00	0.906	3.622	4.445	6.571	1.000	1.299	0.035	D4072300M-100F
	23.50	0.925	3.701	4.524	6.650	1.000	1.299	0.031	D4072350M-100F
	23.81	0.937	3.748	4.524	6.650	1.000	1.299	0.292	D4070937I-100F
4xD	24.00	0.945	3.780	4.602	6.728	1.000	1.299	0.028	D4072400M-100F
	24.50	0.965	3.858	4.681	6.807	1.000	1.299	0.020	D4072450M-100F
	25.00	0.984	3.937	4.760	6.886	1.000	1.299	0.016	D4072500M-100F
	25.40	1.000	4.000	4.760	6.886	1.000	1.299	0.013	D4071000I-100F
	25.50	1.004	4.016	4.839	6.965	1.000	1.299	0.012	D4072550M-100F
	26.00	1.024	4.094	4.917	7.043	1.000	1.299	0.008	D4072600M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



Ⓜ = Metric (mm)

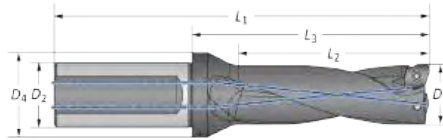
Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders



Metric Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	26.50	1.043	53.00	75.70	134.70	32.00	41.00	1.68	D2092650M-32FM
	27.00	1.063	54.00	76.70	135.70	32.00	41.00	1.60	D2092700M-32FM
	27.50	1.083	55.00	77.70	136.70	32.00	41.00	1.45	D2092750M-32FM
	28.00	1.102	56.00	78.70	137.70	32.00	41.00	1.30	D2092800M-32FM
	28.50	1.122	57.00	79.70	138.70	32.00	41.00	1.21	D2092850M-32FM
	28.58	1.125	57.15	79.70	138.70	32.00	41.00	1.20	D2091125I-32FM
	29.00	1.142	58.00	80.70	139.70	32.00	41.00	1.10	D2092900M-32FM
	29.50	1.161	59.00	81.70	140.70	32.00	41.00	0.97	D2092950M-32FM
	30.00	1.181	60.00	82.70	141.70	32.00	41.00	0.80	D2093000M-32FM
	30.15	1.187	60.30	82.70	141.70	32.00	41.00	0.82	D2091187I-32FM
	30.50	1.201	61.00	83.70	142.70	32.00	41.00	0.74	D2093050M-32FM
	31.00	1.220	62.00	84.70	143.70	32.00	41.00	0.60	D2093100M-32FM
	31.50	1.240	63.00	85.70	144.70	32.00	41.00	0.50	D2093150M-32FM
	31.75	1.250	63.50	85.70	144.70	32.00	41.00	0.50	D2091250I-32FM
3xD	26.50	1.043	79.50	102.20	161.20	32.00	41.00	1.68	D3092650M-32FM
	27.00	1.063	81.00	103.70	162.70	32.00	41.00	1.60	D3092700M-32FM
	27.50	1.083	82.50	105.20	164.20	32.00	41.00	1.45	D3092750M-32FM
	28.00	1.102	84.00	106.70	165.70	32.00	41.00	1.30	D3092800M-32FM
	28.50	1.122	85.50	108.20	167.20	32.00	41.00	1.21	D3092850M-32FM
	28.58	1.125	85.73	108.20	167.20	32.00	41.00	1.20	D3091125I-32FM
	29.00	1.142	87.00	109.70	168.70	32.00	41.00	1.10	D3092900M-32FM
	29.50	1.161	88.50	111.20	170.20	32.00	41.00	0.97	D3092950M-32FM
	30.00	1.181	90.00	112.70	171.70	32.00	41.00	0.80	D3093000M-32FM
	30.15	1.187	90.45	112.70	171.70	32.00	41.00	0.82	D3091187I-32FM
	30.50	1.201	91.50	114.20	173.20	32.00	41.00	0.74	D3093050M-32FM
	31.00	1.220	93.00	115.70	174.70	32.00	41.00	0.60	D3093100M-32FM
	31.50	1.240	94.50	117.00	176.20	32.00	41.00	0.50	D3093150M-32FM
	31.75	1.250	95.25	117.20	176.20	32.00	41.00	0.50	D3091250I-32FM

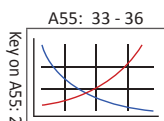
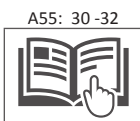
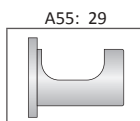
A55

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



m = Metric (mm)

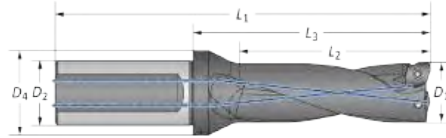
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders



Metric Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m 4xD	26.50	1.043	106.00	128.70	187.70	32.00	41.00	1.68	D4092650M-32FM
	27.00	1.063	108.00	130.70	189.70	32.00	41.00	1.60	D4092700M-32FM
	27.50	1.083	110.00	132.70	191.70	32.00	41.00	1.45	D4092750M-32FM
	28.00	1.102	112.00	134.70	193.70	32.00	41.00	1.30	D4092800M-32FM
	28.50	1.122	114.00	136.70	195.70	32.00	41.00	1.21	D4092850M-32FM
	28.58	1.125	114.30	136.70	195.70	32.00	41.00	1.20	D4091125I-32FM
	29.00	1.142	116.00	138.70	197.70	32.00	41.00	1.10	D4092900M-32FM
	29.50	1.161	118.00	140.70	199.70	32.00	41.00	0.97	D4092950M-32FM
	30.00	1.181	120.00	142.70	201.70	32.00	41.00	0.80	D4093000M-32FM
	30.15	1.187	120.60	142.70	201.70	32.00	41.00	0.82	D4091187I-32FM
	30.50	1.201	122.00	144.70	203.70	32.00	41.00	0.74	D4093050M-32FM
	31.00	1.220	124.00	146.70	205.70	32.00	41.00	0.60	D4093100M-32FM
	31.50	1.240	126.00	148.70	207.70	32.00	41.00	0.50	D4093150M-32FM
	31.75	1.250	127.00	148.70	207.70	32.00	41.00	0.50	D4091250I-32FM

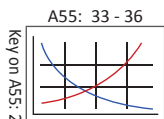
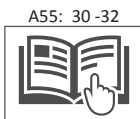
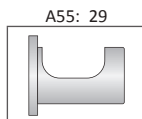
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55



m = Metric (mm)

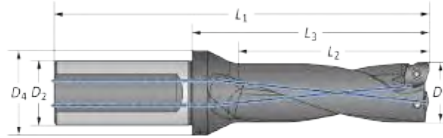
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders



Imperial Shank

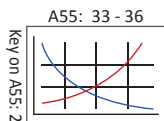
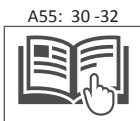
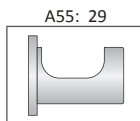
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	26.50	1.043	2.087	2.980	5.303	1.250	1.614	0.066	D2092650M-125F
	27.00	1.063	2.126	3.020	5.343	1.250	1.614	0.063	D2092700M-125F
	27.50	1.083	2.165	3.059	5.382	1.250	1.614	0.057	D2092750M-125F
	28.00	1.102	2.205	3.098	5.421	1.250	1.614	0.051	D2092800M-125F
	28.50	1.122	2.244	3.138	5.461	1.250	1.614	0.048	D2092850M-125F
	28.58	1.125	2.250	3.138	5.461	1.250	1.614	0.046	D2091125I-125F
	29.00	1.142	2.283	3.177	5.500	1.250	1.614	0.043	D2092900M-125F
	29.50	1.161	2.323	3.217	5.539	1.250	1.614	0.038	D2092950M-125F
	30.00	1.181	2.362	3.256	5.579	1.250	1.614	0.031	D2093000M-125F
	30.15	1.187	2.374	3.256	5.579	1.250	1.614	0.032	D2091187I-125F
	30.50	1.201	2.402	3.295	5.618	1.250	1.614	0.029	D2093050M-125F
	31.00	1.220	2.441	3.335	5.657	1.250	1.614	0.024	D2093100M-125F
	31.50	1.240	2.480	3.374	5.697	1.250	1.614	0.020	D2093150M-125F
	31.75	1.250	2.500	3.374	5.697	1.250	1.614	0.019	D2091250I-125F
3xD	26.50	1.043	3.130	4.024	6.346	1.250	1.614	0.066	D3092650M-125F
	27.00	1.063	3.189	4.083	6.406	1.250	1.614	0.063	D3092700M-125F
	27.50	1.083	3.248	4.142	6.465	1.250	1.614	0.057	D3092750M-125F
	28.00	1.102	3.307	4.201	6.524	1.250	1.614	0.051	D3092800M-125F
	28.50	1.122	3.366	4.260	6.583	1.250	1.614	0.048	D3092850M-125F
	28.58	1.125	3.375	4.260	6.583	1.250	1.614	0.046	D3091125I-125F
	29.00	1.142	3.425	4.319	6.642	1.250	1.614	0.043	D3092900M-125F
	29.50	1.161	3.484	4.378	6.701	1.250	1.614	0.038	D3092950M-125F
	30.00	1.181	3.543	4.437	6.760	1.250	1.614	0.031	D3093000M-125F
	30.15	1.187	3.561	4.437	6.760	1.250	1.614	0.032	D3091187I-125F
	30.50	1.201	3.602	4.496	6.819	1.250	1.614	0.029	D3093050M-125F
	31.00	1.220	3.661	4.555	6.878	1.250	1.614	0.024	D3093100M-125F
	31.50	1.240	3.720	4.614	6.937	1.250	1.614	0.020	D3093150M-125F
	31.75	1.250	3.750	4.614	6.937	1.250	1.614	0.019	D3091250I-125F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



Key on A55: 2

m = Metric (mm)

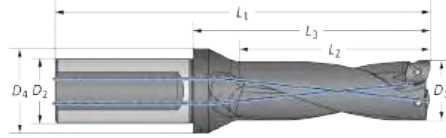
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 26.50 mm - 31.99 mm (1.044" - 1.259")

Holders



Imperial Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
i 4xD	26.50	1.043	4.173	5.067	7.390	1.250	1.614	0.066	D4092650M-125F
	27.00	1.063	4.252	5.146	7.469	1.250	1.614	0.063	D4092700M-125F
	27.50	1.083	4.331	5.224	7.547	1.250	1.614	0.057	D4092750M-125F
	28.00	1.102	4.409	5.303	7.626	1.250	1.614	0.051	D4092800M-125F
	28.50	1.122	4.488	5.382	7.705	1.250	1.614	0.048	D4092850M-125F
	28.58	1.125	4.500	5.382	7.705	1.250	1.614	0.046	D4091125I-125F
	29.00	1.142	4.567	5.461	7.783	1.250	1.614	0.043	D4092900M-125F
	29.50	1.161	4.646	5.539	7.862	1.250	1.614	0.038	D4092950M-125F
	30.00	1.181	4.724	5.618	7.941	1.250	1.614	0.031	D4093000M-125F
	30.15	1.187	4.748	5.618	7.941	1.250	1.614	0.032	D4091187I-125F
	30.50	1.201	4.803	5.697	8.020	1.250	1.614	0.029	D4093050M-125F
	31.00	1.220	4.882	5.776	8.098	1.250	1.614	0.024	D4093100M-125F
	31.50	1.240	4.961	5.854	8.177	1.250	1.614	0.020	D4093150M-125F
	31.75	1.250	5.000	5.854	8.177	1.250	1.614	0.019	D4091250I-125F

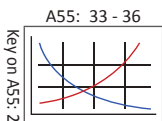
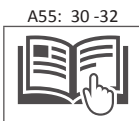
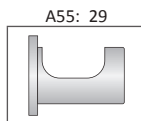
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55



m = Metric (mm)

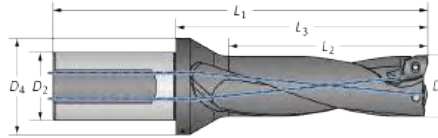
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders



Metric Shank

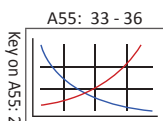
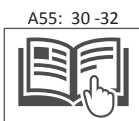
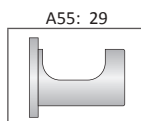
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	64.00	100.40	169.40	40.00	54.00	2.20	D2113200M-40FM
	32.50	1.280	65.00	100.40	169.40	40.00	54.00	2.05	D2113250M-40FM
	33.00	1.299	66.00	102.40	171.40	40.00	54.00	1.90	D2113300M-40FM
	33.32	1.312	66.65	102.40	171.40	40.00	54.00	1.84	D2111312I-40FM
	33.50	1.319	67.00	102.40	171.40	40.00	54.00	1.80	D2113350M-40FM
	34.00	1.339	68.00	104.40	173.40	40.00	54.00	1.70	D2113400M-40FM
	34.50	1.358	69.00	104.40	173.40	40.00	54.00	1.55	D2113450M-40FM
	34.92	1.375	69.85	104.40	173.40	40.00	54.00	1.42	D2111375I-40FM
	35.00	1.378	70.00	106.40	175.40	40.00	54.00	1.40	D2113500M-40FM
	35.50	1.398	71.00	106.40	175.40	40.00	54.00	1.30	D2113550M-40FM
	36.00	1.417	72.00	108.40	177.40	40.00	54.00	1.20	D2113600M-40FM
	36.50	1.437	73.00	108.40	177.40	40.00	54.00	1.06	D2113650M-40FM
	37.00	1.457	74.00	110.40	179.40	40.00	54.00	0.90	D2113700M-40FM
	37.50	1.476	75.00	110.40	179.40	40.00	54.00	0.81	D2113750M-40FM
	38.00	1.496	76.00	112.40	181.40	40.00	54.00	0.70	D2113800M-40FM
	38.10	1.500	76.20	112.40	181.40	40.00	54.00	0.69	D2111500I-40FM
	38.50	1.516	77.00	112.40	181.40	40.00	54.00	0.56	D2113850M-40FM
3xD	32.00	1.260	96.00	132.40	201.40	40.00	54.00	2.20	D3113200M-40FM
	32.50	1.280	97.50	132.40	201.40	40.00	54.00	2.05	D3113250M-40FM
	33.00	1.299	99.00	135.40	204.40	40.00	54.00	1.90	D3113300M-40FM
	33.32	1.312	99.97	135.40	204.40	40.00	54.00	1.84	D3111312I-40FM
	33.50	1.319	100.50	135.40	204.40	40.00	54.00	1.80	D3113350M-40FM
	34.00	1.339	102.00	138.40	207.40	40.00	54.00	1.70	D3113400M-40FM
	34.50	1.358	103.50	138.40	207.40	40.00	54.00	1.55	D3113450M-40FM
	34.92	1.375	104.78	138.40	207.40	40.00	54.00	1.42	D3111375I-40FM
	35.00	1.378	105.00	141.40	210.40	40.00	54.00	1.40	D3113500M-40FM
	35.50	1.398	106.50	141.40	210.40	40.00	54.00	1.30	D3113550M-40FM
	36.00	1.417	108.00	144.40	213.40	40.00	54.00	1.20	D3113600M-40FM
	36.50	1.437	109.50	144.40	213.40	40.00	54.00	1.06	D3113650M-40FM
	37.00	1.457	111.00	147.40	216.40	40.00	54.00	0.90	D3113700M-40FM
	37.50	1.476	112.50	147.40	216.40	40.00	54.00	0.81	D3113750M-40FM
	38.00	1.496	114.00	150.40	219.40	40.00	54.00	0.70	D3113800M-40FM
	38.10	1.500	114.30	150.40	219.40	40.00	54.00	0.69	D3111500I-40FM
	38.50	1.516	115.50	150.40	219.40	40.00	54.00	0.56	D3113850M-150FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



Ⓜ = Metric (mm)

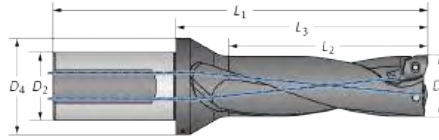
Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders



Metric Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m 4xD	32.00	1.260	128.00	154.40	223.40	40.00	54.00	2.20	D4113200M-40FM
	32.50	1.280	130.00	154.40	223.40	40.00	54.00	2.05	D4113250M-40FM
	33.00	1.299	132.00	158.40	227.40	40.00	54.00	1.90	D4113300M-40FM
	33.32	1.312	133.30	158.40	227.40	40.00	54.00	1.84	D4111312I-40FM
	33.50	1.319	134.00	158.40	227.40	40.00	54.00	1.80	D4113350M-40FM
	34.00	1.339	136.00	162.40	231.40	40.00	54.00	1.70	D4113400M-40FM
	34.50	1.358	138.00	162.40	231.40	40.00	54.00	1.55	D4113450M-40FM
	34.92	1.375	139.70	162.40	231.40	40.00	54.00	1.42	D4111375I-40FM
	35.00	1.378	140.00	166.40	235.40	40.00	54.00	1.40	D4113500M-40FM
	35.50	1.398	142.00	166.40	235.40	40.00	54.00	1.30	D4113550M-40FM
	36.00	1.417	144.00	170.40	239.40	40.00	54.00	1.20	D4113600M-40FM
	36.50	1.437	146.00	170.40	239.40	40.00	54.00	1.06	D4113650M-40FM
	37.00	1.457	148.00	174.40	243.40	40.00	54.00	0.90	D4113700M-40FM
	37.50	1.476	150.00	174.40	243.40	40.00	54.00	0.81	D4113750M-40FM
	38.00	1.496	152.00	178.40	247.40	40.00	54.00	0.70	D4113800M-40FM
	38.10	1.500	152.40	178.40	247.40	40.00	54.00	0.69	D4111500I-40FM
	38.50	1.516	154.00	178.40	247.40	40.00	54.00	0.56	D4113850M-40FM

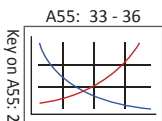
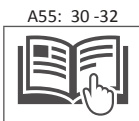
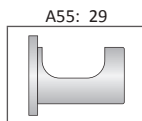
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55



m = Metric (mm)

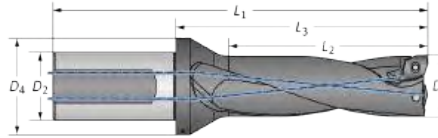
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders



Imperial Shank

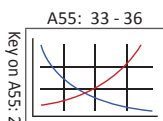
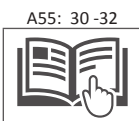
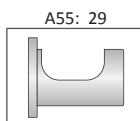
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	2.520	3.953	6.669	1.500	2.126	0.087	D2113200M-150F
	32.50	1.280	2.559	3.953	6.669	1.500	2.126	0.081	D2113250M-150F
	33.00	1.299	2.598	4.031	6.748	1.500	2.126	0.075	D2113300M-150F
	33.32	1.312	2.624	4.031	6.748	1.500	2.126	0.073	D2111312I-150F
	33.50	1.319	2.638	4.031	6.748	1.500	2.126	0.071	D2113350M-150F
	34.00	1.339	2.677	4.110	6.827	1.500	2.126	0.067	D2113400M-150F
	34.50	1.358	2.717	4.110	6.827	1.500	2.126	0.061	D2113450M-150F
	34.92	1.375	2.750	4.110	6.827	1.500	2.126	0.056	D2111375I-150F
	35.00	1.378	2.756	4.189	6.906	1.500	2.126	0.055	D2113500M-150F
	35.50	1.398	2.795	4.189	6.906	1.500	2.126	0.051	D2113550M-150F
	36.00	1.417	2.835	4.268	6.984	1.500	2.126	0.047	D2113600M-150F
	36.50	1.437	2.874	4.268	6.984	1.500	2.126	0.042	D2113650M-150F
	37.00	1.457	2.913	4.346	7.063	1.500	2.126	0.035	D2113700M-150F
	37.50	1.476	2.953	4.346	7.063	1.500	2.126	0.032	D2113750M-150F
	38.00	1.496	2.992	4.425	7.142	1.500	2.126	0.028	D2113800M-150F
	38.10	1.500	3.000	4.425	7.142	1.500	2.126	0.027	D2111500I-150F
	38.50	1.516	3.031	4.425	7.142	1.500	2.126	0.022	D2113850M-150F
3xD	32.00	1.260	3.780	5.213	7.929	1.500	2.126	0.087	D3113200M-150F
	32.50	1.280	3.839	5.213	7.929	1.500	2.126	0.081	D3113250M-150F
	33.00	1.299	3.898	5.331	8.047	1.500	2.126	0.075	D3113300M-150F
	33.32	1.312	3.936	5.331	8.047	1.500	2.126	0.073	D3111312I-150F
	33.50	1.319	3.957	5.331	8.047	1.500	2.126	0.071	D3113350M-150F
	34.00	1.339	4.016	5.449	8.165	1.500	2.126	0.067	D3113400M-150F
	34.50	1.358	4.075	5.449	8.165	1.500	2.126	0.061	D3113450M-150F
	34.92	1.375	4.125	5.449	8.165	1.500	2.126	0.056	D3111375I-150F
	35.00	1.378	4.134	5.567	8.283	1.500	2.126	0.055	D3113500M-150F
	35.50	1.398	4.193	5.567	8.283	1.500	2.126	0.051	D3113550M-150F
	36.00	1.417	4.252	5.685	8.402	1.500	2.126	0.047	D3113600M-150F
	36.50	1.437	4.311	5.685	8.402	1.500	2.126	0.042	D3113650M-150F
	37.00	1.457	4.370	5.803	8.520	1.500	2.126	0.035	D3113700M-150F
	37.50	1.476	4.429	5.803	8.520	1.500	2.126	0.032	D3113750M-150F
	38.00	1.496	4.488	5.921	8.638	1.500	2.126	0.028	D3113800M-150F
	38.10	1.500	4.500	5.921	8.638	1.500	2.126	0.027	D3111500I-150F
	38.50	1.516	4.547	5.921	8.638	1.500	2.126	0.022	D3113850M-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



Key on A55: 2

m = Metric (mm)

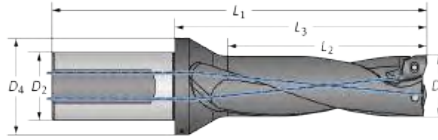
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.99 mm (1.260" - 1.535")

Holders



Imperial Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
i 4xD	32.00	1.260	5.039	6.079	8.795	1.500	2.126	0.087	D4113200M-150F
	32.50	1.280	5.118	6.079	8.795	1.500	2.126	0.081	D4113250M-150F
	33.00	1.299	5.197	6.236	8.953	1.500	2.126	0.075	D4113300M-150F
	33.32	1.312	5.248	6.236	8.953	1.500	2.126	0.073	D4111312I-150F
	33.50	1.319	5.276	6.236	8.953	1.500	2.126	0.071	D4113350M-150F
	34.00	1.339	5.354	6.394	9.110	1.500	2.126	0.067	D4113400M-150F
	34.50	1.358	5.433	6.394	9.110	1.500	2.126	0.061	D4113450M-150F
	34.92	1.375	5.500	6.394	9.110	1.500	2.126	0.056	D4111375I-150F
	35.00	1.378	5.512	6.551	9.268	1.500	2.126	0.055	D4113500M-150F
	35.50	1.398	5.591	6.551	9.268	1.500	2.126	0.051	D4113550M-150F
	36.00	1.417	5.669	6.709	9.425	1.500	2.126	0.047	D4113600M-150F
	36.50	1.437	5.748	6.709	9.425	1.500	2.126	0.042	D4113650M-150F
	37.00	1.457	5.827	6.866	9.583	1.500	2.126	0.035	D4113700M-150F
	37.50	1.476	5.906	6.866	9.583	1.500	2.126	0.032	D4113750M-150F
	38.00	1.496	5.984	7.024	9.740	1.500	2.126	0.028	D4113800M-150F
	38.10	1.500	6.000	7.024	9.740	1.500	2.126	0.027	D4111500I-150F
	38.50	1.516	6.063	7.024	9.740	1.500	2.126	0.022	D4113850M-150F

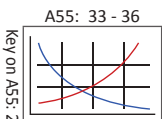
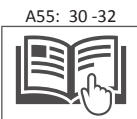
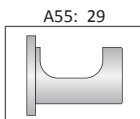
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

A55



Key on A55: 2

m = Metric (mm)

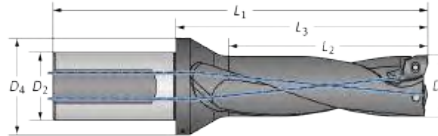
i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders



Metric Shank

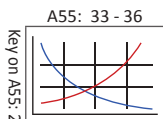
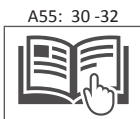
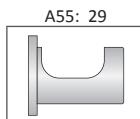
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	78.00	110.40	179.40	40.00	54.00	2.80	D2143900M-40FM
	39.50	1.555	79.00	110.40	179.40	40.00	54.00	2.66	D2143950M-40FM
	39.67	1.562	79.40	110.40	179.40	40.00	54.00	2.61	D2141562I-40FM
	40.00	1.575	80.00	112.40	181.40	40.00	54.00	2.50	D2144000M-40FM
	40.50	1.594	81.00	112.40	181.40	40.00	54.00	2.41	D2144050M-40FM
	41.00	1.614	82.00	114.40	183.40	40.00	54.00	2.30	D2144100M-40FM
	41.28	1.625	82.55	114.40	183.40	40.00	54.00	2.23	D2141625I-40FM
	41.50	1.634	83.00	114.40	183.40	40.00	54.00	2.16	D2144150M-40FM
	42.00	1.654	84.00	116.40	185.40	40.00	54.00	2.00	D2144200M-40FM
	42.50	1.673	85.00	116.40	185.40	40.00	54.00	1.90	D2144250M-40FM
	42.85	1.687	85.70	116.40	185.40	40.00	54.00	1.82	D2141687I-40FM
	43.00	1.693	86.00	118.40	187.40	40.00	59.00	1.80	D2144300M-40FM
	43.50	1.713	87.00	118.40	187.40	40.00	59.00	1.65	D2144350M-40FM
	44.00	1.732	88.00	120.40	189.40	40.00	59.00	1.50	D2144400M-40FM
	44.45	1.750	88.90	120.40	189.40	40.00	59.00	1.41	D2141750I-40FM
	44.50	1.752	89.00	120.40	189.40	40.00	59.00	1.40	D2144450M-40FM
	45.00	1.772	90.00	122.40	191.40	40.00	59.00	1.30	D2144500M-40FM
	45.50	1.791	91.00	122.40	191.40	40.00	59.00	1.15	D2144550M-40FM
	46.02	1.812	92.10	124.40	193.40	40.00	59.00	1.02	D2141812I-40FM
	46.00	1.811	92.00	124.40	193.40	40.00	59.00	1.00	D2144600M-40FM
	46.50	1.831	93.00	124.40	193.40	40.00	59.00	0.90	D2144650M-40FM
3xD	47.00	1.850	94.00	126.40	195.40	40.00	59.00	0.80	D2144700M-40FM
	39.00	1.535	117.00	149.40	218.40	40.00	54.00	2.80	D3143900M-40FM
	39.50	1.555	118.50	149.40	218.40	40.00	54.00	2.66	D3143950M-40FM
	39.67	1.562	119.02	149.40	218.40	40.00	54.00	2.61	D3141562I-40FM
	40.00	1.575	120.00	152.40	221.40	40.00	54.00	2.50	D3144000M-40FM
	40.50	1.594	121.50	152.40	221.40	40.00	54.00	2.41	D3144050M-40FM
	41.00	1.614	123.00	155.40	224.40	40.00	54.00	2.30	D3144100M-40FM
	41.28	1.625	123.83	155.40	224.40	40.00	54.00	2.23	D3141625I-40FM
	41.50	1.634	124.50	155.40	224.40	40.00	54.00	2.16	D3144150M-40FM
	42.00	1.654	126.00	158.40	227.40	40.00	54.00	2.00	D3144200M-40FM
	42.50	1.673	127.50	158.40	227.40	40.00	54.00	1.90	D3144250M-40FM
	42.85	1.687	128.55	158.40	227.40	40.00	54.00	1.82	D3141687I-40FM
	43.00	1.693	129.00	161.40	230.40	40.00	59.00	1.80	D3144300M-40FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N·m (39.8 in·lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20	- 0.008
	+ 0.30	+ 0.012
3xD	- 0.20	- 0.008
	+ 0.30	+ 0.012
4xD	- 0.20	- 0.008
	+ 0.35	+ 0.014



Ⓜ = Metric (mm)

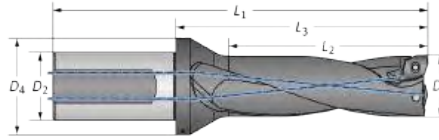
Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders



Metric Shank

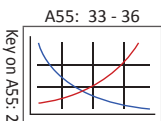
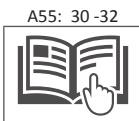
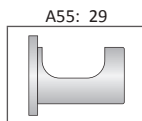
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
3xD	43.50	1.713	130.50	161.40	230.40	40.00	59.00	1.65	D3144350M-40FM
	44.00	1.732	132.00	164.40	233.40	40.00	59.00	1.50	D3144400M-40FM
	44.45	1.750	133.35	164.40	233.40	40.00	59.00	1.41	D3141750I-40FM
	44.50	1.752	133.50	164.40	233.40	40.00	59.00	1.40	D3144450M-40FM
	45.00	1.772	135.00	167.40	236.40	40.00	59.00	1.30	D3144500M-40FM
	45.50	1.791	136.50	167.40	236.40	40.00	59.00	1.15	D3144550M-40FM
	46.00	1.811	138.00	170.40	239.40	40.00	59.00	1.00	D3144600M-40FM
	46.02	1.812	138.07	170.40	239.40	40.00	59.00	1.02	D3141812I-40FM
4xD	46.50	1.831	139.50	170.40	239.40	40.00	59.00	0.90	D3144650M-40FM
	47.00	1.850	141.00	173.40	242.40	40.00	59.00	0.80	D3144700M-40FM
	39.00	1.535	156.00	188.40	257.40	40.00	54.00	2.80	D4143900M-40FM
	39.50	1.555	158.00	188.40	257.40	40.00	54.00	2.66	D4143950M-40FM
	39.67	1.562	158.70	188.40	257.40	40.00	54.00	2.61	D4141562I-40FM
	40.00	1.575	160.00	192.40	261.40	40.00	54.00	2.50	D4144000M-40FM
	40.50	1.594	162.00	192.40	261.40	40.00	54.00	2.41	D4144050M-40FM
	41.00	1.614	164.00	196.40	265.40	40.00	54.00	2.30	D4144100M-40FM
	41.28	1.625	165.10	196.40	265.40	40.00	54.00	2.23	D4141625I-40FM
	41.50	1.634	166.00	196.40	265.40	40.00	54.00	2.16	D4144150M-40FM
	42.00	1.654	168.00	200.40	269.40	40.00	54.00	2.00	D4144200M-40FM
	42.50	1.673	170.00	200.40	269.40	40.00	54.00	1.90	D4144250M-40FM
	42.85	1.687	171.40	200.40	269.40	40.00	54.00	1.82	D4141687I-40FM
	43.00	1.693	172.00	204.40	273.40	40.00	59.00	1.80	D4144300M-40FM
	43.50	1.713	174.00	204.40	273.40	40.00	59.00	1.65	D4144350M-40FM
	44.00	1.732	176.00	208.40	277.40	40.00	59.00	1.50	D4144400M-40FM
	44.45	1.750	177.80	208.40	277.40	40.00	59.00	1.41	D4141750I-40FM
	44.50	1.752	178.00	208.40	277.40	40.00	59.00	1.40	D4144450M-40FM
	45.00	1.772	180.00	212.40	281.40	40.00	59.00	1.30	D4144500M-40FM
	45.50	1.791	182.00	212.40	281.40	40.00	59.00	1.15	D4144550M-40FM
	46.00	1.811	184.00	216.40	285.40	40.00	59.00	1.00	D4144600M-40FM
	46.02	1.812	184.10	216.40	285.40	40.00	59.00	1.02	D4141812I-40FM
	46.50	1.831	186.00	216.40	285.40	40.00	59.00	0.90	D4144650M-40FM
	47.00	1.850	188.00	220.40	289.40	40.00	59.00	0.80	D4144700M-40FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



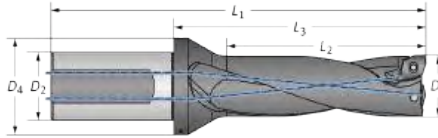
Ⓜ = Metric (mm)

Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")**

Holders



Imperial Shank

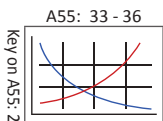
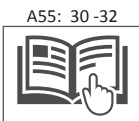
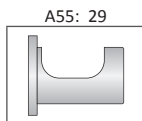
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	3.071	4.346	7.063	1.500	2.126	0.110	D2143900M-150F
	39.50	1.555	3.110	4.346	7.063	1.500	2.126	0.105	D2143950M-150F
	39.67	1.562	3.124	4.346	7.063	1.500	2.126	0.103	D2141562I-150F
	40.00	1.575	3.150	4.425	7.142	1.500	2.126	0.098	D2144000M-150F
	40.50	1.594	3.189	4.425	7.142	1.500	2.126	0.095	D2144050M-150F
	41.00	1.614	3.228	4.504	7.220	1.500	2.126	0.091	D2144100M-150F
	41.28	1.625	3.250	4.504	7.220	1.500	2.126	0.088	D2141625I-150F
	41.50	1.634	3.268	4.504	7.220	1.500	2.126	0.085	D2144150M-150F
	42.00	1.654	3.307	4.583	7.299	1.500	2.126	0.079	D2144200M-150F
	42.50	1.673	3.346	4.583	7.299	1.500	2.126	0.075	D2144250M-150F
	42.85	1.687	3.374	4.583	7.299	1.500	2.126	0.072	D2141687I-150F
	43.00	1.693	3.386	4.661	7.378	1.500	2.323	0.071	D2144300M-150F
	43.50	1.713	3.425	4.661	7.378	1.500	2.323	0.065	D2144350M-150F
	44.00	1.732	3.465	4.740	7.457	1.500	2.323	0.059	D2144400M-150F
	44.45	1.750	3.500	4.740	7.457	1.500	2.323	0.055	D2141750I-150F
	44.50	1.752	3.504	4.740	7.457	1.500	2.323	0.055	D2144450M-150F
	45.00	1.772	3.543	4.819	7.535	1.500	2.323	0.051	D2144500M-150F
	45.50	1.791	3.583	4.819	7.535	1.500	2.323	0.045	D2144550M-150F
	46.02	1.812	3.624	4.898	7.614	1.500	2.323	0.040	D2141812I-150F
	46.00	1.811	3.622	4.898	7.614	1.500	2.323	0.039	D2144600M-150F
	46.50	1.831	3.661	4.898	7.614	1.500	2.323	0.036	D2144650M-150F
	47.00	1.850	3.701	4.976	7.693	1.500	2.323	0.031	D2144700M-150F
3xD	39.00	1.535	4.606	5.882	8.598	1.500	2.126	0.110	D3143900M-150F
	39.50	1.555	4.665	5.882	8.598	1.500	2.126	0.105	D3143950M-150F
	39.67	1.562	4.686	5.882	8.598	1.500	2.126	0.103	D3141562I-150F
	40.00	1.575	4.724	6.000	8.717	1.500	2.126	0.098	D3144000M-150F
	40.50	1.594	4.783	6.000	8.717	1.500	2.126	0.095	D3144050M-150F
	41.00	1.614	4.843	6.118	8.835	1.500	2.126	0.091	D3144100M-150F
	41.28	1.625	4.875	6.118	8.835	1.500	2.126	0.088	D3141625I-150F
	41.50	1.634	4.902	6.118	8.835	1.500	2.126	0.085	D3144150M-150F
	42.00	1.654	4.961	6.236	8.953	1.500	2.126	0.079	D3144200M-150F
	42.50	1.673	5.020	6.236	8.953	1.500	2.126	0.075	D3144250M-150F
	42.85	1.687	5.061	6.236	8.953	1.500	2.126	0.072	D3141687I-150F
	43.00	1.693	5.079	6.354	9.071	1.500	2.323	0.071	D3144300M-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



Key on A55: 2

M = Metric (mm)

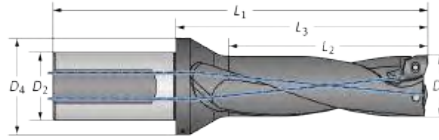
I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



14 Series: 39.00 mm - 47.00 mm (1.536" - 1.850")

Holders



Imperial Shank

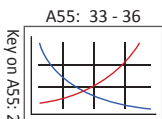
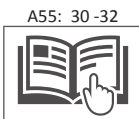
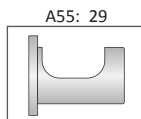
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
3xD	43.50	1.713	5.138	6.354	9.071	1.500	2.323	0.065	D3144350M-150F
	44.00	1.732	5.197	6.472	9.189	1.500	2.323	0.059	D3144400M-150F
	44.45	1.750	5.250	6.472	9.189	1.500	2.323	0.055	D3141750I-150F
	44.50	1.752	5.256	6.472	9.189	1.500	2.323	0.055	D3144450M-150F
	45.00	1.772	5.315	6.591	9.307	1.500	2.323	0.051	D3144500M-150F
	45.50	1.791	5.374	6.591	9.307	1.500	2.323	0.045	D3144550M-150F
	46.00	1.811	5.433	6.709	9.425	1.500	2.323	0.039	D3144600M-150F
	46.02	1.812	5.436	6.709	9.425	1.500	2.323	0.040	D3141812I-150F
4xD	46.50	1.831	5.492	6.709	9.425	1.500	2.323	0.036	D3144650M-150F
	47.00	1.850	5.551	6.827	9.543	1.500	2.323	0.031	D3144700M-150F
	39.00	1.535	6.142	7.417	10.134	1.500	2.126	0.110	D4143900M-150F
	39.50	1.555	6.220	7.417	10.134	1.500	2.126	0.105	D4143950M-150F
	39.67	1.562	6.248	7.417	10.134	1.500	2.126	0.103	D4141562I-150F
	40.00	1.575	6.299	7.575	10.291	1.500	2.126	0.098	D4144000M-150F
	40.50	1.594	6.378	7.575	10.291	1.500	2.126	0.095	D4144050M-150F
	41.00	1.614	6.457	7.732	10.449	1.500	2.126	0.091	D4144100M-150F
	41.28	1.625	6.500	7.732	10.449	1.500	2.126	0.088	D4141625I-150F
	41.50	1.634	6.535	7.732	10.449	1.500	2.126	0.085	D4144150M-150F
	42.00	1.654	6.614	7.890	10.606	1.500	2.126	0.079	D4144200M-150F
	42.50	1.673	6.693	7.890	10.606	1.500	2.126	0.075	D4144250M-150F
	42.85	1.687	6.748	7.890	10.606	1.500	2.126	0.072	D4141687I-150F
	43.00	1.693	6.772	8.047	10.764	1.500	2.323	0.071	D4144300M-150F
	43.50	1.713	6.850	8.047	10.764	1.500	2.323	0.065	D4144350M-150F
	44.00	1.732	6.929	8.205	10.921	1.500	2.323	0.059	D4144400M-150F
	44.45	1.750	7.000	8.205	10.921	1.500	2.323	0.055	D4141750I-150F
	44.50	1.752	7.008	8.205	10.921	1.500	2.323	0.055	D4144450M-150F
	45.00	1.772	7.087	8.362	11.079	1.500	2.323	0.051	D4144500M-150F
	45.50	1.791	7.165	8.362	11.079	1.500	2.323	0.045	D4144550M-150F
	46.00	1.811	7.244	8.520	11.236	1.500	2.323	0.039	D4144600M-150F
	46.02	1.812	7.248	8.520	11.236	1.500	2.323	0.040	D4141812I-150F
	46.50	1.831	7.323	8.520	11.236	1.500	2.323	0.036	D4144650M-150F
	47.00	1.850	7.402	8.677	11.394	1.500	2.323	0.031	D4144700M-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



Ⓜ = Metric (mm)

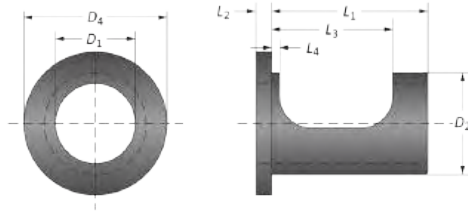
Ⓢ = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



Accessories

Eccentric Sleeves



	Sleeve Dimensions							Part No.	Adjustment Range	
	D ₁	D ₂	D ₄	L ₂	L ₃	L ₄	L ₁		Diameter*	Center Height
m	25.00	32.00	49.00	6.00	39.00	2.50	54.00	SLEEVE-25FM	-0.20 to +0.40	-0.15 to +0.20
	32.00	40.00	58.00	6.00	43.00	2.50	59.00	SLEEVE-32FM	-0.20 to +0.40	-0.15 to +0.20
	40.00	50.00	74.00	6.00	49.00	3.00	69.00	SLEEVE-40FM	-0.20 to +0.40	-0.20 to +0.30
i	0.750	1.000	1.614	0.157	1.593	0.118	1.837	SLEEVE-075F	-0.008 to +0.016	-0.006 to +0.008
	1.000	1.250	1.929	0.236	1.593	0.098	1.995	SLEEVE-100F	-0.008 to +0.016	-0.006 to +0.008
	1.250	1.500	2.283	0.236	1.693	0.098	2.087	SLEEVE-125F	-0.008 to +0.016	-0.006 to +0.008
	1.500	2.000	2.913	0.236	1.929	0.118	2.481	SLEEVE-150F	-0.008 to +0.024	-0.008 to +0.012

*Diameter adjustment range refers to the cutting diameter.

A55



Milling Applications
Peripheral Adjustment Position



Lathe Applications
Front Adjustment Position



Cutting Diameter and Center Height Adjustment

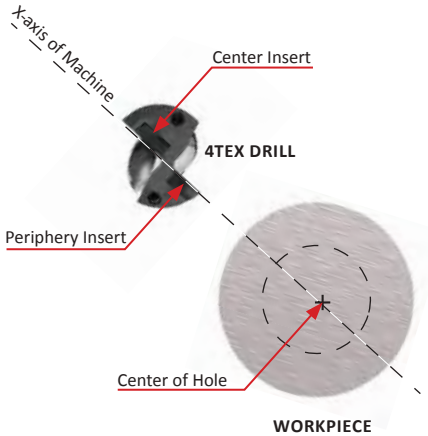
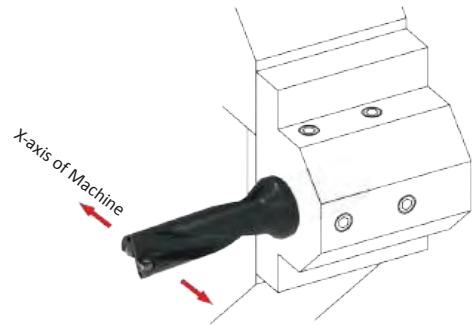
Milling and Lathe Diameter Adjustments



For Milling Applications

1. Assemble the 4TEX drill, eccentric sleeve, and tool holder. Do not tighten the tool holder set screws.
2. Using the peripheral marks for milling machines, align the reference indentation on the holder with the 0 (zero) mark on the eccentric sleeve to have no offset.
3. Rotate the sleeve in the (+) or (-) direction to increase or decrease the nominal diameter.
4. Once the drill has arrived at the desired diameter, firmly tighten the top set screw first and then tighten the bottom set screw.

NOTICE: Eccentric sleeves are to be used with side-locking tool holders only. Damage may result with other styles of tool holders.



For Lathe Applications

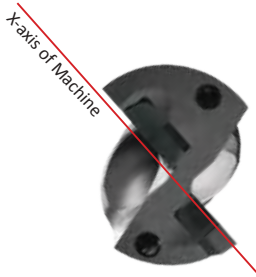
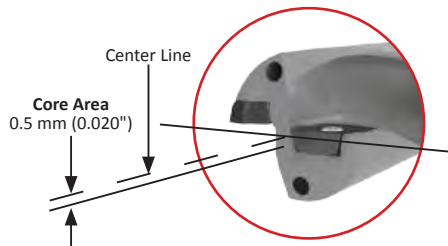
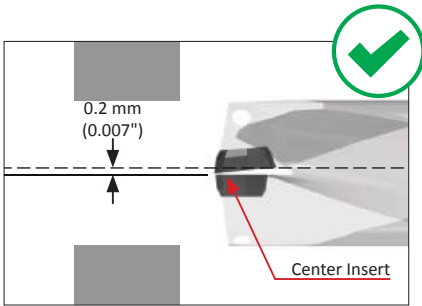
1. Assemble the 4TEX drill into the lathe turret with the top face of the inserts parallel to the x-axis of the machine. This will allow for the diameter offsets to be made using the lathe's x-axis.
2. To increase the nominal diameter, offset the x-axis so the periphery insert moves away from the center of the hole.
3. To decrease the nominal diameter, offset the x-axis so the periphery insert moves toward the center of the hole.

NOTE: Eccentric sleeve is not required when adjusting the diameter of the hole on a lathe.



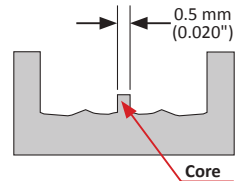
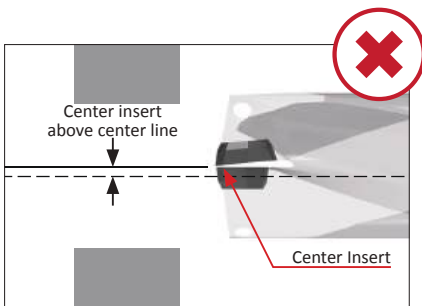
Cutting Diameter and Center Height Adjustment

Center Height Alignment: Proper Center Line Position



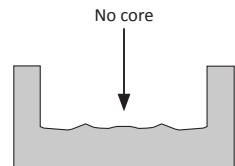
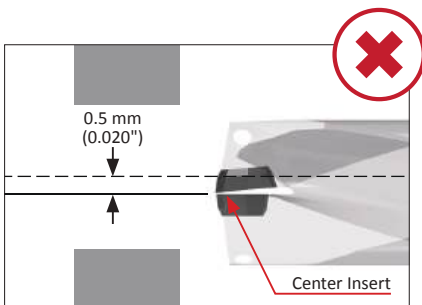
Proper Center Height Alignment

- The correct center height alignment will position the center insert 0.2 mm (0.007") below the center line.



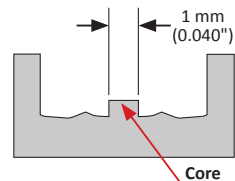
Center Insert Above the Center Line

- This will cause fracturing of the center insert.
- Requires center height adjustment.



Center Insert Too Far Below Center Line

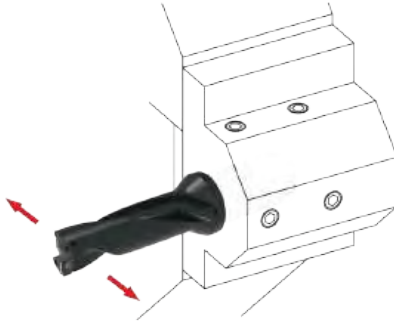
- This will cause the drill to interfere with the drilled hole.
- This will impede chip evacuation on the periphery insert.
- Requires center height adjustment.





Cutting Diameter and Center Height Adjustment

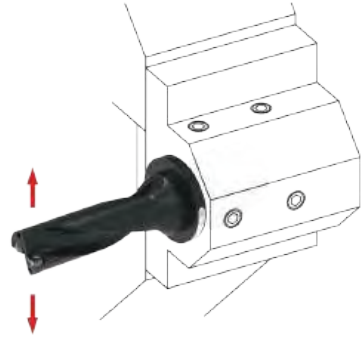
Center Height Alignment: How to Correct Issues



Method 1: Adjustment with X-Axis

1. Rotate the drill body so the position of the center line of the inserts is perpendicular to the lathe's x-axis.
2. Use the x-axis to offset the position of the center line in a (+) or (-) direction to increase or decrease the center core diameter at the bottom of the hole.

NOTE: This method does not allow diameter adjustments using the x-axis.



Method 2: Adjustment with Eccentric Sleeve

1. Assemble the drill to the turret using the eccentric sleeve, positioning the center line of the inserts parallel to the x-axis.
2. Align the reference indentation on the drill to the "0" setting on the flange face.
3. Rotate the sleeve (+) or (-) to increase or decrease the center height of the inserts in order to increase or decrease the core diameter at the bottom of the hole.

NOTE: This method still allows diameter adjustments using the x-axis.

NOTE (applies to both methods): Adjusting the center line of the inserts may affect the hole diameter produced. Method two is preferred to make center height adjustments and compensate for hole diameter with the x-axis.



Recommended Drilling Data | Metric (mm)

4TEX DRILL					
ISO	Material	Hardness (BHN)	Speed (m/min)		
			P	K	H
			M		N
			AM480	AM485	TiCN
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	125 - 365	125 - 365	—
		150 - 200	125 - 305	125 - 305	—
		200 - 250	125 - 245	125 - 245	—
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	125 - 305	125 - 305	—
		125 - 175	125 - 305	125 - 305	—
		175 - 225	125 - 245	125 - 245	—
		225 - 275	125 - 245	125 - 245	—
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	100 - 245	100 - 245	—
		175 - 225	100 - 245	100 - 245	—
		225 - 275	100 - 245	100 - 245	—
		275 - 325	100 - 245	100 - 185	—
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	100 - 245	—	—
		175 - 225	100 - 245	—	—
		225 - 275	100 - 245	—	—
		275 - 325	100 - 245	—	—
		325 - 375	100 - 245	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	100 - 165	—	—
		300 - 350	100 - 185	—	—
		350 - 400	100 - 185	—	—
	Structural Steel A36, A285, A516, etc.	100 - 150	100 - 185	100 - 185	—
		150 - 250	100 - 185	100 - 185	—
		250 - 350	100 - 185	—	—
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	85 - 185	85 - 185	—
		200 - 250	85 - 185	—	—
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	75 - 185	75 - 215	—
		275 - 350	75 - 145	75 - 155	—
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	75 - 185	75 - 215	—
		185 - 275	75 - 145	75 - 155	—
	Super Duplex Stainless Steel	135 - 185	75 - 185	75 - 215	—
K	Nodular, Grey, Ductile Cast Iron	120 - 150	90 - 245	—	—
		150 - 200	90 - 245	—	—
		200 - 220	90 - 155	—	—
		220 - 260	80 - 125	—	—
		260 - 320	80 - 125	—	—
N	Cast Aluminum	30	—	—	245 - 610
		180	—	—	245 - 610
	Wrought Aluminum	30	—	—	245 - 610
		180	—	—	245 - 610
	Aluminum Bronze	100 - 200	150 - 305	—	150 - 305
		200 - 250	150 - 305	—	150 - 305
	Brass	100	150 - 305	—	150 - 305
S	Copper	60	—	—	150 - 305
	High-Temp Alloy* Hastelloy® B, Inconel® 600, etc.	140 - 220	30 - 80	30 - 80	—
		220 - 310	30 - 60	30 - 60	—
	Titanium Alloy*	140 - 220	40 - 155	40 - 155	—
		220 - 310	40 - 90	40 - 90	—
H	Aerospace Alloy* S82	185 - 275	30 - 80	30 - 80	—
		275 - 350	30 - 60	31 - 60	—
	Wear Plate Hardox®, AR400, T-1, etc.	400	30 - 60	—	—
		500	30 - 60	—	—
		600	30 - 60	—	—
	Hardened Steel	300 - 400	30 - 60	—	—
		400 - 500	30 - 60	—	—

*For high-temp materials, 70 bar is recommended as well as a quality synthetic coolant at approximately 10% emulsion.

**For 4xD tools, begin at low end of feed recommendation.



Recommended Drilling Data | Metric (mm)

4TEX DRILL			
Feed Rate (mm/rev) by Diameter - 2xD, 3xD**			
03, 04 series 12.00 mm - 15.49 mm	05 series 15.50 mm - 18.49 mm	06, 07 series 18.50 mm - 26.49 mm	09, 11, 14 series 26.50 mm - 47.00 mm
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.07 - 0.10	0.07 - 0.12	0.08 - 0.14	0.08 - 0.14
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.14	0.07 - 0.17	0.08 - 0.21	0.08 - 0.21
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.05 - 0.10	0.07 - 0.12	0.07 - 0.14	0.07 - 0.14
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.08 - 0.14	0.08 - 0.19	0.08 - 0.21	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.07 - 0.12	0.08 - 0.14	0.08 - 0.17	0.08 - 0.21
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.06 - 0.08	0.06 - 0.08	0.07 - 0.10	0.07 - 0.10
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15
0.05 - 0.08	0.07 - 0.12	0.08 - 0.15	0.08 - 0.15

*For high-temp materials, 70 bar is recommended as well as a quality synthetic coolant at approximately 10% emulsion.

**For 4xD tools, begin at low end of feed recommendation.



Recommended Drilling Data | Imperial (in)

4TEX DRILL

ISO Material		Hardness (BHN)	Speed (SFM)				
			P	K	H	M	N
			AM480			AM485	TiCN
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	400 - 1200			400 - 1200	—
		150 - 200	400 - 1000			400 - 1000	—
		200 - 250	400 - 800			400 - 800	—
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	400 - 1000			400 - 1000	—
		125 - 175	400 - 1000			400 - 1000	—
		175 - 225	400 - 800			400 - 800	—
		225 - 275	400 - 800			400 - 800	—
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	330 - 800			330 - 800	—
		175 - 225	330 - 800			330 - 800	—
		225 - 275	330 - 800			330 - 800	—
		275 - 325	330 - 600			330 - 600	—
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	330 - 800			—	—
		175 - 225	330 - 800			—	—
		225 - 275	330 - 800			—	—
		275 - 325	330 - 800			—	—
		325 - 375	330 - 800			—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	330 - 600			—	—
		300 - 350	330 - 600			—	—
		350 - 400	330 - 600			—	—
	Structural Steel A36, A285, A516, etc.	100 - 150	330 - 600			330 - 600	—
		150 - 250	330 - 600			330 - 600	—
		250 - 350	330 - 600			—	—
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	270 - 600			270 - 600	—
		200 - 250	270 - 600			—	—
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	240 - 600			240 - 700	—
		275 - 350	240 - 470			240 - 500	—
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	240 - 600			240 - 700	—
		185 - 275	240 - 470			240 - 500	—
	Super Duplex Stainless Steel	135 - 185	240 - 600			240 - 700	—
K	Nodular, Grey, Ductile Cast Iron	185 - 275	240 - 470			240 - 500	—
		120 - 150	300 - 800			—	—
		150 - 200	300 - 800			—	—
		200 - 220	300 - 500			—	—
		220 - 260	270 - 400			—	—
N	Cast Aluminum	260 - 320	270 - 400			—	—
		30	—			—	800 - 2000
		180	—			—	800 - 2000
		30	—			—	800 - 2000
	Wrought Aluminum	180	—			—	800 - 2000
		100 - 200	500 - 1000			—	500 - 1000
	Aluminum Bronze	200 - 250	500 - 1000			—	500 - 1000
S	Brass	100	500 - 1000			—	500 - 1000
		60	—			—	500 - 1000
	Copper	60	—			—	500 - 1000
		High-Temp Alloy* Hastelloy® B, Inconel® 600, etc.	140 - 220	100 - 250			100 - 250
	220 - 310		100 - 200			100 - 200	—
Titanium Alloy*	140 - 220		140 - 500			140 - 500	—
	220 - 310		140 - 300			140 - 300	—
Aerospace Alloy* S82	185 - 275		100 - 250			100 - 250	—
	275 - 350	100 - 200			100 - 200	—	
H	Wear Plate Hardox®, AR400, T-1, etc.	400	100 - 200			—	—
		500	100 - 200			—	—
		600	100 - 200			—	—
	Hardened Steel	300 - 400	100 - 300			—	—
		400 - 500	100 - 200			—	—

*For high-temp materials, 1000 PSI is recommended as well as a quality synthetic coolant at approximately 10% emulsion.

**For 4xD tools, begin at low end of feed recommendation.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is also available through our Application Engineering Team: appeng@alliedmachine.com.

4TEX DRILL

A55

**For 4xD tools, begin at low end of feed recommendation.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is also available through our Application Engineering Team: appeng@alliedmachine.com.



Insert Geometry Recommendations

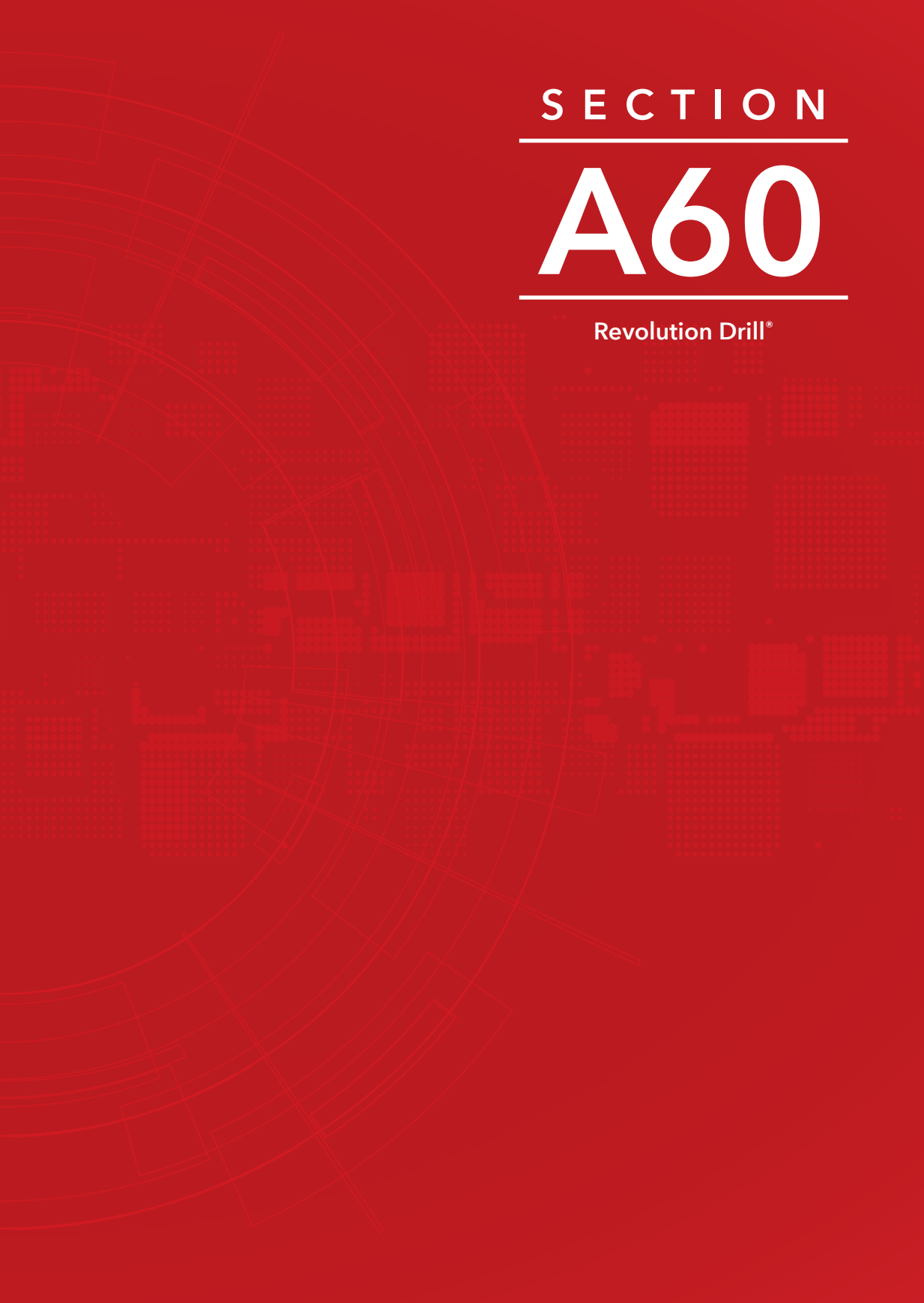
4TEX DRILL							
ISO	Material	Hardness (BHN)	Geometry				
			P	M	K	N	H
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	○	●			
		150 - 200	●	○			
		200 - 250	●	○			
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	○	●			
		125 - 175	○	●			
		175 - 225	○	●			
		225 - 275	●	○			
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	○	●			
		175 - 225	○	●			
		225 - 275	●	○			
		275 - 325	●				○
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	○	●			
		175 - 225	●	○			
		225 - 275	●				○
		275 - 325	●				○
		325 - 375	○				●
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	●				
		300 - 350	○				●
		350 - 400	○				●
	Structural Steel A36, A285, A516, etc.	100 - 150	○	●			
		150 - 250	○	●			
		250 - 350	●				○
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	●	○			
		200 - 250	●				○
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	○	●			
		275 - 350	○	●			
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	○	●			
		185 - 275	○	●			
	Super Duplex Stainless Steel	135 - 185	○	●			
K	Nodular, Grey, Ductile Cast Iron	185 - 275	○	●			
		275 - 350	○	●			
		135 - 185	○	●			
		185 - 275	○	●			
		275 - 350	○	●			
N	Cast Aluminum	120 - 150	●				
		150 - 200	●				
	Wrought Aluminum	200 - 220	●				
		220 - 260					
	Aluminum Bronze	260 - 320					
	Brass					●	
	Copper					●	
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	30	○	●			
		180	○	●			
	Titanium Alloy	30	○	●			
		180	○	●			
	Aerospace Alloy S82	185 - 275	○	●			
H	Wear Plate Hardox®, AR400, T-1, etc.	275 - 350	○	●			
		400	○				●
		500	○				●
	Hardened Steel	600	○				●
			300 - 400	○			
		400 - 500	○				●

● Best ○ Good



Troubleshooting

1.		Starting on Uneven Surfaces <ul style="list-style-type: none"> Reduce entry feed by 50% if necessary.
2.		Starting on Angled Surfaces <ul style="list-style-type: none"> Reduce entry feed by 20 - 50%. Use lower rake geometry if insert chipping occurs.
3.		Angled Bore Exit <ul style="list-style-type: none"> Reduce entry feed by 50% on breakout. Use tough insert and stable corner radius.
4.		Starting on Convex Surfaces <ul style="list-style-type: none"> Reduce entry feed by 50%. Use lower rake geometry if insert chipping occurs.
5.		Drilling Through a Cross Hole <ul style="list-style-type: none"> Reduce feed rate 50% if necessary. Use good coolant flow and monitor chip packing. Use lower rake geometry if insert chipping occurs.
6.		Drilling on a Groove or Large Centering Box <ul style="list-style-type: none"> Reduce entry feed. Use lower rake geometry for center insert.
7.		Chain Drilling <ul style="list-style-type: none"> Use good coolant flow. Reduce feed rate by 50% for interrupted cut. Use lower rake geometry if insert chipping occurs.
8.		Starting on an Edge <ul style="list-style-type: none"> Reduce entry feed rate by 50%. Use lower rake geometry if insert chipping occurs.
9.		Starting on a Welded Seam <ul style="list-style-type: none"> Reduce entry feed rate by 50%. Use lower rake geometry if insert chipping occurs.
10.		Drilling Through Stacked Plates <ul style="list-style-type: none"> Not recommended.
11.		Opening an Existing Hole <ul style="list-style-type: none"> Use flood coolant.
12.		Adjustable <ul style="list-style-type: none"> For mills, use eccentric sleeve with end mill holder. For lathes, use x-axis to adjust offset ϕ. <p>NOTE: Refer to maximum offset ϕ in data tables.</p>



SECTION

A60

Revolution Drill®

Revolution Drill®

47.63 mm - 101.60 mm (1.8750" - 4.0000")



Revolution Drill

The Revolution Drill has an innovative design that allows for adjustability of 5.10 mm (0.200") on diameter. This eliminates the need for special tooling and/or subsequent boring operations.

With the ability to drill from solid, the Revolution Drill does not require a previously drilled pilot hole. The replaceable cartridges reduce setup time, and the indexable inserts protect your investment. The insert design provides excellent chip control and aggressive penetration rates.

Large Scale Innovation

- ▶ Drills from solid.
- ▶ Drill depths up to 4.5xD.
- ▶ Excellent chip control.

Applicable Industries

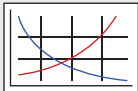
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Structural Steel Fabricator
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

Table of Contents

Introduction Information

System Overview	
Features & Benefits	3
Product Overview	4
Setup Instructions	5
Product Nomenclature	6

Drill Series

34 Series: 47.63 mm - 50.80 mm (1.8750" - 2.0000")	
Straight Shank	7
CAT Integral Shank	8
36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")	
Straight Shank	9
CAT Integral Shank	10
38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")	
Straight Shank	11
CAT Integral Shank	12
42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")	
Straight Shank	13
CAT Integral Shank	14
44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")	
Straight Shank	15
CAT Integral Shank	16
46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")	
Straight Shank	17
CAT Integral Shank	18
48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")	
Straight Shank	19
CAT Integral Shank	20
52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")	
Straight Shank	21
CAT Integral Shank	22
54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")	
Straight Shank	23
CAT Integral Shank	24
56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")	
Straight Shank	25
CAT Integral Shank	26
58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")	
Straight Shank	27
CAT Integral Shank	28

Recommended Drilling Data

Metric (mm)	29
Imperial (in)	30



System Overview

Features & Benefits

Revolution Drill

Series	Diameter Range		Length-to-Diameter Ratio					Shank Options			Inserts per Cartridge
	Metric (mm)	Imperial (in)	1.0xD	2.2xD	2.5xD	3.5xD	4.5xD	Straight	CAT40	CAT50	
34	47.63 - 50.80	1.8750 - 2.0000		●		●	●	●	●	●	2
36	50.80 - 55.88	2.0000 - 2.2000		●		●	●	●	●	●	2
38	55.88 - 60.96	2.2000 - 2.4000		●		●	●	●	●	●	2
42	60.96 - 66.04	2.4000 - 2.6000		●		●	●	●	●	●	2
44	66.04 - 71.12	2.6000 - 2.8000		●		●		●		●	3
46	71.12 - 76.20	2.8000 - 3.0000		●		●		●		●	3
48	76.20 - 81.28	3.0000 - 3.2000	●		●			●		●	3
52	81.28 - 86.36	3.2000 - 3.4000	●		●			●		●	3
54	86.36 - 91.44	3.4000 - 3.6000	●		●			●		●	3
56	91.44 - 96.52	3.6000 - 3.8000	●		●			●		●	4
58	96.52 - 101.60	3.8000 - 4.0000	●		●			●		●	4

NOTE: Stacked plate styles are also available.

Features & Benefits

- Adjustability of 5.10 mm (0.200") on diameter.
- Drill depths up to 4.5xD (standard).
- The replaceable cartridges protect your investment.
- Adjustable diameter reduces inventory and cost.
- The insert design allows for excellent chip control and aggressive penetration rates.
- No pilot hole needed.



2 Inserts
(34 - 42 series)



3 Inserts
(44 - 54 series)



4 Inserts
(56 - 58 series)

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Body Lengths

- 1.0xD (48, 52, 54, 56, 58 series)
- 2.2xD (34, 36, 38, 42, 44, 46 series)
- 2.5xD (48, 52, 54, 56, 58 series)
- 3.5xD (34, 36, 38, 42, 44, 46 series)
- 4.5xD (34, 36, 38, 42, 44, 46 series)

Shank Options



Straight Shank
(all series)



CAT40 Shank
(34, 36, 38, 42 series)

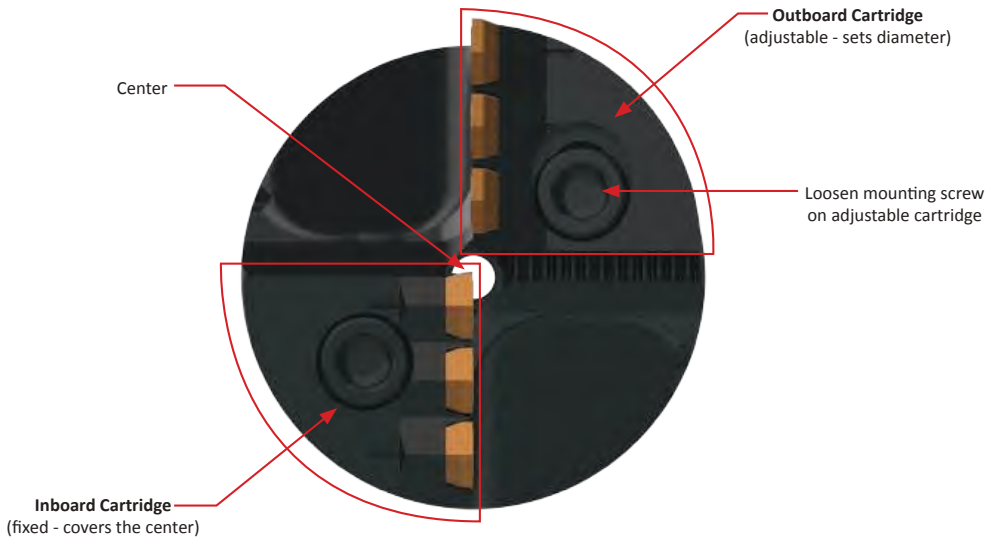
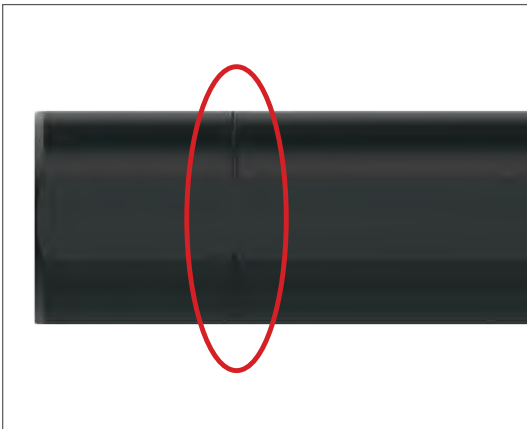


CAT50 Shank
(all series)



System Overview

Product Overview



Straight Shanks

- Designed for lathe applications.
- Can be cut off for use in end mill holders.
- The score mark (circled above) is provided for recommended cut length.
- Cut and deburr at the score mark.
- This improves rigidity when the body sits against the face of an end mill holder.

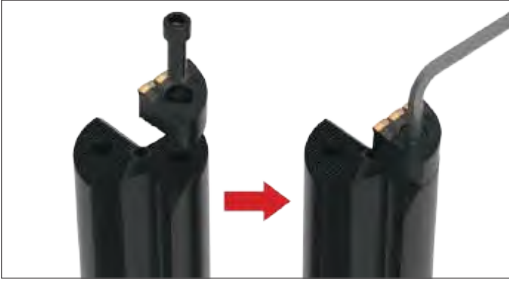


A60



System Overview

Setup Instructions



Step 1:

Mount the fixed cartridge and tighten the mounting screw to 15-19 N-m (11-14 ft-lbf).



Step 2:

Finger-tighten the mounting screw on the adjustable cartridge.



Step 3:

Set the diameter using the adjustment screw against the mounting screw. Place the drill in a presetter to ensure the correct diameter setting.



Step 4:

Tighten the mounting screw to 15-19 N-m (11-14 ft-lbf).

A60

IC Inserts

- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM200® and AM300® coatings increase tool life above competitors' premium coatings.
- The same inserts are used for both Revolution Drill® and Opening Drill® products.



AM300®



AM200®



TiN

Insert Application Recommendations

Carbide Grade Options

P35 (C5)	General purpose carbide grade suitable for most applications. ▶ <i>Common application in steels and stainless steels.</i>
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ <i>Recommended for less rigid applications.</i>
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ <i>Recommended for grey, ductile, and nodular irons.</i>

Additional Geometry Option

High Rake (HR)	Provides superior chip control and tool life in long chipping carbon and alloy steels below 200 BHN.
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Product Nomenclature

Revolution Drill Holders

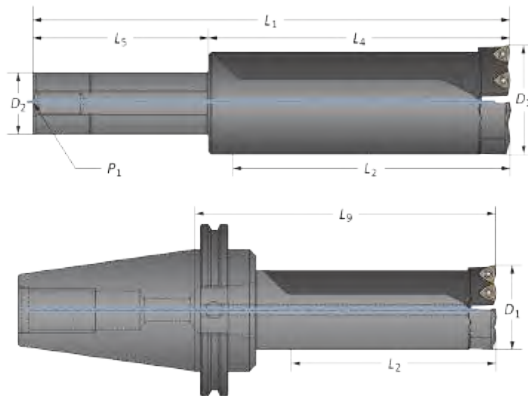
R	34	X	22	—	150L
Drill Style	Series		Drill Length		Shank Style
R = Standard SP = Stacked Plate	34	48	10 = 1.0xD 22 = 2.2xD 25 = 2.5xD 35 = 3.5xD 45 = 4.5xD		150L = 1.500 Ø straight 200L = 2.000 Ø straight 40M = 40 mm ISO 9766 50M = 50 mm ISO 9766 CV40 = CAT40 CV50 = CAT50
	36	52			
	38	54			
	42	56			
	44	58			
	46				

Revolution Drill & Opening Drill Inserts

OP	—	05	T3	08	—	1	H	HR
		IC Type	Thickness	Radius		Carbide Grade	Shank Style	Geometry
		05 = 5/16"	T3 = 5/32"	08 = 1/32"		Blank = P35 (C5) 1 = K35 (C1) 2 = K25 (C2)	P = AM300® H = AM200® T = TiN A = TiAlN N = TiCN U = Uncoated	Blank = General Purpose HR = High Rake

Reference Key

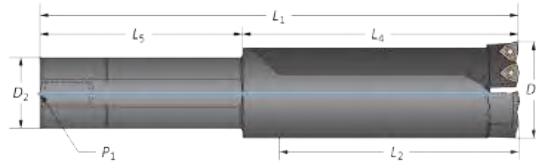
Symbol	Attribute
D_1	Drill diameter range
D_2	Shank diameter
L_1	Overall length
L_2	Maximum drill depth
L_4	Holder length
L_5	Shank length
L_9	Gauge length
P_1	Rear pipe tap





34 Series: 47.63 mm - 50.80 mm (1.8750" - 2.0000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	114.9	139.2	209.2	40	70.0	—	R34X22-40M	C34-...
		3.5xD	178.4	202.7	272.7	40	70.0	—	R34X35-40M	
		4.5xD	229.2	253.5	323.5	40	70.0	—	R34X45-40M	
	Stacked Plate	2.2xD	114.9	139.4	209.4	40	70.0	—	SP34X22-40M	C34SP-...
i	Standard	2.2xD	4.525	5.481	9.481	1-1/2	4.000	1/4 NPT	R34X22-150L	C34-...
		3.5xD	7.025	7.981	11.981	1-1/2	4.000	1/4 NPT	R34X35-150L	
		4.5xD	9.025	9.981	13.981	1-1/2	4.000	1/4 NPT	R34X45-150L	
	Stacked Plate	2.2xD	4.525	5.488	9.488	1-1/2	4.000	1/4 NPT	SP34X22-150L	C34SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

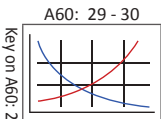
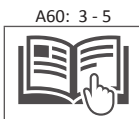
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R34...	C34-FIX	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34-ADJ					
SP34...	C34SP-FIX	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

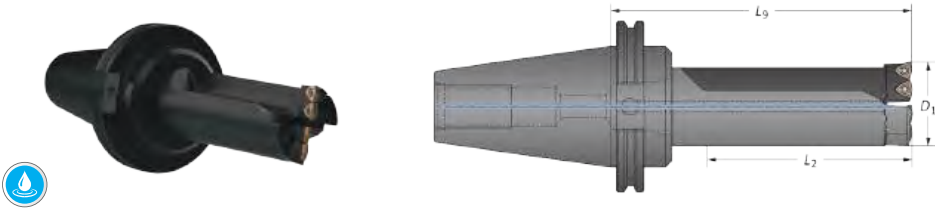
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



34 Series: 47.63 mm - 50.80 mm (1.8750" - 2.0000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.		Cartridges
		L ₂	L ₉	CAT40	CAT50	
Standard	2.2xD	4.525	6.856	R34X22-CV40	R34X22-CV50	C34-...
	3.5xD	7.025	9.356	R34X35-CV40	R34X35-CV50	
	4.5xD	9.025	11.356	R34X45-CV40	R34X45-CV50	
Stacked Plate	2.2xD	4.525	6.863	SP34X22-CV40	SP34X22-CV50	C34SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

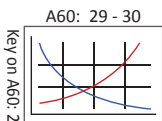
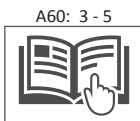
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R34...	C34-FIX	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34-ADJ					
SP34...	C34SP-FIX	2	MS-17M-1	5 mm	AS-16T9-1	8T-9
	C34SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

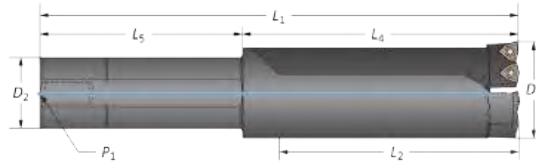
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	126.0	151.9	221.9	40	70.0	—	R36X22-40M	C36-...
		3.5xD	195.8	221.8	291.8	40	70.0	—	R36X35-40M	
		4.5xD	253.0	278.9	348.9	40	70.0	—	R36X45-40M	
	Stacked Plate	2.2xD	126.0	152.1	222.1	40	70.0	—	SP36X22-40M	C36SP-...
i	Standard	2.2xD	4.959	5.982	9.982	1-1/2	4.000	1/4 NPT	R36X22-150L	C36-...
		3.5xD	7.709	8.732	12.732	1-1/2	4.000	1/4 NPT	R36X35-150L	
		4.5xD	9.959	10.982	14.982	1-1/2	4.000	1/4 NPT	R36X45-150L	
	Stacked Plate	2.2xD	4.959	5.988	9.988	1-1/2	4.000	1/4 NPT	SP36X22-150L	C36SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

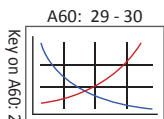
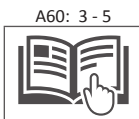
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R36...	C36-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36-ADJ					
SP36...	C36SP-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

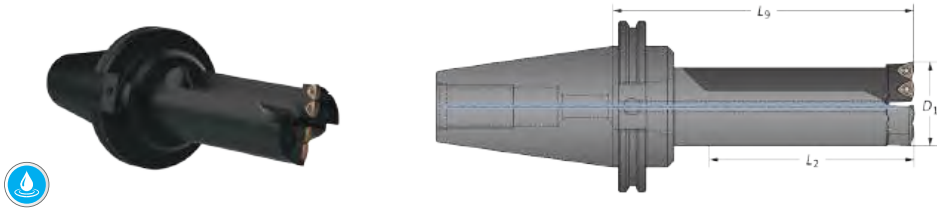
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



36 Series: 50.80 mm - 55.88 mm (2.0000" - 2.2000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.		Cartridges
		L ₂	L ₉	CAT40	CAT50	
Standard	2.2xD	4.959	7.357	R36X22-CV40	R36X22-CV50	C36-...
	3.5xD	7.709	10.107	R36X35-CV40	R36X35-CV50	
	4.5xD	9.959	12.357	R36X45-CV40	R36X45-CV50	
Stacked Plate	2.2xD	4.959	7.363	SP36X22-CV40	SP36X22-CV50	C36SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

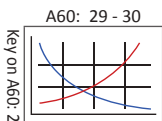
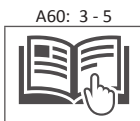
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R36...	C36-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36-ADJ					
SP36...	C36SP-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C36SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

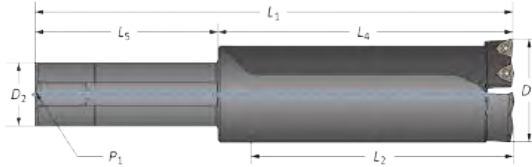
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	138.7	164.6	234.6	40	70.0	—	R38X22-40M	C38-...
		3.5xD	214.9	240.8	310.8	40	70.0	—	R38X35-40M	
		4.5xD	278.4	304.3	374.3	40	70.0	—	R38X45-40M	
	Stacked Plate	2.2xD	138.7	164.8	234.8	40	70.0	—	SP38X22-40M	C38SP-...
i	Standard	2.2xD	5.459	6.482	10.482	1-1/2	4.000	1/4 NPT	R38X22-150L	C38-...
		3.5xD	8.459	9.482	13.482	1-1/2	4.000	1/4 NPT	R38X35-150L	
		4.5xD	10.959	11.982	15.982	1-1/2	4.000	1/4 NPT	R38X45-150L	
	Stacked Plate	2.2xD	5.459	6.488	10.488	1-1/2	4.000	1/4 NPT	SP38X22-150L	C38SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

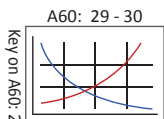
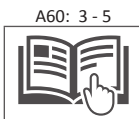
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R38...	C38-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38-ADJ					
SP38...	C38SP-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

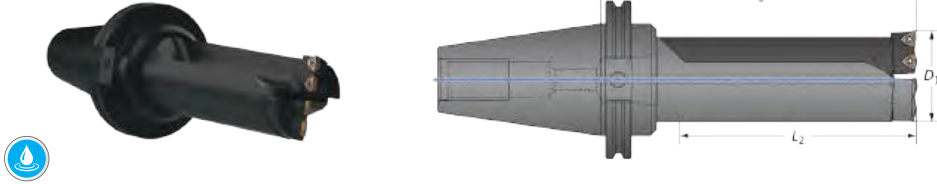
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



38 Series: 55.88 mm - 60.96 mm (2.2000" - 2.4000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.		Cartridges
		L ₂	L ₉	CAT40	CAT50	
Standard	2.2xD	5.459	7.857	R38X22-CV40	R38X22-CV50	C38-...
	3.5xD	8.459	10.857	R38X35-CV40	R38X35-CV50	
	4.5xD	10.959	13.357	R38X45-CV40	R38X45-CV50	
Stacked Plate	2.2xD	5.459	7.863	SP38X22-CV40	SP38X22-CV50	C38SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

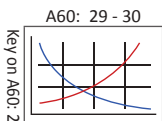
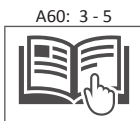
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R38...	C38-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38-ADJ					
SP38...	C38SP-FIX	2	MS-17M-1	5 mm	AS-18T9-1	8T-9
	C38SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

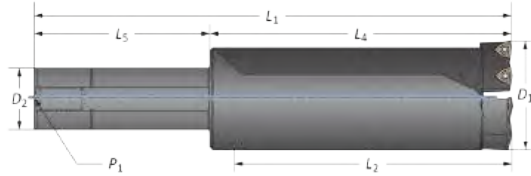
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	144.9	174.2	244.2	40	70.0	—	R42X22-40M	C42-...
		3.5xD	233.8	263.1	333.1	40	70.0	—	R42X35-40M	
		4.5xD	297.3	326.6	396.6	40	70.0	—	R42X45-40M	
	Stacked Plate	2.2xD	144.9	177.9	247.9	40	70.0	—	SP42X22-40M	C42SP-...
i	Standard	2.2xD	5.704	6.859	10.859	1-1/2	4.000	1/4 NPT	R42X22-150L	C42-...
		3.5xD	9.204	10.359	14.359	1-1/2	4.000	1/4 NPT	R42X35-150L	
		4.5xD	11.704	12.859	16.859	1-1/2	4.000	1/4 NPT	R42X45-150L	
	Stacked Plate	2.2xD	5.704	7.005	11.005	1-1/2	4.000	1/4 NPT	SP42X22-150L	C42SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

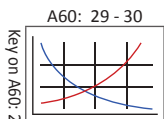
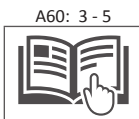
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R42...	C42-FIX	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42-ADJ					
SP42...	C42SP-FIX	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

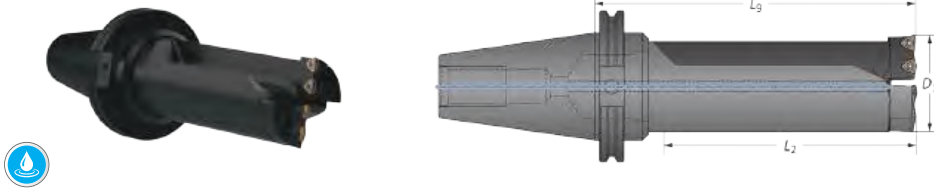
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



42 Series: 60.96 mm - 66.04 mm (2.4000" - 2.6000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.		Cartridges
		L ₂	L ₃	CAT40	CAT50	
Standard	2.2xD	5.704	8.234	R42X22-CV40	R42X22-CV50	C42-...
	3.5xD	9.204	11.734	R42X35-CV40	R42X35-CV50	
	4.5xD	11.704	14.234	R42X45-CV40	R42X45-CV50	
Stacked Plate	2.2xD	5.704	8.380	SP42X22-CV40	SP42X22-CV50	C42SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

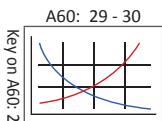
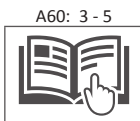
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R42...	C42-FIX	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42-ADJ					
SP42...	C42SP-FIX	2	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C42SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

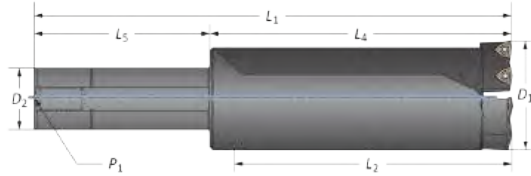
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	157.6	193.4	263.4	40	70.0	—	R44X22-40M	C44-...
		3.5xD	252.9	288.6	358.6	40	70.0	—	R44X35-40M	
	Stacked Plate	2.2xD	157.6	197.1	267.1	40	70.0	—	SP44X22-40M	C44SP-...
i	Standard	2.2xD	6.206	7.614	11.614	1-1/2	4.000	1/4 NPT	R44X22-150L	C44-...
		3.5xD	9.956	11.364	15.364	1-1/2	4.000	1/4 NPT	R44X35-150L	
	Stacked Plate	2.2xD	6.206	7.760	11.760	1-1/2	4.000	1/4 NPT	SP44X22-150L	C44SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

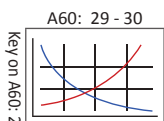
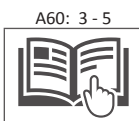
Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R44...	C44-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C44-ADJ					
SP44...	C44SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C44SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A60



m = Metric (mm)

i = Imperial (in)

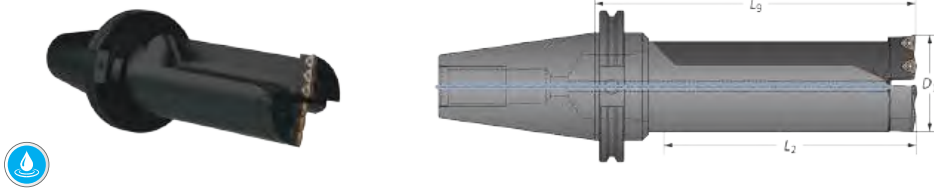
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



44 Series: 66.04 mm - 71.12 mm (2.6000" - 2.8000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L ₃	CAT50	
Standard	2.2xD	6.206	8.989	R44X22-CV50	C44-...
	3.5xD	9.956	12.739	R44X35-CV50	
Stacked Plate	2.2xD	6.206	9.135	SP44X22-CV50	C44SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

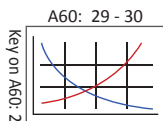
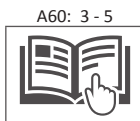
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R44...	C44-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C44-ADJ					
SP44...	C44SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C44SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

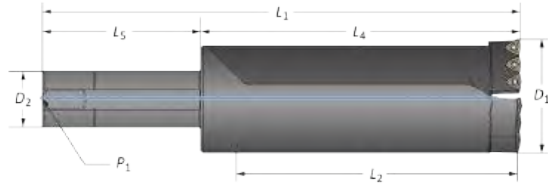
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	2.2xD	170.4	206.2	276.2	40	70.0	—	R46X22-40M	C46-...
		3.5xD	265.6	301.4	371.4	40	70.0	—	R46X35-40M	
	Stacked Plate	2.2xD	170.4	210.0	280.0	40	70.0	—	SP46X22-40M	C46SP-...
i	Standard	2.2xD	6.707	8.117	12.117	1-1/2	4.000	1/4 NPT	R46X22-150L	C46-...
		3.5xD	10.457	11.867	15.867	1-1/2	4.000	1/4 NPT	R46X35-150L	
	Stacked Plate	2.2xD	6.707	8.266	12.266	1-1/2	4.000	1/4 NPT	SP46X22-150L	C46SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

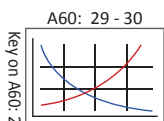
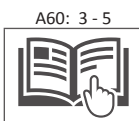
Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R46...	C46-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C46-ADJ					
SP46...	C46SP-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C46SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A60



m = Metric (mm)

i = Imperial (in)

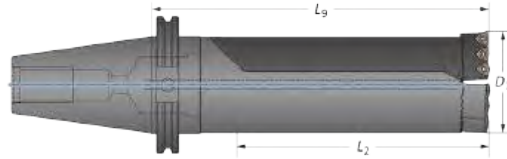
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



46 Series: 71.12 mm - 76.20 mm (2.8000" - 3.0000")

Holders with Integrated CAT Shank



CAT Integral Shank

	Style	Length	Holder		Part No.	Cartridges
			L ₂	L ₉	CAT50	
i	Standard	2.2xD	6.707	9.492	R46X22-CV50	C46-...
		3.5xD	10.457	13.242	R46X35-CV50	
	Stacked Plate	2.2xD	6.707	9.641	SP46X22-CV50	C46SP-...

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

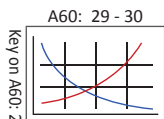
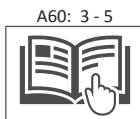
Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R46...	C46-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C46-ADJ					
SP46...	C46SP-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C46SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A60



m = Metric (mm)

i = Imperial (in)

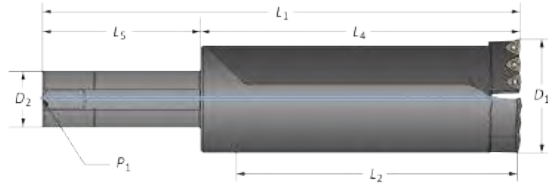
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	1.0xD	80.2	117.4	197.4	50	80.0	—	R48X10-50M	C48-...
		2.5xD	200.9	238.0	318.1	50	80.0	—	R48X25-50M	
	Stacked Plate	1.0xD	80.2	122.5	202.5	50	80.0	—	SP48X10-50M	C48SP-...
		2.5xD	200.9	243.1	323.1	50	80.0	—	SP48X25-50M	
i	Standard	1.0xD	3.158	4.622	9.122	2	4.500	1/4 NPT	R48X10-200L	C48-...
		2.5xD	7.908	9.372	13.872	2	4.500	1/4 NPT	R48X25-200L	
	Stacked Plate	1.0xD	3.158	4.821	9.321	2	4.500	1/4 NPT	SP48X10-200L	C48SP-...
		2.5xD	7.908	9.571	14.071	2	4.500	1/4 NPT	SP48X25-200L	

NOTE: Holder includes cartridges; however, inserts are sold separately.

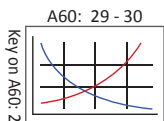
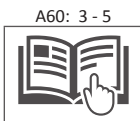
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R48...	C48-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48-ADJ					
SP48...	C48SP-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



A60: 3 - 5

m = Metric (mm)

i = Imperial (in)

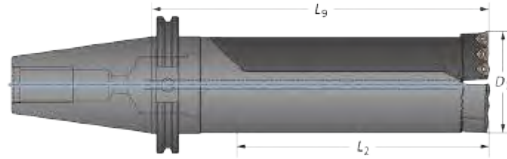
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



48 Series: 76.20 mm - 81.28 mm (3.0000" - 3.2000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L ₉	CAT50	
Standard	1.0xD	3.158	5.997	R48X10-CV50	C48-...
	2.5xD	7.908	10.747	R48X25-CV50	
Stacked Plate	1.0xD	3.158	6.196	SP48X10-CV50	C48SP-...
	2.5xD	7.908	10.946	SP48X25-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

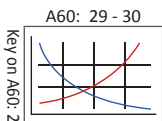
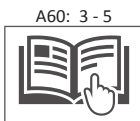
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R48...	C48-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48-ADJ					
SP48...	C48SP-FIX	3	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C48SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

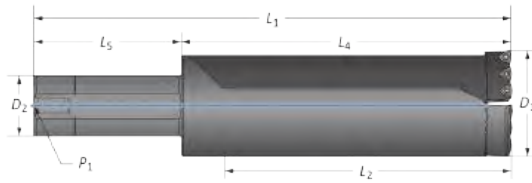
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	1.0xD	86.7	130.2	210.2	50	80.0	—	R52X10-50M	C52-...
		2.5xD	213.7	257.2	337.2	50	80.0	—	R52X25-50M	
	Stacked Plate	1.0xD	86.7	135.3	215.3	50	80.0	—	SP52X10-50M	C52SP-...
		2.5xD	213.7	262.3	342.3	50	80.0	—	SP52X25-50M	
i	Standard	1.0xD	3.414	5.125	9.625	2	4.500	1/4 NPT	R52X10-200L	C52-...
		2.5xD	8.414	10.125	14.625	2	4.500	1/4 NPT	R52X25-200L	
	Stacked Plate	1.0xD	3.414	5.326	9.826	2	4.500	1/4 NPT	SP52X10-200L	C52SP-...
		2.5xD	8.414	10.326	14.826	2	4.500	1/4 NPT	SP52X25-200L	

NOTE: Holder includes cartridges; however, inserts are sold separately.

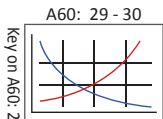
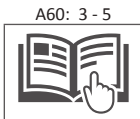
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R52...	C52-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52-ADJ					
SP52...	C52SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

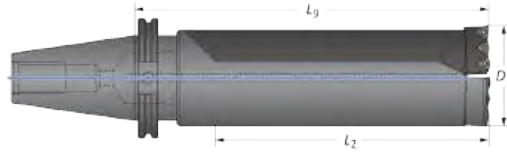
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



52 Series: 81.28 mm - 86.36 mm (3.2000" - 3.4000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L _g	CAT50	
Standard	1.0xD	3.414	6.500	R52X10-CV50	C52-...
	2.5xD	8.414	11.500	R52X25-CV50	
Stacked Plate	1.0xD	3.414	6.701	SP52X10-CV50	C52SP-...
	2.5xD	8.414	11.701	SP52X25-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

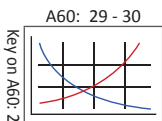
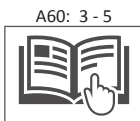
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R52...	C52-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52-ADJ					
SP52...	C52SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C52SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

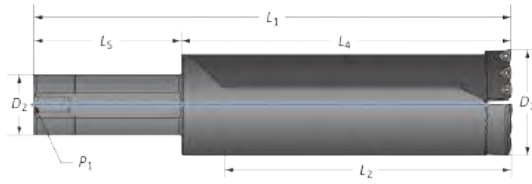
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	1.0xD	92.9	136.5	216.5	50	80.0	—	R54X10-50M	C54-...
		2.5xD	226.3	269.9	349.9	50	80.0	—	R54X25-50M	
	Stacked Plate	1.0xD	92.9	141.6	221.6	50	80.0	—	SP54X10-50M	C54SP-...
		2.5xD	226.3	275.0	355.0	50	80.0	—	SP54X25-50M	
i	Standard	1.0xD	3.659	5.375	9.875	2	4.500	1/4 NPT	R54X10-200L	C54-...
		2.5xD	8.909	10.625	15.125	2	4.500	1/4 NPT	R54X25-200L	
	Stacked Plate	1.0xD	3.659	5.576	10.076	2	4.500	1/4 NPT	SP54X10-200L	C54SP-...
		2.5xD	8.909	10.826	15.326	2	4.500	1/4 NPT	SP54X25-200L	

NOTE: Holder includes cartridges; however, inserts are sold separately.

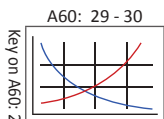
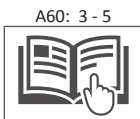
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R54...	C54-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54-ADJ					
SP54...	C54SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



A60: 3 - 5

m = Metric (mm)

i = Imperial (in)

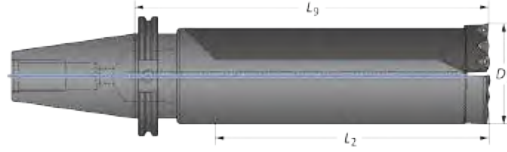
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



54 Series: 86.36 mm - 91.44 mm (3.4000" - 3.6000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L _g	CAT50	
Standard	1.0xD	3.659	6.751	R54X10-CV50	C54-...
	2.5xD	8.909	12.000	R54X25-CV50	
Stacked Plate	1.0xD	3.659	6.951	SP54X10-CV50	C54SP-...
	2.5xD	8.909	12.201	SP54X25-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

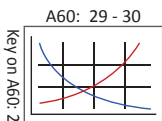
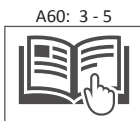
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R54...	C54-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54-ADJ					
SP54...	C54SP-FIX	3	MS-19M-1	6 mm	AS-18T9-1	8T-9
	C54SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

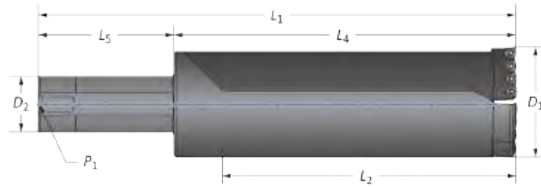
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	1.0xD	98.6	149.4	229.4	50	80.0	—	R56X10-50M	C56-...
		2.5xD	238.3	289.1	369.1	50	80.0	—	R56X25-50M	
	Stacked Plate	1.0xD	98.6	154.4	234.4	50	80.0	—	SP56X10-50M	C56SP-...
		2.5xD	238.3	294.1	374.1	50	80.0	—	SP56X25-50M	
i	Standard	1.0xD	3.882	5.880	10.380	2	4.500	1/4 NPT	R56X10-200L	C56-...
		2.5xD	9.382	11.380	15.880	2	4.500	1/4 NPT	R56X25-200L	
	Stacked Plate	1.0xD	3.882	6.079	10.579	2	4.500	1/4 NPT	SP56X10-200L	C56SP-...
		2.5xD	9.382	11.579	16.079	2	4.500	1/4 NPT	SP56X25-200L	

NOTE: Holder includes cartridges; however, inserts are sold separately.

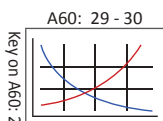
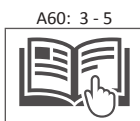
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R56...	C56-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56-ADJ					
SP56...	C56SP-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

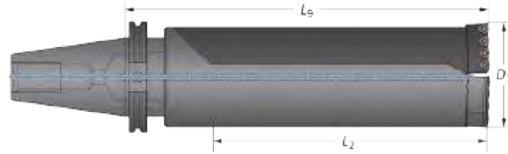
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



56 Series: 91.44 mm - 96.52 mm (3.6000" - 3.8000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L ₉	CAT50	
Standard	1.0xD	3.882	7.255	R56X10-CV50	C56-...
	2.5xD	9.382	12.755	R56X25-CV50	
Stacked Plate	1.0xD	3.882	7.454	SP56X10-CV50	C56SP-...
	2.5xD	9.382	12.954	SP56X25-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

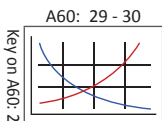
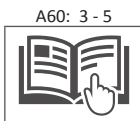
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R56...	C56-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56-ADJ					
SP56...	C56SP-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C56SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

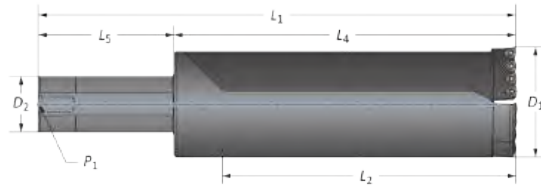
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")

Straight Shank Holders



Straight Shank

	Style	Length	Holder			Shank			Part No.	Cartridges
			L ₂	L ₄	L ₁	D ₂	L ₅	P ₁		
m	Standard	1.0xD	98.6	149.4	229.4	50	80.0	—	R58X10-50M	C58-...
		2.5xD	251.0	301.8	381.8	50	80.0	—	R58X25-50M	
	Stacked Plate	1.0xD	98.6	154.5	234.5	50	80.0	—	SP58X10-50M	C58SP-...
		2.5xD	251.0	306.9	386.9	50	80.0	—	SP58X25-50M	
i	Standard	1.0xD	3.882	5.883	10.383	2	4.500	1/4 NPT	R58X10-200L	C58-...
		2.5xD	9.882	11.883	16.383	2	4.500	1/4 NPT	R58X25-200L	
	Stacked Plate	1.0xD	3.882	6.082	10.582	2	4.500	1/4 NPT	SP58X10-200L	C58SP-...
		2.5xD	9.882	12.082	16.582	2	4.500	1/4 NPT	SP58X25-200L	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

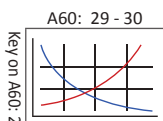
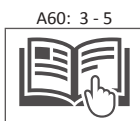
Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R58...	C58-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58-ADJ					
SP58...	C58SP-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58SP-ADJ					

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IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

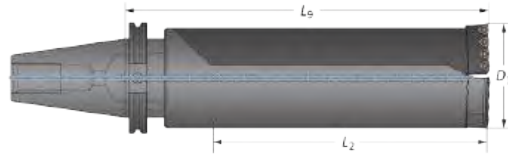
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



58 Series: 96.52 mm - 101.60 mm (3.8000" - 4.0000")

Holders with Integrated CAT Shank



CAT Integral Shank

Style	Length	Holder		Part No.	Cartridges
		L ₂	L ₉	CAT50	
Standard	1.0xD	3.882	7.258	R58X10-CV50	C58-...
	2.5xD	9.882	13.258	R58X25-CV50	
Stacked Plate	1.0xD	3.882	7.457	SP58X10-CV50	C58SP-...
	2.5xD	9.882	13.457	SP58X25-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

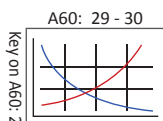
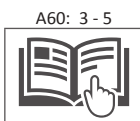
Cartridges

Holder Part No.	Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
R58...	C58-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58-ADJ					
SP58...	C58SP-FIX	4	MS-21M-1	8 mm	AS-18T9-1	8T-9
	C58SP-ADJ					

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



Recommended Drilling Data | Metric (mm)

REVOLUTION DRILL						
		Speed (m/min)				
						
ISO	Material	Hardness (BHN)	AM300®	AM200®	TiN	Feed Rate (mm/rev)
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	274 - 396	259 - 366	213 - 274	0.09 - 0.18
	Low-Carbon Steel 1010, 1020, 1025, etc.	85 - 275	259 - 381	244 - 351	198 - 259	0.08 - 0.17
	Medium-Carbon Steel 1030, 1040, 1050, etc.	125 - 325	244 - 320	229 - 290	183 - 259	0.09 - 0.17
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	229 - 305	213 - 274	183 - 259	0.09 - 0.17
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	183 - 259	168 - 229	122 - 198	0.08 - 0.13
	Structural Steel A36, A285, A516, etc.	100 - 350	259 - 320	244 - 290	198 - 259	0.08 - 0.17
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	122 - 244	107 - 213	76 - 198	0.06 - 0.13
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	183 - 259	168 - 229	122 - 198	0.08 - 0.15
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	183 - 259	168 - 229	122 - 198	0.08 - 0.15
	Super Duplex Stainless Steel	135 - 275	152 - 228	137 - 198	91 - 152	0.05 - 0.12
K	Nodular, Grey, Ductile Cast Iron	120 - 320	213 - 274	198 - 244	152 - 213	0.10 - 0.20
N	Cast Aluminum	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
	Wrought Aluminum	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
	Brass	30 - 100	290 - 411	274 - 381	229 - 335	0.13 - 0.23
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	76 - 137	76 - 107	46 - 91	0.06 - 0.11

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Material Constants

Type of Material	Hardness (BHN)	K _m (kPa)
Free-Machining Steel	100 - 250	5.17
Low-Carbon Steel	85 - 275	5.86
Medium-Carbon Steel	125 - 325	6.21
Alloy Steel	125 - 375	6.90
High-Strength Steel	225 - 400	7.93
Structural Steel	100 - 350	6.90
Tool Steel	150 - 250	6.21
Stainless Steel 400 Series	185 - 350	7.45
Stainless Steel 300 Series	135 - 275	6.48
Super Duplex Stainless Steel	135 - 275	6.48
Nodular, Ductile Cast Iron	120 - 320	4.48
Grey Cast Iron	120 - 320	5.17
Cast Aluminum	30 - 180	2.76
Wrought Aluminum	30 - 180	2.76
Aluminum Bronze	100 - 250	3.45
Brass	100	2.41
Copper	60	2.07
High-Temperature Alloy	140 - 310	9.93
Titanium Alloy	140 - 310	4.97
Aerospace Alloy	185 - 350	4.48
Wear Plate	400 - 600	11.04
Hardened Steel	300 - 500	9.66

Formulas

1.	RPM = $(318.31 \cdot \text{m/min}) / \text{DIA}$
	RPM = revolutions per minute (rev/min)
	m/min = speed (m/min)
	DIA = diameter of drill (mm)
2.	HP = $(\text{DIA}^2 \cdot \text{mm/rev} \cdot \text{RPM} \cdot \text{K}_m) / 181,018$
	kW = tool power (kW)
	DIA = diameter of drill (mm)
	mm/rev = feed rate (mm/rev)
	RPM = revolutions per minute (rev/min)
	K _m = specific cutting energy (kPa)
	machine efficiency (using 181,018 as constant)
3.	Thrust = $148.78 \cdot \text{mm/rev} \cdot \text{DIA} \cdot \text{K}_m$
	Thrust = axial thrust (N)
	mm/rev = feed rate (mm/rev)
	DIA = diameter of drill (mm)
	K _m = specific cutting energy (kPa)
4.	Torque = $(\text{kW} \cdot 9549.3) / \text{RPM}$
	Torque = torque (N·m)
	kW = tool power (kW)
	RPM = revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

Revolution Drill						
			Speed (SFM)			
ISO	Material	Hardness (BHN)	 AM300®	 AM200®	 TiN	Feed Rate (IPR)
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	900 - 1300	850 - 1200	700 - 900	0.0035 - 0.0070
	Low-Carbon Steel 1010, 1020, 1025, etc.	85 - 275	850 - 1250	800 - 1150	650 - 850	0.0030 - 0.0065
	Medium-Carbon Steel 1030, 1040, 1050, etc.	125 - 325	800 - 1050	750 - 950	600 - 850	0.0035 - 0.0065
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	750 - 1000	700 - 900	600 - 850	0.0035 - 0.0065
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	600 - 850	550 - 750	400 - 650	0.0030 - 0.0050
	Structural Steel A36, A285, A516, etc.	100 - 350	850 - 1050	800 - 950	650 - 850	0.0030 - 0.0065
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	400 - 800	350 - 700	250 - 650	0.0025 - 0.0050
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
	Super Duplex Stainless Steel	135 - 275	500 - 750	450 - 650	300 - 550	0.0020 - 0.0050
K	Nodular, Grey, Ductile Cast Iron	120 - 320	700 - 900	650 - 800	500 - 700	0.0040 - 0.0080
N	Cast Aluminum	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
	Wrought Aluminum	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
	Brass	30 - 100	950 - 1350	900 - 1250	750 - 1100	0.0050 - 0.0090
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	250 - 450	250 - 350	150 - 300	0.0025 - 0.0050

Material Constants

Type of Material	Hardness (BHN)	K _m (lbs/in ²)
Free-Machining Steel	100 - 250	0.75
Low-Carbon Steel	85 - 275	0.85
Medium-Carbon Steel	125 - 325	0.90
Alloy Steel	125 - 375	1.00
High-Strength Steel	225 - 400	1.15
Structural Steel	100 - 350	1.00
Tool Steel	150 - 250	0.90
Stainless Steel 400 Series	185 - 350	1.08
Stainless Steel 300 Series	135 - 275	0.94
Super Duplex Stainless Steel	135 - 275	0.94
Nodular, Ductile Cast Iron	120 - 320	0.65
Grey Cast Iron	120 - 320	0.75
Cast Aluminum	30 - 180	0.40
Wrought Aluminum	30 - 180	0.40
Aluminum Bronze	100 - 250	0.50
Brass	100	0.35
Copper	60	0.30
High-Temperature Alloy	140 - 310	1.44
Titanium Alloy	140 - 310	0.72
Aerospace Alloy	185 - 350	0.70
Wear Plate	400 - 600	1.60
Hardened Steel	300 - 500	1.40

Formulas

1.	RPM = $(3.82 \cdot \text{SFM}) / \text{DIA}$
	RPM = revolutions per minute (rev/min)
	SFM = speed (ft/min)
	DIA = diameter of drill (inch)
2.	HP = $(0.6676 \cdot \text{DIA}^2 \cdot \text{IPR} \cdot \text{RPM} \cdot K_m) / 0.80$
	HP = tool power (HP)
	DIA = diameter of drill (inch)
	IPR = feed rate (in/rev)
	RPM = revolutions per minute (rev/min)
	K _m = specific cutting energy (lbs/in ²) machine efficiency (using 0.80 as constant)
3.	Thrust = $148,500 \cdot \text{IPR} \cdot \text{DIA} \cdot K_m$
	Thrust = axial thrust (lbs)
	IPR = feed rate (in/rev)
	DIA = diameter of drill (inch)
	K _m = specific cutting energy (lbs/in ²)
4.	Torque = $(\text{HP} \cdot 5252) / \text{RPM}$
	Torque = torque (ft-lbs)
	HP = tool power (HP)
	RPM = revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

The background of the entire page is a solid red color. Overlaid on this are several faint, light-red geometric patterns. On the left side, there are several concentric circles of varying radii. Across the entire page, there is a grid of thin, intersecting lines that form a series of small squares, some of which are slightly offset or rotated, creating a complex, layered effect.

SECTION

A70

Opening Drill®

Opening Drill®

50.80 mm - 142.75 mm (2.0000" - 5.6200")



Opening Drill

The Opening Drill is an extremely effective tool designed to enlarge existing holes. It is available in nine different shank styles: Straight, ABS 63, CAT V40, CAT V50, HSK 63A/C, HSK 100A/C, BT 40, BT 50, and DIN50.

In a single operation, an existing hole can be opened and large amounts of material can be removed. The insert design reduces chip size and improves evacuation. Also, inventory and cost are reduced by the adjustable diameters.

Need larger holes | No problem

- ▶ Excellent chip control.
- ▶ Improves hole quality and surface finish.
- ▶ Provides maximum durability and stability.

Applicable Industries

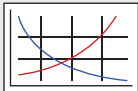
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Marine
-  Oil and Gas
-  Renewable Energy/ Energy
-  Structural Steel Fabricator
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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System Overview

Features & Benefits



2 Inserts
(OP1 - OP3 series)



3 Inserts
(OP4 series)

Features & Benefits

- Opens an existing hole in a single operation.
- Can be used as a rotating or stationary tool.
- Can be used in rough boring operations.
- Smooth cutting action and quiet operations in lathes and mills.
- Unique design enables larger holes to be made on low horsepower machines.
- Ignores core shifts up to 3.18 mm (1/8") providing straight and true holes without the need for boring.

	OP1	OP2	OP3	OP4
	47.63 mm - 50.80 mm 1.8750" - 2.0000"	47.63 mm - 50.80 mm 1.8750" - 2.0000"	47.63 mm - 50.80 mm 1.8750" - 2.0000"	47.63 mm - 50.80 mm 1.8750" - 2.0000"
Straight (mm)	40	40	40	50
Straight (in)	1.500	1.500	1.500	2.000
Shank Options				
HSK63*	●	●	●	●
HSK100	●	●	●	●
BT40*	●	●	●	●
BT50	●	●	●	●
CAT40*	●	●	●	●
CAT50	●	●	●	●
ABS63*	●	●	●	●
DIN50	●	●	●	●
Inserts per Cartridge	2	2	2	3

*Long length not available for OP4 series.

Shank Options



Straight



CAT40



CAT50



BT40



BT50



HSK63



HSK100



DIN50



ABS63



System Overview

Product Overview

IC Inserts

- The design allows for excellent chip control and aggressive penetration rates.
- The proprietary AM200® and AM300® coatings increase tool life above competitors' premium coatings.
- The same inserts are used for both Revolution Drill® and Opening Drill® products.



AM300®



AM200®



TiN

Insert Application Recommendations

Carbide Grade Options

P35 (C5)	General purpose carbide grade suitable for most applications. ▶ <i>Common application in steels and stainless steels.</i>
K35 (C1)	Toughest carbide grade. Provides the best combination of edge strength and tool life. ▶ <i>Recommended for less rigid applications.</i>
K25 (C2)	Higher wear-resistant carbide suitable for abrasive material applications. ▶ <i>Recommended for grey, ductile, and nodular irons.</i>

Additional Geometry Option

High Rake (HR)	Provides superior chip control and tool life in long chipping carbon and alloy steels below 200 BHN.
----------------	--



Straight Shanks

- Designed for lathe applications.
- Can be cut off for use in end mill holders.
- The score mark (circled above) is provided for recommended cut length.
- Cut and deburr at the score mark.
- This improves rigidity when the body sits against the face of an end mill holder.



A70



System Overview

Setup Instructions



Step 1:

Loosen the mounting screws on both cartridges.



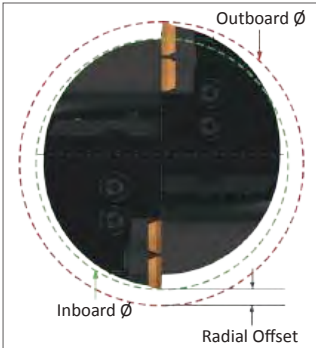
Step 2:

Set one cartridge to the finish diameter by tightening the adjustment screw against the adjustment pin.



Step 3:

Tighten the mounting screws on the cartridge to 15-19 N-m (11-14 ft-lbf).



Step 4:

Set the opposing cartridge with 4.06 mm - 5.08 mm (0.200" - 0.160") radial offset inward by tightening the adjustment screw against the adjustment pin (optimum situation for each insert to remove equal material).



Step 5:

Tighten the mounting screws on the cartridge to 15-19 N-m (11-14 ft-lbf).

System Overview

Product Nomenclature

Opening Drill Holders

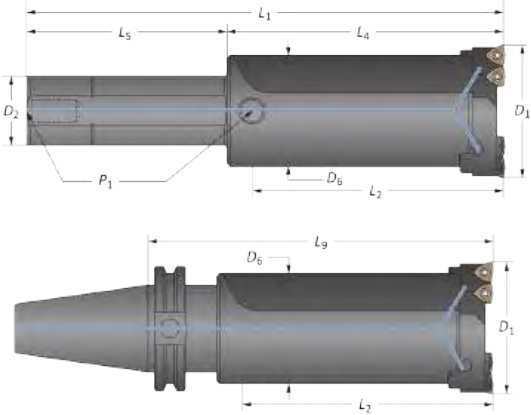
OP1	—	1S	—	SS1.5	
Series		Drill Length		Shank Style	
OP1		1S = Short		40M = 40 mm straight	BT40 = BT40
OP2		1L = Long		50M = 50 mm straight	BT50 = BT50
OP3				SS1.5 = 1.500 Ø straight	CV40 = CAT40
OP4				SS2.0 = 2.000 Ø straight	CV50 = CAT50
				HSK63 = HSK 63A/C	ABS63 = ABS63
				HSK100 = HSK 100A/C	DV50 = DIN50

Revolution Drill & Opening Drill Inserts

OP	05	T3	08	1	H	HR
	IC Type	Thickness	Radius	Carbide Grade	Shank Style	Geometry
	05 = 5/16"	T3 = 5/32"	08 = 1/32"	Blank = P35 (C5) 1 = K35 (C1) 2 = K25 (C2)	P = AM300® H = AM200® T = TiN A = TiAlN N = TiCN U = Uncoated	Blank = General Purpose HR = High Rake

Reference Key

Symbol	Attribute
D ₁	Drill diameter range
D ₂	Shank diameter
D ₆	Body diameter
L ₁	Overall length
L ₂	Maximum drill depth
L ₄	Holder length
L ₅	Shank length
L ₉	Gauge length
P ₁	Rear pipe tap

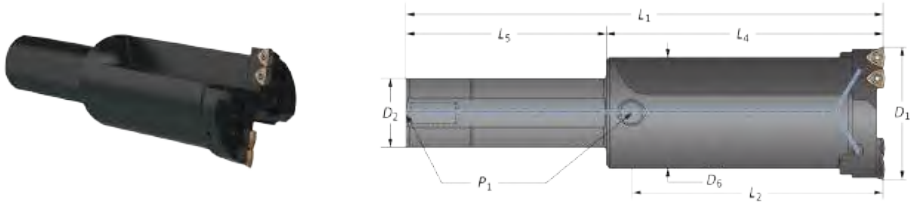


A70



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

Straight Shank



	D ₁ Range	Length	Holder				Shank			Part No.	Cartridges
			D ₆	L ₂	L ₄	L ₁	D ₂	L ₃	P ₁		
m	50.80 - 63.50	Short	46.7	83.5	104.4	174.4	40	70.0	—	OP1-1S-40M	OP1-WC05
		Long	46.7	140.6	161.6	231.6	40	70.0	—	OP1-1L-40M	
	63.50 - 76.20	Short	56.4	118.5	141.2	211.3	40	70.0	—	OP2-1S-40M	OP2-WC05
		Long	56.4	194.7	217.4	287.5	40	70.0	—	OP2-1L-40M	
	76.20 - 104.65	Short	71.3	129.9	153.9	224.0	40	70.0	—	OP3-1S-40M	OP3-WC05
		Long	71.3	231.5	255.5	325.6	40	70.0	—	OP3-1L-40M	
	104.65 - 142.75	Short	88.9	127.4	153.9	234.0	50	80.0	—	OP4-1S-50M	OP4-WC05
		Long	88.9	267.1	293.6	373.7	50	80.0	—	OP4-1L-50M	
i	2.0000 - 2.5000	Short	1.840	3.286	4.112	8.112	1-1/2	4.000	1/4 NPT	OP1-1S-SS1.5	OP1-WC05
		Long	1.840	5.536	6.362	10.362	1-1/2	4.000	1/4 NPT	OP1-1L-SS1.5	
	2.5000 - 3.0000	Short	2.220	4.666	5.561	9.561	1-1/2	4.000	1/4 NPT	OP2-1S-SS1.5	OP2-WC05
		Long	2.220	7.666	8.561	12.561	1-1/2	4.000	1/4 NPT	OP2-1L-SS1.5	
	3.0000 - 4.1200	Short	2.806	5.114	6.061	10.061	1-1/2	4.000	1/4 NPT	OP3-1S-SS1.5	OP3-WC05
		Long	2.806	9.114	10.061	14.061	1-1/2	4.000	1/4 NPT	OP3-1L-SS1.5	
	4.1200 - 5.6200	Short	3.500	5.017	6.061	10.561	2	4.500	1/4 NPT	OP4-1S-SS2.0	OP4-WC05
		Long	3.500	10.517	11.561	16.061	2	4.500	1/4 NPT	OP4-1L-SS2.0	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

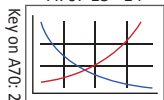
IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rate	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A70: 13 - 14

A70: 3 - 4



m = Metric (mm)

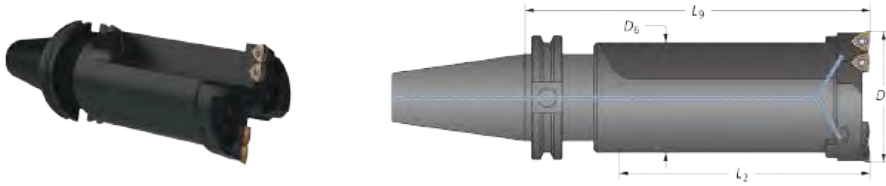
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.
IC inserts and insert screws sold in quantities of 10.



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

CAT Integral Shank



CAT40 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
2.0000 - 2.5000	Short	1.840	3.286	5.487	OP1-1S-CV40	OP1-WC05
	Long	1.840	5.536	7.737	OP1-1L-CV40	
2.5000 - 3.0000	Short	2.220	4.666	6.936	OP2-1S-CV40	OP2-WC05
	Long	2.220	7.666	9.936	OP2-1L-CV40	
3.0000 - 4.1200	Short	2.806	5.114	7.436	OP3-1S-CV40	OP3-WC05
	Long	2.806	9.114	11.436	OP3-1L-CV40	
4.1200 - 5.6200	Short	3.500	5.017	7.436	OP4-1S-CV40	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.

CAT50 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
2.0000 - 2.5000	Short	1.840	3.286	5.487	OP1-1S-CV50	OP1-WC05
	Long	1.840	5.536	7.737	OP1-1L-CV50	
2.5000 - 3.0000	Short	2.220	4.666	6.936	OP2-1S-CV50	OP2-WC05
	Long	2.220	7.666	9.936	OP2-1L-CV50	
3.0000 - 4.1200	Short	2.806	5.114	7.436	OP3-1S-CV50	OP3-WC05
	Long	2.806	9.114	11.436	OP3-1L-CV50	
4.1200 - 5.6200	Short	3.500	5.017	7.436	OP4-1S-CV50	OP4-WC05
	Long	3.500	10.517	12.936	OP4-1L-CV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

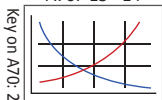
IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A70: 13 - 14

A70: 3 - 4



m = Metric (mm)

i = Imperial (in)

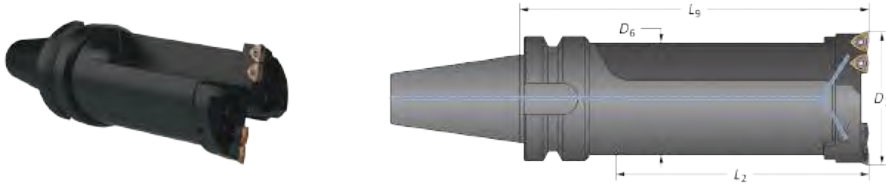
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

BT Integral Shank



BT40 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	139.4	OP1-1S-BT40	OP1-WC05
	Long	46.7	140.6	196.5	OP1-1L-BT40	
63.50 - 76.20	Short	56.4	118.5	176.2	OP2-1S-BT40	OP2-WC05
	Long	56.4	194.7	252.4	OP2-1L-BT40	
76.20 - 104.65	Short	71.3	129.9	188.9	OP3-1S-BT40	OP3-WC05
	Long	71.3	231.5	290.5	OP3-1L-BT40	
104.65 - 142.75	Short	88.9	127.4	188.9	OP4-1S-BT40	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.

BT50 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	148.9	OP1-1S-BT50	OP1-WC05
	Long	46.7	140.6	206.0	OP1-1L-BT50	
63.50 - 76.20	Short	56.4	118.5	185.7	OP2-1S-BT50	OP2-WC05
	Long	56.4	194.7	261.9	OP2-1L-BT50	
76.20 - 104.65	Short	71.3	129.9	198.4	OP3-1S-BT50	OP3-WC05
	Long	71.3	231.5	300.0	OP3-1L-BT50	
104.65 - 142.75	Short	88.9	127.4	198.4	OP4-1S-BT50	OP4-WC05
	Long	88.9	267.1	338.1	OP4-1L-BT50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

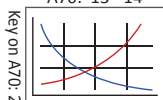
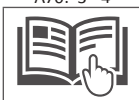
IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rate	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A70: 13 - 14

A70: 3 - 4



m = Metric (mm)

i = Imperial (in)

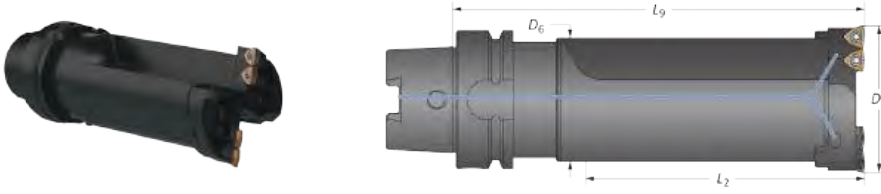
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

HSK Integral Shank



HSK63 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	150.1	OP1-1S-HSK63	OP1-WC05
	Long	46.7	140.6	207.3	OP1-1L-HSK63	
63.50 - 76.20	Short	56.4	118.5	186.9	OP2-1S-HSK63	OP2-WC05
	Long	56.4	194.7	263.1	OP2-1L-HSK63	
76.20 - 104.65	Short	71.3	129.9	199.6	OP3-1S-HSK63	OP3-WC05
	Long	71.3	231.5	301.2	OP3-1L-HSK63	
104.65 - 142.75	Short	88.9	127.4	199.6	OP4-1S-HSK63	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.

HSK100 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	152.6	OP1-1S-HSK100	OP1-WC05
	Long	46.7	140.6	209.8	OP1-1L-HSK100	
63.50 - 76.20	Short	56.4	118.5	189.4	OP2-1S-HSK100	OP2-WC05
	Long	56.4	194.7	265.6	OP2-1L-HSK100	
76.20 - 104.65	Short	71.3	129.9	202.1	OP3-1S-HSK100	OP3-WC05
	Long	71.3	231.5	303.7	OP3-1L-HSK100	
104.65 - 142.75	Short	88.9	127.4	202.1	OP4-1S-HSK100	OP4-WC05
	Long	88.9	267.1	341.8	OP4-1L-HSK100	

NOTE: Holder includes cartridges; however, inserts are sold separately.

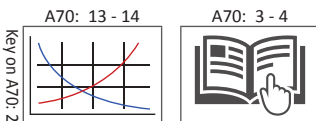
Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)

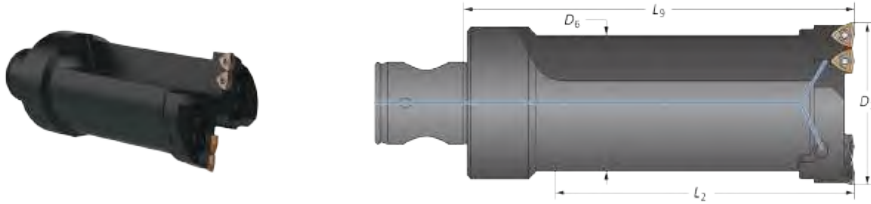
i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.

**Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")**

ABS63 Integral Shank

**ABS63 Shanks**

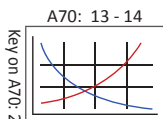
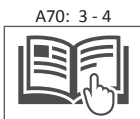
D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	141.3	OP1-1S-ABS63	OP1-WC05
	Long	46.7	140.6	198.5	OP1-1L-ABS63	
63.50 - 76.20	Short	56.4	118.5	160.3	OP2-1S-ABS63	OP2-WC05
	Long	56.4	194.7	236.5	OP2-1L-ABS63	
76.20 - 104.65	Short	71.3	129.9	173.0	OP3-1S-ABS63	OP3-WC05
	Long	71.3	231.5	274.6	OP3-1L-ABS63	
104.65 - 142.75	Short	88.9	127.4	173.0	OP4-1S-ABS63	OP4-WC05

NOTE: Holder includes cartridges; however, inserts are sold separately.**Cartridges**

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rate	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

= Metric (mm)

= Imperial (in)

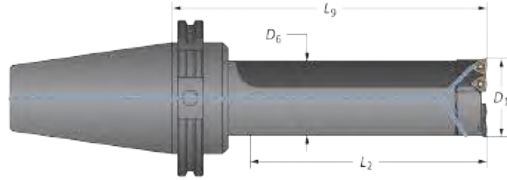
Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.



Opening Drill: 50.80 mm - 142.75 mm (2.0000" - 5.6200")

DIN50 Integral Shank



DIN50 Shanks

D ₁ Range	Length	Holder			Part No.	Cartridges
		D ₆	L ₂	L ₉		
50.80 - 63.50	Short	46.7	83.5	139.4	OP1-1S-DV50	OP1-WC05
	Long	46.7	140.6	196.6	OP1-1L-DV50	
63.50 - 76.20	Short	56.4	118.5	176.3	OP2-1S-DV50	OP2-WC05
	Long	56.4	194.7	252.5	OP2-1L-DV50	
76.20 - 104.65	Short	71.3	129.9	189.0	OP3-1S-DV50	OP3-WC05
	Long	71.3	231.5	290.6	OP3-1L-DV50	
104.65 - 142.75	Short	88.9	127.4	189.0	OP4-1S-DV50	OP4-WC05
	Long	88.9	267.1	328.7	OP4-1L-DV50	

NOTE: Holder includes cartridges; however, inserts are sold separately.

Cartridges

Replacement Cartridges	Qty. Inserts Needed	Mounting Screw	Key Size	Adjusting Screw	Driver
OP1-WC05	2	MS-13M-1	5 mm	AS-10T9-1	8T-9
OP2-WC05	2	MS-15M-1	5 mm	AS-10T9-1	8T-9
OP3-WC05	2	MS-15M-1	5 mm	AS-12T9-1	8T-9
OP4-WC05	3	MS-15M-1	5 mm	AS-14T9-1	8T-9

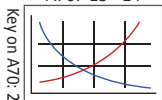
IC Inserts

Carbide Grade	Geometry	Part No.			Insert Screws*	Driver
		AM300®	AM200®	TiN		
P35 (C5)	Standard	OP-05T308-P	OP-05T308-H	OP-05T308-T	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P	OP-05T308-1H	OP-05T308-1T		
K25 (C2)		OP-05T308-2P	OP-05T308-2H	—		
P35 (C5)	High Rake	OP-05T308-PHR	OP-05T308-HHR	—	IS-10-1	8T-9

*Admissible Tightening Torque: 175 N-cm (15.5 in-lbs). Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

A70: 13 - 14

A70: 3 - 4



m = Metric (mm)

i = Imperial (in)

Mounting and adjusting screws sold in quantities of 4.

IC inserts and insert screws sold in quantities of 10.

**Recommended Drilling Data | Metric (mm)****OPENING DRILL**

ISO	Material	Hardness (BHN)	Speed (m/min)			Feed Rate (mm/rev)
			 AM300®	 AM200®	 TIN	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	274 - 396	259 - 366	213 - 274	0.09 - 0.18
	Low-Carbon Steel 1010, 1020, 1025, etc.	85 - 275	259 - 381	244 - 351	198 - 259	0.08 - 0.17
	Medium-Carbon Steel 1030, 1040, 1050, etc.	125 - 325	244 - 320	229 - 290	183 - 259	0.09 - 0.17
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	229 - 305	213 - 274	183 - 259	0.09 - 0.17
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	183 - 259	168 - 229	122 - 198	0.08 - 0.13
	Structural Steel A36, A285, A516, etc.	100 - 350	259 - 320	244 - 290	198 - 259	0.08 - 0.17
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	122 - 244	107 - 213	76 - 198	0.06 - 0.13
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	183 - 259	168 - 229	122 - 198	0.08 - 0.15
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	183 - 259	168 - 229	122 - 198	0.08 - 0.15
	Super Duplex Stainless Steel	135 - 275	152 - 228	137 - 198	91 - 152	0.05 - 0.12
K	Nodular, Grey, Ductile Cast Iron	120 - 320	213 - 274	198 - 244	152 - 213	0.10 - 0.20
N	Cast Aluminum	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
	Wrought Aluminum	30 - 180	381 - 503	381 - 472	290 - 335	0.15 - 0.30
	Brass	30 - 100	290 - 411	274 - 381	229 - 335	0.13 - 0.23
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	76 - 137	76 - 107	46 - 91	0.06 - 0.11

Material Constants

Type of Material	Hardness (BHN)	K _m (kPa)
Free-Machining Steel	100 - 250	5.17
Low-Carbon Steel	85 - 275	5.86
Medium-Carbon Steel	125 - 325	6.21
Alloy Steel	125 - 375	6.90
High-Strength Steel	225 - 400	7.93
Structural Steel	100 - 350	6.90
Tool Steel	150 - 250	6.21
Stainless Steel 400 Series	185 - 350	7.45
Stainless Steel 300 Series	135 - 275	6.48
Super Duplex Stainless Steel	135 - 275	6.48
Nodular, Ductile Cast Iron	120 - 320	4.48
Grey Cast Iron	120 - 320	5.17
Cast Aluminum	30 - 180	2.76
Wrought Aluminum	30 - 180	2.76
Aluminum Bronze	100 - 250	3.45
Brass	100	2.41
Copper	60	2.07
High-Temperature Alloy	140 - 310	9.93
Titanium Alloy	140 - 310	4.97
Aerospace Alloy	185 - 350	4.48
Wear Plate	400 - 600	11.04
Hardened Steel	300 - 500	9.66

Formulas

1.	RPM = $(318.31 \cdot \text{m/min}) / \text{DIA}_f$ RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA _f = finish diameter of drill (mm)
2.	kW = $((\text{DIA}_f^2 - \text{DIA}_p^2) \cdot \text{mm/rev} \cdot \text{RPM} \cdot \text{K}_m) / 205,154$ kW = tool power (kW) DIA _f = finish diameter of drill (mm) DIA _p = pre-drill diameter (mm) mm/rev = feed rate (mm/rev) RPM = revolutions per minute (rev/min) K _m = specific cutting energy (kPa) machine efficiency (using 205,154 as constant)
3.	Thrust = $148.78 \cdot \text{mm/rev} \cdot (\text{DIA}_f - \text{DIA}_p) \cdot \text{K}_m$ Thrust = axial thrust (N) IPR = feed rate (mm/rev) DIA _f = finish diameter of drill (mm) DIA _p = pre-drill diameter (mm) K _m = specific cutting energy (kPa)
4.	Torque = $(\text{kW} \cdot 9549.3) / \text{RPM}$ Torque = torque (N-m) HP = tool power (kW) RPM = revolutions per minute (rev/min)

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

OPENING DRILL

ISO	Material	Hardness (BHN)	Speed (SFM)			Feed Rate (IPR)
			 AM300®	 AM200®	 TiN	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	900 - 1300	850 - 1200	700 - 900	0.0035 - 0.0070
	Low-Carbon Steel 1010, 1020, 1025, etc.	85 - 275	850 - 1250	800 - 1150	650 - 850	0.0030 - 0.0065
	Medium-Carbon Steel 1030, 1040, 1050, etc.	125 - 325	800 - 1050	750 - 950	600 - 850	0.0035 - 0.0065
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	750 - 1000	700 - 900	600 - 850	0.0035 - 0.0065
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	600 - 850	550 - 750	400 - 650	0.0030 - 0.0050
	Structural Steel A36, A285, A516, etc.	100 - 350	850 - 1050	800 - 950	650 - 850	0.0030 - 0.0065
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	400 - 800	350 - 700	250 - 650	0.0025 - 0.0050
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	600 - 850	550 - 750	400 - 650	0.0030 - 0.0060
	Super Duplex Stainless Steel	135 - 275	500 - 750	450 - 650	300 - 550	0.0020 - 0.0050
K	Nodular, Grey, Ductile Cast Iron	120 - 320	700 - 900	650 - 800	500 - 700	0.0040 - 0.0080
N	Cast Aluminum	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
	Wrought Aluminum	30 - 180	1250 - 1650	1200 - 1550	950 - 1100	0.0060 - 0.0120
	Brass	30 - 100	950 - 1350	900 - 1250	750 - 1100	0.0050 - 0.0090
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	250 - 450	250 - 350	150 - 300	0.0025 - 0.0050

Material Constants

Type of Material	Hardness (BHN)	K _m (lbs/in ²)
Free-Machining Steel	100 - 250	0.75
Low-Carbon Steel	85 - 275	0.85
Medium-Carbon Steel	125 - 325	0.90
Alloy Steel	125 - 375	1.00
High-Strength Steel	225 - 400	1.15
Structural Steel	100 - 350	1.00
Tool Steel	150 - 250	0.90
Stainless Steel 400 Series	185 - 350	1.08
Stainless Steel 300 Series	135 - 275	0.94
Super Duplex Stainless Steel	135 - 275	0.94
Nodular, Ductile Cast Iron	120 - 320	0.65
Grey Cast Iron	120 - 320	0.75
Cast Aluminum	30 - 180	0.40
Wrought Aluminum	30 - 180	0.40
Aluminum Bronze	100 - 250	0.50
Brass	100	0.35
Copper	60	0.30
High-Temperature Alloy	140 - 310	1.44
Titanium Alloy	140 - 310	0.72
Aerospace Alloy	185 - 350	0.70
Wear Plate	400 - 600	1.60
Hardened Steel	300 - 500	1.40

Formulas

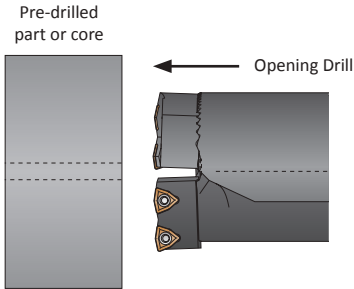
1.	RPM = $(3.82 \cdot \text{SFM}) / \text{DIA}_f$ RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA _f = finish diameter of drill (inch)
2.	HP = $(0.5891 \cdot (\text{DIA}_f^2 - \text{DIA}_p^2) \cdot \text{IPR} \cdot \text{RPM} \cdot \text{K}_m) / 0.80$ HP = tool power (HP) DIA _f = finish diameter of drill (inch) DIA _p = pre-drill diameter (inch) IPR = feed rate (in/rev) RPM = revolutions per minute (rev/min) K _m = specific cutting energy (lbs/in ²) machine efficiency (using 0.80 as constant)
3.	Thrust = $148,500 \cdot \text{IPR} \cdot (\text{DIA}_f - \text{DIA}_p) \cdot \text{K}_m$ Thrust = axial thrust (lbs) IPR = feed rate (in/rev) DIA _f = finish diameter of drill (inch) DIA _p = pre-drill diameter (inch) K _m = specific cutting energy (lbs/in ²)
4.	Torque = $(\text{HP} \cdot 5252) / \text{RPM}$ Torque = torque (ft-lbs) HP = tool power (HP) RPM = revolutions per minute (rev/min)

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IMPORTANT: The speeds and feeds listed above are considered a general starting point for all applications. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Minimum Pilot Hole Diameter



Metric Minimum Pilot Hole Diameter

Minimum Pilot Hole Diameter = Finish Diameter – C

To open an existing diameter hole to 69.85 mm diameter, an OP2 tool would be used. The minimum pilot hole diameter would be:
69.85 mm - 47.75 = 22.10 mm

m	Opening Drill Series	Drill Diameter Range	C
	OP1	50.80 - 63.50	47.75
	OP2	63.50 - 76.20	47.75
	OP3	76.20 - 104.65	47.75
	OP4	104.65 - 142.75	68.07

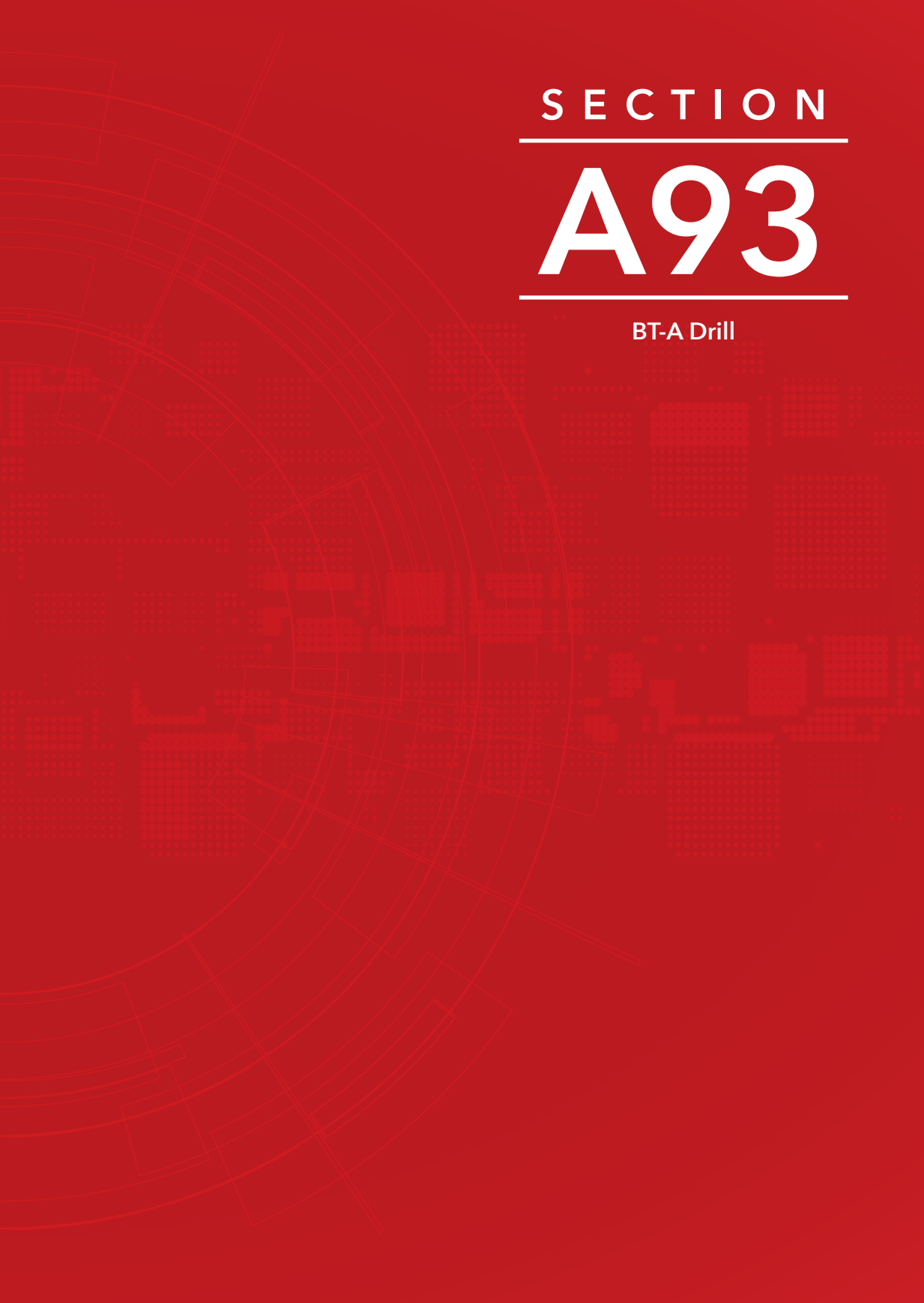
Imperial Minimum Pilot Hole Diameter

Minimum Pilot Hole Diameter = Finish Diameter – C

To open an existing diameter hole to 2.7500" diameter, an OP2 tool would be used. The minimum pilot hole diameter would be:
2.7500" - 1.880 = 0.8700"

i	Opening Drill Series	Drill Diameter Range	C
	OP1	2.0000 - 2.5000	1.880
	OP2	2.5000 - 3.0000	1.880
	OP3	3.0000 - 4.1200	1.880
	OP4	4.1200 - 5.6200	2.680

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.



SECTION

A93

BT-A Drill

BT-A Drill

12.98 mm - 47.82 mm (0.5110" - 1.8829")



BT-A (STS) Deep Hole Machining System

The BT-A drill (using the single tube system or STS) conquers deep hole applications in ways other drills simply cannot. The internal ejection system flushes chips and debris from the hole with no interference to the cutting process.

By utilizing the countless advantages of the T-A® drill insert, the BT-A design significantly increases penetration rates over brazed heads and traditional gun drills. A specific BT geometry has also been developed to increase productivity in these types of drilling applications.

Material Ejection with Efficiency

- ▶ Excellent hole size and finish.
- ▶ Optimizes chip evacuation.
- ▶ Up to 2x the penetration rate of traditional BTA heads.

Applicable Industries



Aerospace



Defense



Heavy Equipment



Oil and Gas



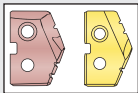
Renewable Energy/ Energy



Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



T-A® Inserts
Refers to the range of inserts that connect with the corresponding holders.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

Table of Contents

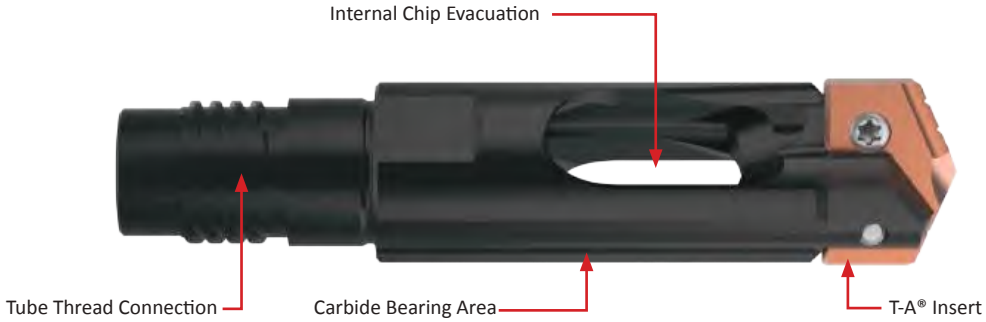
Introduction Information	
System Overview	3
Product Nomenclature.....	4
Drill Series	
0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959").....	5
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609").....	6
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809").....	7
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829").....	8



System Overview

BTA Machining

BTA machining is the reverse of typical gun drilling systems. The BT-A drill is a drill head consisting of a holder body and a replaceable tip T-A® insert. The drill head threads into an STS (single tube system) cylindrical tube with a diameter smaller than the drill head. The difference in diameter forms an annular area between the hole and the tube OD. This allows high-volume coolant to be directed to the cutting edge.



- ✓ **Improve hole straightness**
with the laser clad bearing area.
- ✓ **Eliminate the need for resharping**
with replaceable cutting edges.
- ✓ **Reduce your inventory**
with the replaceable T-A® feature.
- ✓ **Compatibility**
heads are compatible with standard BTA-STS systems.
- ✓ **Balanced cutting forces.**
- ✓ **Patented design.**

T-A Insert: BT-A Geometry (-BT)

- Low thrust web geometry reduces z-axis requirements.
- Lip geometry identical to the tiny chip (-TC) for improved chip formation.
- Polished cutting surface eliminates material buildup.



BT-A Single Tube System



BT-A Double Tube (Ejector) System (Quoted Special)



A93

2x INCREASE in
penetration rates
over traditional BTA heads

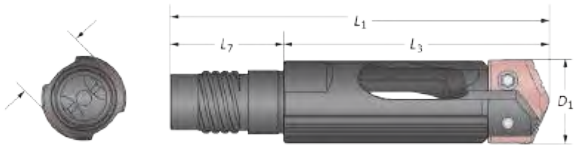
Product Nomenclature

BT-A Head

BTA	2	804					—	1.1299
	Series	Tube Size						Diameter
	0	794	798	802	806	810		25.00 = Metric
	1	795	799	803	807	811		0.7344 = Inch
	2	796	800	804	808			
	3	797	801	805	809			

Reference Key

Symbol	Attribute
D_1	Drill insert range
L_1	Overall length
L_3	Holder reference length
L_5	Shank length

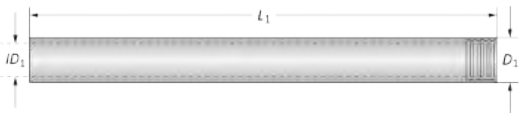


BT-A Tube

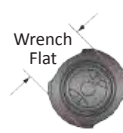
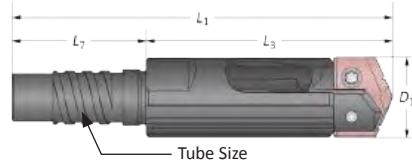
BTAT	—	804					—	63
		Tube Size						Length
		794	798	802	806	810		63 = Standard
		795	799	803	807	811		102 = Long
		796	800	804	808			
		797	801	805	809			

Reference Key

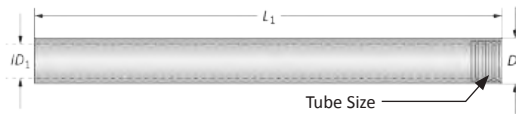
Symbol	Attribute
D_6	Body diameter
ID_1	Internal diameter
L_1	Overall length



A93

**0 Series: 12.98 mm - 17.67 mm (0.5110" - 0.6959")****Heads**

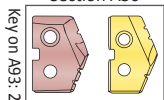
		Tube Size	Holder				Carbide: K35 (C1)		Wrench Flat (mm)
			D_1	L_3	L_1	L_5	Part No.		
								Part No.	
							AM200®		
m	794	12.98 - 13.61	43.36	66.37	23.01	BTA0-794-XX.XX	1C10H-XXXX-BT	11	
	795	13.61 - 14.63	44.63	67.64	23.01	BTA0-795-XX.XX	1C10H-XXXX-BT	12	
	796	14.63 - 15.62	45.90	69.90	24.00	BTA0-796-XX.XX	1C10H-XXXX-BT	13	
	797	15.62 - 16.71	45.90	69.90	24.00	BTA0-797-XX.XX	1C10H-XXXX-BT	14	
	798	16.71 - 17.70	45.26	69.27	24.00	BTA0-798-XX.XX	1C10H-XXXX-BT	15	
i	794	0.5110 - 0.5359	1.7070	2.6130	0.9060	BTA0-794-X.XXXX	1C10H-XXXX-BT	11	
	795	0.5360 - 0.5759	1.7570	2.6630	0.9060	BTA0-795-X.XXXX	1C10H-XXXX-BT	12	
	796	0.5760 - 0.6149	1.8070	2.7520	0.9450	BTA0-796-X.XXXX	1C10H-XXXX-BT	13	
	797	0.6150 - 0.6579	1.8070	2.7520	0.9450	BTA0-797-X.XXXX	1C10H-XXXX-BT	14	
	798	0.6580 - 0.6969	1.7820	2.7270	0.9450	BTA0-798-X.XXXX	1C10H-XXXX-BT	15	

**Tubes**

Tube Size	Metric (mm)		Imperial (in)		Tube Length	L_1		Part No.
	D_6	ID_1	D_6	ID_1		Metric (cm)	Imperial (in)	
794	11.00	7.00	0.4331	0.2756	Short	160	63	BTAT794-63
					Long	260	102	BTAT794-102
795	12.00	8.00	0.4724	0.3150	Short	160	63	BTAT795-63
					Long	260	102	BTAT795-102
796	13.00	8.50	0.5118	0.3346	Short	160	63	BTAT796-63
					Long	260	102	BTAT796-102
797	14.00	9.00	0.5512	0.3543	Short	160	63	BTAT797-63
					Long	260	102	BTAT797-102
798	15.00	10.00	0.5906	0.3937	Short	160	63	BTAT798-63
					Long	260	102	BTAT798-102

Connection Accessories

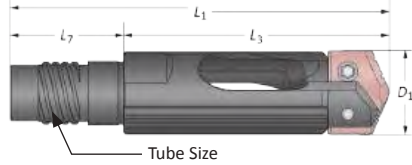
Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	0.5110 - 0.6093	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	0.6094 - 0.6959	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.**Section A30****m** = Metric (mm)**i** = Imperial (in)

Screws sold in multiples of 10.

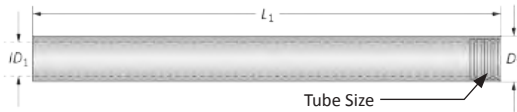


1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")



Heads

	Tube Size	D_1	Holder			Part No.	Carbide: K35 (C1)	Wrench Flat (mm)
			L_3	L_1	L_5		Part No. AM200®	
m	799	17.70 - 18.92	58.17	83.16	24.00	BTA1-799-XX.XX	1C11H-XXXX-BT	16
	800	18.92 - 20.01	58.80	86.79	28.00	BTA1-800-XX.XX	1C11H-XXXX-BT	17
	801	20.02 - 21.82	59.44	89.94	30.51	BTA1-801-XX.XX	1C11H-XXXX-BT	18
	802	21.82 - 24.10	60.71	93.70	32.99	BTA1-802-XX.XX	1C11H-XXXX-BT	19
	803	24.10 - 24.41	63.88	96.88	32.99	BTA1-803-XX.XX	1C11H-XXXX-BT	21
i	799	0.6970 - 0.7449	2.2900	3.2740	0.9840	BTA1-799-X.XXXX	1C11H-XXXX-BT	16
	800	0.7450 - 0.7879	2.3150	3.4170	1.1020	BTA1-800-X.XXXX	1C11H-XXXX-BT	17
	801	0.7880 - 0.8589	2.3400	3.5410	1.2010	BTA1-801-X.XXXX	1C11H-XXXX-BT	18
	802	0.8590 - 0.9489	2.3900	3.6890	1.2990	BTA1-802-X.XXXX	1C11H-XXXX-BT	19
	803	0.9490 - 0.9609	2.5150	3.8140	1.2990	BTA1-803-X.XXXX	1C11H-XXXX-BT	21



Tubes

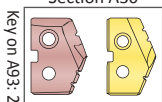
Tube Size	Metric (mm)		Imperial (in)		Tube Length	L_1		Part No.
	D_6	ID_1	D_6	ID_1		Metric (cm)	Imperial (in)	
799	16.00	10.50	0.6299	0.4134	Short	160	63	BTAT799-63
					Long	260	102	BTAT797-102
800	17.00	11.50	0.6693	0.4528	Short	160	63	BTAT800-63
					Long	260	102	BTAT800-102
801	18.00	12.00	0.7087	0.4724	Short	160	63	BTAT801-63
					Long	260	102	BTAT801-102
802	20.00	13.00	0.7874	0.5118	Short	160	63	BTAT802-63
					Long	260	102	BTAT802-102
803	22.00	14.00	0.8661	0.5512	Short	160	63	BTAT803-63
					Long	260	102	BTAT803-102

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	0.6900 - 0.8593	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	0.8594 - 0.9609	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Section A30



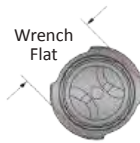
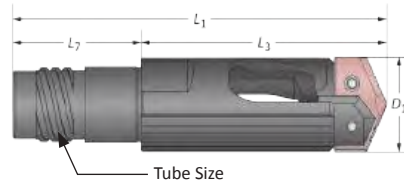
m = Metric (mm)

i = Imperial (in)

Screws sold in multiples of 10.

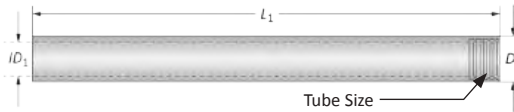


2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")



Heads

	Tube Size	D_1	Holder			Part No.	Carbide: K35 (C1)	Wrench Flat (mm)
			L_3	L_1	L_5		 Part No. AM200®	
m	803	24.41 - 26.41	78.49	111.48	32.99	BTA2-803-XX.XX	1C12H-XXXX-BT	21
	804	26.42 - 28.70	75.95	103.94	28.00	BTA2-804-XX.XX	1C12H-XXXX-BT	22
	805	28.70 - 31.01	75.44	111.43	35.99	BTA2-805-XX.XX	1C12H-XXXX-BT	25
	806	31.01 - 33.32	77.85	113.84	35.99	BTA2-806-XX.XX	1C12H-XXXX-BT	27
	807	33.32 - 35.05	77.85	113.84	35.99	BTA2-807-XX.XX	1C12H-XXXX-BT	30
i	803	0.9610 - 1.0399	3.0900	4.3890	1.2990	BTA2-803-X.XXXX	1C12H-XXXX-BT	21
	804	1.0400 - 1.1299	2.9900	4.0920	1.1020	BTA2-804-X.XXXX	1C12H-XXXX-BT	22
	805	1.1300 - 1.2209	2.9700	4.3870	1.4170	BTA2-805-X.XXXX	1C12H-XXXX-BT	25
	806	1.2210 - 1.3119	3.0650	4.4820	1.4170	BTA2-806-X.XXXX	1C12H-XXXX-BT	27
	807	1.3120 - 1.3800	3.0650	4.4820	1.4170	BTA2-807-X.XXXX	1C12H-XXXX-BT	30



Tubes

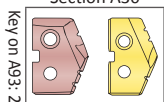
Tube Size	Metric (mm)		Imperial (in)		Tube Length	L_1		Part No.
	D_6	ID_1	D_6	ID_1		Metric (cm)	Imperial (in)	
803	22.00	14.00	0.8661	0.5512	Short	160	63	BTAT803-63
					Long	260	102	BTAT803-102
804	24.00	15.50	0.9449	0.6102	Short	160	63	BTAT804-63
					Long	260	102	BTAT804-102
805	26.00	17.00	1.0236	0.6693	Short	160	63	BTAT805-63
					Long	260	102	BTAT805-102
806	28.00	18.50	1.1024	0.7283	Long	260	102	BTAT806-102
807	30.00	20.00	1.1811	0.7874	Long	260	102	BTAT807-102

Connection Accessories

Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
2	0.9610 - 1.3809	7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Section A30



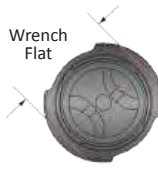
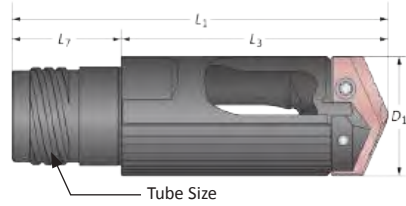
m = Metric (mm)

i = Imperial (in)

Screws sold in multiples of 10.

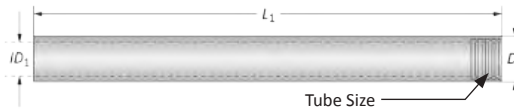


3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")



Heads

	Tube Size	D_1	L_3	Holder			Carbide: K35 (C1)  Part No. AM200®	Wrench Flat (mm)
				L_1	L_5	Part No.		
m	807	34.37 - 36.22	96.82	132.82	35.99	BTA3-807-XX.XX	1C13H-XXXX-BT	30
	808	36.22 - 39.62	100.00	144.45	44.45	BTA3-808-XX.XX	1C13H-XXXX-BT	32
	809	39.62 - 43.00	103.17	146.18	43.00	BTA3-809-XX.XX	1C13H-XXXX-BT	36
	810	43.00 - 47.01	101.90	144.91	43.00	BTA3-810-XX.XX	1C13H-XXXX-BT	41
	811	47.02 - 47.83	103.17	146.18	43.00	BTA3-811-XX.XX	1C13H-XXXX-BT	41
i	807	1.3530 - 1.4259	3.8120	5.2290	1.4170	BTA3-807-X.XXXX	1C13H-XXXX-BT	30
	808	1.4260 - 1.5599	3.9370	5.6870	1.7500	BTA3-808-X.XXXX	1C13H-XXXX-BT	32
	809	1.5600 - 1.6929	4.0620	5.7550	1.6930	BTA3-809-X.XXXX	1C13H-XXXX-BT	36
	810	1.6930 - 1.8509	4.0120	5.7050	1.6930	BTA3-810-X.XXXX	1C13H-XXXX-BT	41
	811	1.8510 - 1.8829	4.0620	5.7550	1.6930	BTA3-811-X.XXXX	1C13H-XXXX-BT	41



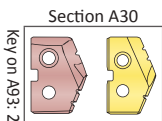
Tubes

Tube Size	Metric (mm)		Imperial (in)		Tube Length	L_1		Part No.
	D_6	ID_1	D_6	ID_1		Metric (cm)	Imperial (in)	
807	30.00	20.00	1.1811	0.7874	Long	260	102	BTAT807-102
808	33.00	23.00	1.2992	0.9055	Long	260	102	BTAT808-102
809	36.00	25.00	1.4173	0.9843	Long	260	102	BTAT809-102
810	39.00	28.00	1.5354	1.1024	Long	260	102	BTAT810-102
811	43.00	31.00	1.6929	1.2205	Long	260	102	BTAT811-102

Connection Accessories

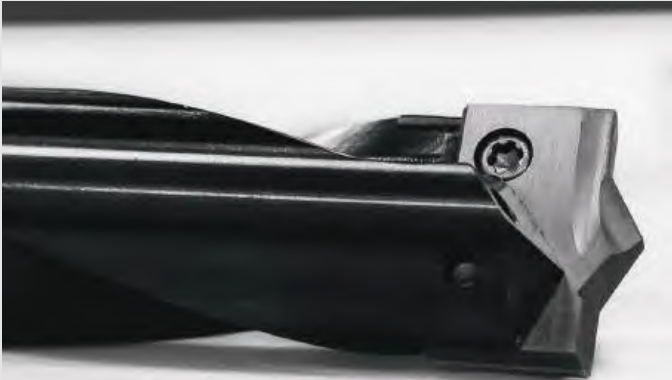
Insert Series	D_1	Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
3	1.3530 - 1.8829	7495-IP15-1	7495N-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



m = Metric (mm)
i = Imperial (in)
 Screws sold in multiples of 10.

STRUCTURAL STEEL DRILLING PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

www.alliedmachine.com

SECTION

A91-SSD

Structural Steel Solutions

Structural Steel Drilling Solutions



Take on Tough Drilling

Allied Machine's structural steel drilling system is designed for maximum performance in structural steel materials and applications. These solutions utilize the T-A, GEN2 T-A, GEN3SYS XT Pro, and 4TEX drill designs and capabilities.

With multiple geometries and coatings, you're sure to find the solution that is right for you. Tough drilling is tough no more.

- ▶ T-A® and GEN2 T-A®
 - ▶ 14.00 mm - 47.82 mm (0.5512" - 1.8829")
- ▶ GEN3SYS® XT Pro
 - ▶ 12.00 mm - 35.00 mm (0.4724" - 1.3780")
- ▶ 4TEX® Drill
 - ▶ 12.00 mm - 39.67 mm (0.472" - 1.562")

Applicable Industries



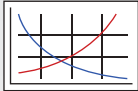
Structural Steel Fabricator

Reference Icons

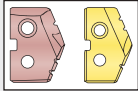
The following icons will appear throughout the catalog to help you navigate between products.



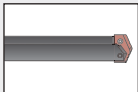
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



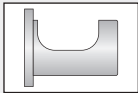
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



T-A Inserts
Range of inserts that connect with the corresponding holders.



T-A Holders
Range of holders that connect with the corresponding inserts.



Eccentric Sleeves
Refers to the corresponding eccentric sleeve for the holder.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Structural Steel Drilling

Overview

Achieving Optimal Results in Structural Steel

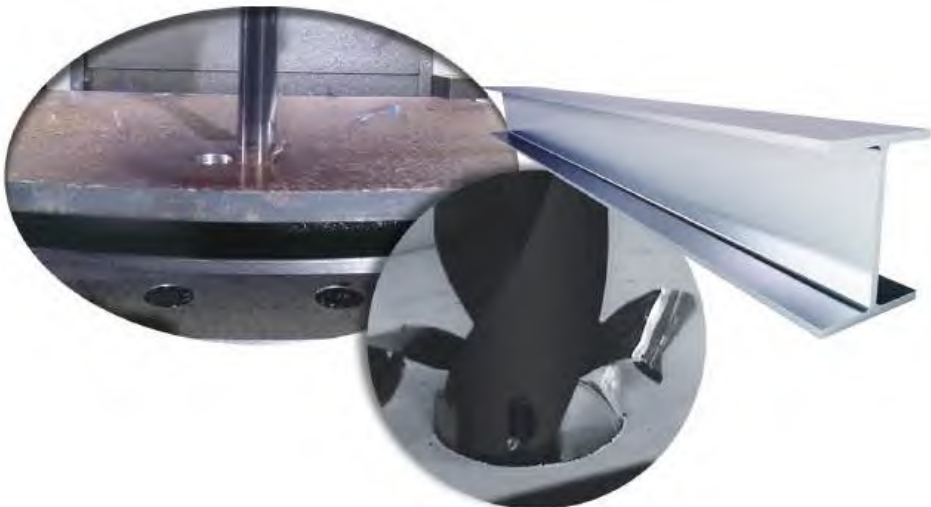
Drilling in structural steel materials can be a difficult process, and achieving optimal results becomes a major issue. Allied Machine's structural steel drilling solutions have been specifically designed to produce the best results in the toughest materials. With solutions in both the T-A® and GEN3SYS® XT Pro product lines, you have multiple options to solve your application problems.



A91

Insert Style Comparison

	 GEN3SYS® XT Pro Structural Steel	 T-A® Thin Wall	 T-A® Notch Point®	 T-A®150° Structural Steel	 GEN2 T-A® High Efficiency
High penetration	☒				
Material less than 11.5 mm (7/16") thick		☒			
Material over 11.5 mm (7/16") thick	☒		☒	☒	☒
Reduced exit burr			☒	☒	
Includes Notch Point® geometry			☒	☒	☒
Available from carbide	☒				☒
Stocked in common sizes for the structural steel industry	☒	☒	☒	☒	☒





T-A® and GEN2 T-A® Structural Steel Drilling System

Case Study

CASE STUDY



A91

Project Profile: Structural Steel I-Beam Construction
Tooling Solution: T-A® Structural Steel Drilling System

The Problem:

Previously, the customer was using a competitor spade drill running at the following parameters:

- 650 RPM
- 0.25 mm/rev (0.010 IPR)
- 165.1 mm/min (6.5 IPM)

The tool drilled a 22.23 mm (0.875") diameter hole to a 11.11 mm (0.4375") depth. The drill had a tool life of **only 20 holes**.

The poor tool performance was brought to the attention of the technician, who was familiar with Allied Machine products. The following day, Allied Machine tooling was brought in for testing. The customer needed improvement in the tool life of the inserts.

The Solution:

Allied Machine recommended the T-A structural steel drilling system.

- **Insert** = 151A-0028-TW (#1 series T-A insert with TiAlN coating and thin wall geometry)
- **Holder** = 25010H-004IS052 (#1 series T-A holder with #4 Morse Taper shank and helical flute)

The tool ran at the following parameters:

- 440 RPM
- 0.25 mm/rev (0.010 IPR)
- 111.7 mm/min (4.4 IPM)

The tool achieved the desired diameter and depth. But most of all, the tool produced **1,500 holes**.

Summary:

The customer was able to take advantage of Allied Machine's vast experience in the structural steel drilling niche. Allied's wide variety of stocked solutions for specific customer problems allows for a remarkable increase in tool life.

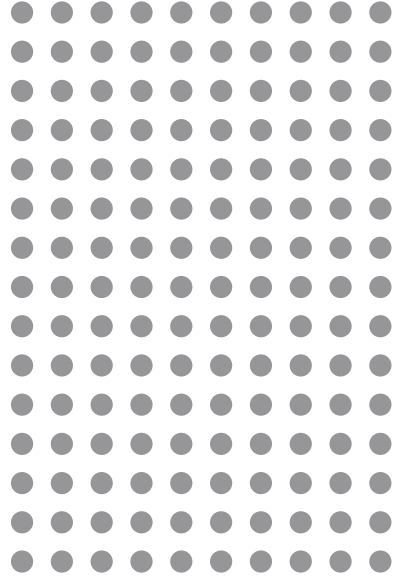
The T-A structural steel drilling system defeated the competition, resulting in a **cost per hole savings of 89%** for the customer.

The PROOF is in the NUMBERS

Competitor Insert Tool Life
(number of holes = 20)



T-A Structural Steel Insert Tool Life
(number of holes = 1,500)



Overall **SAVINGS** of
89%



PREMIUM SOLUTION





T-A® and GEN2 T-A® Structural Steel Drilling System

System Overview

A91

STRUCTURAL STEEL ENHANCEMENTS T-A® & GEN2 T-A®

GEN2 T-A Insert

Available in AM300® and AM200® Coating



High Efficiency (-HE)

- Improves performance.
- Improves tool life.
- Improves chip formation in structural steel materials.

T-A Inserts

Available in AM200® and TiAlN Coatings



Thin Wall (-TW)

- Designed for drilling 11.5 mm (7/16") thick or less I-beam or structural materials.
- Increases hole diameter tolerance.
- Improves hole roundness.
- Decreases material deflection.



Notch Point® (-NP)

- Provides excellent self-centering characteristics.
- Reduces bellmouth and tool lead-off.
- Reduces axial thrust requirements.



Structural Steel (-SS)

- Designed for drilling 11.5 mm (7/16") thick or thicker I-beam or structural materials.
- Reduces exit burrs, increases stability, and lowers drilling forces.
- Includes Notch Point® web geometry.



Holder Anatomy

1. Morse taper shank
2. Coolant inlet
3. Flute (straight or helical)
4. Built-up body diameter
5. Coolant outlets



Straight Flute



Helical Flute



Product Nomenclature

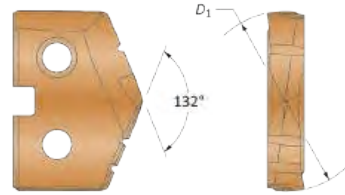
T-A Drill Inserts

4	5	3	H	—	0115	-HE
Insert	Material	Series	Coating		Diameter	Geometry
1 = T-A® 4 = GEN2 T-A®	5 = Super cobalt C1 = K35 (C1) carbide	0 1 2 3	P = AM300® H = AM200® A = TiAlN		13 = Metric (mm) .515 = Decimal (in) 0017 = Fractional (in)	TW = Thin Wall NP = Notch Point® SS = 150° Structural HE = High Efficiency

A91

Reference Key

Symbol	Attribute
D_1	Insert diameter

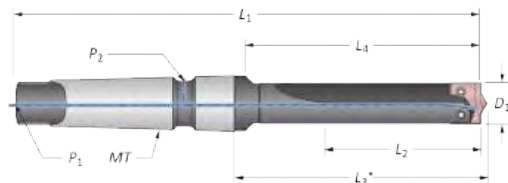


T-A Drill Holders

2	40	20	S	—	004	IS	060
	Drill Length	Series	Flute		Shank Designator	Shank Code	Minimum Insert Diameter
	20 = Short 40 = Standard 50 = Extended ⚠ 60 = Long ⚠	00 = 0 05 = 0.5 10 = 1 15 = 1.5 20 = 2 25 = 2.5 30 = 3	S = Straight H = Helical		Morse Taper 003 = 3MT 004 = 4MT	IS = Imperial Morse taper structural steel	In increments of 1/64 of an inch In increments of 0.0156"

Reference Key

Symbol	Attribute
D_1	Drill insert range
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
P_1	Rear pipe tap
P_2	Side pipe tap
MT	Morse taper size



* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.



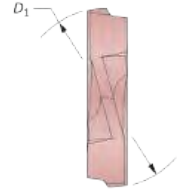
0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Inserts

A91

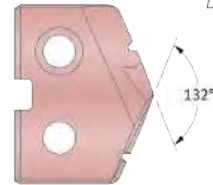
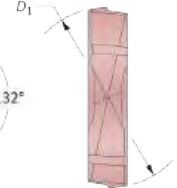
Thin Wall

For material up to 11.5 mm (7/16") thick.



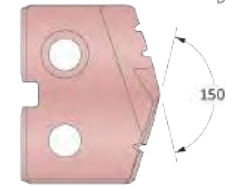
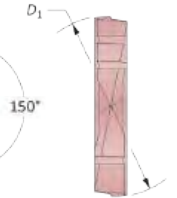
Notch Point®

For material over 11.5 mm (7/16") thick.



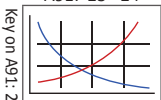
150° Structural Steel

For material over 11.5 mm (7/16") thick and for reduced exit burr.



Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Geometry	HSS: Super Cobalt	
					AM200®	TiAIN
0	14.00	0.5512	—	Thin Wall	150H-14-TW	150A-14-TW
				Notch Point®	150H-14-NP	150A-14-NP
				150° Structural Steel	150H-14-SS	150A-14-SS
	14.29	0.5625	9/16	Thin Wall	150H-0018-TW	150A-0018-TW
				Notch Point®	150H-0018-NP	150A-0018-NP
				150° Structural Steel	150H-0018-SS	150A-0018-SS
0.5	15.88	0.6250	5/8	Thin Wall	150H-0020-TW	150A-0020-TW
				Notch Point®	150H-0020-NP	150A-0020-NP
				150° Structural Steel	150H-0020-SS	150A-0020-SS
	16.00	0.6299	—	Thin Wall	150H-16-TW	150A-16-TW
				Notch Point®	150H-16-NP	150A-16-NP
				150° Structural Steel	150H-16-SS	150A-16-SS
	17.46	0.6875	11/16	Thin Wall	150H-0022-TW	150A-0022-TW
				Notch Point®	150H-0022-NP	150A-0022-NP
				150° Structural Steel	150H-0022-SS	150A-0022-SS

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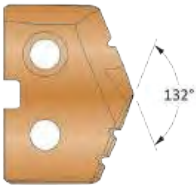
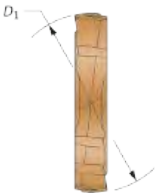


Inserts sold in quantities of 2.



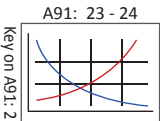
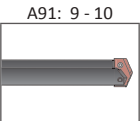
0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

GEN2 T-A® Structural Steel Drill Inserts



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Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₁ inch	Fractional Equivalent	AM200®	AM300®
0	14.00	0.5512	—	450H-14-HE	4C10P-14-HE
	14.29	0.5625	9/16	450H-0018-HE	4C10P-0018-HE
0.5	15.88	0.6250	5/8	450H-0020-HE	4C10P-0020-HE
	16.00	0.6299	—	450H-16-HE	4C10P-16-HE
	17.46	0.6875	11/16	450H-0022-HE	4C10P-0022-HE

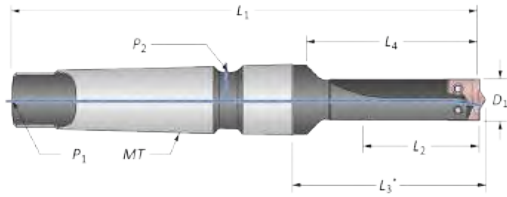


Inserts sold in quantities of 2.

**0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")**

T-A® Structural Steel Drill Insert Holders

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**Metric #3 Taper Shank Holders**

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
m	Straight	0	Short	14.29	30.51	57.94	59.89	156.36	#3	TTC	TSC	22000S-003IS036
		0.5	Short	15.88	30.86	57.94	59.89	156.36	#3	TTC	TSC	22005S-003IS040
			Short	17.46	30.58	57.94	59.89	156.36	#3	TTC	TSC	22005S-003IS044
	Helical	0	Standard	14.29	76.23	86.51	88.47	184.94	#3	TTC	TSC	24000H-003IS036
			Extended	14.29	180.37	242.21	244.17	340.64	#3	TTC	TSC	25000H-003IS036
		0.5	Standard	15.88	76.58	86.51	88.47	184.94	#3	TTC	TSC	24005H-003IS040
			Standard	17.46	76.94	86.51	88.47	184.94	#3	TTC	TSC	24005H-003IS044
			Extended	17.46	181.08	242.21	244.17	340.64	#3	TTC	TSC	25005H-003IS044

*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

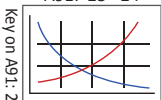
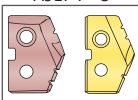
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

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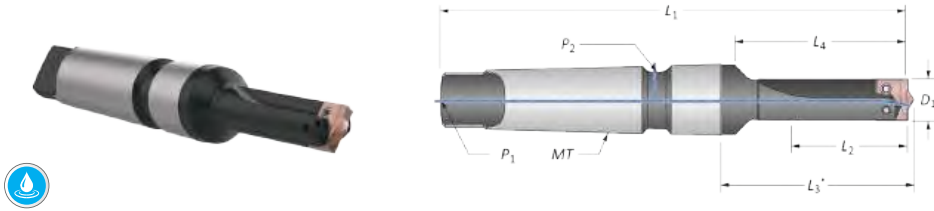
m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



0 Series: 14.00 mm - 17.67 mm (0.5112" - 0.6959")

T-A® Structural Steel Drill Insert Holders



Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
i	Straight	0	Short	0.5625	1.201	2.281	2.358	6.156	#3	TTC	TSC	22000S-003IS036
			Short	0.6250	1.215	2.281	2.358	6.156	#3	TTC	TSC	22005S-003IS040
		0.5	Short	0.6875	1.204	2.281	2.358	6.156	#3	TTC	TSC	22005S-003IS044
	Helical	0	Standard	0.5625	3.001	3.406	3.483	7.281	#3	TTC	TSC	24000H-003IS036
			Extended	0.5625	7.101	9.536	9.613	13.411	#3	TTC	TSC	25000H-003IS036
		0.5	Standard	0.6250	3.015	3.406	3.483	7.281	#3	TTC	TSC	24005H-003IS040
			Extended	0.6875	3.029	3.406	3.483	7.281	#3	TTC	TSC	24005H-003IS044
		0.5	Standard	0.6250	3.015	3.406	3.483	7.281	#3	TTC	TSC	24005H-003IS040
			Extended	0.6875	7.129	9.536	9.613	13.411	#3	TTC	TSC	25005H-003IS044

* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

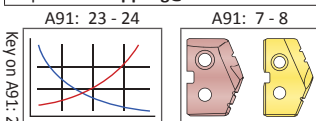
Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
0	72556-IP8-1	72556N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)
0.5	72567-IP8-1	72567N-IP8-1	8IP-8	8IP-8TL	8IP-8B	175 N-cm (15.5 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Inserts

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Thin Wall

For material up to 11.5 mm (7/16") thick.



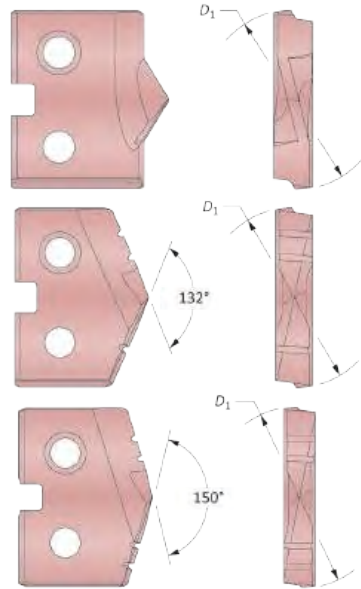
Notch Point®

For material over 11.5 mm (7/16") thick.

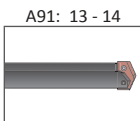


150° Structural Steel

For material over 11.5 mm (7/16") thick and for reduced exit burr.



Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Geometry	HSS: Super Cobalt	
					AM200®	TiAlN
1	18.00	0.7087	—	Thin Wall	151H-18-TW	151A-18-TW
				Notch Point®	151H-18-NP	151A-18-NP
				150° Structural Steel	151H-18-SS	151A-18-SS
	20.64	0.8125	13/16	Thin Wall	151H-0026-TW	151A-0026-TW
				Notch Point®	151H-0026-NP	151A-0026-NP
				150° Structural Steel	151H-0026-SS	151A-0026-SS
	21.00	0.8268	—	Thin Wall	151H-21-TW	151A-21-TW
				Notch Point®	151H-21-NP	151A-21-NP
				150° Structural Steel	151H-21-SS	151A-21-SS
	22.00	0.8661	—	Thin Wall	151H-22-TW	151A-22-TW
				Notch Point®	151H-22-NP	151A-22-NP
				150° Structural Steel	151H-22-SS	151A-22-SS
1.5	22.23	0.8750	7/8	Thin Wall	151H-0028-TW	151A-0028-TW
				Notch Point®	151H-0028-NP	151A-0028-NP
				150° Structural Steel	151H-0028-SS	151A-0028-SS
	23.81	0.9375	15/16	Thin Wall	151H-0030-TW	151A-0030-TW
				Notch Point®	151H-0030-NP	151A-0030-NP
				150° Structural Steel	151H-0030-SS	151A-0030-SS
	24.00	0.9449	—	Thin Wall	151H-24-TW	151A-24-TW
				Notch Point®	151H-24-NP	151A-24-NP
				150° Structural Steel	151H-24-SS	151A-24-SS



Inserts sold in quantities of 2.



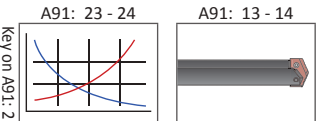
1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

GEN2 T-A® Structural Steel Drill Inserts



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Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₂ inch	Fractional Equivalent	AM200®	AM300®
1	18.00	0.7087	—	451H-18-HE	4C11P-18-HE
	20.64	0.8125	13/16	451H-0026-HE	4C11P-0026-HE
	21.00	0.8268	—	451H-21-HE	4C11P-21-HE
	22.00	0.8661	—	451H-22-HE	4C11P-22-HE
1.5	22.23	0.8750	7/8	451H-0028-HE	4C11P-0028-HE
	23.81	0.9375	15/16	451H-0030-HE	4C11P-0030-HE
	24.00	0.9449	—	451H-24-HE	4C11P-24-HE



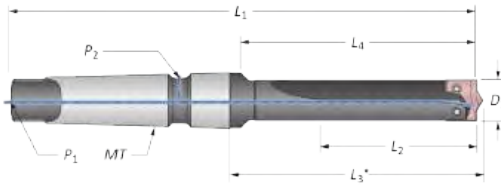
Inserts sold in quantities of 2.



1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders

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Metric #3 Taper Shank Holders

Flute	Series	Length	Body					Shank			Part No.
			D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
Straight	1	Short	17.86	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS045
		Short	20.64	64.97	100.43	103.58	198.86	#3	TTC	TSC	22010S-003IS052
	1.5	Short	22.23	65.33	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS056
		Short	23.81	65.68	100.43	103.58	198.86	#3	TTC	TSC	22015S-003IS060
Helical	1	Standard	17.86	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS045
		Standard	20.64	137.74	151.23	154.38	249.66	#3	TTC	TSC	24010H-003IS052
		Extended	17.86	180.54	239.34	242.49	337.77	#3	TTC	TSC	25010H-003IS045
		Extended	20.64	180.54	239.34	242.49	337.77	#3	TTC	TSC	25010H-003IS052
	1.5	Standard	22.23	140.18	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS056
		Standard	23.81	140.44	151.23	154.38	249.66	#3	TTC	TSC	24015H-003IS060
		Extended	23.81	181.25	239.34	242.49	337.77	#3	TTC	TSC	25015H-003IS060
		Extended	23.81	181.25	239.34	242.49	337.77	#3	TTC	TSC	25015H-003IS060

Metric #4 Taper Shank Holders

Flute	Series	Length	Body					Shank			Part No.
			D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
Straight	1	Short	17.86	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS045
		Short	20.64	64.97	100.43	103.58	224.26	#4	TTC	TSC	22010S-004IS052
	1.5	Short	22.23	65.33	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS056
		Short	23.81	65.68	100.43	103.58	224.26	#4	TTC	TSC	22015S-004IS060
Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
		Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
		Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	25010H-004IS052
		Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	26010H-004IS052
	1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
		Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
		Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	25015H-004IS060
		Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	26015H-004IS060

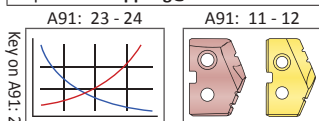
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

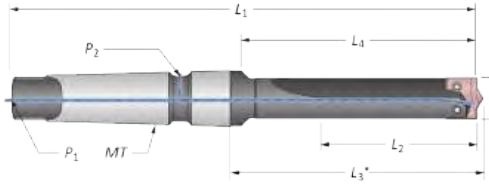
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1 Series: 17.53 mm - 24.40 mm (0.6900" - 0.9609")

T-A® Structural Steel Drill Insert Holders



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Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Straight	1	Short	0.7031	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS045
				0.8125	2.558	3.954	4.078	7.829	#3	TTC	TSC	22010S-003IS052
		1.5	Short	0.8750	2.572	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS056
				0.9375	2.586	3.954	4.078	7.829	#3	TTC	TSC	22015S-003IS060
i	Helical	1	Standard	0.7031	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS045
			Standard	0.8125	5.423	5.954	6.078	9.829	#3	TTC	TSC	24010H-003IS052
			Extended	0.7031	7.108	9.423	9.547	13.298	#3	TTC	TSC	25010H-003IS045
			Extended	0.8125	7.108	9.423	9.547	13.298	#3	TTC	TSC	25010H-003IS052
		1.5	Standard	0.8750	5.519	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS056
			Standard	0.9375	5.529	5.954	6.078	9.829	#3	TTC	TSC	24015H-003IS060
			Extended	0.9375	7.136	9.423	9.547	13.298	#3	TTC	TSC	25015H-003IS060
			Extended	0.9375	7.136	9.423	9.547	13.298	#3	TTC	TSC	25015H-003IS060

Imperial #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
	Straight	1	Short	0.7031	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS045
			Short	0.8125	2.558	3.954	4.078	8.829	#4	TTC	TSC	22010S-004IS052
		1.5	Short	0.8750	2.572	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS056
			Short	0.9375	2.586	3.954	4.078	8.829	#4	TTC	TSC	22015S-004IS060
i	Helical	1	Standard	17.86	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS045
			Standard	20.64	134.57	151.23	154.38	275.06	#4	TTC	TSC	24010H-004IS052
			Extended	20.64	169.88	237.74	240.89	361.57	#4	TTC	TSC	25010H-004IS052
			Long	20.64	166.7	402.77	405.92	526.59	#4	TTC	TSC	26010H-004IS052
		1.5	Standard	22.23	136.42	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS056
			Standard	23.81	137.44	151.23	154.38	275.06	#4	TTC	TSC	24015H-004IS060
			Extended	23.81	173.13	237.74	240.89	361.57	#4	TTC	TSC	25015H-004IS060
			Long	23.81	173.13	403.58	406.73	527.41	#4	TTC	TSC	26015H-004IS060

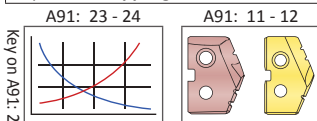
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Series	Insert Screws	Nylon Locking Screws	Insert Driver	Preset Torque Hand Driver	Replacement Tips	Admissible Tightening Torque*
1	7375-IP9-1	7375N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)
1.5	739-IP9-1	739N-IP9-1	8IP-9	8IP-9TL	8IP-9B	305 N-cm (27.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")****T-A® Structural Steel Drill Inserts****A91****Thin Wall**

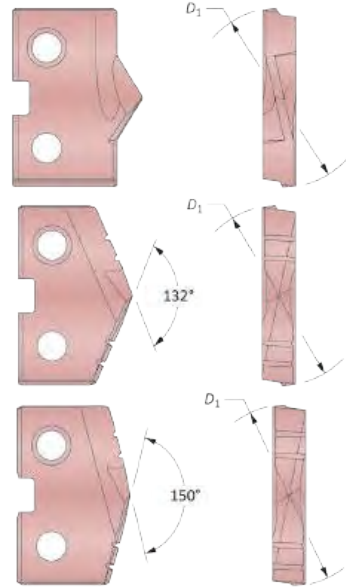
For material up to 11.5 mm (7/16") thick.

**Notch Point®**

For material over 11.5 mm (7/16") thick.

**150° Structural Steel**

For material over 11.5 mm (7/16") thick and for reduced exit burr.

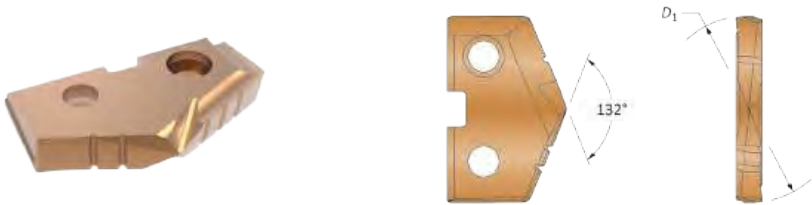


Series	D ₁ mm	D ₁ inch	Fractional Equivalent	Geometry	HSS: Super Cobalt	
					AM200®	TiAIN
2	25.40	1.0000	1	Thin Wall	152H-0100-TW	152A-0100-TW
				Notch Point®	152H-0100-NP	152A-0100-NP
				150° Structural Steel	152H-0100-SS	152A-0100-SS
	26.00	1.0236	—	Thin Wall	152H-26-TW	152A-26-TW
				Notch Point®	152H-26-NP	152A-26-NP
				150° Structural Steel	152H-26-SS	152A-26-SS
	26.99	1.0625	1-1/16	Thin Wall	152H-0102-TW	152A-0102-TW
				Notch Point®	152H-0102-NP	152A-0102-NP
				150° Structural Steel	152H-0102-SS	152A-0102-SS
	27.00	1.0630	—	Thin Wall	152H-27-TW	152A-27-TW
				Notch Point®	152H-27-NP	152A-27-NP
				150° Structural Steel	152H-27-SS	152A-27-SS
	28.58	1.1250	1-1/8	Thin Wall	152H-0104-TW	152A-0104-TW
				Notch Point®	152H-0104-NP	152A-0104-NP
				150° Structural Steel	152H-0104-SS	152A-0104-SS
2.5	30.16	1.1875	1-3/16	Thin Wall	152H-0106-TW	152A-0106-TW
				Notch Point®	152H-0106-NP	152A-0106-NP
				150° Structural Steel	152H-0106-SS	152A-0106-SS
	31.00	1.2205	—	Thin Wall	152H-31-TW	152A-31-TW
				Notch Point®	152H-31-NP	152A-31-NP
				150° Structural Steel	152H-31-SS	152A-31-SS
	31.75	1.2500	1-1/4	Thin Wall	152H-0108-TW	152A-0108-TW
				Notch Point®	152H-0108-NP	152A-0108-NP
				150° Structural Steel	152H-0108-SS	152A-0108-SS
	33.00	1.2992	—	Thin Wall	152H-33-TW	152A-33-TW
				Notch Point®	152H-33-NP	152A-33-NP
				150° Structural Steel	152H-33-SS	152A-33-SS
	33.34	1.3125	1-5/16	Thin Wall	152H-0110-TW	152A-0110-TW
				Notch Point®	152H-0110-NP	152A-0110-NP
				150° Structural Steel	152H-0110-SS	152A-0110-SS
	34.93	1.3750	1-3/8	Thin Wall	152H-0112-TW	152A-0112-TW
				Notch Point®	152H-0112-NP	152A-0112-NP
				150° Structural Steel	152H-0112-SS	152A-0112-SS



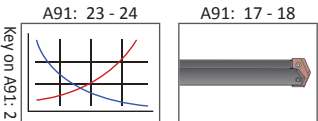
2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

GEN2 T-A® Structural Steel Drill Inserts



A91

Series	D ₁ mm	Insert		HSS: Super Cobalt	Carbide: K35 (C1)
		D ₁ inch	Fractional Equivalent	AM200®	AM300®
2	25.40	1.0000	1	452H-0100-HE	4C12P-0100-HE
	26.00	1.0236	—	452H-26-HE	4C12P-26-HE
	26.99	1.0625	1-1/16	452H-0102-HE	4C12P-0102-HE
	27.00	1.0630	—	452H-27-HE	4C12P-27-HE
	28.58	1.1250	1-1/8	452H-0104-HE	4C12P-0104-HE
2.5	30.16	1.1875	1-3/16	452H-0106-HE	4C12P-0106-HE
	31.00	1.2205	—	452H-31-HE	4C12P-31-HE
	31.75	1.2500	1-1/4	452H-0108-HE	4C12P-0108-HE
	33.00	1.2992	—	452H-33-HE	4C12P-33-HE
	33.34	1.3125	1-5/16	452H-0110-HE	4C12P-0110-HE
	34.93	1.3750	1-3/8	452H-0112-HE	4C12P-0112-HE



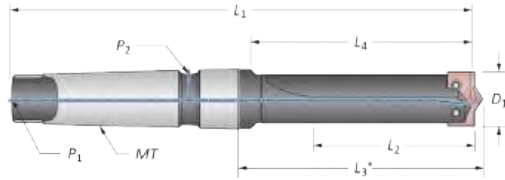
Inserts sold in quantities of 2.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders

A91



Metric #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Helical	2	Extended	25.40	181.41	239.06	242.9	337.49	#3	TTC	TSC	25020H-003IS100

Metric #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
	Straight	2	Short	25.40	81.56	116.18	120.02	240.00	#4	TTC	TSC	22020S-004IS100
		2.5	Short	30.16	82.63	116.18	120.02	240.00	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	25.40	148.72	166.98	170.82	290.80	#4	TTC	TSC	24020H-004IS100
			Extended	25.40	172.01	237.62	241.45	361.44	#4	TTC	TSC	25020H-004IS100
		2.5	Long	25.40	172.01	408.20	412.04	532.03	#4	TTC	TSC	26020H-004IS100
			Standard	30.16	148.72	166.98	170.82	290.80	#4	TTC	TSC	24025H-004IS112

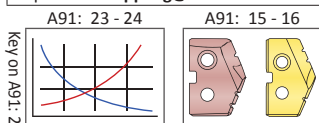
*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

					Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



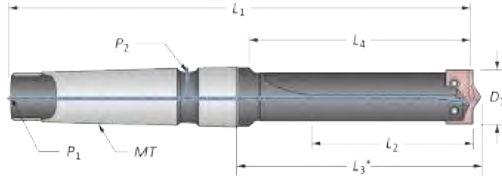
= Metric (mm)
 = Imperial (in)

Screws sold in multiples of 10.



2 Series: 24.41 mm - 35.06 mm (0.9610" - 1.3809")

T-A® Structural Steel Drill Insert Holders



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Imperial #3 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
i	Helical	2	Extended	1.0000	7.142	9.412	9.563	13.287	#3	TTC	TSC	25020H-003IS100

Imperial #4 Taper Shank Holders

	Flute	Series	Length	Body					Shank			Part No.
				D ₁	L ₂	L ₄	L ₃ *	L ₁	MT	P ₁	P ₂	
i	Straight	2	Short	1.0000	3.211	4.574	4.725	9.449	#4	TTC	TSC	22020S-004IS100
		2.5	Short	1.1875	3.253	4.574	4.725	9.449	#4	TTC	TSC	22025S-004IS112
	Helical	2	Standard	1.0000	5.855	6.574	6.725	11.449	#4	TTC	TSC	24020H-004IS100
			Extended	1.0000	6.772	9.355	9.506	14.230	#4	TTC	TSC	25020H-004IS100
		2.5	Long	1.0000	6.772	16.071	16.222	20.946	#4	TTC	TSC	26020H-004IS100
			Standard	1.1875	5.855	6.574	6.725	11.449	#4	TTC	TSC	24025H-004IS112

*L₃ is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

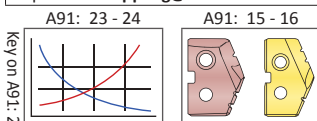
Connection Accessories

					Admissible Tightening Torque*
7495-IP15-1	7495N-IP15-1	8IP-15	8IP-15TL	8IP-15B	690 N-cm (61.0 in-lbs)

*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING

Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)

Screws sold in multiples of 10.

**3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")****T-A® Structural Steel Drill Inserts****A91****Thin Wall**

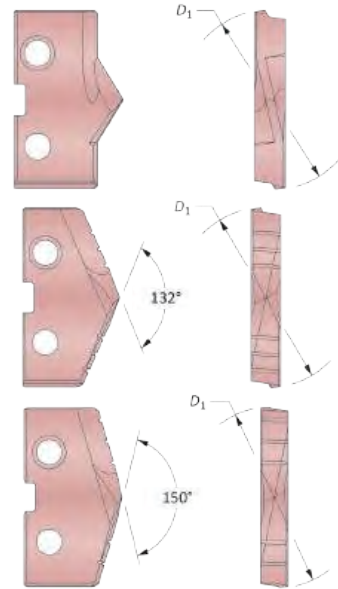
For material up to 11.5 mm (7/16") thick.

**Notch Point®**

For material over 11.5 mm (7/16") thick.

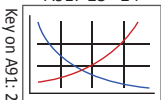
**150° Structural Steel**

For material over 11.5 mm (7/16") thick and for reduced exit burr.

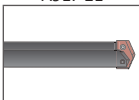


Insert			Geometry	HSS: Super Cobalt	
D_1 mm	D_1 inch	Fractional Equivalent		AM200®	TiAIN
36.51	1.4375	1-7/16	Thin Wall	153H-0114-TW	153A-0114-TW
			Notch Point®	153H-0114-NP	153A-0114-NP
			150° Structural Steel	153H-0114-SS	153A-0114-SS
38.10	1.5000	1-1/2	Thin Wall	153H-0116-TW	153A-0116-TW
			Notch Point®	153H-0116-NP	153A-0116-NP
			150° Structural Steel	153H-0116-SS	153A-0116-SS
39.00	1.5354	—	Thin Wall	153H-39-TW	153A-39-TW
			Notch Point®	153H-39-NP	153A-39-NP
			150° Structural Steel	153H-39-SS	153A-39-SS
39.69	1.5625	1-9/16	Thin Wall	153H-0118-TW	153A-0118-TW
			Notch Point®	153H-0118-NP	153A-0118-NP
			150° Structural Steel	153H-0118-SS	153A-0118-SS

A91: 23 - 24



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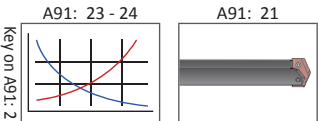
3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

GEN2 T-A® Structural Steel Drill Inserts



A91

D ₁ mm	Insert		HSS: Super Cobalt AM200®
	D ₁ inch	Fractional Equivalent	
36.51	1.4375	1-7/16	453H-0114-HE
38.10	1.5000	1-1/2	453H-0116-HE
39.00	1.5354	—	453H-39-HE
39.69	1.5625	1-9/16	453H-0118-HE



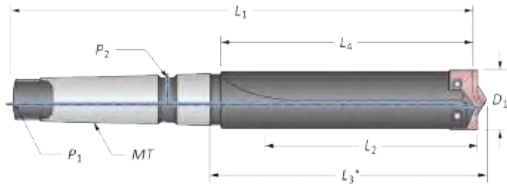
Inserts sold in quantities of 1.



3 Series: 34.37 mm - 47.82 mm (1.3530" - 1.8829")

T-A® Structural Steel Drill Insert Holders

A91



Imperial #4 Taper Shank Holders

i	Flute	Length	Body					Shank			Part No.
			D_1	L_2	L_4	L_3^*	L_1	MT	P_1	P_2	
	Straight	Short	1.4063	4.441	6.037	6.250	10.912	#4	TTC	TSC	22030S-004IS126
	Helical	Standard	1.4063	7.118	7.787	8.000	12.662	#4	TTC	TSC	24030H-004IS126

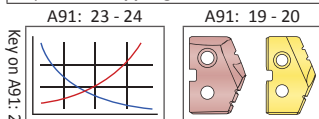
* L_3 is 1.60 mm (0.063") shorter if using a structural steel holder with Notch Point®, GEN2 T-A®, or 150° structural steel T-A® drill insert geometry.

Connection Accessories

Insert Screws	Nylon Locking Screws	Insert Driver	Admissible Tightening Torque*
7514-IP20-1	7514N-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

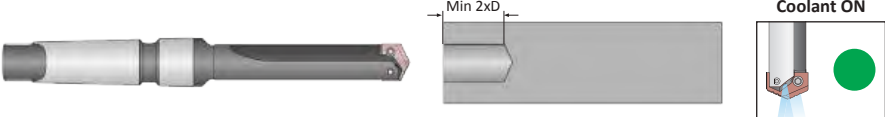
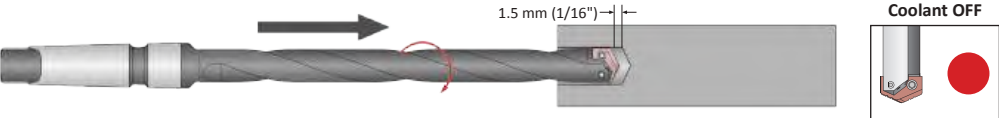
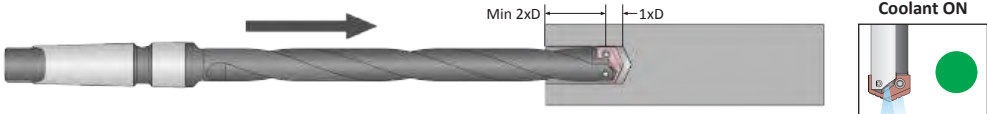
*Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page A91: 22 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	
2. Feed-in ⚠️ 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.	
6. Drill Retract ⚠️ 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	

⚠️ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Metric (mm)

A91



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39	34	0.30	0.45	0.48	0.50
		150 - 250	35	31	0.28	0.40	0.43	0.48
		250 - 350	32	28	0.25	0.36	0.40	0.45



NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39	34	0.25	0.30	0.36	0.45
		150 - 250	35	31	0.23	0.28	0.30	0.40
		250 - 350	35	28	0.20	0.25	0.28	0.36



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM200®		0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	39		0.25	0.30	0.36	0.46
		150 - 250	35		0.23	0.28	0.30	0.40
		250 - 350	35		0.20	0.25	0.28	0.36

GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant		Feed Rate (mm/rev) by Diameter			
			AM300®		0 series	1 series	2 series	3 series
					12.98 mm - 17.67 mm	17.53 mm - 24.40 mm	24.41 mm - 35.06 mm	34.37 mm - 47.82 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	50		0.20	0.28	0.38	0.43
		150 - 250	47		0.15	0.25	0.33	0.38
		250 - 350	43		0.13	0.23	0.30	0.33



Recommended Drilling Data | Imperial (in)

A91



THIN WALL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125	110	0.012	0.018	0.019	0.020
		150 - 250	115	100	0.011	0.016	0.017	0.019
		250 - 350	105	90	0.010	0.014	0.016	0.018



NOTCH POINT & 150° STRUCTURAL STEEL | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®	TiAlN	0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125	110	0.010	0.012	0.014	0.018
		150 - 250	115	100	0.009	0.011	0.012	0.016
		250 - 350	105	90	0.008	0.010	0.011	0.014



GEN2 T-A HIGH EFFICIENCY | SUPER COBALT

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM200®		0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	125		0.010	0.012	0.014	0.018
		150 - 250	115		0.009	0.011	0.012	0.016
		250 - 350	105		0.008	0.010	0.011	0.014

GEN2 T-A HIGH EFFICIENCY | CARBIDE K35 (C1)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant		Feed Rate (IPR) by Diameter			
			AM300®		0 series	1 series	2 series	3 series
					0.5110" - 0.6959"	0.6900" - 0.9609"	0.9610" - 1.3809"	1.3530" - 1.8829"
P	Structural Steel A36, A285, A516, etc.	100 - 150	165		0.008	0.011	0.015	0.017
		150 - 250	155		0.006	0.010	0.013	0.015
		250 - 350	140		0.005	0.009	0.012	0.013



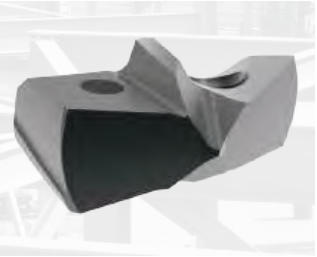
GEN3SYS® XT Pro Structural Steel Drilling System

System Overview

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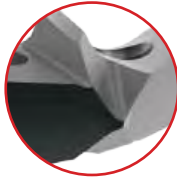
GEN3SYS® XT Pro *ST*

STRUCTURAL STEEL ENHANCEMENTS



New Point Design

Increases stability without hindering penetration.



Redesigned Insert

Provides consistent performance and adds durability.



Improved Geometry

Extends tool life and increases insert strength without increasing horsepower consumption.



AM420

AM420 Coating

Increases heat threshold and extends tool life.

Get the Consistency You Need

The challenge of drilling structural steel materials is about to get easier. Developed through a rigorous and thorough testing process, the modified and improved XTST insert is a product of innovation.

Achieve the **consistent performance** you need while matching or even exceeding your current parameters.

Tough Drilling is Tough No More

Structural steel applications can prove to be difficult to machine, so you need a drill that's been put through the fire to ensure it can conquer those challenging applications.

Rigorous testing and countless hours of design and programming make the XT Pro structural steel insert the optimal drill for structural steel applications.

- Diameter range: 12.00 mm - 35.00 mm (0.4724" - 1.3780").
- Holders available in 1.5xD, 3xD, 5xD, and 7xD lengths.
- Flanged shank with flat.



1.5xD

3xD

5xD

7xD



NOTICE: Structural steel GEN3SYS holders are specifically designed to be used only with GEN3SYS XT Pro structural steel geometry inserts. Using other GEN3SYS XT or XT Pro insert geometries in these holders could lead to chip packing and tool failure. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Product Nomenclature

GEN3SYS XT Pro Drill Inserts

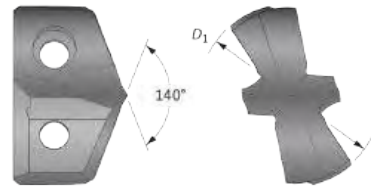
XT	ST	20			—	20.00
	ISO Material	Series				Diameter (mm)
	ST = Structural steel	12	17	26		To order nonstocked standard diameters, see table below.
		13	18	29		
		14	20	32		
		15	22			
		16	24			

*Available in 12-32 series only.

Sizes not shown are available upon request.	
When ordering, please follow the example below:	
Metric:	20.10 mm, 20 series = use Part No. XTST20-20.10
Imperial:	0.7913", 20 series = use Part No. XTST20-20.10

Reference Key

Symbol	Attribute
D_1	Insert diameter

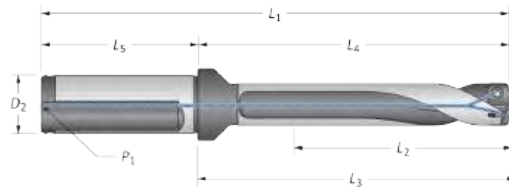


GEN3SYS XT and XT Pro Drill Holders

ST	03	12	0	—	20	FM
	Drill Length	Series		Flute	Shank Diameter	
	01 = 1.5xD	12	20	0 = Standard	Metric (mm)	Imperial (in)
	03 = 3xD	13	22	5 = Oversize	16 = 16 mm	063 = 0.625"
	05 = 5xD	14	24		20 = 20 mm	075 = 0.750"
	07 = 7xD	15	26		25 = 25 mm	100 = 1.000"
		16	29		32 = 32 mm	125 = 1.250"
		17	32		40 = 40 mm	150 = 1.500"
		18				
					Shank Style	
					FM = Flanged metric (with flat)	
					CM = Cylindrical metric (no flat)	
					F = Flanged (with flat)	
					C = Cylindrical (no flat)	

Reference Key

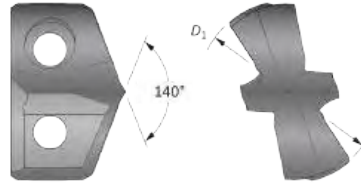
Symbol	Attribute
D_2	Shank diameter
L_1	Overall length
L_2	Drill depth
L_3	Holder reference length
L_4	Holder length
L_5	Shank length
P_1	Rear pipe tap



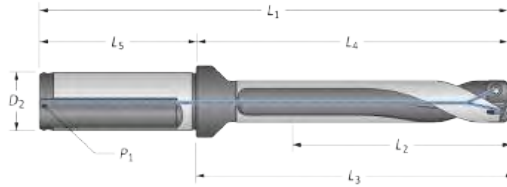
**12 Series: 12.00 mm - 12.99 mm (0.4724" - 0.5117")**

GEN3SYS® XT Pro Structural Steel Drilling System

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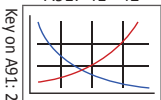


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
12.00	0.4724	—	XTST12-12.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	19.5	47.1	49.3	97.1	50.0	20	1/8 BSPT	ST01120-20FM
	3xD	39.0	66.6	68.8	116.6	50.0	20	1/8 BSPT	ST03120-20FM
	5xD	65.0	92.6	94.8	142.6	50.0	20	1/8 BSPT	ST05120-20FM
	7xD	90.9	118.5	120.8	168.6	50.0	20	1/8 BSPT	ST07120-20FM
i	1.5xD	0.766	1.859	1.938	3.891	2.031	3/4	1/8 NPT	ST01120-075F
	3xD	1.531	2.625	2.703	4.656	2.031	3/4	1/8 NPT	ST03120-075F
	5xD	2.563	3.641	3.734	5.672	2.031	3/4	1/8 NPT	ST05120-075F
	7xD	3.578	4.672	4.750	6.688	2.031	3/4	1/8 NPT	ST07120-075F

A91: 41 - 42

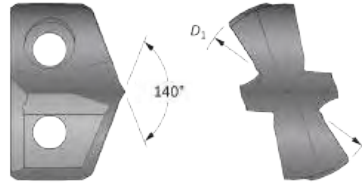
**m** = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



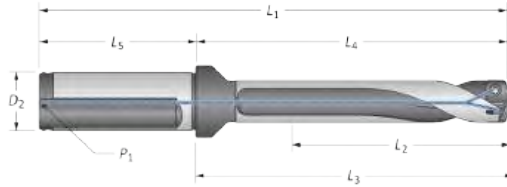
13 Series: 13.00 mm - 13.99 mm (0.5118" - 0.5511")

GEN3SYS® XT Pro Structural Steel Drilling System



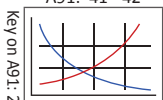
A91

D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
13.00	0.5118	—	XTST XTST13-13.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	21.1	48.1	50.3	99.7	50.0	20	1/8 BSPT	ST01130-20FM
	3xD	42.1	69.1	71.3	120.7	50.0	20	1/8 BSPT	ST03130-20FM
	5xD	69.9	97.2	99.4	148.8	50.0	20	1/8 BSPT	ST05130-20FM
	7xD	97.9	125.4	127.6	177.0	50.0	20	1/8 BSPT	ST07130-20FM
i	1.5xD	0.828	1.891	1.984	3.922	2.031	3/4	1/8 NPT	ST01130-075F
	3xD	1.656	2.719	2.813	4.750	2.031	3/4	1/8 NPT	ST03130-075F
	5xD	2.750	3.828	3.906	5.859	2.031	3/4	1/8 NPT	ST05130-075F
	7xD	3.859	4.938	5.031	6.969	2.031	3/4	1/8 NPT	ST07130-075F

A91: 41 - 42



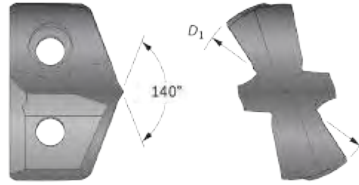
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.

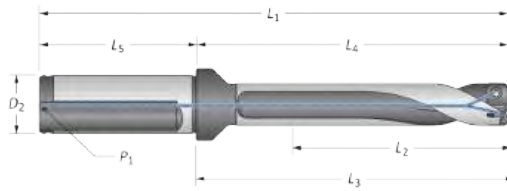
**14 Series: 14.00 mm - 14.99 mm (0.5512" - 0.5905")**

GEN3SYS® XT Pro Structural Steel Drilling System

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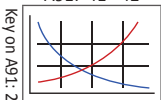


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
14.00	0.5512	—	XTST14-14.00
14.29	0.5626	9/16	XTST14-14.29



	Body					Shank			Part No.
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	22.5	49.9	52.5	99.9	50.0	20	1/8 BSPT	ST01140-20FM
	3xD	45.0	72.4	75.0	122.4	50.0	20	1/8 BSPT	ST03140-20FM
	5xD	75.0	102.4	104.9	152.4	50.0	20	1/8 BSPT	ST05140-20FM
	7xD	104.9	132.3	134.9	182.3	50.0	20	1/8 BSPT	ST07140-20FM
i	1.5xD	0.906	1.953	2.063	3.984	2.031	3/4	1/8 NPT	ST01140-075F
	3xD	1.781	2.844	2.953	4.875	2.031	3/4	1/8 NPT	ST03140-075F
	5xD	2.953	4.031	4.125	6.063	2.031	3/4	1/8 NPT	ST05140-075F
	7xD	4.141	5.203	5.313	7.234	2.031	3/4	1/8 NPT	ST07140-075F

A91: 41 - 42



m = Metric (mm)

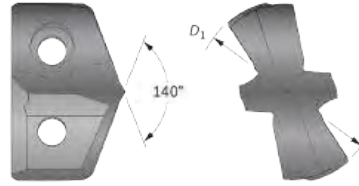
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



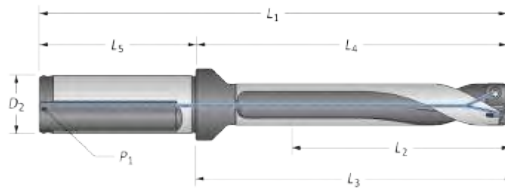
15 Series: 15.00 mm - 15.99 mm (0.5906" - 0.6298")

GEN3SYS® XT Pro Structural Steel Drilling System



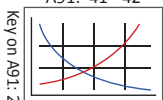
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Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
15.00	0.5906	—	XTST15-15.00
15.88	0.6252	5/8	XTST15-15.88



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	24.0	51.1	53.6	101.1	50.0	20	1/8 BSPT	ST01150-20FM
	3xD	48.0	75.1	77.6	125.1	50.0	20	1/8 BSPT	ST03150-20FM
	5xD	80.0	107.0	109.6	157.0	50.0	20	1/8 BSPT	ST05150-20FM
	7xD	111.9	139.0	141.6	189.0	50.0	20	1/8 BSPT	ST07150-20FM
i	1.5xD	0.953	2.016	2.109	4.047	2.031	3/4	1/8 NPT	ST01150-075F
	3xD	1.891	2.953	3.047	4.984	2.031	3/4	1/8 NPT	ST03150-075F
	5xD	3.156	4.219	4.313	6.234	2.031	3/4	1/8 NPT	ST05150-075F
	7xD	4.422	5.469	5.578	7.500	2.031	3/4	1/8 NPT	ST07150-075F

A91: 41 - 42



m = Metric (mm)
i = Imperial (in)

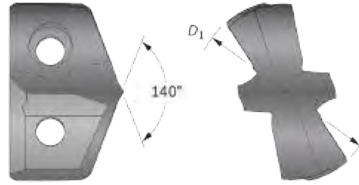
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



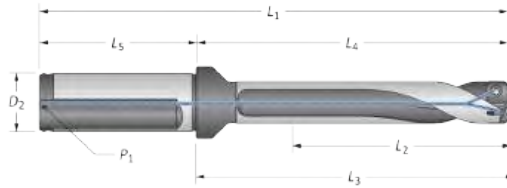
16 Series: 16.00 mm - 16.99 mm (0.6299" - 0.6692")

GEN3SYS® XT Pro Structural Steel Drilling System

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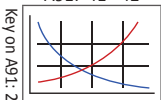


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
16.00	0.6299	—	XTST16-16.00



	Length	Body				Shank			Part No. With Flat
		L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	25.5	55.8	58.7	105.8	50.0	20	1/8 BSPT	ST01160-20FM
	3xD	51.0	81.3	84.2	131.3	50.0	20	1/8 BSPT	ST03160-20FM
	5xD	84.9	115.3	118.2	165.3	50.0	20	1/8 BSPT	ST05160-20FM
	7xD	118.9	149.3	152.2	199.3	50.0	20	1/8 BSPT	ST07160-20FM
i	1.5xD	1.016	2.203	2.313	4.234	2.031	3/4	1/8 NPT	ST01160-075F
	3xD	3.016	3.203	3.313	5.234	2.031	3/4	1/8 NPT	ST03160-075F
	5xD	3.359	4.531	4.656	6.563	2.031	3/4	1/8 NPT	ST05160-075F
	7xD	4.688	5.875	5.984	7.906	2.031	3/4	1/8 NPT	ST07160-075F

A91: 41 - 42



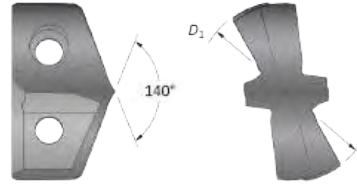
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



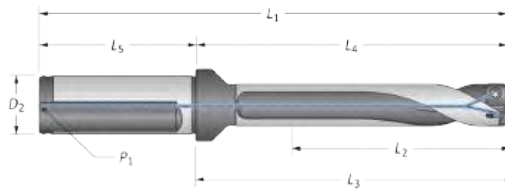
17 Series: 17.00 mm - 17.99 mm (0.6693" - 0.7086")

GEN3SYS® XT Pro Structural Steel Drilling System



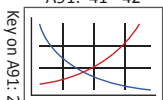
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D ₁ mm	Insert		Part No.
	D ₁ inch	Fractional Equivalent	
17.00	0.6693	—	XTST17-17.00
17.46	0.6876	11/16	XTST17-17.46



	Length	Body				Shank			Part No. With Flat
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	27.0	57.1	60.0	107.1	50.0	20	1/8 BSPT	ST01170-20FM
	3xD	54.0	84.1	87.0	134.1	50.0	20	1/8 BSPT	ST03170-20FM
	5xD	89.9	120.0	122.9	170.0	50.0	20	1/8 BSPT	ST05170-20FM
	7xD	125.9	156.0	158.9	206.0	50.0	20	1/8 BSPT	ST07170-20FM
i	1.5xD	1.063	2.250	2.359	4.281	2.031	3/4	1/8 NPT	ST01170-075F
	3xD	2.125	3.313	3.422	5.344	2.031	3/4	1/8 NPT	ST03170-075F
	5xD	3.547	4.719	4.844	6.750	2.031	3/4	1/8 NPT	ST05170-075F
	7xD	4.969	6.141	6.250	8.172	2.031	3/4	1/8 NPT	ST07170-075F

A91: 41 - 42



m = Metric (mm)
i = Imperial (in)

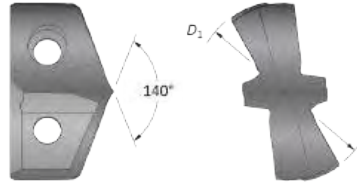
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



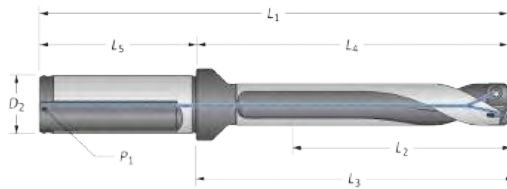
18 Series: 18.00 mm - 19.99 mm (0.7087" - 0.7873")

GEN3SYS® XT Pro Structural Steel Drilling System

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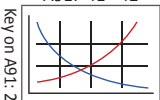


D_1 mm	Insert		Part No.
	D_1 inch	Fractional Equivalent	
18.00	0.7087	—	XTST18-18.00
19.00	0.7480	—	XTST18-19.00



	Body					Shank			Part No.
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	30.0	64.0	67.1	114.0	50.0	20	1/8 BSPT	ST01180-20FM
	3xD	60.0	94.0	97.1	144.0	50.0	20	1/8 BSPT	ST03180-20FM
	5xD	99.9	134.0	137.1	184.0	50.0	20	1/8 BSPT	ST05180-20FM
	7xD	139.9	174.0	177.1	224.0	50.0	20	1/8 BSPT	ST07180-20FM
i	1.5xD	1.188	2.531	2.641	4.797	2.281	1	1/8 NPT	ST01180-100F
	3xD	2.375	3.703	3.828	5.984	2.281	1	1/8 NPT	ST03180-100F
	5xD	3.938	5.281	5.391	7.563	2.281	1	1/8 NPT	ST05180-100F
	7xD	5.516	6.844	6.969	9.125	2.281	1	1/8 NPT	ST07180-100F

A91: 41 - 42



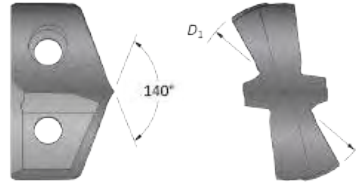
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



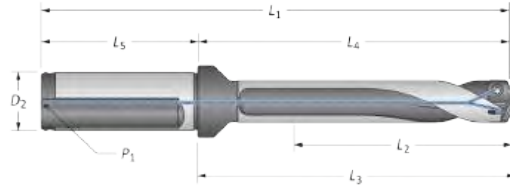
20 Series: 20.00 mm - 21.99 mm (0.7874" - 0.8660")

GEN3SYS® XT Pro Structural Steel Drilling System



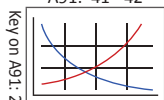
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D ₁ mm	Insert		Part No.
	D ₁ inch	Fractional Equivalent	
20.00	0.7874	—	XTST20-20.00
20.64	0.8126	13/16	XTST20-20.64
21.00	0.8268	—	XTST20-21.00
21.82	0.8591	—	XTST20-21.82



	Body					Shank			Part No. With Flat
	Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	33.0	67.1	70.3	123.1	56.0	25	1/8 BSPT	ST01200-25FM
	3xD	66.0	100.1	103.3	156.1	56.0	25	1/8 BSPT	ST03200-25FM
	5xD	110.0	144.1	147.2	200.1	56.0	25	1/8 BSPT	ST05200-25FM
	7xD	153.9	188.1	191.2	244.1	56.0	25	1/8 BSPT	ST07200-25FM
i	1.5xD	1.234	2.641	2.766	4.922	2.281	1	1/8 NPT	ST01200-100F
	3xD	2.531	3.938	4.063	6.219	2.281	1	1/8 NPT	ST03200-100F
	5xD	4.344	5.672	5.797	7.953	2.281	1	1/8 NPT	ST05200-100F
	7xD	6.063	7.406	7.531	9.688	2.281	1	1/8 NPT	ST07200-100F

A91: 41 - 42



m = Metric (mm)
i = Imperial (in)

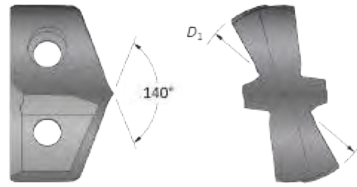
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



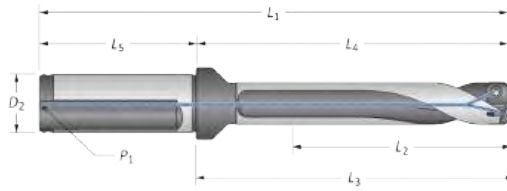
22 Series: 22.00 mm - 23.99 mm (0.8661" - 0.9448")

GEN3SYS® XT Pro Structural Steel Drilling System

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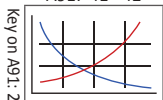
D ₁ mm	D ₁ inch	Fractional Equivalent	Part No.
			XTST
22.00	0.8661	—	XTST22-22.00
22.23	0.8752	7/8	XTST22-22.23
23.00	0.9055	—	XTST22-23.00
23.81	0.9374	15/16	XTST22-23.81



	Length	Body				Shank			Part No. With Flat
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	36.0	69.3	72.7	125.3	56.0	25	1/8 BSPT	ST01220-25FM
									ST01225-25FM*
	3xD	72.0	105.3	108.7	161.3	56.0	25	1/8 BSPT	ST03220-25FM
									ST03225-25FM*
	5xD	119.9	153.3	156.7	209.3	56.0	25	1/8 BSPT	ST05220-25FM
i									ST05225-25FM*
	7xD	167.9	201.3	204.7	257.3	56.0	25	1/8 BSPT	ST07220-25FM
									ST07225-25FM*
	1.5xD	1.406	2.719	2.859	5.000	2.281	1	1/8 NPT	ST01220-100F
									ST01225-100F*
i	3xD	2.828	4.141	4.281	6.422	2.281	1	1/8 NPT	ST03220-100F
									ST03225-100F*
	5xD	4.719	6.031	6.172	8.313	2.281	1	1/8 NPT	ST05220-100F
									ST05225-100F*
	7xD	6.609	7.922	8.063	10.203	2.281	1	1/8 NPT	ST07220-100F
									ST07225-100F*

*Oversized body holder (minimum drill diameter = 23.00 mm (0.9055")).

A91: 41 - 42



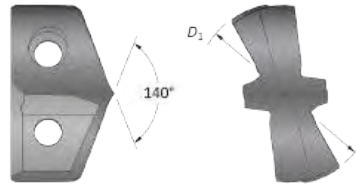
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



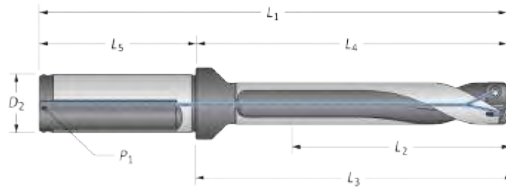
24 Series: 24.00 mm - 25.99 mm (0.9449" - 1.0235")

GEN3SYS® XT Pro Structural Steel Drilling System



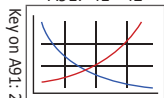
A91

Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
24.00	0.9449	—	XTST24-24.00
24.60	0.9685	—	XTST24-24.60
25.40	1.0000	1	XTST24-25.40
25.78	1.0150	—	XTST24-25.78



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	39.0	74.8	78.3	130.8	56.0	25	1/8 BSPT	ST01240-25FM
	3xD	78.0	113.8	117.3	169.8	56.0	25	1/8 BSPT	ST03240-25FM
	5xD	129.9	165.8	169.2	221.8	56.0	25	1/8 BSPT	ST05240-25FM
	7xD	181.9	217.8	221.2	273.8	56.0	25	1/8 BSPT	ST07240-25FM
i	1.5xD	1.547	2.953	3.094	5.234	2.281	1	1/8 NPT	ST01240-100F
	3xD	3.078	4.484	4.625	6.766	2.281	1	1/8 NPT	ST03240-100F
	5xD	5.125	6.531	6.656	8.813	2.281	1	1/8 NPT	ST05240-100F
	7xD	7.172	8.578	8.703	10.859	2.281	1	1/8 NPT	ST07240-100F

A91: 41 - 42



m = Metric (mm)
i = Imperial (in)

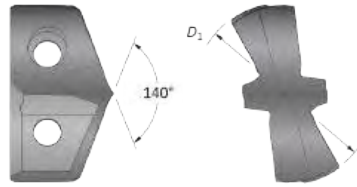
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



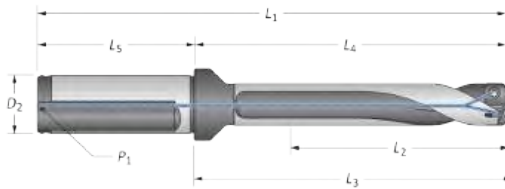
26 Series: 26.00 mm - 28.99 mm (1.0236" - 1.1416")

GEN3SYS® XT Pro Structural Steel Drilling System

A91

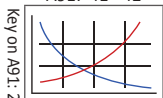


D ₁ mm	Insert		Part No.
	D ₁ inch	Fractional Equivalent	
26.00	1.0236	—	XTST26-26.00
26.99	1.0626	1-1/16	XTST26-26.99
27.00	1.0630	—	XTST26-27.00
28.00	1.1024	—	XTST26-28.00
28.58	1.1252	1-1/8	XTST26-28.58



	Length	Body				Shank			Part No. With Flat
		L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	
m	1.5xD	43.5	84.6	87.9	144.6	60.0	32	1/4 BSPT	ST01260-32FM
	3xD	87.0	128.1	131.4	188.1	60.0	32	1/4 BSPT	ST03260-32FM
	5xD	145.0	186.1	189.4	246.1	60.0	32	1/4 BSPT	ST05260-32FM
	7xD	202.9	244.0	247.4	304.0	60.0	32	1/4 BSPT	ST07260-32FM
i	1.5xD	1.703	3.344	3.469	5.625	2.281	1-1/4	1/4 NPT	ST01260-125F
	3xD	3.422	5.063	5.188	7.344	2.281	1-1/4	1/4 NPT	ST03260-125F
	5xD	5.719	7.344	7.484	9.625	2.281	1-1/4	1/4 NPT	ST05260-125F
	7xD	7.984	9.625	9.766	11.906	2.281	1-1/4	1/4 NPT	ST07260-125F

A91: 41 - 42



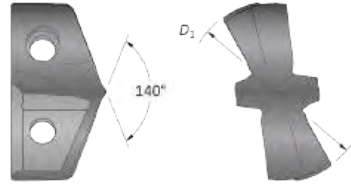
m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



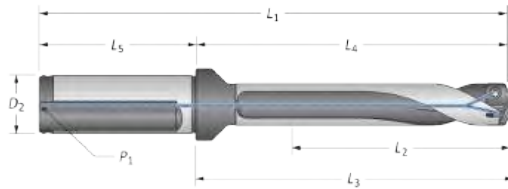
29 Series: 29.00 mm - 31.99 mm (1.1417" - 1.2597")

GEN3SYS® XT Pro Structural Steel Drilling System



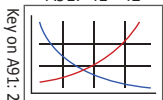
A91

Insert			Part No.
D_1 mm	D_1 inch	Fractional Equivalent	
29.00	1.1417	—	XTST29-29.00
30.00	1.1811	—	XTST29-30.00
30.16	1.1874	1-3/16	XTST29-30.16
31.00	1.2205	—	XTST29-31.00
31.75	1.2500	1-1/4	XTST29-31.75



	Body					Shank			Part No. With Flat
	Length	L_2	L_4	L_3	L_1	L_5	D_2	P_1	
m	1.5xD	48.0	88.2	91.7	148.2	60.0	32	1/4 BSPT	ST01290-32FM
	3xD	96.0	136.2	139.7	196.2	60.0	32	1/4 BSPT	ST03290-32FM
	5xD	159.9	200.1	203.7	260.1	60.0	32	1/4 BSPT	ST05290-32FM
	7xD	223.9	264.1	267.7	324.1	60.0	32	1/4 BSPT	ST07290-32FM
i	1.5xD	1.891	3.328	3.625	5.766	2.281	1-1/4	1/4 NPT	ST01290-125F
	3xD	3.781	5.375	5.516	7.656	2.281	1-1/4	1/4 NPT	ST03290-125F
	5xD	6.297	7.906	8.047	10.188	2.281	1-1/4	1/4 NPT	ST05290-125F
	7xD	8.813	10.422	10.563	12.703	2.281	1-1/4	1/4 NPT	ST07290-125F

A91: 41 - 42



m = Metric (mm)

i = Imperial (in)

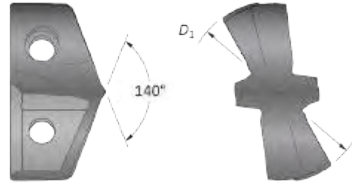
Inserts sold in multiples of 1. | Screws sold in multiples of 10.



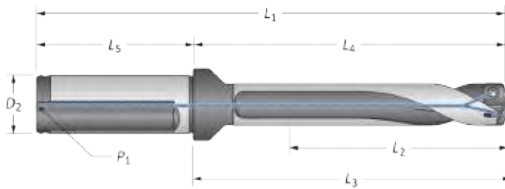
32 Series: 32.00 mm - 35.00 mm (1.2598" -1.3780")

GEN3SYS® XT Pro Structural Steel Drilling System

A91

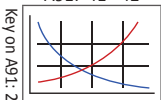


D ₁ mm	D ₁ inch	Fractional Equivalent	Part No.
			XTST
32.00	1.2598	—	XTST32-32.00
33.00	1.2992	—	XTST32-33.00
33.34	1.3126	1-5/16	XTST32-33.34
34.00	1.3386	—	XTST32-34.00
34.93	1.3752	1-3/8	XTST32-34.93



Body					Shank			Part No.	
Length	L ₂	L ₄	L ₃	L ₁	L ₅	D ₂	P ₁	With Flat	
m	1.5xD	52.5	105.2	109.5	165.2	60.0	32	1/4 BSPT	ST01320-32FM
					173.5	70.0	40	1/4 BSPT	ST01320-40FM
	3xD	105.0	157.7	162.0	217.7	60.0	32	1/4 BSPT	ST03320-32FM
					227.7	70.0	40	1/4 BSPT	ST03320-40FM
	5xD	175.0	227.7	232.0	287.7	60.0	32	1/4 BSPT	ST05320-32FM
					297.7	70.0	40	1/4 BSPT	ST05320-40FM
	7xD	244.9	297.7	302.2	357.7	60.0	32	1/4 BSPT	ST07320-32FM
					367.7	70.0	40	1/4 BSPT	ST07320-40FM
i	1.5xD	2.078	4.156	4.313	6.828	2.688	1-1/2	1/4 NPT	ST01320-150F
	3xD	4.141	6.219	6.375	8.891	2.688	1-1/2	1/4 NPT	ST03320-150F
	5xD	6.922	8.969	9.125	11.656	2.688	1-1/2	1/4 NPT	ST05320-150F
	7xD	9.641	11.719	11.891	14.406	2.688	1-1/2	1/4 NPT	ST07320-150F

A91: 41 - 42



m = Metric (mm)
i = Imperial (in)

Inserts sold in multiples of 1. | Screws sold in multiples of 10.



Notes

A91



Recommended Drilling Data | Metric (mm)



A91

METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min) - Mist Coolant AM420	Feed Rate (mm/rev) by Diameter			
				12 series	13 series	14 series	15 series
				12.00 mm - 12.99 mm	13.00 mm - 13.99 mm	14.00 mm - 14.99 mm	15.00 mm - 15.99 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	107	0.20	0.22	0.25	0.25
		150 - 250	91	0.18	0.20	0.23	0.23
		250 - 350	79	0.15	0.17	0.20	0.20

IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM) - Mist Coolant AM420	Feed Rate (IPR) by Diameter			
				12 series	13 series	14 series	15 series
				12.00 mm - 12.99 mm	13.00 mm - 13.99 mm	14.00 mm - 14.99 mm	15.00 mm - 15.99 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	350	0.008	0.009	0.010	0.010
		150 - 250	300	0.007	0.008	0.009	0.009
		250 - 350	260	0.006	0.007	0.008	0.008

Speed and Feed Multiplier

	Depth of Cut	
	$\leq 1.5xD$	$> 1.5xD$
Speed	See above chart	0.75
Feed	See above chart	0.90

NOTE:

- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

A91

Feed Rate (mm/rev) by Diameter

16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.30	0.30	0.36	0.38	0.41	0.43	0.46	0.48	0.48
0.25	0.25	0.30	0.36	0.38	0.41	0.43	0.46	0.46
0.23	0.23	0.28	0.30	0.33	0.36	0.38	0.41	0.41

Feed Rate (IPR) by Diameter

16 series 16.00 mm - 16.99 mm	17 series 17.00 mm - 17.99 mm	18 series 18.00 mm - 19.99 mm	20 series 20.00 mm - 21.99 mm	22 series 22.00 mm - 23.99 mm	24 series 24.00 mm - 25.99 mm	26 series 26.00 mm - 28.99 mm	29 series 29.00 mm - 31.99 mm	32 series 32.00 mm - 35.00 mm
0.012	0.012	0.014	0.015	0.016	0.017	0.018	0.019	0.019
0.010	0.010	0.012	0.014	0.015	0.016	0.017	0.018	0.018
0.009	0.009	0.011	0.012	0.013	0.014	0.015	0.016	0.016

NOTE:

- The speeds and feeds listed above are based on a rigid setup using air mist through-tool coolant. Speed may be increased up to 50% if using **high-pressure flood** or through coolant.
- If drilling dry without coolant, speed must be reduced significantly based on setup, drill depth, and material hardness. Up to 50% speed and feed reduction may be necessary in these types of applications.
- If drilling material thickness of 12.7 mm (0.500") or less, a minimum of 10% reduction in feed is required to minimize material deflection.

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Safety Information

A91



Mechanical / Physical Hazards

Operating cutting tools may present both mechanical and physical hazards. These hazards can result in serious injury to workers or those near machines and damage to machines and the cutting tools. Cutting tools and/or assemblies may break or come loose when in operation causing projectile metal fragments. Metal chips produced by cutting tools have sharp edges and may be very hot. To minimize the risk of mechanical or physical hazards:

- Always secure all components of the cutting tool assembly before operating.
- Wear cut-resistant gloves when handling cutting tool components and assemblies.
- Do not touch metal chips produced by the cutting tools with your hands.
- Always wear appropriate personal protective equipment including safety goggles or glasses with side shields.
- Immediately discontinue use of damaged cutting tools.
- To avoid machine tool damage, make sure the machine has adequate power and torque for the cutting tool when operating. See catalog for power and torque requirements.
- Operating long cutting tools at high spindle speeds can result in a high risk of tool failure and serious injury.

Dust and Fume Hazards

Grinding, welding, cutting, or burning hard metals such as high-speed steel, cobalt, or carbides produces hazardous dust and/or fumes. Continued long-term exposure to hazardous dust and fumes can cause serious health issues. To minimize the risk of dust and fume hazards:

- Do not regrind or sharpen cutting tools without using adequate ventilation.
- Use appropriate personal protective equipment such as approved respirator to avoid inhalation, swallowing, or skin contact with the hazardous dust and/or fumes.
- Do not eat, drink, or smoke in the machine operation area. Always wash skin prior to eating, drinking, or smoking to avoid hazardous ingestion.

Sensitizing Hazards

Components of an assembled cutting tool are made from a variety of metal elements that may cause allergic skin reactions with prolonged skin contact. To minimize the risk of allergic skin reactions:

- Avoid skin contact with cutting tools.
- Wear appropriate gloves and protective clothing.
- Wash skin and launder clothing after handling cutting tools to reduce the risk of skin allergies.

Preventive Safety Measure Applicable to all Hazards

- Prior to using cutting tools, always read Allied Machine's Safety Data Sheets, product catalog, and product labels for additional warnings for the Allied Machine product being used.
- For machining safety, only operate equipment when all necessary guards, interlocks, and other safety devices are in place and functional. Use all appropriate safety guards or machine encapsulations to securely collect particles such as chips or cutting elements that may become projectiles.

Through Hole

- With through holes, a **sharp-edged disk** is created as tool breakout occurs.
- ⚠ Proper personal protective equipment must be used to prevent injury (e.g. wear cut-resistant gloves).

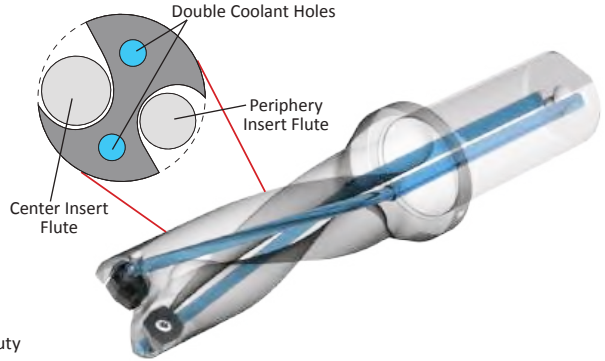




System Overview

4TEX Drill **Advantages**

- ✓ **Superior chip evacuation**
provided by the two twisted coolant holes.
- ✓ **Improved hole size**
from the increased holder rigidity.
- ✓ **Longer tool life**
provided by the four-sided insert design.
- ✓ **Optimal chip formation**
with ISO-specific insert geometry/coating combinations.
- ✓ **Competitive cycle times**
due to single effective cutting when using light duty machines.



A91

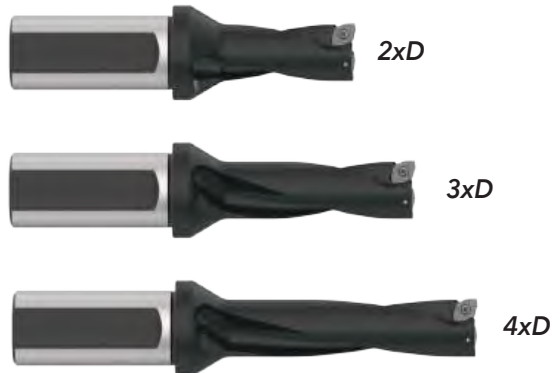
DESIGNED TO GIVE YOU **IMPROVED** HOLE SIZE AND STRAIGHTNESS

- The two twisted coolant holes allow the core to remain intact, making the core thicker and stronger for improved hole straightness even in uneven surfaces.
- The enlarged dual coolant outlets increase the coolant volume, which improves the chip evacuation resulting in improved hole size.
- The flute space of the internal cutting edge side (where chips get stuck most often) is 1.6x larger than typical IC drills, helping to mitigate catastrophic failures and improve hole size.

LONGER TOOL LIFE



AVAILABLE **LENGTHS**



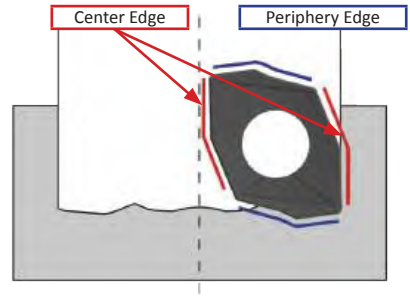


Insert Information

A91

4 CUTTING EDGES

- Each insert has two inner cutting edges and two outer cutting edges.
- Economical solution that increases tool life because of the rotation ability of the inserts.
- Available in ISO material-specific geometry/coating combinations.

**Periphery Insert**

Periphery edge chip formation:

**Center Insert**

Center edge chip formation:



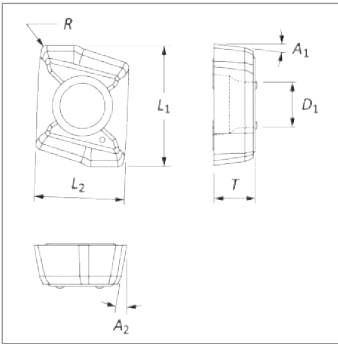
180°

ISO	Geometry	Coating	Description
P	General Rake	AM480	A general purpose geometry that provides excellent chip formation in most steels including free-machining, medium- and high-carbon steels. A P30 carbide substrate for improved toughness and AM480 coating, a proprietary wear-resistant multilayer PVD coating to improve tool life.
S M	High Rake	AM485	A higher rake geometry that provides excellent chip formation in both stainless steels and high-temperature alloys. A tough M25 carbide substrate coated with AM485, a high heat-resistant proprietary multilayer PVD coating.
K	General Rake	AM480	With a general purpose geometry, the K inserts can be used in grey cast irons as well as ductile irons. A high wear-resistant K10 carbide substrate to improve tool life and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.
N	High Rake	TiCN	A higher rake cutting geometry provides excellent chip formation in nonferrous materials. An M15/K15 carbide substrate paired with TiCN coating for improved lubricity to resist built-up material, increasing tool life and maintaining chip formation.
H	Low Rake	AM480	A lower rake geometry to improve edge strength in both hardened tool steels and high-strength alloys. With a P30 carbide substrate for improved toughness and coated with AM480, a proprietary multilayer PVD coating to improve resistance against tool wear.

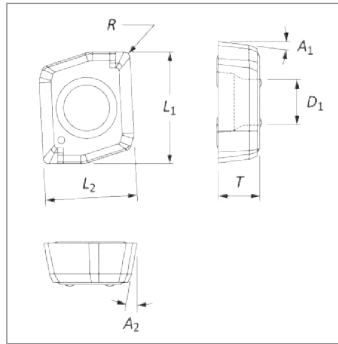
Insert Information

Series	Insert Prefix	Dimension (mm)					Angle		Shape
		L_1	L_2	T	D_1	R	A_1	A_2	
03	4T-030203C-x	5.60	4.80	2.30	2.40	0.30	7°	10°	 Style 1
	4T-030203P-x	6.38	4.77	2.30	2.40	0.30	7°	10°	 Style 2
04	4T-040203-x	6.21	5.06	2.60	2.45	0.30	13°	10°	 Style 3
05	4T-05T203-x	7.26	5.48	2.76	2.55	0.30	13°	7°	
06	4T-06T204-x	8.59	6.44	2.89	2.79	0.40	13°	7°	
07	4T-070305-x	10.21	8.02	3.24	3.00	0.50	13°	7°	
09	4T-09T306-x	12.18	9.55	4.03	3.64	0.60	13°	7°	
11	4T-11T306-x	14.50	11.61	4.06	4.62	0.60	13°	7°	
14	4T-140408-x	17.99	14.40	4.88	5.76	0.80	13°	7°	

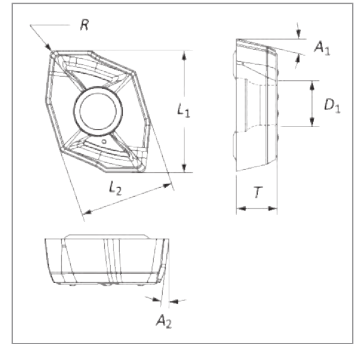
Style 1



Style 2



Style 3





Product Nomenclature

4TEX Drill Holders

D4	03		1200	M	—	075		F
Drill Length	Series		Diameter*	Diameter Style		Shank Diameter		Shank Style
D2 = 2xD	03	09	1200 = 12 mm	M = Metric		Metric	Imperial	FM = Metric flanged shank
D3 = 3xD	04	11	0750 = 0.075"	I = Imperial		20 = 20 mm	075 = 0.075"	F = Imperial flanged shank
D4 = 4xD	05	14				25 = 25 mm	100 = 1.000"	
	06					32 = 32 mm	125 = 1.250"	
	07					40 = 40 mm	150 = 1.500"	

*Ordering Nonstocked Diameters:

Nonstocked diameters are available upon request. Please refer to price list for applicable process fees.

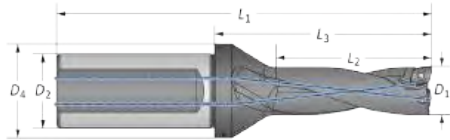
Ordering example:

Metric: 03 Series (12.65 mm) = D2031265M-20FM

Inch: 03 Series (Ø 0.480") = D2030480I-075F

Reference Key

Symbol	Attribute
D_1	Drill diameter
D_2	Shank diameter
D_4	Flange diameter
L_1	Assembled overall length
L_2	Drill depth
L_3	Reference length



Series Details

Series		3 Series	4 Series	5 Series	6 Series	7 Series	9 Series	11 Series	14 Series
Cutter	mm	12.00 - 13.49	13.50 - 15.49	15.50 - 18.49	18.50 - 21.99	22.00 - 26.49	26.50 - 31.99	32.00 - 38.99	39.00 - 47.00
	inch	0.472 - 0.531	0.532 - 0.610	0.611 - 0.728	0.728 - 0.866	0.867 - 1.043	1.044 - 1.259	1.260 - 1.535	1.536 - 1.850
Shank	mm	20.00	20.00	25.00	25.00	25.00	32.00	40.00	40.00
	inch	0.750	0.750	1.000	1.000	1.000	1.250	1.500	1.500
Insert Prefix		4T-030203C-x	4T-040203-x	4T-05T203-x	4T-06T204-x	4T-070305-x	4T-09T306-x	4T-11T306-x	4T-140408-x
		4T-030203P-x							
# of Inserts		2	2	2	2	2	2	2	2

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

A91

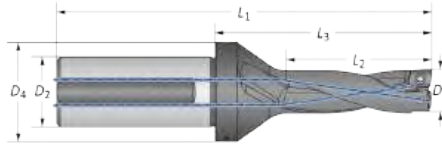


03 Series: 12.00 mm - 13.00 mm (0.472" - 0.512")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



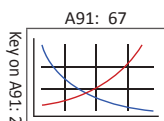
	Length	D ₁		Body			Shank		Max Offset	Part No.
		mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m	2xD	12.00	0.472	24.00	45.40	88.40	20.00	27.00	0.50	D2031200M-20FM
		13.00	0.512	26.00	47.40	90.40	20.00	27.00	0.30	D2031300M-20FM
	3xD	12.00	0.472	36.00	57.40	100.40	20.00	27.00	0.50	D3031200M-20FM
		13.00	0.512	39.00	60.40	103.40	20.00	27.00	0.30	D3031300M-20FM
	4xD	12.00	0.472	48.00	69.40	112.40	20.00	27.00	0.50	D4031200M-20FM
		13.00	0.512	52.00	73.40	116.40	20.00	27.00	0.30	D4031300M-20FM
i	2xD	12.00	0.472	0.945	1.787	3.480	0.750	1.063	0.020	D2031200M-075F
		13.00	0.512	1.024	1.866	3.559	0.750	1.063	0.012	D2031300M-075F
	3xD	12.00	0.472	1.417	2.260	3.953	0.750	1.063	0.020	D3031200M-075F
		13.00	0.512	1.535	2.378	4.071	0.750	1.063	0.012	D3031300M-075F
	4xD	12.00	0.472	1.890	2.732	4.425	0.750	1.063	0.020	D4031200M-075F
		13.00	0.512	2.047	2.890	4.583	0.750	1.063	0.012	D4031300M-075F

IC Inserts

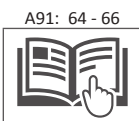
ISO	Style	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	Center	4T-030203C-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
	Periphery	4T-030203P-P			
S M	Center	4T-030203C-M			
	Periphery	4T-030203P-M			
K	Center	4T-030203C-K			
	Periphery	4T-030203P-K			
N	Center	4T-030203C-N			
	Periphery	4T-030203P-N			
H	Center	4T-030203C-H			
	Periphery	4T-030203P-H			

Expected Hole Tolerances

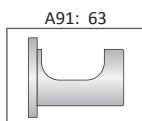
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



A91: 67



A91: 64 - 66



A91: 63

m = Metric (mm)

i = Imperial (in)

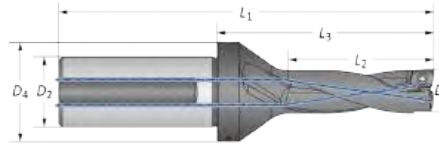
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



04 Series: 14.00 mm - 15.00 mm (0.551" - 0.591")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

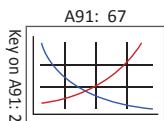
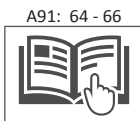
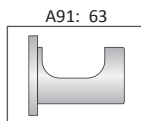
Length		D ₁		Body			Shank		Max Offset	Part No.
		mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
m	2xD	14.00	0.551	28.00	49.40	92.40	20.00	27.00	20.00	D2041400M-20FM
		14.29	0.563	28.55	49.40	92.40	20.00	27.00	20.00	D2040562I-20FM
		15.00	0.591	30.00	51.40	94.40	20.00	27.00	20.00	D2041500M-20FM
	3xD	14.00	0.551	42.00	63.40	106.40	20.00	27.00	20.00	D3041400M-20FM
		14.29	0.563	42.82	63.40	106.40	20.00	27.00	20.00	D3040562I-20FM
		15.00	0.591	45.00	66.40	109.40	20.00	27.00	20.00	D3041500M-20FM
	4xD	14.00	0.551	56.00	77.40	120.40	20.00	27.00	20.00	D4041400M-20FM
		14.29	0.563	57.10	77.40	120.40	20.00	27.00	20.00	D4040562I-20FM
		15.00	0.591	60.00	81.40	124.40	20.00	27.00	20.00	D4041500M-20FM
i	2xD	14.00	0.551	1.102	1.945	3.638	0.750	1.063	0.016	D2041400M-075F
		14.29	0.563	1.124	1.945	3.638	0.750	1.063	0.013	D2040562I-075F
		15.00	0.591	1.181	2.024	3.717	0.750	1.063	0.008	D2041500M-075F
	3xD	14.00	0.551	1.654	2.496	4.189	0.750	1.063	0.016	D3041400M-075F
		14.29	0.563	1.686	2.496	4.189	0.750	1.063	0.013	D3040562I-075F
		15.00	0.591	1.772	2.614	4.307	0.750	1.063	0.008	D3041500M-075F
	4xD	14.00	0.551	2.205	3.047	4.740	0.750	1.063	0.016	D4041400M-075F
		14.29	0.563	2.248	3.047	4.740	0.750	1.063	0.013	D4040562I-075F
		15.00	0.591	2.362	3.205	4.898	0.750	1.063	0.008	D4041500M-075F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-040203-P	7241-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-040203-M			
K	4T-040203-K			
N	4T-040203-N			
H	4T-040203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.004 + 0.008	- 0.10 + 0.20
3xD	- 0.004 + 0.008	- 0.10 + 0.20
4xD	- 0.004 + 0.010	- 0.10 + 0.25



Key on A91: 2

m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

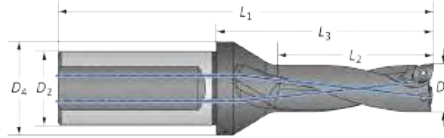


05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

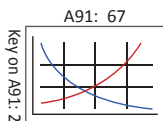
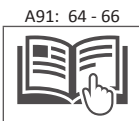
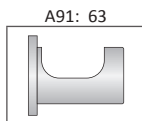
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.88	0.625	31.75	54.50	108.50	25.00	32.00	0.70	D2050625I-25FM
	16.00	0.630	32.00	55.50	109.50	25.00	32.00	0.70	D2051600M-25FM
	17.00	0.669	34.00	57.50	111.50	25.00	32.00	0.40	D2051700M-25FM
	17.46	0.687	34.90	57.50	111.50	25.00	32.00	0.30	D2050687I-25FM
	18.00	0.709	36.00	59.50	113.50	25.00	32.00	0.20	D2051800M-25FM
3xD	15.88	0.625	47.63	70.00	124.00	25.00	32.00	0.70	D3050625I-25FM
	16.00	0.630	48.00	71.50	125.50	25.00	32.00	0.70	D3051600M-25FM
	17.00	0.669	51.00	74.50	128.50	25.00	32.00	0.40	D3051700M-25FM
	17.46	0.687	52.35	74.50	128.50	25.00	32.00	0.30	D3050687I-25FM
	18.00	0.709	54.00	77.50	131.50	25.00	32.00	0.20	D3051800M-25FM
4xD	15.88	0.625	63.50	85.50	139.50	25.00	32.00	0.70	D4050625I-25FM
	16.00	0.630	64.00	87.50	141.50	25.00	32.00	0.70	D4051600M-25FM
	17.00	0.669	68.00	91.50	145.50	25.00	32.00	0.40	D4051700M-25FM
	17.46	0.687	69.80	91.50	145.50	25.00	32.00	0.30	D4050687I-25FM
	18.00	0.709	72.00	95.50	149.50	25.00	32.00	0.20	D4051800M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



M = Metric (mm)

I = Imperial (in)

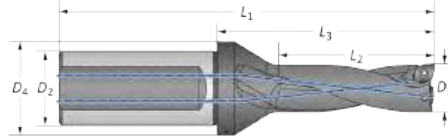
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



05 Series: 15.88 mm - 18.00 mm (0.625" - 0.709")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



Imperial Shank

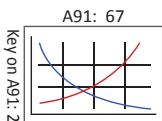
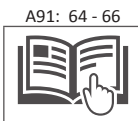
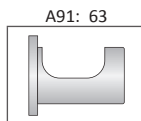
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	15.88	0.625	1.250	2.146	4.272	1.000	1.260	0.029	D2050625I-100F
	16.00	0.630	1.260	2.185	4.311	1.000	1.260	0.028	D2051600M-100F
	17.00	0.669	1.339	2.264	4.390	1.000	1.260	0.016	D2051700M-100F
	17.46	0.687	1.374	2.264	4.390	1.000	1.260	0.012	D2050687I-100F
	18.00	0.709	1.417	2.343	4.469	1.000	1.260	0.008	D2051800M-100F
3xD	15.88	0.625	1.875	2.756	4.882	1.000	1.260	0.029	D3050625I-100F
	16.00	0.630	1.890	2.815	4.941	1.000	1.260	0.028	D3051600M-100F
	17.00	0.669	2.008	2.933	5.059	1.000	1.260	0.016	D3051700M-100F
	17.46	0.687	2.061	2.933	5.059	1.000	1.260	0.012	D3050687I-100F
	18.00	0.709	2.126	3.051	5.177	1.000	1.260	0.008	D3051800M-100F
4xD	15.88	0.625	2.500	3.366	5.492	1.000	1.260	0.029	D4050625I-100F
	16.00	0.630	2.520	3.445	5.571	1.000	1.260	0.028	D4051600M-100F
	17.00	0.669	2.677	3.602	5.728	1.000	1.260	0.016	D4051700M-100F
	17.46	0.687	2.748	3.602	5.728	1.000	1.260	0.012	D4050687I-100F
	18.00	0.709	2.835	3.760	5.886	1.000	1.260	0.008	D4051800M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-05T203-P	7243-T6-1	8T-6	0.5 N-m (4.4 in-lbs)
S M	4T-05T203-M			
K	4T-05T203-K			
N	4T-05T203-N			
H	4T-05T203-H			

Expected Hole Tolerances

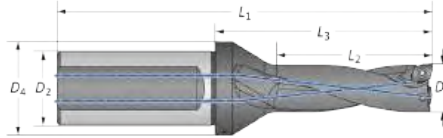
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



M = Metric (mm)

I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")****Holders****NOTE:** For full diameter range offerings, see the 4TEX section of our drilling catalog.**A91****Metric Shank**

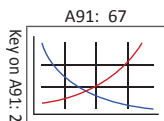
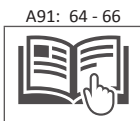
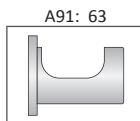
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	19.00	0.748	38.00	59.40	113.40	25.00	32.00	0.80	D2061900M-25FM
	20.00	0.787	40.00	61.40	115.40	25.00	32.00	0.50	D2062000M-25FM
	20.64	0.813	41.25	62.40	116.40	25.00	32.00	0.40	D2060812I-25FM
	21.00	0.827	42.00	63.40	117.40	25.00	32.00	0.30	D2062100M-25FM
3xD	19.00	0.748	57.00	78.40	132.40	25.00	32.00	0.80	D3061900M-25FM
	20.00	0.787	60.00	81.40	135.40	25.00	32.00	0.50	D3062000M-25FM
	20.64	0.813	61.87	82.90	136.90	25.00	32.00	0.40	D3060812I-25FM
	21.00	0.827	63.00	84.40	138.40	25.00	32.00	0.30	D3062100M-25FM
4xD	19.00	0.748	76.00	97.40	151.40	25.00	32.00	0.80	D4061900M-25FM
	20.00	0.787	80.00	101.40	155.40	25.00	32.00	0.50	D4062000M-25FM
	20.64	0.813	82.49	103.40	157.40	25.00	32.00	0.40	D4060812I-25FM
	21.00	0.827	84.00	105.40	159.40	25.00	32.00	0.30	D4062100M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

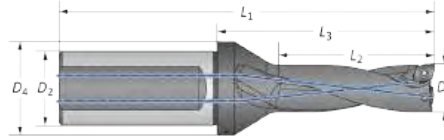
**M** = Metric (mm)**I** = Imperial (in)IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



06 Series: 19.00 mm - 21.00 mm (0.748" - 0.827")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



Imperial Shank

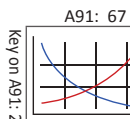
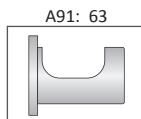
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	19.00	0.748	1.496	2.339	4.465	1.000	1.260	0.031	D2061900M-100F
	20.00	0.787	1.575	2.417	4.543	1.000	1.260	0.020	D2062000M-100F
	20.64	0.813	1.624	2.457	4.583	1.000	1.260	0.015	D2060812I-100F
	21.00	0.827	1.654	2.496	4.622	1.000	1.260	0.012	D2062100M-100F
3xD	19.00	0.748	2.244	3.087	5.213	1.000	1.260	0.031	D3061900M-100F
	20.00	0.787	2.362	3.205	5.331	1.000	1.260	0.020	D3062000M-100F
	20.64	0.813	2.436	3.264	5.390	1.000	1.260	0.015	D3060812I-100F
	21.00	0.827	2.480	3.323	5.449	1.000	1.260	0.012	D3062100M-100F
4xD	19.00	0.748	2.992	3.835	5.961	1.000	1.260	0.031	D4061900M-100F
	20.00	0.787	3.150	3.992	6.118	1.000	1.260	0.020	D4062000M-100F
	20.64	0.813	3.248	4.071	6.197	1.000	1.260	0.015	D4060812I-100F
	21.00	0.827	3.307	4.150	6.276	1.000	1.260	0.012	D4062100M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-06T204-P	72251-T7-1	8T-7	0.8 N-m (7.1 in-lbs)
S M	4T-06T204-M			
K	4T-06T204-K			
N	4T-06T204-N			
H	4T-06T204-H			

Expected Hole Tolerances

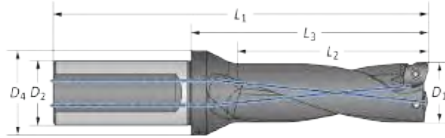
Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")****Holders****NOTE:** For full diameter range offerings, see the 4TEX section of our drilling catalog.**A91****Metric Shank**

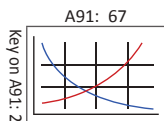
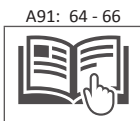
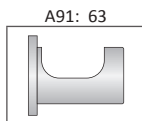
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	44.00	64.90	118.90	25.00	33.00	1.20	D2072200M-25FM
	22.22	0.875	44.45	64.90	118.90	25.00	33.00	1.10	D2070875I-25FM
	23.00	0.906	46.00	66.90	120.90	25.00	33.00	0.90	D2072300M-25FM
	23.81	0.937	47.60	67.90	121.90	25.00	33.00	7.40	D2070937I-25FM
	24.00	0.945	48.00	68.90	122.90	25.00	33.00	0.70	D2072400M-25FM
	25.40	1.000	50.80	70.90	124.90	25.00	33.00	0.30	D2071000I-25FM
3xD	22.00	0.866	66.00	86.90	140.90	25.00	33.00	1.20	D3072200M-25FM
	22.22	0.875	66.68	86.90	140.90	25.00	33.00	1.10	D3070875I-25FM
	23.00	0.906	69.00	89.90	143.90	25.00	33.00	0.90	D3072300M-25FM
	23.81	0.937	71.40	91.40	145.40	25.00	33.00	7.40	D3070937I-25FM
	24.00	0.945	72.00	92.90	146.90	25.00	33.00	0.70	D3072400M-25FM
	25.40	1.000	76.20	95.90	149.90	25.00	33.00	0.30	D3071000I-25FM
4xD	22.00	0.866	88.00	109.00	163.00	25.00	33.00	1.20	D4072200M-25FM
	22.22	0.875	88.90	108.90	162.90	25.00	33.00	1.10	D4070875I-25FM
	23.00	0.906	92.00	113.00	167.00	25.00	33.00	0.90	D4072300M-25FM
	23.81	0.937	95.20	114.90	168.90	25.00	33.00	7.40	D4070937I-25FM
	24.00	0.945	96.00	117.00	171.00	25.00	33.00	0.70	D4072400M-25FM
	25.40	1.000	101.60	120.90	174.90	25.00	33.00	0.30	D4071000I-25FM
	26.00	1.024	104.00	125.00	179.00	25.00	33.00	0.20	D4072600M-25FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010

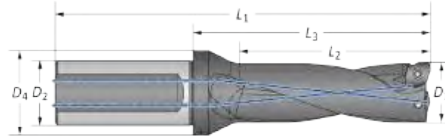
**m** = Metric (mm)**i** = Imperial (in)IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



07 Series: 22.00 mm - 26.00 mm (0.866" - 1.024")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



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Imperial Shank

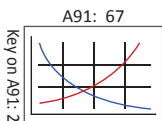
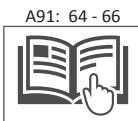
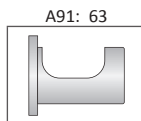
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	22.00	0.866	1.732	2.555	4.681	1.000	1.299	0.047	D2072200M-100F
	22.22	0.875	1.750	2.555	4.681	1.000	1.299	0.043	D2070875I-100F
	23.00	0.906	1.811	2.634	4.760	1.000	1.299	0.035	D2072300M-100F
	23.81	0.937	1.874	2.673	4.799	1.000	1.299	0.292	D2070937I-100F
	24.00	0.945	1.890	2.713	4.839	1.000	1.299	0.028	D2072400M-100F
	25.40	1.000	2.000	2.791	4.917	1.000	1.299	0.013	D2071000I-100F
3xD	26.00	1.024	2.047	2.870	4.996	1.000	1.299	0.008	D2072600M-100F
	22.00	0.866	2.598	3.421	5.547	1.000	1.299	0.047	D3072200M-100F
	22.22	0.875	2.625	3.421	5.547	1.000	1.299	0.043	D3070875I-100F
	23.00	0.906	2.717	3.539	5.665	1.000	1.299	0.035	D3072300M-100F
	23.81	0.937	2.811	3.598	5.724	1.000	1.299	0.292	D3070937I-100F
	24.00	0.945	2.835	3.657	5.783	1.000	1.299	0.028	D3072400M-100F
4xD	25.40	1.000	3.000	3.776	5.902	1.000	1.299	0.013	D3071000I-100F
	26.00	1.024	3.071	3.894	6.020	1.000	1.299	0.008	D3072600M-100F
	22.00	0.866	3.465	4.287	6.413	1.000	1.299	0.047	D4072200M-100F
	22.22	0.875	3.500	4.287	6.413	1.000	1.299	0.043	D4070875I-100F
	23.00	0.906	3.622	4.445	6.571	1.000	1.299	0.035	D4072300M-100F
	23.81	0.937	3.748	4.524	6.650	1.000	1.299	0.292	D4070937I-100F
4xD	24.00	0.945	3.780	4.602	6.728	1.000	1.299	0.028	D4072400M-100F
	25.40	1.000	4.000	4.760	6.886	1.000	1.299	0.013	D4071000I-100F
	26.00	1.024	4.094	4.917	7.043	1.000	1.299	0.008	D4072600M-100F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-070305-P	72568-T8-1	8T-8	1.2 N-m (10.6 in-lbs)
S M	4T-070305-M			
K	4T-070305-K			
N	4T-070305-N			
H	4T-070305-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.10 + 0.20	- 0.004 + 0.008
3xD	- 0.10 + 0.20	- 0.004 + 0.008
4xD	- 0.10 + 0.25	- 0.004 + 0.010



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

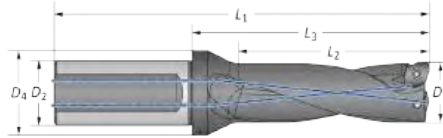


09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

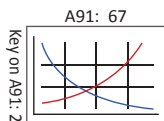
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	27.00	1.063	54.00	76.70	135.70	32.00	41.00	1.60	D2092700M-32FM
	28.00	1.102	56.00	78.70	137.70	32.00	41.00	1.30	D2092800M-32FM
	28.58	1.125	57.15	79.70	138.70	32.00	41.00	1.20	D2091125I-32FM
	29.00	1.142	58.00	80.70	139.70	32.00	41.00	1.10	D2092900M-32FM
	30.00	1.181	60.00	82.70	141.70	32.00	41.00	0.80	D2093000M-32FM
	30.15	1.187	60.30	82.70	141.70	32.00	41.00	0.82	D2091187I-32FM
	31.00	1.220	62.00	84.70	143.70	32.00	41.00	0.60	D2093100M-32FM
3xD	31.75	1.250	63.50	85.70	144.70	32.00	41.00	0.50	D2091250I-32FM
	27.00	1.063	81.00	103.70	162.70	32.00	41.00	1.60	D3092700M-32FM
	28.00	1.102	84.00	106.70	165.70	32.00	41.00	1.30	D3092800M-32FM
	28.58	1.125	85.73	108.20	167.20	32.00	41.00	1.20	D3091125I-32FM
	29.00	1.142	87.00	109.70	168.70	32.00	41.00	1.10	D3092900M-32FM
	30.00	1.181	90.00	112.70	171.70	32.00	41.00	0.80	D3093000M-32FM
	30.15	1.187	90.45	112.70	171.70	32.00	41.00	0.82	D3091187I-32FM
4xD	31.00	1.220	93.00	115.70	174.70	32.00	41.00	0.60	D3093100M-32FM
	31.75	1.250	95.25	117.20	176.20	32.00	41.00	0.50	D3091250I-32FM
	27.00	1.063	108.00	130.70	189.70	32.00	41.00	1.60	D4092700M-32FM
	28.00	1.102	112.00	134.70	193.70	32.00	41.00	1.30	D4092800M-32FM
	28.58	1.125	114.30	136.70	195.70	32.00	41.00	1.20	D4091125I-32FM
	29.00	1.142	116.00	138.70	197.70	32.00	41.00	1.10	D4092900M-32FM
	30.00	1.181	120.00	142.70	201.70	32.00	41.00	0.80	D4093000M-32FM
	30.15	1.187	120.60	142.70	201.70	32.00	41.00	0.82	D4091187I-32FM
	31.00	1.220	124.00	146.70	205.70	32.00	41.00	0.60	D4093100M-32FM
	31.75	1.250	127.00	148.70	207.70	32.00	41.00	0.50	D4091250I-32FM

IC Inserts

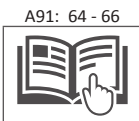
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

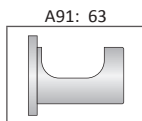
Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



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m = Metric (mm)

i = Imperial (in)

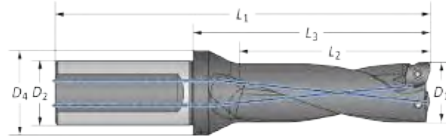
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



09 Series: 27.00 mm - 31.75 mm (1.063" - 1.250")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

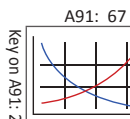
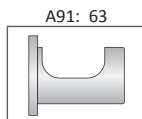
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	27.00	1.063	2.126	3.020	5.343	1.250	1.614	0.063	D2092700M-125F
	28.00	1.102	2.205	3.098	5.421	1.250	1.614	0.051	D2092800M-125F
	28.58	1.125	2.250	3.138	5.461	1.250	1.614	0.046	D2091125I-125F
	29.00	1.142	2.283	3.177	5.500	1.250	1.614	0.043	D2092900M-125F
	30.00	1.181	2.362	3.256	5.579	1.250	1.614	0.031	D2093000M-125F
	30.15	1.187	2.374	3.256	5.579	1.250	1.614	0.032	D2091187I-125F
	31.00	1.220	2.441	3.335	5.657	1.250	1.614	0.024	D2093100M-125F
3xD	31.75	1.250	2.500	3.374	5.697	1.250	1.614	0.019	D2091250I-125F
	27.00	1.063	3.189	4.083	6.406	1.250	1.614	0.063	D3092700M-125F
	28.00	1.102	3.307	4.201	6.524	1.250	1.614	0.051	D3092800M-125F
	28.58	1.125	3.375	4.260	6.583	1.250	1.614	0.046	D3091125I-125F
	29.00	1.142	3.425	4.319	6.642	1.250	1.614	0.043	D3092900M-125F
	30.00	1.181	3.543	4.437	6.760	1.250	1.614	0.031	D3093000M-125F
	30.15	1.187	3.561	4.437	6.760	1.250	1.614	0.032	D3091187I-125F
4xD	31.00	1.220	3.661	4.555	6.878	1.250	1.614	0.024	D3093100M-125F
	31.75	1.250	3.750	4.614	6.937	1.250	1.614	0.019	D3091250I-125F
	27.00	1.063	4.252	5.146	7.469	1.250	1.614	0.063	D4092700M-125F
	28.00	1.102	4.409	5.303	7.626	1.250	1.614	0.051	D4092800M-125F
	28.58	1.125	4.500	5.382	7.705	1.250	1.614	0.046	D4091125I-125F
	29.00	1.142	4.567	5.461	7.783	1.250	1.614	0.043	D4092900M-125F
	30.00	1.181	4.724	5.618	7.941	1.250	1.614	0.031	D4093000M-125F
4xD	30.15	1.187	4.748	5.618	7.941	1.250	1.614	0.032	D4091187I-125F
	31.00	1.220	4.882	5.776	8.098	1.250	1.614	0.024	D4093100M-125F
	31.75	1.250	5.000	5.854	8.177	1.250	1.614	0.019	D4091250I-125F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-09T306-P	738-T10-1	8T-10	2.0 N-m (17.7 in-lbs)
S M	4T-09T306-M			
K	4T-09T306-K			
N	4T-09T306-N			
H	4T-09T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



M = Metric (mm)

I = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

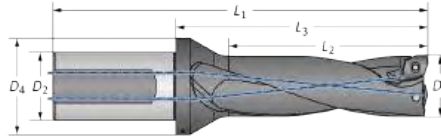


11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.

A91



Metric Shank

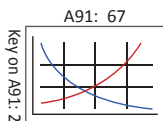
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	64.00	100.40	169.40	40.00	54.00	2.20	D2113200M-40FM
	33.00	1.299	66.00	102.40	171.40	40.00	54.00	1.90	D2113300M-40FM
	33.32	1.312	66.65	102.40	171.40	40.00	54.00	1.84	D2111312I-40FM
	34.00	1.339	68.00	104.40	173.40	40.00	54.00	1.70	D2113400M-40FM
	34.92	1.375	69.85	104.40	173.40	40.00	54.00	1.42	D2111375I-40FM
3xD	38.10	1.500	76.20	112.40	181.40	40.00	54.00	0.69	D2111500I-40FM
	32.00	1.260	96.00	132.40	201.40	40.00	54.00	2.20	D3113200M-40FM
	33.00	1.299	99.00	135.40	204.40	40.00	54.00	1.90	D3113300M-40FM
	33.32	1.312	99.97	135.40	204.40	40.00	54.00	1.84	D3111312I-40FM
	34.00	1.339	102.00	138.40	207.40	40.00	54.00	1.70	D3113400M-40FM
4xD	34.92	1.375	104.78	138.40	207.40	40.00	54.00	1.42	D3111375I-40FM
	38.10	1.500	114.30	150.40	219.40	40.00	54.00	0.69	D3111500I-40FM
	32.00	1.260	128.00	154.40	223.40	40.00	54.00	2.20	D4113200M-40FM
	33.00	1.299	132.00	158.40	227.40	40.00	54.00	1.90	D4113300M-40FM
	33.32	1.312	133.30	158.40	227.40	40.00	54.00	1.84	D4111312I-40FM
4xD	34.00	1.339	136.00	162.40	231.40	40.00	54.00	1.70	D4113400M-40FM
	34.92	1.375	139.70	162.40	231.40	40.00	54.00	1.42	D4111375I-40FM
	38.10	1.500	152.40	178.40	247.40	40.00	54.00	0.69	D4111500I-40FM

IC Inserts

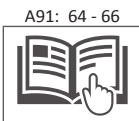
ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

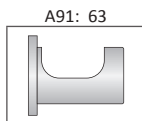
Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012



A91: 67



A91: 64 - 66



A91: 63

m = Metric (mm)

i = Imperial (in)

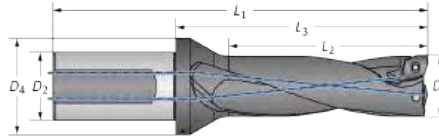
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



11 Series: 32.00 mm - 38.10 mm (1.260" - 1.500")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	32.00	1.260	2.520	3.953	6.669	1.500	2.126	0.087	D2113200M-150F
	33.00	1.299	2.598	4.031	6.748	1.500	2.126	0.075	D2113300M-150F
	33.32	1.312	2.624	4.031	6.748	1.500	2.126	0.073	D2111312I-150F
	34.00	1.339	2.677	4.110	6.827	1.500	2.126	0.067	D2113400M-150F
	34.92	1.375	2.750	4.110	6.827	1.500	2.126	0.056	D2111375I-150F
3xD	38.10	1.500	3.000	4.425	7.142	1.500	2.126	0.027	D2111500I-150F
	32.00	1.260	3.780	5.213	7.929	1.500	2.126	0.087	D3113200M-150F
	33.00	1.299	3.898	5.331	8.047	1.500	2.126	0.075	D3113300M-150F
	33.32	1.312	3.936	5.331	8.047	1.500	2.126	0.073	D3111312I-150F
	34.00	1.339	4.016	5.449	8.165	1.500	2.126	0.067	D3113400M-150F
4xD	34.92	1.375	4.125	5.449	8.165	1.500	2.126	0.056	D3111375I-150F
	38.10	1.500	4.500	5.921	8.638	1.500	2.126	0.027	D3111500I-150F
	32.00	1.260	5.039	6.079	8.795	1.500	2.126	0.087	D4113200M-150F
	33.00	1.299	5.197	6.236	8.953	1.500	2.126	0.075	D4113300M-150F
	33.32	1.312	5.248	6.236	8.953	1.500	2.126	0.073	D4111312I-150F
4xD	34.00	1.339	5.354	6.394	9.110	1.500	2.126	0.067	D4113400M-150F
	34.92	1.375	5.500	6.394	9.110	1.500	2.126	0.056	D4111375I-150F
	38.10	1.500	6.000	7.024	9.740	1.500	2.126	0.027	D4111500I-150F

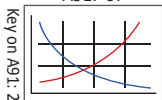
IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-11T306-P	7488-T15-1	8T-15	3.5 N-m (30.9 in-lbs)
S M	4T-11T306-M			
K	4T-11T306-K			
N	4T-11T306-N			
H	4T-11T306-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.15 + 0.25	- 0.006 + 0.010
3xD	- 0.15 + 0.25	- 0.006 + 0.010
4xD	- 0.15 + 0.30	- 0.006 + 0.012

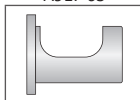
A91: 67



A91: 64 - 66



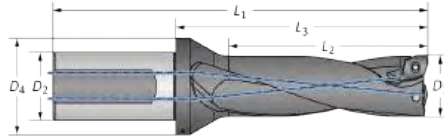
A91: 63



m = Metric (mm)

i = Imperial (in)

IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.

**14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")****Holders****NOTE:** For full diameter range offerings, see the 4TEX section of our drilling catalog.**A91****Metric Shank**

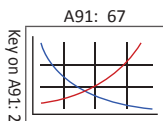
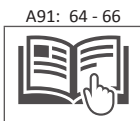
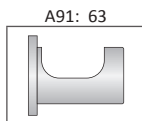
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	78.00	110.40	179.40	40.00	54.00	2.80	D2143900M-40FM
	39.67	1.562	79.40	110.40	179.40	40.00	54.00	2.61	D2141562I-40FM
3xD	39.00	1.535	117.00	149.40	218.40	40.00	54.00	2.80	D3143900M-40FM
	39.67	1.562	119.02	149.40	218.40	40.00	54.00	2.61	D3141562I-40FM
4xD	39.00	1.535	156.00	188.40	257.40	40.00	54.00	2.80	D4143900M-40FM
	39.67	1.562	158.70	188.40	257.40	40.00	54.00	2.61	D4141562I-40FM

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014

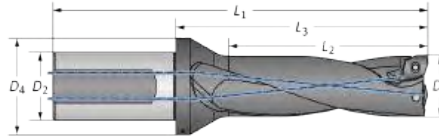
**M** = Metric (mm)**I** = Imperial (in)IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



14 Series: 39.00 mm - 39.67 mm (1.535" - 1.562")

Holders

NOTE: For full diameter range offerings, see the 4TEX section of our drilling catalog.



A91

Imperial Shank

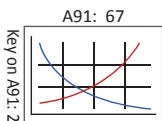
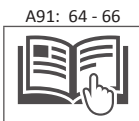
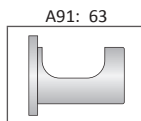
Length	D ₁		Body			Shank		Max Offset	Part No.
	mm	in	L ₂	L ₃	L ₁	D ₂	D ₄		
2xD	39.00	1.535	3.071	4.346	7.063	1.500	2.126	0.110	D2143900M-150F
	39.67	1.562	3.124	4.346	7.063	1.500	2.126	0.103	D2141562I-150F
3xD	39.00	1.535	4.606	5.882	8.598	1.500	2.126	0.110	D3143900M-150F
	39.67	1.562	4.686	5.882	8.598	1.500	2.126	0.103	D3141562I-150F
4xD	39.00	1.535	6.142	7.417	10.134	1.500	2.126	0.110	D4143900M-150F
	39.67	1.562	6.248	7.417	10.134	1.500	2.126	0.103	D4141562I-150F

IC Inserts

ISO	Part No.	Insert Screw	Torx® Driver	Admissible Tightening Torque
P	4T-140408-P	7595-T20-1	8T-20	4.5 N-m (39.8 in-lbs)
S M	4T-140408-M			
K	4T-140408-K			
N	4T-140408-N			
H	4T-140408-H			

Expected Hole Tolerances

Length	mm	in
2xD	- 0.20 + 0.30	- 0.008 + 0.012
3xD	- 0.20 + 0.30	- 0.008 + 0.012
4xD	- 0.20 + 0.35	- 0.008 + 0.014



M = Metric (mm)

I = Imperial (in)

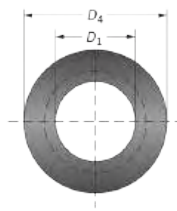
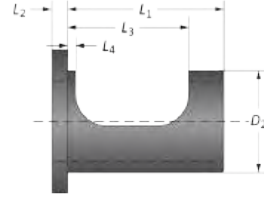
IC inserts sold in quantities of 10.
Insert screws sold in quantities of 10.



Accessories

Eccentric Sleeves

A91



	Sleeve Dimensions							Part No.	Adjustment Range	
	D ₁	D ₂	D ₄	L ₂	L ₃	L ₄	L ₁		Diameter*	Center Height
m	25.00	32.00	49.00	6.00	39.00	2.50	54.00	SLEEVE-25FM	-0.20 to +0.40	-0.15 to +0.20
	32.00	40.00	58.00	6.00	43.00	2.50	59.00	SLEEVE-32FM	-0.20 to +0.40	-0.15 to +0.20
	40.00	50.00	74.00	6.00	49.00	3.00	69.00	SLEEVE-40FM	-0.20 to +0.40	-0.20 to +0.30
i	0.750	1.000	1.614	0.157	1.593	0.118	1.837	SLEEVE-075F	-0.008 to +0.016	-0.006 to +0.008
	1.000	1.250	1.929	0.236	1.593	0.098	1.995	SLEEVE-100F	-0.008 to +0.016	-0.006 to +0.008
	1.250	1.500	2.283	0.236	1.693	0.098	2.087	SLEEVE-125F	-0.008 to +0.016	-0.006 to +0.008
	1.500	2.000	2.913	0.236	1.929	0.118	2.481	SLEEVE-150F	-0.008 to +0.024	-0.008 to +0.012

*Diameter adjustment range refers to the cutting diameter.



Milling Applications
Peripheral Adjustment Position



Lathe Applications
Front Adjustment Position



Cutting Diameter and Center Height Adjustment

Milling and Lathe Diameter Adjustments

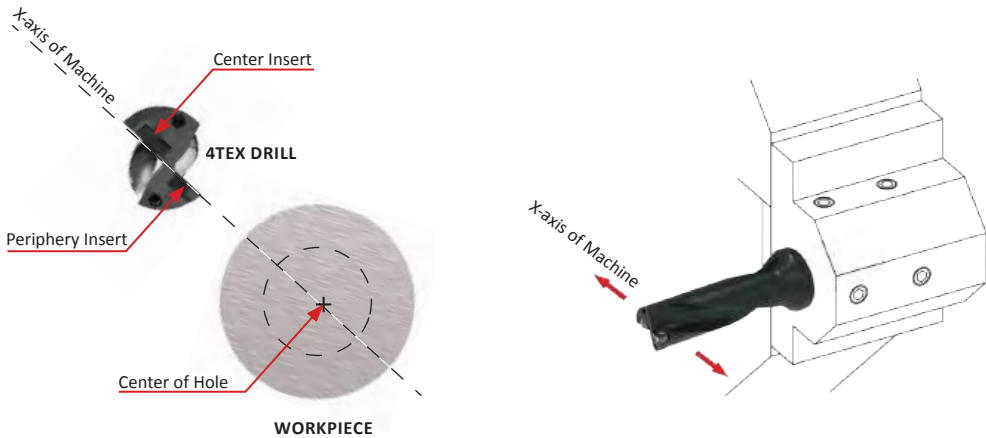


A91

For Milling Applications

1. Assemble the 4TEX drill, eccentric sleeve, and tool holder. Do not tighten the tool holder set screws.
2. Using the peripheral marks for milling machines, align the reference indentation on the holder with the 0 (zero) mark on the eccentric sleeve to have no offset.
3. Rotate the sleeve in the (+) or (-) direction to increase or decrease the nominal diameter.
4. Once the drill has arrived at the desired diameter, firmly tighten the top set screw first and then tighten the bottom set screw.

NOTICE: Eccentric sleeves are to be used with side-locking tool holders only. Damage may result with other styles of tool holders.



For Lathe Applications

1. Assemble the 4TEX drill into the lathe turret with the top face of the inserts parallel to the x-axis of the machine. This will allow for the diameter offsets to be made using the lathe's x-axis.
2. To increase the nominal diameter, offset the x-axis so the periphery insert moves away from the center of the hole.
3. To decrease the nominal diameter, offset the x-axis so the periphery insert moves toward the center of the hole.

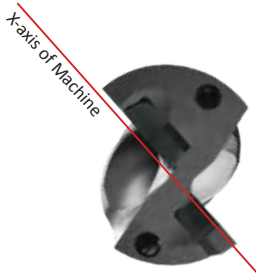
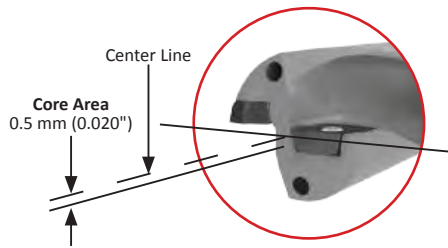
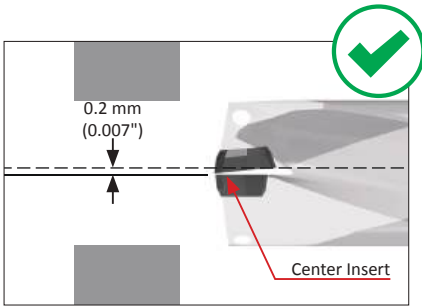
NOTE: Eccentric sleeve is not required when adjusting the diameter of the hole on a lathe.



Cutting Diameter and Center Height Adjustment

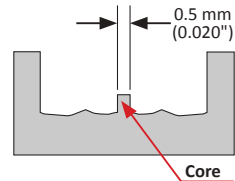
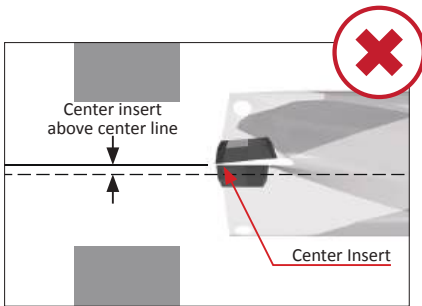
Center Height Alignment: Proper Center Line Position

A91



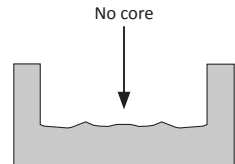
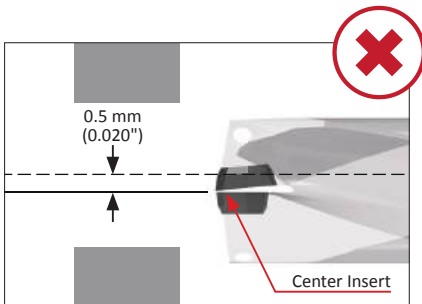
Proper Center Height Alignment

- The correct center height alignment will position the center insert 0.2 mm (0.007") below the center line.



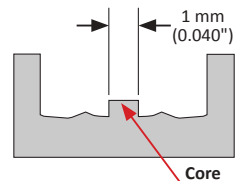
Center Insert Above the Center Line

- This will cause fracturing of the center insert.
- Requires center height adjustment.



Center Insert Too Far Below Center Line

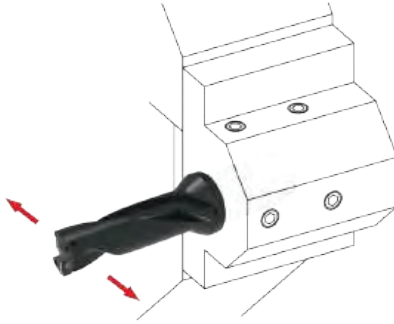
- This will cause the drill to interfere with the drilled hole.
- This will impede chip evacuation on the periphery insert.
- Requires center height adjustment.





Cutting Diameter and Center Height Adjustment

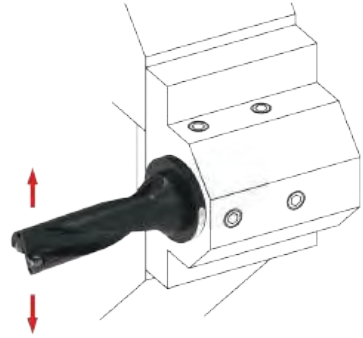
Center Height Alignment: How to Correct Issues



Method 1: Adjustment with X-Axis

1. Rotate the drill body so the position of the center line of the inserts is perpendicular to the lathe's x-axis.
2. Use the x-axis to offset the position of the center line in a (+) or (-) direction to increase or decrease the center core diameter at the bottom of the hole.

NOTE: This method does not allow diameter adjustments using the x-axis.



Method 2: Adjustment with Eccentric Sleeve

1. Assemble the drill to the turret using the eccentric sleeve, positioning the center line of the inserts parallel to the x-axis.
2. Align the reference indentation on the drill to the "0" setting on the flange face.
3. Rotate the sleeve (+) or (-) to increase or decrease the center height of the inserts in order to increase or decrease the core diameter at the bottom of the hole.

NOTE: This method still allows diameter adjustments using the x-axis.

NOTE (applies to both methods): Adjusting the center line of the inserts may affect the hole diameter produced. Method two is preferred to make center height adjustments and compensate for hole diameter with the x-axis.



Recommended Drilling Data

4TEX DRILL | METRIC (mm)

ISO	Material	Hardness (BHN)	Speed (m/min)	Feed Rate (mm/rev) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				12.00 mm - 15.49 mm	15.50 mm - 18.49 mm	18.50 mm - 26.49 mm	26.50 mm - 47.00 mm
P	Structural Steel A36, A285, A516, etc.	100 - 150	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		150 - 250	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13
		250 - 350	100 - 185	0.05 - 0.13	0.07 - 0.13	0.08 - 0.13	0.08 - 0.13

*For 4xD tools, begin at low end of feed recommendation.

4TEX DRILL | IMPERIAL (in)

ISO	Material	Hardness (BHN)	Speed (SFM)	Feed Rate (IPR) by Diameter - 2xD, 3xD*			
				03, 04 series	05 series	06, 07 series	09, 11, 14 series
				0.472" - 0.610"	0.611" - 0.728"	0.728" - 1.043"	1.044" - 1.850"
P	Structural Steel A36, A285, A516, etc.	100 - 150	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		150 - 250	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080
		250 - 350	330 - 600	0.0015 - 0.0055	0.0025 - 0.0065	0.0030 - 0.0080	0.0030 - 0.0080

*For 4xD tools, begin at low end of feed recommendation.

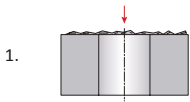
INSERT GEOMETRY RECOMMENDATIONS

ISO	Material	Hardness (BHN)	Geometry				
			P	M	K	N	H
P	Structural Steel A36, A285, A516, etc.	100 - 150	○	●			
		150 - 250	○	●			
		250 - 350	●				○

● Best ○ Good

Troubleshooting

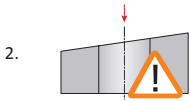
A91



1.

Starting on Uneven Surfaces

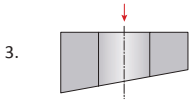
- Reduce entry feed by 50% if necessary.



2.

Starting on Angled Surfaces

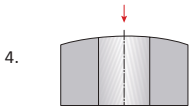
- Reduce entry feed by 20 - 50%.
- Use lower rake geometry if insert chipping occurs.



3.

Angled Bore Exit

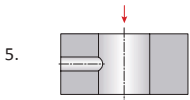
- Reduce entry feed by 50% on breakout.
- Use tough insert and stable corner radius.



4.

Starting on Convex Surfaces

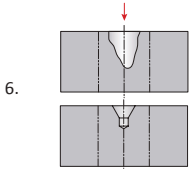
- Reduce entry feed by 50%.
- Use lower rake geometry if insert chipping occurs.



5.

Drilling Through a Cross Hole

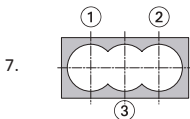
- Reduce feed rate 50% if necessary.
- Use good coolant flow and monitor chip packing.
- Use lower rake geometry if insert chipping occurs.



6.

Drilling on a Groove or Large Centering Box

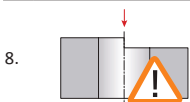
- Reduce entry feed.
- Use lower rake geometry for center insert.



7.

Chain Drilling

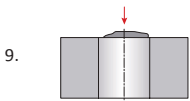
- Use good coolant flow.
- Reduce feed rate by 50% for interrupted cut.
- Use lower rake geometry if insert chipping occurs.



8.

Starting on an Edge

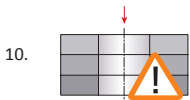
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.



9.

Starting on a Welded Seam

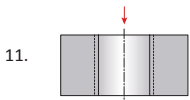
- Reduce entry feed rate by 50%.
- Use lower rake geometry if insert chipping occurs.



10.

Drilling Through Stacked Plates

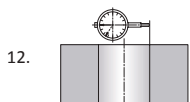
- Not recommended.



11.

Opening an Existing Hole

- Use flood coolant.



12.

Adjustable

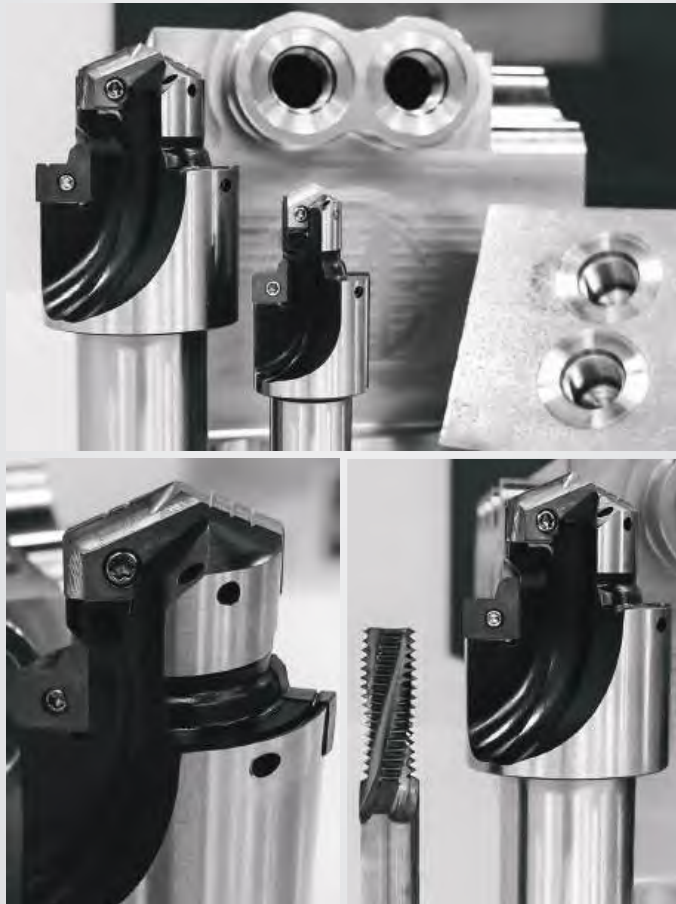
- For mills, use eccentric sleeve with end mill holder.
- For lathes, use x-axis to adjust offset ϕ .

NOTE: Refer to maximum offset ϕ in data tables.

ACCUPORT 432[®]

PORTING

PRODUCT CATALOG



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SECTION

A92-ACP

AccuPort 432®

AccuPort 432®



High Performance Multistep Action

Durable and precise, the AccuPort 432 holders provide a strong and rigid platform for the drilling of hydraulic ports. The precision ground insert location on each holder ensures total repeatability and simple changing of the replaceable inserts.

With the AccuPort technology, you can drill and finish port forms in **ONE** operation. Save time and money with AccuPort.

- ▶ Single operation hydraulic port cutting system.
- ▶ No pre-drilling required.
- ▶ Replaceable inserts eliminate regrinding and resetting.

Applicable Industries

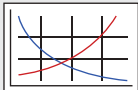
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  Heavy Equipment
-  Hydraulics
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

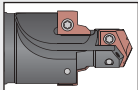
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Accuport 432 Holders
Refers to the full details of the holder items included in each kit.



Port and Thread Finishing Kits
Lists the available kits complete with AccuPort tool and AccuThread® solid carbide thread mill.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Product Overview

Port Specification

A92



ONE TOOL | FOUR OPERATIONS



Advanced Solutions, Outstanding Results

As designers and manufacturing engineers push the limits of production technology to improve productivity and performance, Allied Machine has continued to innovate and develop new solutions like the unique AccuPort 432 hydraulic port contour cutter system. Every product in the AccuPort system is designed to deliver maximum performance in a diverse range of hydraulic port cutting applications and demanding manufacturing environments.

Using precision replaceable inserts for both the drilling and port forming operations, AccuPort eliminates the need for tool regrinding and enables absolute repeatability, excellent surface finish, and reduced cost per hole. The AccuPort drills, forms, and precision-finishes the hydraulic port in **one** pass. This replaces up to three separate cutting operations in a single tool to deliver outstanding improvements in productivity, accuracy, and repeatability.

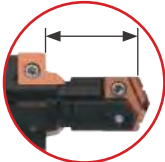
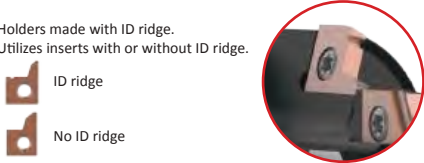
Hydraulic systems are present in an incredibly diverse range of industries. Anywhere a hydraulic port is required, AccuPort can provide a more cost-effective and higher performance solution in a fraction of the time taken for traditional methods using separate drills, special forming tools, and spot facers.



Solid Carbide AccuPort: -2 to -4



Replaceable Insert AccuPort: -4 to -32

Port Specification	Notes
Imperial SAE J-1926 ISO 11926-1 MS-16142	Extended minor diameter length option also available. 
Metric ISO 6149-1:2006 SAE J-2244/1	Holders made with ID ridge. Utilizes inserts with or without ID ridge. 
Military SAE A55202	Also conforms to AND10050 specification by using an alternate tap drill size for a UN thread.
John Deere® JDS-G173.1	Adheres to John Deere port standards.

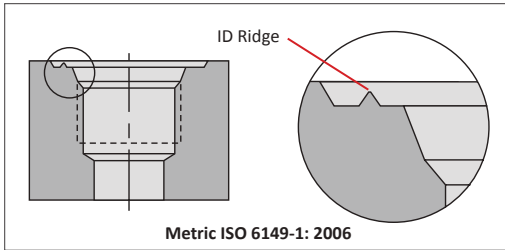
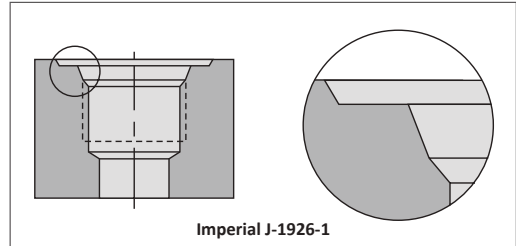
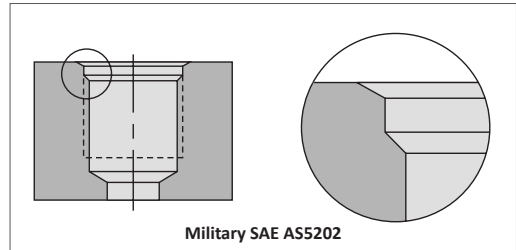


Product Overview

Port Specification & Solid Carbide Regrinds

Choosing the Right System

Every product in the AccuPort 432 product line is designed to deliver maximum performance in a diverse range of hydraulic port cutting applications and demanding manufacturing environments. The innovative design delivers the best possible range of benefits in terms of productivity, cost per hole, and tool life.



A92

Common Industry Sectors and Components



Aerospace
Pumps
Landing Gear
Brake Cylinders
Manifolds



Agriculture
Pumps
Manifolds
Cylinders and Rams
Gear Pumps



Automotive
Motor Valves
Relief Valves
Brake Cylinders
Power Steering
Pumps



Marine / Shipbuilding
Pumps
Cylinders and Rams
Motors
Manifolds

Solid Carbide Factory Regrind & Recoat

1. Send tools to Superion for regrind and recoat.



Parts for regrind
(packaged safely)



Paperwork included in shipment
package must include:

- Distributor name
- Distributor contact
- Distributor email



Superion®
Attention: Regrind Department
1285 S Patton St.
Xenia, OH 45385
United States

2. Submit purchase order after tools have been inspected and quoted.

New item:
J1926-02S-10CM



Regrind item:
J1926-02G-10CM

3. Regrind and recoat in Xenia, OH (16 day lead time).

4. Tools returned at supplied address.



Product Overview

Replaceable Inserts Overview

A92

T-A® Drill Insert Grades			
HSS Super Cobalt (T-A / GEN2 T-A) Suited for good-to-rigid machining applications, used for drilling exotic and high-alloy materials, or general use when surface speed needs to be increased. For use in material hardness up to 350 BHN.	Carbide P40 (C5) (T-A) Excellent for drilling free-machining steel, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	Carbide K35 (C1) (T-A / GEN2 T-A) Excellent for drilling free-machining steels, low/medium-carbon steels, alloy steels, high-strength steels, tool steels, and hardened steels.	Carbide K10 (C3) (T-A) Designed for drilling grey/white cast irons. The special geometry offers substantial increase in penetration rates and provides exceptional edge strength and tool life.

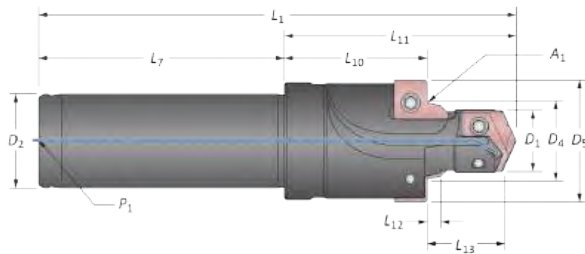
Port Form Inserts	GEN2 T-A Inserts		T-A Inserts
			
AM200® TiAIN	AM300®	AM200®	TiN

GEN2 T-A®	T-A®
 <ul style="list-style-type: none">Standard• Offers substantial increases in penetration rates and tool life.• Improves centering, drill stability, chip formation, and lowers drill forces.• Provides smoother breakout on through-hole applications.	 <ul style="list-style-type: none">Standard• Offers excellent penetration rates and tool life.• Smooth breakout on through holes.• Increases drill stability and chip formation.• Ideally suited for low-to-high rigidity machining applications.

Made-to-Order Tool Specifications

Scan and email a copy of the table below to Allied's Application Engineering Department to receive pricing for a made-to-order AccuPort 432 Port Contour Cutter.

Send emails to appeng@alliedmachine.com.



Tube Dash No.	Specification	Port Thread Size	D_1	L_{13}	D_5	L_{10}	L_1	D_2	L_7
	☐ J1926								
	☐ ISO 6149								
	☐ ISO 6149 (no ridge)								
	☐ JDS-G173.1								
	☐ AS5202								

Company Name	Contact Name	Phone
<input type="text"/>	<input type="text"/>	<input type="text"/>
Distributor Name	Fax	
<input type="text"/>	<input type="text"/>	



Product Overview

Product Nomenclature

AccuPort 432 Port Bodies

J1926	—	04	Y	—	20FM
Port Specifications		Port Tube Dash No.	T-A® Insert Series		Shank Diameter
J1926 = Imperial		04 14	Y 4		Solid Carbide
X1926 = Imperial (extended minor length)		05 16	Z S*		Replaceable Insert
I6149 = Metric (ISO)		06 18	0 G = Regrind*		Metric (mm)
G1731 = John Deere®		08 20	1		Metric (mm)
AS5202 = Military		10 24	2		Imperial (inch)
		12 32	3		10CM = 10
					14CM = 14
					16CM = 16
					16FM = 16
					20FM = 20
					25FM = 25
					32FM = 32
					063F = 0.750
					075F = 0.750
					100F = 1.000
					125F = 1.250
					150F = 1.500

*Solid carbide porting bodies.

AccuPort 432 Port Form Inserts

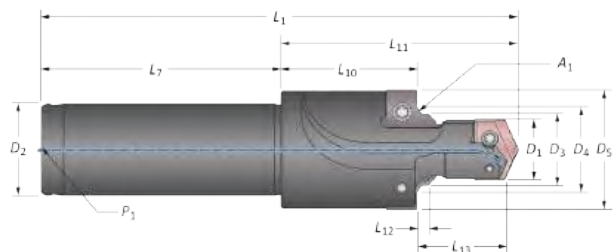
J1926	—	02	R	—	C5	A
Port Specifications		Insert Size	Port Specifications		Diameter	Coating
J1926 = Imperial		02 06 10 16	Blank = No ID ridge		C5 = P40 (C5)	A = TiAlN
I6149 = Metric (ISO)		03 07 11 20	R = ID ridge (I6149 only)		C3 = K10 (C3)	H = AM200®
G1731 = John Deere®		04 07 12 24				
AS5202 = Military		05 09 14 32				

T-A® / GEN2 T-A® Pilot Insert

4	5	Y	H	—	.386	-HE
Insert	Material	Series	Coating		Diameter	Geometry
1 = T-A®	High-Speed Steel	Y 4	P = AM300®		13 = Metric (mm)	Blank = Standard
4 = GEN2 T-A®	Carbide	Z	H = AM200®		.515 = Decimal (in)	-HE = High Efficiency
	3 = HSS	0	A = TiAlN		0017 = Fractional (in)	
	5 = Super cobalt	1	N = TiCN			
	8 = Premium cobalt	2	T = TiN			
	C1 = K35 (C1)	3				
	C2 = K20 (C2)					
	C3 = K10 (C3)					
	C5 = P40 (C5)					

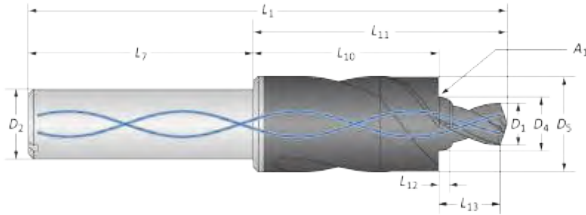
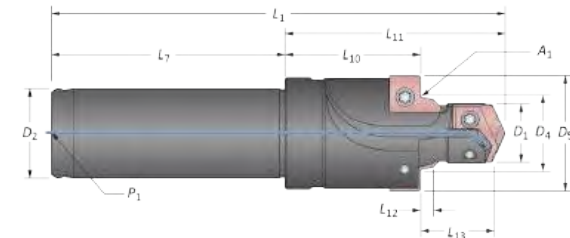
Reference Key

Symbol	Attribute
A ₁	Seal angle
D ₁	Minor diameter
D ₂	Shank diameter
D ₃	Pilot diameter
D ₄	Seal angle diameter
D ₅	Spot face diameter
L ₁	Overall length
L ₇	Shank length
L ₁₀	Spot face to shoulder length
L ₁₁	Total head length
L ₁₂	Seal angle length
L ₁₃	Minor diameter length
P ₁	Rear pipe tap



**SAE J-1926 / ISO 11926-1 / MS-16142**

Metric Shank Holders

A92**Solid Carbide****Replaceable Insert**

Metric (mm)

Tube Dash No.	D ₁	Cutting L ₁₃	D ₅	Seal Angle A ₁	D ₄	L ₁₂	Holder L ₁₁	L ₁₀	L ₁	L ₇	Shank D ₂	P ₁	Port Thread Size	Part No.
Solid Carbide														
-2	6.90	12.2	17.25	12°	9.20	2.10	50.80	37.40	90.9	40.01	10	—	5/16-24 UNF-2B	J1926-02S-10CM
-3	8.40	12.2	19.25	12°	10.80	2.10	50.80	37.10	96.0	45.01	14	—	3/8-24 UNF-2B	J1926-03S-14CM
-4	9.90	16.3	21.26	12°	12.50	2.60	46.50	28.30	94.5	48.01	16	—	7/16-20 UNF-2B	J1926-04S-16CM
Replaceable Insert														
-4	9.80	14.0	21.34	12°	12.50	2.70	38.8	22.80	78.4	41.91	16	1/16 BSPT	7/16-20 UNF-2B	J1926-04Y-16FM
-5	11.50	14.0	23.51	12°	14.10	2.70	38.8	22.50	78.4	41.91	16	1/16 BSPT	1/2-20 UNF-2B	J1926-05Z-16FM
-6	13.00	15.5	25.13	12°	15.70	2.70	47.2	29.00	86.4	41.91	20	1/8 BSPT	9/16-18 UNF-2B	J1926-06O-20FM
-8	17.50	17.5	30.62	15°	20.70	2.70	50.3	29.20	89.5	41.91	20	1/8 BSPT	3/4-16 UNF-2B	J1926-08O-20FM
-10	20.50	20.0	34.13	15°	24.00	2.70	54.4	30.10	103.9	53.09	25	1/8 BSPT	7/8-14 UNF-2B	J1926-10I-25FM
-12	25.00	23.0	42.03	15°	29.20	3.50	67.1	38.90	121.4	57.91	32	1/4 BSPT	1-1/16-12 UN-2B	J1926-12Z-32FM
-14	28.00	23.0	45.24	15°	32.40	3.50	67.1	38.20	121.4	57.91	32	1/4 BSPT	1-3/16-12 UN-2B	J1926-14Z-32FM
-16	31.20	23.0	49.13	15°	35.60	3.50	67.1	37.50	121.4	57.91	32	1/4 BSPT	1-5/16-12 UN-2B	J1926-16Z-32FM
-20	39.00	23.0	58.57	15°	43.60	3.50	77.8	46.60	130.9	57.91	32	1/4 BSPT	1-5/8-12 UN-2B	J1926-20Z-32FM*
-24	45.50	23.0	65.13	15°	49.90	3.50	77.8	45.20	130.9	57.91	32	1/4 BSPT	1-7/8-12 UN-2B	J1926-24Z-32FM*
-32	61.50	23.0	88.12	15°	65.80	3.50	103.2	60.80	150.0	57.91	32	1/4 BSPT	2-1/2-12 UN-2B	J1926-32Z-32FM*

Imperial (in)

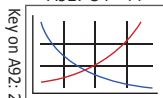
Tube Dash No.	D ₁	Cutting L ₁₃	D ₅	Seal Angle A ₁	D ₄	L ₁₂	Holder L ₁₁	L ₁₀	L ₁	L ₇	Shank D ₂	P ₁	Port Thread Size	Part No.
Solid Carbide														
-2	0.272	0.480	0.6791	12°	0.362	0.083	2.000	1.472	3.579	1.575	10 mm	—	5/16-24 UNF-2B	J1926-02S-10CM
-3	0.331	0.480	0.7579	12°	0.425	0.083	2.000	1.461	3.780	1.772	14 mm	—	3/8-24 UNF-2B	J1926-03S-14CM
-4	0.390	0.642	0.8370	12°	0.492	0.102	1.831	1.114	3.720	1.890	16 mm	—	7/16-20 UNF-2B	J1926-04S-16CM
Replaceable Insert														
-4	0.386	0.551	0.8402	12°	0.492	0.106	1.528	0.898	3.087	1.650	0.630	1/16 BSPT	7/16-20 UNF-2B	J1926-04Y-16FM
-5	0.453	0.551	0.9255	12°	0.555	0.106	1.528	0.886	3.087	1.650	0.630	1/16 BSPT	1/2-20 UNF-2B	J1926-05Z-16FM
-6	0.512	0.610	0.9894	12°	0.618	0.106	1.858	1.142	3.402	1.650	0.787	1/8 BSPT	9/16-18 UNF-2B	J1926-06O-20FM
-8	0.689	0.689	1.2056	15°	0.815	0.106	1.980	1.150	3.524	1.650	0.787	1/8 BSPT	3/4-16 UNF-2B	J1926-08O-20FM
-10	0.807	0.787	1.3437	15°	0.945	0.106	2.142	1.185	4.091	2.090	0.984	1/8 BSPT	7/8-14 UNF-2B	J1926-10I-25FM
-12	0.984	0.906	1.6549	15°	1.150	0.138	2.642	1.531	4.780	2.280	1.260	1/4 BSPT	1-1/16-12 UN-2B	J1926-12Z-32FM
-14	1.102	0.906	1.7812	15°	1.276	0.138	2.642	1.504	4.780	2.280	1.260	1/4 BSPT	1-3/16-12 UN-2B	J1926-14Z-32FM
-16	1.231	0.906	1.9341	15°	1.402	0.138	2.642	1.476	4.780	2.280	1.260	1/4 BSPT	1-5/16-12 UN-2B	J1926-16Z-32FM
-20	1.535	0.906	2.3058	15°	1.717	0.138	3.063	1.835	5.154	2.280	1.260	1/4 BSPT	1-5/8-12 UN-2B	J1926-20Z-32FM*
-24	1.791	0.906	2.5641	15°	1.965	0.138	3.063	1.780	5.154	2.280	1.260	1/4 BSPT	1-7/8-12 UN-2B	J1926-24Z-32FM*
-32	2.421	0.906	3.4694	15°	2.591	0.138	4.063	2.394	5.906	2.280	1.260	1/4 BSPT	2-1/2-12 UN-2B	J1926-32Z-32FM*

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

A92: 34 - 44

A92: 3 - 5

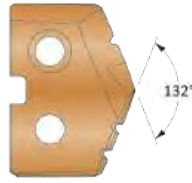
A92: 21 - 22

**m** = Metric (mm)**i** = Imperial (in)



SAE J-1926 / ISO 11926-1 / MS-16142

Inserts



A92

T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

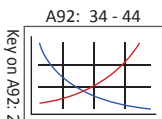
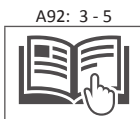
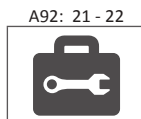
Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	J1926-04Y-16FM	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	J1926-05Z-16FM	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	J1926-06O-20FM	0	45OH-13	4C1OP-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-08O-20FM	0	45OH-0022	4C1OP-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-10I-25FM	1	45IH-20.5	4C1IP-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	J1926-12Z-32FM	2	45ZH-25	4C1ZP-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	J1926-14Z-32FM	2	45ZH-28	4C1ZP-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	J1926-16Z-32FM	2	45ZH-1.231	4C1ZP-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	J1926-203-32FM*	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	J1926-243-32FM*	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	J1926-324-32FM*	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

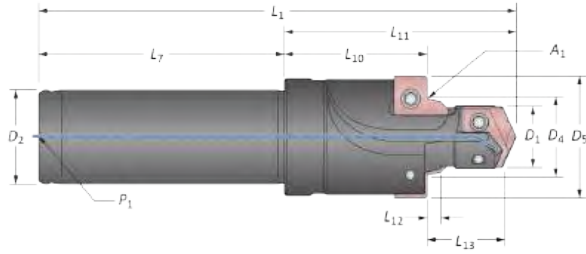
Tube Dash No.	AccuPort Part No.	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
		 C3 Carbide AM200®	 C5 Carbide TiAlN			
-4	J1926-04Y-16FM	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	J1926-05Z-16FM	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	J1926-06O-20FM	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-08O-20FM	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-10I-25FM	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	J1926-12Z-32FM	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	J1926-14Z-32FM	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	J1926-16Z-32FM	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	J1926-203-32FM*	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	J1926-243-32FM*	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	J1926-324-32FM*	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

****Tightening torques** are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



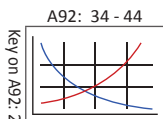
Y - 2 series T-A inserts sold in multiples of 2.
 3 - 4 series T-A inserts sold in multiples of 1.
 Port form inserts sold in multiples of 2.
 Insert screws sold in multiples of 10.

**SAE J-1926 / ISO 11926-1 / MS-16142****Imperial Shank Holders****A92****Metric (mm)**

Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	9.80	14.00	21.34	12°	12.45	2.79	38.79	22.86	84.12	47.63	15.88	1/16 NPT	7/16-20 UNF-2B	J1926-04Y-063F
-5	11.50	14.00	23.51	12°	13.97	2.79	38.79	22.61	84.12	47.63	15.88	1/16 NPT	1/2-20 UNF-2B	J1926-05Z-063F
-6	13.00	15.49	25.13	12°	15.75	2.79	47.17	28.96	94.46	50.01	19.05	1/8 NPT	9/16-18 UNF-2B	J1926-060-075F
-8	17.50	17.50	30.62	15°	20.57	2.79	50.34	29.21	97.64	50.01	19.05	1/8 NPT	3/4-16 UNF-2B	J1926-080-075F
-10	20.50	19.99	34.13	15°	24.13	2.79	54.36	30.23	108.74	57.94	25.40	1/8 NPT	7/8-14 UNF-2B	J1926-101-100F
-12	25.00	23.01	42.03	15°	29.21	3.56	67.06	38.86	121.44	57.94	31.75	1/4 NPT	1-1/16-12 UN-2B	J1926-122-125F
-14	28.00	23.01	45.24	15°	32.51	3.56	67.06	38.10	121.44	57.94	31.75	1/4 NPT	1-3/16-12 UN-2B	J1926-142-125F
-16	31.20	23.01	49.13	15°	35.56	3.56	67.06	37.59	121.44	57.94	31.75	1/4 NPT	1-5/16-12 UN-2B	J1926-162-125F
-20	39.00	23.01	58.57	15°	43.69	3.56	77.77	46.74	141.30	68.28	38.10	1/4 NPT	1-5/8-12 UN-2B	J1926-203-150F
-24	45.50	23.01	65.13	15°	50.04	3.56	77.77	45.21	141.30	68.28	38.10	1/4 NPT	1-7/8-12 UN-2B	J1926-243-150F
-32	61.50	23.01	88.12	15°	65.79	3.56	96.82	60.71	160.35	68.28	38.10	1/4 NPT	2-1/2-12 UN-2B	J1926-324-150F

Imperial (in)

Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	0.386	0.551	0.8402	12°	0.490	0.110	1.527	0.900	3.312	1.875	5/8	1/16 NPT	7/16-20 UNF-2B	J1926-04Y-063F
-5	0.453	0.551	0.9255	12°	0.550	0.110	1.527	0.890	3.312	1.875	5/8	1/16 NPT	1/2-20 UNF-2B	J1926-05Z-063F
-6	0.512	0.610	0.9894	12°	0.620	0.110	1.857	1.140	3.719	1.969	3/4	1/8 NPT	9/16-18 UNF-2B	J1926-060-075F
-8	0.689	0.689	1.2056	15°	0.810	0.110	1.982	1.150	3.844	1.969	3/4	1/8 NPT	3/4-16 UNF-2B	J1926-080-075F
-10	0.807	0.787	1.3437	15°	0.950	0.110	2.140	1.190	4.281	2.281	1	1/8 NPT	7/8-14 UNF-2B	J1926-101-100F
-12	0.984	0.906	1.6549	15°	1.150	0.140	2.640	1.530	4.781	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-2B	J1926-122-125F
-14	1.102	0.906	1.7812	15°	1.280	0.140	2.640	1.500	4.781	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-2B	J1926-142-125F
-16	1.231	0.906	1.9341	15°	1.400	0.140	2.640	1.480	4.781	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-2B	J1926-162-125F
-20	1.535	0.906	2.3058	15°	1.720	0.140	3.062	1.840	5.563	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-2B	J1926-203-150F
-24	1.791	0.906	2.5641	15°	1.970	0.140	3.062	1.780	5.563	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-2B	J1926-243-150F
-32	2.421	0.906	3.4694	15°	2.590	0.140	3.812	2.390	6.313	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-2B	J1926-324-150F

NOTE: Port contour cutters are available with extended pilot length (L₁₃). See page A92: 13 for items.

A92: 34 - 44



A92: 3 - 5



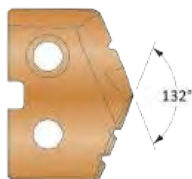
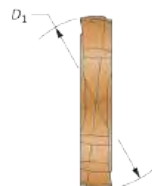
A92: 23 - 24

m = Metric (mm)**i** = Imperial (in)



SAE J-1926 / ISO 11926-1 / MS-16142

Inserts



A92

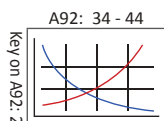
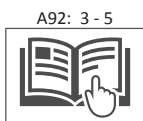
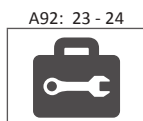
T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	J1926-04Y-063F	Y	45YH-386	4C1YP-386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	J1926-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	J1926-060-075F	0	450H-13	4C10P-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	J1926-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	J1926-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	J1926-162-125F	2	452H-1.231	4C12P-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	J1926-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	J1926-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	J1926-324-150F	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

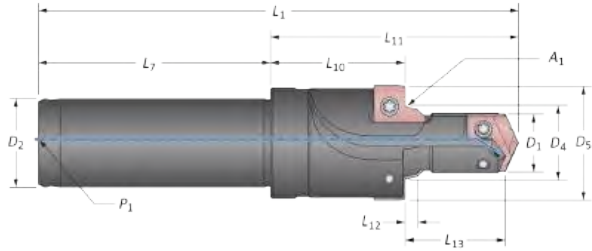
Tube Dash No.	AccuPort Part No.	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
		 C3 Carbide AM200®	 C5 Carbide TiAlN			
-4	J1926-04Y-063F	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	J1926-05Z-063F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	J1926-060-075F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	J1926-080-075F	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	J1926-101-100F	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	J1926-122-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	J1926-142-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	J1926-162-125F	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	J1926-203-150F	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	J1926-243-150F	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	J1926-324-150F	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

Y - 2 series T-A inserts sold in multiples of 2.
 3 - 4 series T-A inserts sold in multiples of 1.
 Port form inserts sold in multiples of 2.
 Insert screws sold in multiples of 10.

**SAE J-1926 / ISO 11926-1 / MS-16142**

Imperial Extended Minor Diameter Length Holders

A92**Metric (mm)**

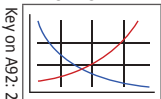
Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	9.80	20.35	21.34	12°	12.45	2.69	45.14	22.76	90.47	47.63	15.88	1/16 NPT	7/16-20 UNF-2B	X1926-04Y-063F
-5	11.50	20.35	23.51	12°	14.05	2.69	45.14	22.48	90.47	47.63	15.88	1/16 NPT	1/2-20 UNF-2B	X1926-05Z-063F
-6	13.00	21.84	25.13	12°	15.70	2.69	53.52	29.06	100.81	50.01	19.05	1/8 NPT	9/16-18 UNF-2B	X1926-060-075F
-8	17.50	23.85	30.62	15°	20.65	2.69	56.69	29.21	103.99	50.01	19.05	1/8 NPT	3/4-16 UNF-2B	X1926-080-075F
-10	20.50	26.34	34.13	15°	24.00	2.69	60.71	30.10	115.09	57.94	25.40	1/8 NPT	7/8-14 UNF-2B	X1926-101-100F
-12	25.00	29.36	42.03	15°	29.21	3.51	73.41	38.86	127.79	57.94	31.75	1/4 NPT	1-1/16-12 UN-2B	X1926-122-125F
-14	28.00	29.36	45.24	15°	32.41	3.51	73.41	38.20	127.79	57.94	31.75	1/4 NPT	1-3/16-12 UN-2B	X1926-142-125F
-16	31.20	29.36	49.13	15°	35.56	3.51	73.41	37.52	127.79	57.94	31.75	1/4 NPT	1-5/16-12 UN-2B	X1926-162-125F
-20	39.00	29.36	58.57	15°	43.56	3.51	84.12	46.61	147.65	68.28	38.10	1/4 NPT	1-5/8-12 UN-2B	X1926-203-150F
-24	45.50	29.36	65.13	15°	49.91	3.51	84.12	45.16	147.65	68.28	38.10	1/4 NPT	1-7/8-12 UN-2B	X1926-243-150F
-32	61.50	29.36	88.12	15°	65.76	3.51	103.17	60.78	166.70	68.28	38.10	1/4 NPT	2-1/2-12 UN-2B	X1926-324-150F

Imperial (in)

Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	0.386	0.801	0.8402	12°	0.490	0.106	1.777	0.896	3.562	1.875	5/8	1/16 NPT	7/16-20 UNF-2B	X1926-04Y-063F
-5	0.453	0.801	0.9255	12°	0.553	0.106	1.777	0.885	3.562	1.875	5/8	1/16 NPT	1/2-20 UNF-2B	X1926-05Z-063F
-6	0.512	0.860	0.9894	12°	0.618	0.106	2.107	1.144	3.969	1.969	3/4	1/8 NPT	9/16-18 UNF-2B	X1926-060-075F
-8	0.689	0.939	1.2056	15°	0.813	0.106	2.232	1.150	4.094	1.969	3/4	1/8 NPT	3/4-16 UNF-2B	X1926-080-075F
-10	0.807	1.037	1.3437	15°	0.945	0.106	2.390	1.185	4.531	2.281	1	1/8 NPT	7/8-14 UNF-2B	X1926-101-100F
-12	0.984	1.156	1.6549	15°	1.150	0.138	2.890	1.530	5.031	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-2B	X1926-122-125F
-14	1.102	1.156	1.7812	15°	1.276	0.138	2.890	1.504	5.031	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-2B	X1926-142-125F
-16	1.231	1.156	1.9341	15°	1.400	0.138	2.890	1.477	5.031	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-2B	X1926-162-125F
-20	1.535	1.156	2.3058	15°	1.715	0.138	3.312	1.835	5.813	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-2B	X1926-203-150F
-24	1.791	1.156	2.5641	15°	1.965	0.138	3.312	1.778	5.813	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-2B	X1926-243-150F
-32	2.421	1.156	3.4694	15°	2.589	0.138	4.062	2.393	6.563	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-2B	X1926-324-150F

NOTE: Port contour cutters are available with extended pilot length (L₁₃). See page A92: 13 for items.

A92: 34 - 44

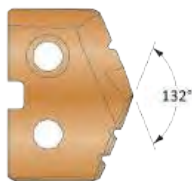
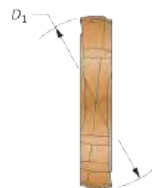


A92: 3 - 5

**m** = Metric (mm)**i** = Imperial (in)

SAE J-1926 / ISO 11926-1 / MS-16142

Inserts



A92

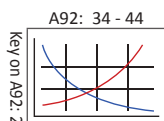
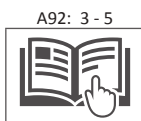
T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	X1926-04Y-063F	Y	45YH-386	4C1YP-386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	X1926-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	X1926-060-075F	0	450H-13	4C10P-13	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	X1926-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	X1926-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	X1926-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	X1926-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	X1926-162-125F	2	452H-1.231	4C12P-1.231	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	X1926-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	X1926-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	X1926-324-150F	4	454H-61.5	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
		 C3 Carbide AM200®	 C5 Carbide TiAlN			
-4	X1926-04Y-063F	J1926-02-C3H	J1926-02-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	X1926-05Z-063F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	X1926-060-075F	J1926-03-C3H	J1926-03-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	X1926-080-075F	J1926-07-C3H	J1926-07-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	X1926-101-100F	J1926-04-C3H	J1926-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	X1926-122-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-14	X1926-142-125F	J1926-08-C3H	J1926-08-C5A	7375-IP9-1	8IP-9	175 N-cm (15.5 in-lbs)
-16	X1926-162-125F	J1926-09-C3H	J1926-09-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	X1926-203-150F	J1926-10-C3H	J1926-10-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	X1926-243-150F	J1926-11-C3H	J1926-11-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	X1926-324-150F	J1926-12-C3H	J1926-12-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.



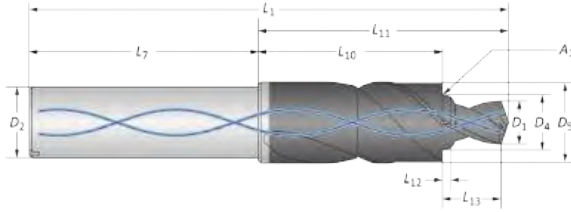
ISO 6149-1:2006 / SAE J-2244/1

Metric Shank Holders

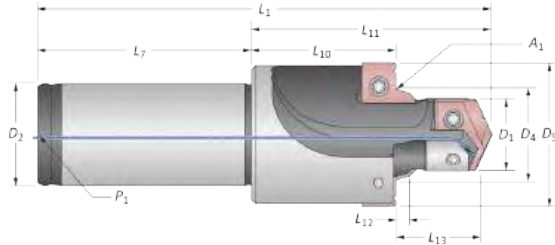
A92



Solid Carbide



Replaceable Insert



Metric (mm)

Tube Dash No.	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁	Port Thread Size	Part No.
Solid Carbide														
-2	7.00	11.5	14.00	12°	9.10	1.60	50.8	38.10	90.9	40.01	10	—	M8 X 1	I6149-02S-10CM
-3	8.50	11.5	16.00	12°	11.10	1.60	49.3	36.20	94.2	45.01	14	—	M10 X 1	I6149-03S-14CM
-4	10.50	15.0	19.00	12°	13.80	2.40	46.5	29.50	94.5	48.01	16	—	M12 X 1.5	I6149-04S-16CM
Replaceable Insert														
-4	10.50	14.4	23.98	15°	13.81	2.60	38.8	22.20	78.4	41.91	16	1/16 BSPT	M12 X 1.5	I6149-04RY-16FM
-5	12.50	14.4	25.99	15°	15.80	2.60	38.8	21.80	78.4	41.91	16	1/16 BSPT	M14 X 1.5	I6149-05RZ-16FM
-6	14.50	15.9	27.99	15°	17.80	2.60	47.2	28.30	86.4	41.91	20	1/8 BSPT	M16 X 1.5	I6149-06R0-20FM
-8	16.50	17.4	30.00	15°	19.80	2.60	50.3	29.60	89.5	41.91	20	1/8 BSPT	M18 X 1.5	I6149-08R0-20FM
-10	20.50	18.4	33.97	15°	23.80	2.60	54.4	31.60	103.9	53.09	25	1/8 BSPT	M22 X 1.5	I6149-10R1-25FM
-12	25.00	22.4	39.95	15°	29.40	3.30	67.1	39.40	121.4	57.91	32	1/4 BSPT	M27 X 2	I6149-12R2-32FM
-14	28.00	22.4	44.00	15°	32.40	3.30	67.1	38.80	121.4	57.91	32	1/4 BSPT	M30 X 2	I6149-14R2-32FM
-16	31.00	22.4	48.97	15°	35.40	3.30	67.1	38.10	121.4	57.91	32	1/4 BSPT	M33 X 2	I6149-16R2-32FM
-20	40.00	23.0	59.92	15°	44.40	3.30	77.8	46.40	130.9	57.91	32	1/4 BSPT	M42 X 2	I6149-20R3-32FM*
-24	46.00	25.5	66.10	15°	50.40	3.30	77.8	42.60	130.9	57.91	32	1/4 BSPT	M48 X 2	I6149-24R3-32FM*
-32	58.00	28.0	75.95	15°	62.40	3.30	103.2	56.60	150.0	57.91	32	1/4 BSPT	M60 X 2	I6149-32R4-32FM*

Imperial (in)

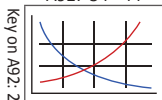
Tube Dash No.	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁	Port Thread Size	Part No.
Solid Carbide														
-2	0.276	0.453	0.5512	12°	0.358	0.063	2.000	1.500	3.579	1.575	10 mm	—	M8 X 1	I6149-02S-10CM
-3	0.335	0.453	0.6299	12°	0.437	0.063	1.941	1.425	3.709	1.772	14 mm	—	M10 X 1	I6149-03S-14CM
-4	0.413	0.591	0.7480	12°	0.543	0.094	1.831	1.161	3.720	1.890	16 mm	—	M12 X 1.5	I6149-04S-16CM
Replaceable Insert														
-4	0.413	0.567	0.9441	15°	0.544	0.102	1.528	0.874	3.087	1.650	0.630	1/16 BSPT	M12 X 1.5	I6149-04RY-16FM
-5	0.492	0.567	1.0232	15°	0.622	0.102	1.528	0.858	3.087	1.650	0.630	1/16 BSPT	M14 X 1.5	I6149-05RZ-16FM
-6	0.571	0.626	1.1020	15°	0.701	0.102	1.858	1.114	3.402	1.650	0.787	1/8 BSPT	M16 X 1.5	I6149-06R0-20FM
-8	0.650	0.685	1.1811	15°	0.780	0.102	1.980	1.165	3.524	1.650	0.787	1/8 BSPT	M18 X 1.5	I6149-08R0-20FM
-10	0.807	0.724	1.3374	15°	0.937	0.102	2.142	1.244	4.091	2.090	0.984	1/8 BSPT	M22 X 1.5	I6149-10R1-25FM
-12	0.984	0.882	1.5728	15°	1.157	0.130	2.642	1.551	4.780	2.280	1.260	1/4 BSPT	M27 X 2	I6149-12R2-32FM
-14	1.102	0.882	1.7323	15°	1.276	0.130	2.642	1.528	4.780	2.280	1.260	1/4 BSPT	M30 X 2	I6149-14R2-32FM
-16	1.220	0.882	1.9280	15°	1.394	0.130	2.642	1.500	4.780	2.280	1.260	1/4 BSPT	M33 X 2	I6149-16R2-32FM
-20	1.575	0.906	2.3591	15°	1.748	0.130	3.063	1.827	5.154	2.280	1.260	1/4 BSPT	M42 X 2	I6149-20R3-32FM*
-24	1.811	1.004	2.6024	15°	1.984	0.130	3.063	1.677	5.154	2.280	1.260	1/4 BSPT	M48 X 2	I6149-24R3-32FM*
-32	2.283	1.102	2.9902	15°	2.457	0.130	4.063	2.228	5.906	2.280	1.260	1/4 BSPT	M60 X 2	I6149-32R4-32FM*

*NOTICE: Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

A92: 34 - 44

A92: 3 - 5

A92: 25 - 28



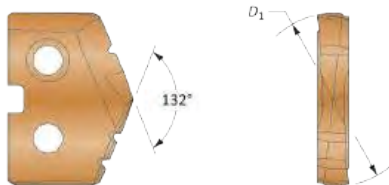
M = Metric (mm)

I = Imperial (in)



ISO 6149-1:2006 / SAE J-2244/1

Inserts



A92

T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

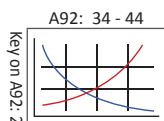
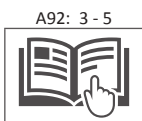
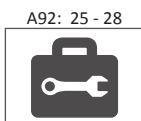
Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	I6149-04RY-16FM	Y	45YH-10.5	4C1YP-10.5	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	I6149-05RZ-16FM	Z	45ZH-12.5	4C12P-12.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	I6149-06R0-20FM	0	450H-14.5	4C10P-14.5	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	I6149-08R0-20FM	0	450H-16.5	4C10P-16.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	I6149-10R1-25FM	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	I6149-12R2-32FM	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	I6149-14R2-32FM	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	I6149-16R2-32FM	2	452H-31	4C12P-31	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	I6149-20R3-32FM*	3	453H-40	1C53A-40	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	I6149-24R3-32FM*	3	453H-46	1C53A-46	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	I6149-32R4-32FM*	4	454H-58	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No.				Insert Screw	Insert Driver	Admissible Tightening Torque**
		C3 Carbide (AM200®)		C5 Carbide (TiAlN)				
		 ID Ridge	 No ID Ridge	 ID Ridge	 No ID Ridge			
-4	I6149-04RY-16FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	I6149-05RZ-16FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	I6149-06R0-20FM	I6149-06R-C3H	I6149-06-C3H	I6149-06R-C5A	I6149-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	I6149-08R0-20FM	I6149-06R-C3H	I6149-06-C3H	I6149-06R-C5A	I6149-06-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	I6149-10R1-25FM	I6149-04R-C3H	I6149-04-C3H	I6149-04R-C5A	I6149-04-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	I6149-12R2-32FM	I6149-12R-C3H	I6149-12-C3H	I6149-12R-C5A	I6149-12-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-14	I6149-14R2-32FM	I6149-14R-C3H	I6149-14-C3H	I6149-14R-C5A	I6149-14-C5A	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-16	I6149-16R2-32FM	I6149-16R-C3H	I6149-16-C3H	I6149-16R-C5A	I6149-16-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	I6149-20R3-32FM*	I6149-20R-C3H	I6149-20-C3H	I6149-20R-C5A	I6149-20-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	I6149-24R3-32FM*	I6149-24R-C3H	I6149-24-C3H	I6149-24R-C5A	I6149-24-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	I6149-32R4-32FM*	I6149-32R-C3H	I6149-32-C3H	I6149-32R-C5A	I6149-32-C5A	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

*NOTICE: Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.



Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.



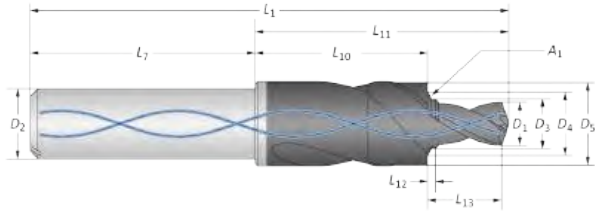
SAE AS5202

Imperial Shank Holders

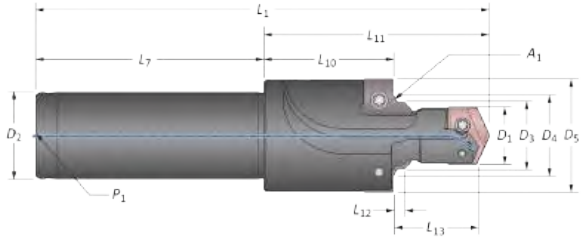
A92



Solid Carbide



Replaceable Insert



Metric (mm)

Tube Dash No.	Cutting			Seal Angle			Holder				Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	D ₃	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
	Solid Carbide														
-2	7.00	15.20	15.29	60°	11.10	1.60	8.30	50.00	33.40	89.90	40.01	10	—	5/16-20 UNJF-3B	AS5202-02S-10CM
-3	8.60	14.70	16.89	60°	12.70	1.60	9.90	50.80	34.50	96.00	45.01	14	—	3/8-24 UNJF-3B	AS5202-03S-14CM
-4	10.00	16.80	18.49	60°	14.30	1.60	11.50	46.50	27.90	94.50	48.01	16	—	7/16-20 UNJF-3B	AS5202-04S-16CM
	Replaceable Insert														
-4	9.91	17.02	22.23	60°	14.35	2.11	11.58	41.83	22.76	87.17	47.63	15.88	1/16 NPT	7/16-20 UNJF-3B	AS5202-04Y-063F
-5	11.50	17.02	23.27	60°	15.95	2.11	13.18	41.83	22.40	87.17	47.63	15.88	1/16 NPT	1/2-20 UNJF-3B	AS5202-05Z-063F
-6	12.95	18.36	24.87	60°	17.55	2.31	14.78	49.53	28.42	97.26	50.01	19.05	1/8 NPT	9/16-18 UNJF-3B	AS5202-06Z-075F
-8	17.50	21.56	30.43	60°	22.30	2.59	19.58	53.77	28.58	101.07	50.01	19.05	1/8 NPT	3/4-16 UNJF-3B	AS5202-080-075F
-10	20.50	24.05	34.39	60°	25.48	2.92	22.81	58.50	30.20	112.88	57.94	25.40	1/8 NPT	7/8-14 UNJF-3B	AS5202-101-100F
-12	25.00	27.46	41.53	60°	31.52	3.38	27.64	70.59	37.95	124.97	57.94	31.75	1/4 NPT	1-1/16-12 UNJ-3B	AS5202-122-125F
-14	28.17	27.46	45.09	60°	34.67	3.38	30.78	70.56	37.21	124.94	57.94	31.75	1/4 NPT	1-3/16-12 UNJ-3B	AS5202-142-125F
-16	31.34	27.46	48.77	60°	37.85	3.38	33.96	70.56	36.50	124.94	57.94	31.75	1/4 NPT	1-5/16-12 UNJ-3B	AS5202-162-125F
-20	39.29	28.78	57.91	60°	45.80	3.38	41.91	81.33	44.32	144.86	68.28	38.10	1/4 NPT	1-5/8-12 UNJ-3B	AS5202-203-150F
-24	45.64	29.06	65.28	60°	52.15	3.38	48.26	81.28	42.57	144.81	68.28	38.10	1/4 NPT	1-7/8-12 UNJ-3B	AS5202-243-150F
-32	61.49	35.20	88.65	60°	68.05	3.38	64.16	94.01	45.77	157.53	68.28	38.10	1/4 NPT	2-1/2-12 UNJ-3B	AS5202-324-150F

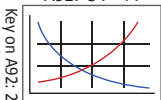
Imperial (in)

Tube Dash No.	Cutting			Seal Angle			Holder				Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	D ₃	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
Solid Carbide															
-2	0.276	0.598	0.6020	60°	0.437	0.063	0.327	1.969	1.315	3.539	1.575	10 mm	—	5/16-20 UNJF-3B	AS5202-02S-10CM
-3	0.339	0.579	0.6650	60°	0.500	0.063	0.390	2.000	1.358	3.780	1.772	14 mm	—	3/8-24 UNJF-3B	AS5202-03S-14CM
-4	0.394	0.661	0.7280	60°	0.563	0.063	0.453	1.831	1.098	3.720	1.890	16 mm	—	7/16-20 UNJF-3B	AS5202-04S-16CM
Replaceable Insert															
-4	0.390	0.670	0.8750	60°	0.565	0.083	0.456	1.647	0.896	3.432	1.875	5/8	1/16 NPT	7/16-20 UNJF-3B	AS5202-04Y-063F
-5	0.453	0.670	0.9160	60°	0.628	0.083	0.519	1.647	0.882	3.432	1.875	5/8	1/16 NPT	1/2-20 UNJF-3B	AS5202-05Z-063F
-6	0.510	0.723	0.9790	60°	0.691	0.091	0.582	1.950	1.119	3.829	1.969	3/4	1/8 NPT	9/16-18 UNJF-3B	AS5202-06Z-075F
-8	0.689	0.849	1.1981	60°	0.878	0.102	0.771	2.117	1.125	3.979	1.969	3/4	1/8 NPT	3/4-16 UNJF-3B	AS5202-080-075F
-10	0.807	0.947	1.3540	60°	1.003	0.115	0.898	2.303	1.189	4.444	2.281	1	1/8 NPT	7/8-14 UNJF-3B	AS5202-101-100F
-12	0.984	1.081	1.6350	60°	1.241	0.133	1.088	2.779	1.494	4.920	2.281	1-1/4	1/4 NPT	1-1/16-12 UNJ-3B	AS5202-122-125F
-14	1.109	1.081	1.7750	60°	1.365	0.133	1.212	2.778	1.465	4.919	2.281	1-1/4	1/4 NPT	1-3/16-12 UNJ-3B	AS5202-142-125F
-16	1.234	1.081	1.9200	60°	1.490	0.133	1.337	2.778	1.437	4.919	2.281	1-1/4	1/4 NPT	1-5/16-12 UNJ-3B	AS5202-162-125F
-20	1.547	1.133	2.2800	60°	1.803	0.133	1.650	3.202	1.745	5.703	2.688	1-1/2	1/4 NPT	1-5/8-12 UNJ-3B	AS5202-203-150F
-24	1.797	1.144	2.5700	60°	2.053	0.133	1.900	3.200	1.676	5.701	2.688	1-1/2	1/4 NPT	1-7/8-12 UNJ-3B	AS5202-243-150F
-32	2.421	1.386	3.4901	60°	2.679	0.133	2.526	3.701	1.802	6.202	2.688	1-1/2	1/4 NPT	2-1/2-12 UNJ-3B	AS5202-324-150F

A92: 34 - 44

A92: 3 - 5

A92: 29 - 30



M = Metric (mm)

I = Imperial (in)

SAE AS5202

Inserts



A92

T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			Super Cobalt AM200®	Carbide AM300®			
-4	AS5202-04Y-063F	Y	45YH-.390	4C1YP-.390	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	AS5202-05Z-063F	Z	45ZH-11.5	4C1ZP-11.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	AS5202-06Z-075F	Z	45ZH-.510	4C1ZP-.510	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-8	AS5202-080-075F	0	450H-17.5	4C10P-17.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	1	451H-20.5	4C11P-20.5	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	AS5202-122-125F	2	452H-25	4C12P-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	2	452H-1.109	4C12P-1.109	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	2	452H-1.234	4C12P-1.234	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	3	453H-1.547	1C53A-1.547	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	AS5202-243-150F	3	453H-1.797	1C53A-1.797	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	AS5202-324-150F	4	454H-2.421	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
		C5 Carbide TiAlN				
-4	AS5202-04Y-063F	AS5202-04-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	AS5202-05Z-063F	AS5202-05-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	AS5202-06Z-075F	AS5202-06-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	AS5202-080-075F	AS5202-08-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	AS5202-10-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-12	AS5202-122-125F	AS5202-12-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	AS5202-14-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	AS5202-16-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	AS5202-20-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-24	AS5202-243-150F	AS5202-24-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-32	AS5202-324-150F	AS5202-32-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

**Tightening torques are calculated with a friction coefficient of μ = 0.14 and develop 90% of ultimate yield strength.

A92: 34 - 44

Key on A92: 2

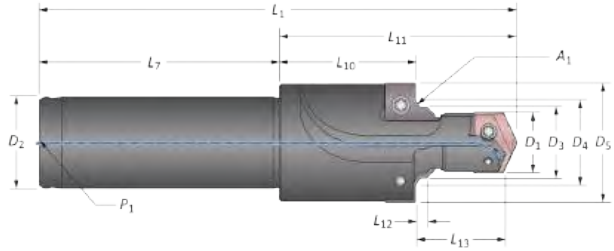
A92: 3 - 5

A92: 29 - 30

Y - 2 series T-A inserts sold in multiples of 2.
 3 - 4 series T-A inserts sold in multiples of 1.
 Port form inserts sold in multiples of 2.
 Insert screws sold in multiples of 10.

**AND10050**

Imperial Shank Holders

A92

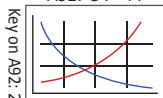
Metric (mm)

Tube Dash No.	Cutting			Seal Angle			Holder				Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	D ₃	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	9.80	17.02	22.23	60°	14.35	2.11	11.58	41.83	22.76	87.17	47.63	15.88	1/16 NPT	7/16-20 UNF-3B	AS5202-04Y-063F
-5	11.46	17.02	23.27	60°	15.95	2.11	13.18	41.83	22.40	87.17	47.63	15.88	1/16 NPT	1/2-20 UNF-3B	AS5202-05Z-063F
-6	12.85	18.36	24.87	60°	17.55	2.31	14.78	49.53	28.42	97.26	50.01	19.05	1/8 NPT	9/16-18 UNF-3B	AS5202-06Z-075F
-8	17.48	21.56	30.43	60°	22.30	2.59	19.58	53.77	28.58	101.07	50.01	19.05	1/8 NPT	3/4-16 UNF-3B	AS5202-080-075F
-10	20.35	24.05	34.39	60°	25.48	2.92	22.81	58.50	30.20	112.88	57.94	25.40	1/8 NPT	7/8-14 UNF-3B	AS5202-101-100F
-12	24.79	27.46	41.53	60°	31.52	3.38	27.64	70.59	37.95	124.97	57.94	31.75	1/4 NPT	1-1/16-12 UN-3B	AS5202-122-125F
-14	27.99	27.46	45.09	60°	34.67	3.38	30.78	70.56	37.21	124.94	57.94	31.75	1/4 NPT	1-3/16-12 UN-3B	AS5202-142-125F
-16	31.14	27.46	48.77	60°	37.85	3.38	33.96	70.56	36.50	124.94	57.94	31.75	1/4 NPT	1-5/16-12 UN-3B	AS5202-162-125F
-20	38.99	28.78	57.91	60°	45.80	3.38	41.91	81.33	44.32	144.86	68.28	38.10	1/4 NPT	1-5/8-12 UN-3B	AS5202-203-150F
-24	45.49	29.06	65.28	60°	52.15	3.38	48.26	81.28	42.57	144.81	68.28	38.10	1/4 NPT	1-7/8-12 UN-3B	AS5202-243-150F
-32	61.29	35.20	88.65	60°	68.05	3.38	64.16	94.01	45.77	157.53	68.28	38.10	1/4 NPT	2-1/2-12 UN-3B	AS5202-324-150F

Imperial (in)

Tube Dash No.	Cutting			Seal Angle			Holder				Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	D ₃	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	0.386	0.670	0.8750	60°	0.565	0.083	0.456	1.647	0.896	3.432	1.875	5/8	1/16 NPT	7/16-20 UNF-3B	AS5202-04Y-063F
-5	0.451	0.670	0.9160	60°	0.628	0.083	0.519	1.647	0.882	3.432	1.875	5/8	1/16 NPT	1/2-20 UNF-3B	AS5202-05Z-063F
-6	0.506	0.723	0.9790	60°	0.691	0.091	0.582	1.950	1.119	3.829	1.969	3/4	1/8 NPT	9/16-18 UNF-3B	AS5202-06Z-075F
-8	0.688	0.849	1.1981	60°	0.878	0.102	0.771	2.117	1.125	3.979	1.969	3/4	1/8 NPT	3/4-16 UNF-3B	AS5202-080-075F
-10	0.801	0.947	1.3540	60°	1.003	0.115	0.898	2.303	1.189	4.444	2.281	1	1/8 NPT	7/8-14 UNF-3B	AS5202-101-100F
-12	0.976	1.081	1.6350	60°	1.241	0.133	1.088	2.779	1.494	4.920	2.281	1-1/4	1/4 NPT	1-1/16-12 UN-3B	AS5202-122-125F
-14	1.102	1.081	1.7750	60°	1.365	0.133	1.212	2.778	1.465	4.919	2.281	1-1/4	1/4 NPT	1-3/16-12 UN-3B	AS5202-142-125F
-16	1.226	1.081	1.9200	60°	1.490	0.133	1.337	2.778	1.437	4.919	2.281	1-1/4	1/4 NPT	1-5/16-12 UN-3B	AS5202-162-125F
-20	1.535	1.133	2.2800	60°	1.803	0.133	1.650	3.202	1.745	5.703	2.688	1-1/2	1/4 NPT	1-5/8-12 UN-3B	AS5202-203-150F
-24	1.791	1.144	2.5700	60°	2.053	0.133	1.900	3.200	1.676	5.701	2.688	1-1/2	1/4 NPT	1-7/8-12 UN-3B	AS5202-243-150F
-32	2.413	1.386	3.4901	60°	2.679	0.133	2.526	3.701	1.802	6.202	2.688	1-1/2	1/4 NPT	2-1/2-12 UN-3B	AS5202-324-150F

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A92: 3 - 5

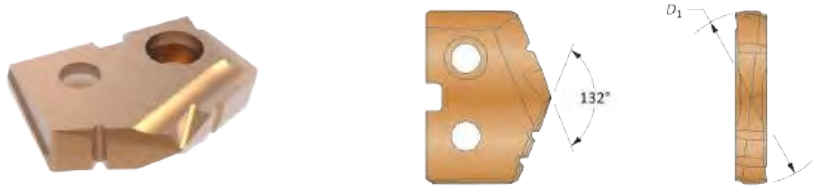


M = Metric (mm)

I = Imperial (in)

AND10050

Inserts



A92

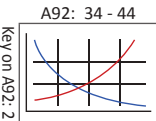
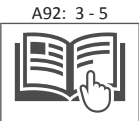
T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	AS5202-04Y-063F	Y	45YH-.386	4C1YP-.386	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	AS5202-05Z-063F	Z	45ZH-.451	4C1ZP-.451	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	AS5202-06Z-075F	Z	45ZH-.506	4C1ZP-.506	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-8	AS5202-080-075F	0	450H-0022	4C10P-0022	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	1	451H-.801	4C11P-.801	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	AS5202-122-125F	2	452H-.976	4C12P-.976	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	2	452H-28	4C12P-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	2	452H-1.226	4C12P-1.226	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	3	453H-39	1C53A-39	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	AS5202-243-150F	3	453H-45.5	1C53A-45.5	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	AS5202-324-150F	4	454H-2.413	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)

Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
		 C5 Carbide TiAlN				
-4	AS5202-04Y-063F	AS5202-04-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	AS5202-05Z-063F	AS5202-05-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	AS5202-06Z-075F	AS5202-06-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	AS5202-080-075F	AS5202-08-C5A		72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	AS5202-101-100F	AS5202-10-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-12	AS5202-122-125F	AS5202-12-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	AS5202-142-125F	AS5202-14-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	AS5202-162-125F	AS5202-16-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-20	AS5202-203-150F	AS5202-20-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-24	AS5202-243-150F	AS5202-24-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-32	AS5202-324-150F	AS5202-32-C5A		7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)

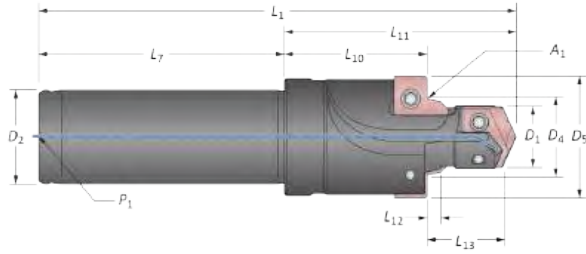
**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

**JDS-G173.1**

Metric Shank Holders

A92



Metric (mm)

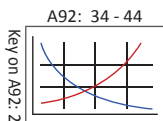
Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	10.50	18.0	24.00	15°	13.90	2.65	42.4	22.20	82.0	41.91	16	1/16 BSPT	M12 X 1.5	G1731-04Y-16FM
-5	12.50	18.0	26.01	15°	15.90	2.65	42.4	21.80	82.0	41.91	16	1/16 BSPT	M14 X 1.5	G1731-05Z-16FM
-6	14.50	19.0	29.00	15°	17.90	2.65	50.3	28.40	89.5	41.91	20	1/8 BSPT	M16 X 1.5	G1731-060-20FM
-8	16.50	21.0	30.98	15°	19.90	2.65	53.9	29.50	93.1	41.91	20	1/8 BSPT	M18 X 1.5	G1731-080-20FM
-10	20.50	22.0	34.96	15°	23.90	2.65	57.9	31.60	107.4	53.09	25	1/8 BSPT	M22 X 1.5	G1731-101-25FM
-12	25.00	27.0	41.00	15°	29.50	3.35	71.6	39.40	126.0	57.91	32	1/4 BSPT	M27 X 2	G1731-122-32FM
-14	28.00	27.0	44.01	15°	32.50	3.35	71.6	39.70	126.0	57.91	32	1/4 BSPT	M30 X 2	G1731-142-32FM
-16	31.00	27.0	50.00	15°	35.50	3.35	71.6	38.10	126.0	57.91	32	1/4 BSPT	M33 X 2	G1731-162-32FM
-18	36.00	27.0	54.96	15°	40.50	3.35	73.7	46.80	134.5	57.91	32	1/4 BSPT	M38 X 2	G1731-183-32FM*
-20	40.00	27.0	61.00	15°	44.50	3.35	73.7	45.90	134.5	57.91	32	1/4 BSPT	M42 X 2	G1731-203-32FM*
-24	46.00	29.0	67.02	15°	50.50	3.35	73.7	42.80	134.5	57.91	32	1/4 BSPT	M48 X 2	G1731-243-32FM*
-32	58.00	32.0	77.00	15°	62.50	3.35	103.2	58.40	154.1	57.91	32	1/4 BSPT	M60 X 2	G1731-324-32FM*
CV	18.50	20.0	32.95	15°	21.90	2.65	54.4	32.50	103.9	53.09	25	1/8 BSPT	M20 X 1.5	G1731-CV1-25FM

Imperial (in)

Tube Dash No.	Cutting			Seal Angle			Holder			Shank			Port Thread Size	Part No.
	D ₁	L ₁₃	D ₅	A ₁	D ₄	L ₁₂	L ₁₁	L ₁₀	L ₁	L ₇	D ₂	P ₁		
-4	0.413	0.709	0.9449	15°	0.547	0.104	1.669	0.874	3.228	1.650	0.630	1/16 BSPT	M12 X 1.5	G1731-04Y-16FM
-5	0.492	0.709	1.0240	15°	0.626	0.104	1.669	0.858	3.228	1.650	0.630	1/16 BSPT	M14 X 1.5	G1731-05Z-16FM
-6	0.571	0.748	1.1417	15°	0.705	0.104	1.980	1.118	3.524	1.650	0.787	1/8 BSPT	M16 X 1.5	G1731-060-20FM
-8	0.650	0.827	1.2197	15°	0.783	0.104	2.122	1.161	3.665	1.650	0.787	1/8 BSPT	M18 X 1.5	G1731-080-20FM
-10	0.807	0.866	1.3764	15°	0.941	0.104	2.280	1.244	4.228	2.090	0.984	1/8 BSPT	M22 X 1.5	G1731-101-25FM
-12	0.984	1.063	1.6142	15°	1.161	0.132	2.819	1.551	4.961	2.280	1.260	1/4 BSPT	M27 X 2	G1731-122-32FM
-14	1.102	1.063	1.7327	15°	1.280	0.132	2.819	1.563	4.961	2.280	1.260	1/4 BSPT	M30 X 2	G1731-142-32FM
-16	1.221	1.063	1.9685	15°	1.398	0.132	2.819	1.500	4.961	2.280	1.260	1/4 BSPT	M33 X 2	G1731-162-32FM
-18	1.417	1.063	2.1638	15°	1.594	0.132	2.902	1.843	5.295	2.280	1.260	1/4 BSPT	M38 X 2	G1731-183-32FM*
-20	1.575	1.063	2.4016	15°	1.752	0.132	2.902	1.807	5.295	2.280	1.260	1/4 BSPT	M42 X 2	G1731-203-32FM*
-24	1.811	1.142	2.6386	15°	1.988	0.132	2.902	1.685	5.295	2.280	1.260	1/4 BSPT	M48 X 2	G1731-243-32FM*
-32	2.284	1.260	3.0315	15°	2.461	0.132	4.063	2.299	6.067	2.280	1.260	1/4 BSPT	M60 X 2	G1731-324-32FM*
C**	0.728	0.787	1.2972	15°	0.862	0.104	2.142	1.280	4.091	2.090	0.984	1/8 BSPT	M20 X 1.5	G1731-CV1-25FM

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

****Cartridge cavity.**



A92: 34 - 44



A92: 31



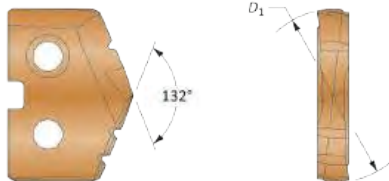
m = Metric (mm)

i = Imperial (in)



JDS-G173.1

Inserts



A92

T-A® / GEN2 T-A® Drill Inserts

See section A30 in A00-DRL for complete T-A insert details.

Tube Dash No.	AccuPort Part No.	T-A® Insert Series	Part No.		Insert Screw	Insert Driver	Admissible Tightening Torque**
			 Super Cobalt AM200®	 Carbide AM300®			
-4	G1731-04Y-16FM	Y	45YH-10.5	4C2YP-10.5	724-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-5	G1731-05Z-16FM	Z	45ZH-12.5	4C2ZP-12.5	7247-IP7-1	8IP-7	84 N-cm (7.4 in-lbs)
-6	G1731-06O-20FM	O	45OH-14.5	4C2OP-14.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	G1731-08O-20FM	O	45OH-16.5	4C2OP-16.5	72567-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	G1731-10I-25FM	1	45IH-20.5	4C2IP-20.5	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-12	G1731-12Z-32FM	2	45ZH-25	4C2ZP-25	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-14	G1731-14Z-32FM	2	45ZH-28	4C2ZP-28	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-16	G1731-16Z-32FM	2	45ZH-31	4C2ZP-31	7495-IP15-1	8IP-15	690 N-cm (61.0 in-lbs)
-18	G1731-18Z-32FM*	3	45ZH-36	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-20	G1731-20Z-32FM*	3	45ZH-40	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-24	G1731-24Z-32FM*	3	45ZH-46	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
-32	G1731-32Z-32FM*	4	45ZH-58	—	7514-IP20-1	8IP-20	1370 N-cm (121.3 in-lbs)
C***	G1731-CV1-25FM	1	45IH-18.5	4C2IP-18.5	739-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)

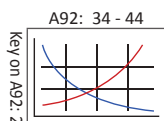
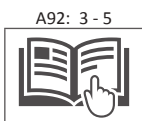
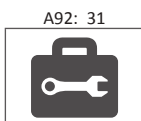
Port Form Drill Inserts

Tube Dash No.	AccuPort Part No.	Part No.	Insert Screw	Insert Driver	Admissible Tightening Torque**
		 C3 Carbide AM200®			
-4	G1731-04Y-16FM	G1731-01-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-5	G1731-05Z-16FM	G1731-01-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-6	G1731-06O-20FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-8	G1731-08O-20FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-10	G1731-10I-25FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-12	G1731-12Z-32FM	G1731-03-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-14	G1731-14Z-32FM	G1731-03-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)
-16	G1731-16Z-32FM	G1731-04-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-18	G1731-18Z-32FM*	G1731-04-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-20	G1731-20Z-32FM*	G1731-05-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-24	G1731-24Z-32FM*	G1731-05-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
-32	G1731-32Z-32FM*	G1731-06-C3H	7375-IP9-1	8IP-9	305 N-cm (27.0 in-lbs)
C***	G1731-CV1-25FM	G1731-02-C3H	72556-IP8-1	8IP-8	175 N-cm (15.5 in-lbs)

***NOTICE:** Due to the cutting forces generated by this tool, a mechanical chuck is required. Please contact Application Engineering with any questions: appeng@alliedmachine.com.

**Tightening torques are calculated with a friction coefficient of $\mu = 0.14$ and develop 90% of ultimate yield strength.

***Cartridge cavity.



Y - 2 series T-A inserts sold in multiples of 2.
 3 - 4 series T-A inserts sold in multiples of 1.
 Port form inserts sold in multiples of 2.
 Insert screws sold in multiples of 10.

**Port and Thread Finishing Kits**

J1926 | Metric | Ferrous Materials

A92

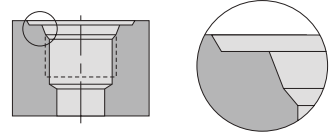
Replaceable Insert



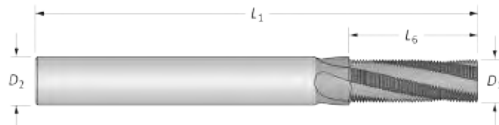
Solid Carbide



SAE J-1926-1 / ISO 11926-1

**Port and Thread Finishing Kits**

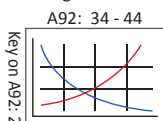
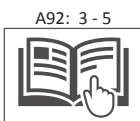
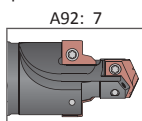
Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty		Qty		Qty		Qty	
				Super Cobalt AM200®		C5 Carbide TiAlN		AM210®		
Solid Carbide										
-2	J1926-02S-10CM	5/16-24 UNF-2B	1	—	—	—	—	TMUK0313-24M	1	ATKK02S-1926M
-3	J1926-03S-14CM	3/8-24 UNF-2B	1	—	—	—	—	TMUK0313-24M	1	ATKK03S-1926M
-4	J1926-04S-16CM	7/16-20 UNF-2B	1	—	—	—	—	TMAK0438-20M	1	ATKK04S-1926M
Replaceable Insert										
-4	J1926-04Y-16FM	7/16-20 UNF-2B	1	45YH-386	2	J1926-02-C5A	2	TMAK0438-20M	1	ATKK04-1926M
-5	J1926-05Z-16FM	1/2-20 UNF-2B	1	45ZH-11.5	2	J1926-03-C5A	2	TMAK0438-20M	1	ATKK05-1926M
-6	J1926-06O-20FM	9/16-18 UNF-2B	1	450H-13	2	J1926-03-C5A	2	TMAK0563-18M	1	ATKK06-1926M
-8	J1926-08O-20FM	3/4-16 UNF-2B	1	450H-0022	2	J1926-07-C5A	2	TMAK0750-16M	1	ATKK08-1926M
-10	J1926-10I-25FM	7/8-14 UNF-2B	1	451H-20.5	2	J1926-04-C5A	2	TMAK0875-14M	1	ATKK10-1926M
-12	J1926-12Z-32FM	1-1/16-12 UN-2B	1	452H-25	2	J1926-08-C5A	2	TMAK1063-12M	1	ATKK12-1926M
-14	J1926-14Z-32FM	1-3/16-12 UN-2B	1	452H-28	2	J1926-08-C5A	2	TMAK1063-12M	1	ATKK14-1926M
-16	J1926-16Z-32FM	1-5/16-12 UN-2B	1	452H-1.231	2	J1926-09-C5A	2	TMAK1063-12M	1	ATKK16-1926M
-20	J1926-20Z-32FM	1-5/8-12 UN-2B	1	453H-39	1	J1926-10-C5A	2	TMAK1063-12M	1	ATKK20-1926M
-24	J1926-24Z-32FM	1-7/8-12 UN-2B	1	453H-45.5	1	J1926-11-C5A	2	TMAK1063-12M	1	ATKK24-1926M
-32	J1926-32Z-32FM	2-1/2-12 UN-2B	1	454H-61.5	1	J1926-12-C5A	2	TMAK1063-12M	1	ATKK32-1926M

**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-2 to -3	24	5.95	16.00	6.00	58.00	3	TMUK0313-24M
-4 to -5	20	8.51	15.24	10.00	73.00	4	TMAK0438-20M
-6	18	9.40	16.92	10.00	73.00	4	TMAK0563-18M
-8	16	11.94	19.05	12.00	84.00	4	TMAK0750-16M
-10	14	11.94	21.77	12.00	84.00	4	TMAK0875-14M
-12 to -32	12	11.94	23.29	12.00	84.00	4	TMAK1063-12M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

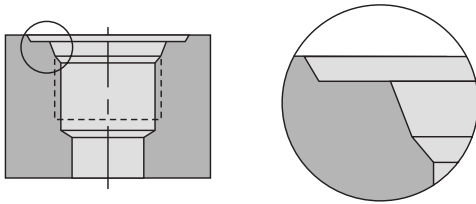


M = Metric (mm)
I = Imperial (in)



Port and Thread Finishing Kits

J1926 | Metric | Nonferrous Materials

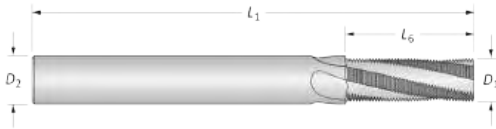


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Port and Thread Finishing Kits

SAE J-1926-1 / ISO 11926-1

Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	Super Cobalt TiN	Qty	C5 Carbide TiAlN	Qty	Uncoated	Qty	
-4	J1926-04Y-16FM	7/16-20 UNF-2B	1	15YT-386	2	J1926-02-C5A	2	TMAU0438-20M	1	ATKU04-1926M
-5	J1926-05Z-16FM	1/2-20 UNF-2B	1	15ZT-11.5	2	J1926-03-C5A	2	TMAU0438-20M	1	ATKU05-1926M
-6	J1926-06O-20FM	9/16-18 UNF-2B	1	15OT-13	2	J1926-03-C5A	2	TMAU0563-18M	1	ATKU06-1926M
-8	J1926-08O-20FM	3/4-16 UNF-2B	1	15OT-0022	2	J1926-07-C5A	2	TMAU0750-16M	1	ATKU08-1926M
-10	J1926-10I-25FM	7/8-14 UNF-2B	1	15IT-20.5	2	J1926-04-C5A	2	TMAU0875-14M	1	ATKU10-1926M
-12	J1926-12Z-32FM	1-1/16-12 UN-2B	1	15ZT-25	2	J1926-08-C5A	2	TMAU1063-12M	1	ATKU12-1926M
-14	J1926-14Z-32FM	1-3/16-12 UN-2B	1	15ZT-28	2	J1926-08-C5A	2	TMAU1063-12M	1	ATKU14-1926M
-16	J1926-16Z-32FM	1-5/16-12 UN-2B	1	15ZT-1.231	2	J1926-09-C5A	2	TMAU1063-12M	1	ATKU16-1926M
-20	J1926-20Z-32FM	1-5/8-12 UN-2B	1	453T-39	1	J1926-10-C5A	2	TMAU1063-12M	1	ATKU20-1926M
-24	J1926-24Z-32FM	1-7/8-12 UN-2B	1	453T-45.5	1	J1926-11-C5A	2	TMAU1063-12M	1	ATKU24-1926M
-32	J1926-32Z-32FM	2-1/2-12 UN-2B	1	454T-61.5	1	J1926-12-C5A	2	TMAU1063-12M	1	ATKU32-1926M

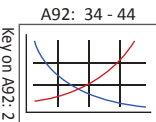
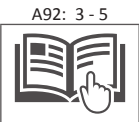
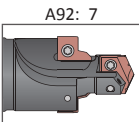


AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4 to -5	20	8.51	15.24	10.00	73.00	4	TMAU0438-20M
-6	18	9.40	16.92	10.00	73.00	4	TMAU0563-18M
-8	16	11.94	19.05	12.00	84.00	4	TMAU0750-16M
-10	14	11.94	21.77	12.00	84.00	4	TMAU0875-14M
-12 to -32	12	11.94	23.29	12.00	84.00	4	TMAU1063-12M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

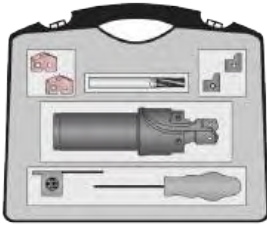
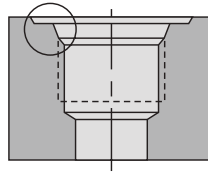
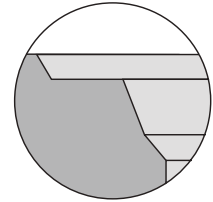


Y - 2 series T-A inserts sold in multiples of 2.
3 - 4 series T-A inserts sold in multiples of 1.
Port form inserts sold in multiples of 2.
Insert screws sold in multiples of 10.

**Port and Thread Finishing Kits**

J1926 | Imperial | Ferrous Materials

A92



SAE J-1926-1 / ISO 11926-1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	Super Cobalt AM200®	Qty	C5 Carbide TiAlN	Qty	AM210®	Qty	
-4	J1926-04Y-063F	7/16-20 UNF-2B	1	45YH-.386	2	J1926-02-C5A	2	TMAK0438-20	1	ATKK04-1926
-5	J1926-05Z-063F	1/2-20 UNF-2B	1	45ZH-11.5	2	J1926-03-C5A	2	TMAK0438-20	1	ATKK05-1926
-6	J1926-060-075F	9/16-18 UNF-2B	1	450H-13	2	J1926-03-C5A	2	TMAK0563-18	1	ATKK06-1926
-8	J1926-080-075F	3/4-16 UNF-2B	1	450H-0022	2	J1926-07-C5A	2	TMAK0750-16	1	ATKK08-1926
-10	J1926-101-100F	7/8-14 UNF-2B	1	451H-20.5	2	J1926-04-C5A	2	TMAK0875-14	1	ATKK10-1926
-12	J1926-122-125F	1-1/16-12 UN-2B	1	452H-25	2	J1926-08-C5A	2	TMAK1063-12	1	ATKK12-1926
-14	J1926-142-125F	1-3/16-12 UN-2B	1	452H-28	2	J1926-08-C5A	2	TMAK1063-12	1	ATKK14-1926
-16	J1926-162-125F	1-5/16-12 UN-2B	1	452H-1.231	2	J1926-09-C5A	2	TMAK1063-12	1	ATKK16-1926
-20	J1926-203-150F	1-5/8-12 UN-2B	1	453H-39	1	J1926-10-C5A	2	TMAK1063-12	1	ATKK20-1926
-24	J1926-243-150F	1-7/8-12 UN-2B	1	453H-45.5	1	J1926-11-C5A	2	TMAK1063-12	1	ATKK24-1926
-32	J1926-324-150F	2-1/2-12 UN-2B	1	454H-61.5	1	J1926-12-C5A	2	TMAK1063-12	1	ATKK32-1926

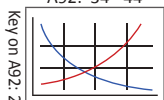
**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (in)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAK0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAK0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAK0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAK0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAK1063-12

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

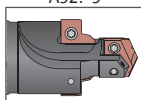
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A92: 3 - 5



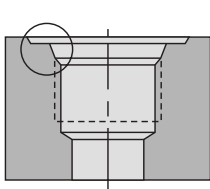
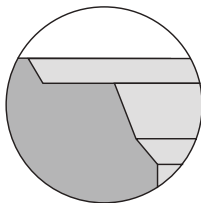
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Port and Thread Finishing Kits

J1926 | Imperial | Nonferrous Materials

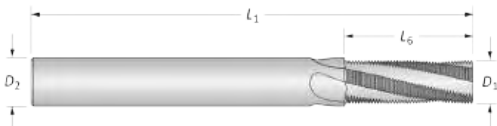


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Port and Thread Finishing Kits

SAE J-1926-1 / ISO 11926-1

Tube Dash No.	AccuPort 432			T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	 Super Cobalt TiN	Qty	 C5 Carbide TiAlN	Qty	 Uncoated	Qty	
-4	J1926-04Y-063F	7/16-20 UNF-2B	1	15YT-386	2	J1926-02-C5A	2	TMAU0438-20	1	ATKU04-1926
-5	J1926-05Z-063F	1/2-20 UNF-2B	1	15ZT-11.5	2	J1926-03-C5A	2	TMAU0438-20	1	ATKU05-1926
-6	J1926-060-075F	9/16-18 UNF-2B	1	150T-13	2	J1926-03-C5A	2	TMAU0563-18	1	ATKU06-1926
-8	J1926-080-075F	3/4-16 UNF-2B	1	150T-0022	2	J1926-07-C5A	2	TMAU0750-16	1	ATKU08-1926
-10	J1926-101-100F	7/8-14 UNF-2B	1	151T-20.5	2	J1926-04-C5A	2	TMAU0875-14	1	ATKU10-1926
-12	J1926-122-125F	1-1/16-12 UN-2B	1	152T-25	2	J1926-08-C5A	2	TMAU1063-12	1	ATKU12-1926
-14	J1926-142-125F	1-3/16-12 UN-2B	1	152T-28	2	J1926-08-C5A	2	TMAU1063-12	1	ATKU14-1926
-16	J1926-162-125F	1-5/16-12 UN-2B	1	152T-1.231	2	J1926-09-C5A	2	TMAU1063-12	1	ATKU16-1926
-20	J1926-203-150F	1-5/8-12 UN-2B	1	453T-39	1	J1926-10-C5A	2	TMAU1063-12	1	ATKU20-1926
-24	J1926-243-150F	1-7/8-12 UN-2B	1	453T-45.5	1	J1926-11-C5A	2	TMAU1063-12	1	ATKU24-1926
-32	J1926-324-150F	2-1/2-12 UN-2B	1	454T-61.5	1	J1926-12-C5A	2	TMAU1063-12	1	ATKU32-1926

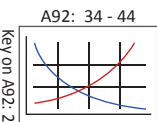
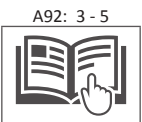
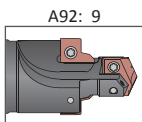


AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAU0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAU0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAU0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAU0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAU1063-12

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

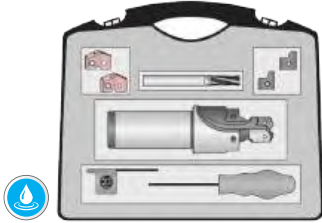


**Port and Thread Finishing Kits**

I6149 | No ID Ridge | Ferrous Materials

A92

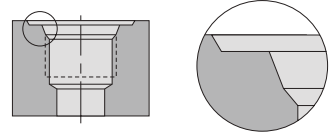
Replaceable Insert



Solid Carbide



ISO 6149-1:2006 / SAE J-2244/1

**Port and Thread Finishing Kits**

Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty		Qty		Qty		Qty	
				Super Cobalt AM200®		C5 Carbide TiAlN		AM210®		
Solid Carbide										
-2	I6149-02S-10CM	M8 X 1	1	—	—	—	—	TMMK0600-100M	1	ATKK02S-6149M
-3	I6149-03S-14CM	M10 X 1	1	—	—	—	—	TMMK0600-100M	1	ATKK03S-6149M
-4	I6149-04S-16CM	M12 X 1.5	1	—	—	—	—	TMMK1000-150M	1	ATKK04S-6149M
Replaceable Insert										
-4	I6149-04RY-16FM	M12 X 1.5	1	45YH-10.5	2	I6149-04-CSA	2	TMMK1000-150M	1	ATKK04-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	45ZH-12.5	2	I6149-04-CSA	2	TMMK1400-150M	1	ATKK05-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	450H-14.5	2	I6149-06-CSA	2	TMMK1400-150M	1	ATKK06-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	450H-16.5	2	I6149-06-CSA	2	TMMK1800-150M	1	ATKK08-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	451H-20.5	2	I6149-04-CSA	2	TMMK1800-150M	1	ATKK10-6149
-12	I6149-12R2-32FM	M27 X 2	1	452H-25	2	I6149-12-CSA	2	TMMK2000-200M	1	ATKK12-6149
-14	I6149-14R2-32FM	M30 X 2	1	452H-28	2	I6149-14-CSA	2	TMMK2000-200M	1	ATKK14-6149
-16	I6149-16R2-32FM	M33 X 2	1	452H-31	2	I6149-16-CSA	2	TMMK2000-200M	1	ATKK16-6149
-20	I6149-20R3-32FM	M42 X 2	1	453H-40	1	I6149-20-CSA	2	TMMK2000-200M	1	ATKK20-6149
-24	I6149-24R3-32FM	M48 X 2	1	453H-46	1	I6149-24-CSA	2	TMMK2000-200M	1	ATKK24-6149
-32	I6149-32R4-32FM	M60 X 2	1	454H-58	1	I6149-32-CSA	2	TMMK2000-200M	1	ATKK32-6149

**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D ₁	L ₆	D ₂	L ₁		
-2 to -3	1.00	4.60	12.00	6.00	58.00	3	TMMK0600-100M
-4	1.50	7.40	19.50	8.00	64.00	4	TMMK1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMK1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMK1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMK2000-200M

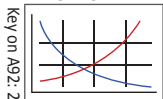
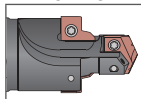
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44

A92: 3 - 5

A92: 13



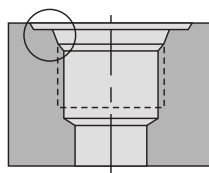
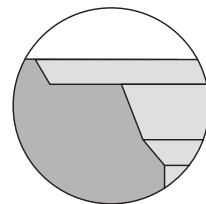
A92: 25

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Port and Thread Finishing Kits

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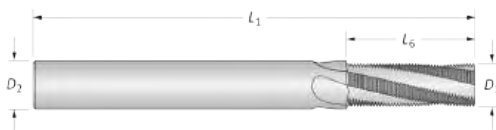


A92

Port and Thread Finishing Kits

ISO 6149-1:2006 / SAE J-2244/1

Tube Dash No.	AccuPort 432			T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	Super Cobalt TiN	Qty	CS Carbide TiAlN	Qty	Uncoated	Qty	
-4	I6149-04RY-16FM	M12 X 1.5	1	15YT-10.5	2	I6149-04-CSA	2	TMMU1000-150M	1	ATKU04-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	15ZT-12.5	2	I6149-04-CSA	2	TMMU1400-150M	1	ATKU05-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	150T-14.5	2	I6149-06-CSA	2	TMMU1400-150M	1	ATKU06-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	150T-16.5	2	I6149-06-CSA	2	TMMU1800-150M	1	ATKU08-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	151T-20.5	2	I6149-04-CSA	2	TMMU1800-150M	1	ATKU10-6149
-12	I6149-12R2-32FM	M27 X 2	1	152T-25	2	I6149-12-CSA	2	TMMU2000-200M	1	ATKU12-6149
-14	I6149-14R2-32FM	M30 X 2	1	152T-28	2	I6149-14-CSA	2	TMMU2000-200M	1	ATKU14-6149
-16	I6149-16R2-32FM	M33 X 2	1	152T-31	2	I6149-16-CSA	2	TMMU2000-200M	1	ATKU16-6149
-20	I6149-20R3-32FM	M42 X 2	1	453T-40	1	I6149-20-CSA	2	TMMU2000-200M	1	ATKU20-6149
-24	I6149-24R3-32FM	M48 X 2	1	453T-46	1	I6149-24-CSA	2	TMMU2000-200M	1	ATKU24-6149
-32	I6149-32R4-32FM	M60 X 2	1	454T-58	1	I6149-32-CSA	2	TMMU2000-200M	1	ATKU32-6149



AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4	1.50	7.40	19.50	8.00	64.00	4	TMMU1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMU1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMU1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMU2000-200M

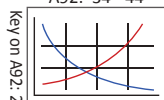
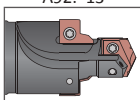
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44

A92: 3 - 5

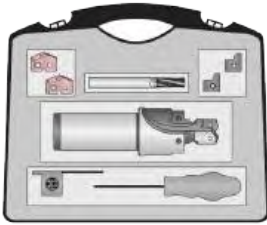
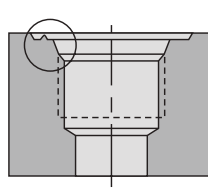
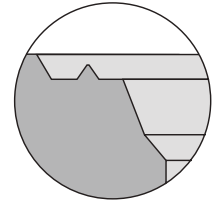
A92: 13



**Port and Thread Finishing Kits**

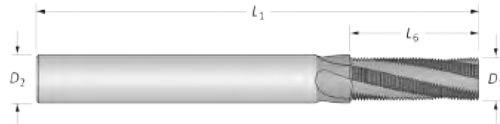
I6149 | ID Ridge | Ferrous Materials

A92

**Port and Thread Finishing Kits**

ISO 6149-1:2006 / SAE J-2244/1

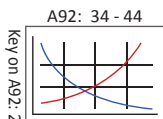
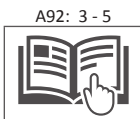
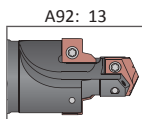
Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	 Super Cobalt AM200®	Qty	 CS Carbide TiAlN	Qty	 AM210®	Qty	
-4	I6149-04RY-16FM	M12 X 1.5	1	45YH-10.5	2	I6149-04R-CSA	2	TMMK1000-150M	1	ATKK04R-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	45ZH-12.5	2	I6149-04R-CSA	2	TMMK1400-150M	1	ATKK05R-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	450H-14.5	2	I6149-06R-CSA	2	TMMK1400-150M	1	ATKK06R-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	450H-16.5	2	I6149-06R-CSA	2	TMMK1800-150M	1	ATKK08R-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	451H-20.5	2	I6149-04R-CSA	2	TMMK1800-150M	1	ATKK10R-6149
-12	I6149-12R2-32FM	M27 X 2	1	452H-25	2	I6149-12R-CSA	2	TMMK2000-200M	1	ATKK12R-6149
-14	I6149-14R2-32FM	M30 X 2	1	452H-28	2	I6149-14R-CSA	2	TMMK2000-200M	1	ATKK14R-6149
-16	I6149-16R2-32FM	M33 X 2	1	452H-31	2	I6149-16R-CSA	2	TMMK2000-200M	1	ATKK16R-6149
-20	I6149-20R3-32FM	M42 X 2	1	453H-40	1	I6149-20R-CSA	2	TMMK2000-200M	1	ATKK20R-6149
-24	I6149-24R3-32FM	M48 X 2	1	453H-46	1	I6149-24R-CSA	2	TMMK2000-200M	1	ATKK24R-6149
-32	I6149-32R4-32FM	M60 X 2	1	454H-58	1	I6149-32R-CSA	2	TMMK2000-200M	1	ATKK32R-6149

**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4	1.50	7.40	19.50	8.00	64.00	4	TMMK1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMK1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMK1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMK2000-200M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

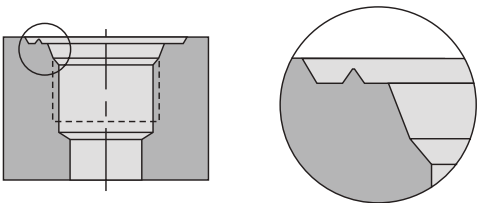
The length of cut allows full thread with one pass. Conforms with J1926 and SAE A55202 port form specifications.





Port and Thread Finishing Kits

16149 | ID Ridge | Nonferrous Materials

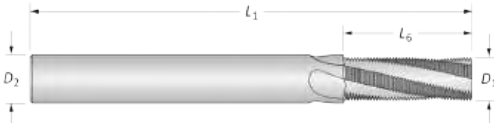


A92

Port and Thread Finishing Kits

ISO 6149-1:2006 / SAE J-2244/1

Tube Dash No.	AccuPort 432			T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	 Super Cobalt TiN	Qty	 CS Carbide TiAlN	Qty	 Uncoated	Qty	
-4	I6149-04RY-16FM	M12 X 1.5	1	15YT-10.5	2	I6149-04R-CSA	2	TMMU1000-150M	1	ATKU04R-6149
-5	I6149-05RZ-16FM	M14 X 1.5	1	15ZT-12.5	2	I6149-04R-CSA	2	TMMU1400-150M	1	ATKU05R-6149
-6	I6149-06R0-20FM	M16 X 1.5	1	150T-14.5	2	I6149-06R-CSA	2	TMMU1400-150M	1	ATKU06R-6149
-8	I6149-08R0-20FM	M18 X 1.5	1	150T-16.5	2	I6149-06R-CSA	2	TMMU1800-150M	1	ATKU08R-6149
-10	I6149-10R1-25FM	M22 X 1.5	1	151T-20.5	2	I6149-04R-CSA	2	TMMU1800-150M	1	ATKU10R-6149
-12	I6149-12R2-32FM	M27 X 2	1	152T-25	2	I6149-12R-CSA	2	TMMU2000-200M	1	ATKU12R-6149
-14	I6149-14R2-32FM	M30 X 2	1	152T-28	2	I6149-14R-CSA	2	TMMU2000-200M	1	ATKU14R-6149
-16	I6149-16R2-32FM	M33 X 2	1	152T-31	2	I6149-16R-CSA	2	TMMU2000-200M	1	ATKU16R-6149
-20	I6149-20R3-32FM	M42 X 2	1	453T-40	1	I6149-20R-CSA	2	TMMU2000-200M	1	ATKU20R-6149
-24	I6149-24R3-32FM	M48 X 2	1	453T-46	1	I6149-24R-CSA	2	TMMU2000-200M	1	ATKU24R-6149
-32	I6149-32R4-32FM	M60 X 2	1	454T-58	1	I6149-32R-CSA	2	TMMU2000-200M	1	ATKU32R-6149

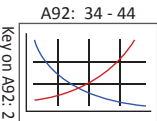
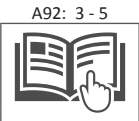
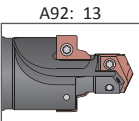


AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4	1.50	7.40	19.50	8.00	64.00	4	TMMU1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMU1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMU1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMU2000-200M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE A55202 port form specifications.

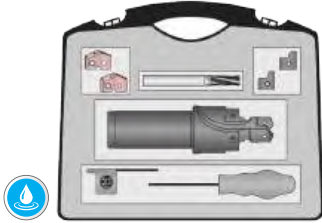


**Port and Thread Finishing Kits**

AS5202 | Ferrous Materials

A92

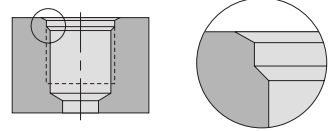
Replaceable Insert



Solid Carbide



SAE AS5202

**Port and Thread Finishing Kits**

Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty		Qty		Qty		Qty	
				Super Cobalt AM200®		C5 Carbide TiAlN		AM210®		
Solid Carbide										
-2	AS5202-02S-10CM	5/16-20 UNJF-3B	1	—	—	—	—	TMUK0313-24M	1	ATKK02S-5202M
-3	AS5202-03S-14CM	3/8-24 UNJF-3B	1	—	—	—	—	TMUK0313-24M	1	ATKK03S-5202M
-4	AS5202-04S-16CM	7/16-20 UNJF-3B	1	—	—	—	—	TMAK0438-20M	1	ATKK04S-5202M
Replaceable Insert										
-4	AS5202-04Y-063F	7/16-20 UNJF-3B	1	45YH-.390	2	AS5202-04-C5A	2	TMAK0438-20	1	ATKK04-5202
-5	AS5202-05Z-063F	1/2-20 UNJF-3B	1	45ZH-11.5	2	AS5202-05-C5A	2	TMAK0438-20	1	ATKK05-5202
-6	AS5202-06Z-075F	9/16-18 UNJF-3B	1	45ZH-.510	2	AS5202-06-C5A	2	TMAK0563-18	1	ATKK06-5202
-8	AS5202-080-075F	3/4-16 UNJF-3B	1	450H-17.5	2	AS5202-08-C5A	2	TMAK0750-16	1	ATKK08-5202
-10	AS5202-101-100F	7/8-14 UNJF-3B	1	451H-20.5	2	AS5202-10-C5A	2	TMAK0875-14	1	ATKK10-5202
-12	AS5202-122-125F	1-1/16-12 UNJ-3B	1	452H-25	2	AS5202-12-C5A	2	TMAK1063-12	1	ATKK12-5202
-14	AS5202-142-125F	1-3/16-12 UNJ-3B	1	452H-1.109	2	AS5202-14-C5A	2	TMAK1063-12	1	ATKK14-5202
-16	AS5202-162-125F	1-5/16-12 UNJ-3B	1	452H-1.234	2	AS5202-16-C5A	2	TMAK1063-12	1	ATKK16-5202
-20	AS5202-203-150F	1-5/8-12 UNJ-3B	1	453H-1.547	1	AS5202-20-C5A	2	TMAK1063-12	1	ATKK20-5202
-24	AS5202-243-150F	1-7/8-12 UNJ-3B	1	453H-1.797	1	AS5202-24-C5A	2	TMAK1063-12	1	ATKK24-5202
-32	AS5202-324-150F	2-1/2-12 UNJ-3B	1	454H-61.5	1	AS5202-32-C5A	2	TMAK1063-12	1	ATKK32-5202

**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (in)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-2 to -3	24	0.234	0.630	6.00 mm	2.283	3	TMUK0313-24M
-4*	20	0.335	0.600	10.00 mm	2.874	4	TMAK0438-20M
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAK0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAK0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAK0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAK0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAK1063-12

* -4 solid carbide AccuPort.

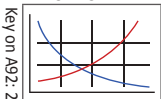
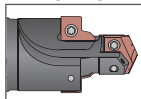
AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.

A92: 34 - 44

A92: 3 - 5

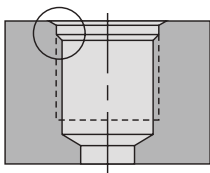
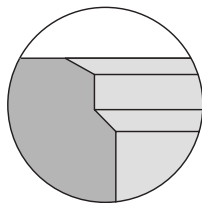
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Port and Thread Finishing Kits

AS5202 | Nonferrous Materials

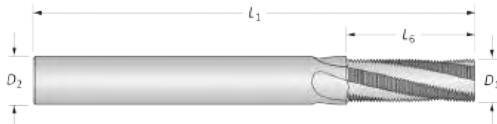


A92

Port and Thread Finishing Kits

SAE AS5202

Tube Dash No.	AccuPort 432			T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	 Super Cobalt TiN	Qty	 C5 Carbide TiAlN	Qty	 Uncoated	Qty	
-4	AS5202-04Y-063F	7/16-20 UNJF-3B	1	15YT-.390	2	AS5202-04-C5A	2	TMAU0438-20	1	ATKU04-5202
-5	AS5202-05Z-063F	1/2-20 UNJF-3B	1	15ZT-11.5	2	AS5202-05-C5A	2	TMAU0438-20	1	ATKU05-5202
-6	AS5202-06Z-075F	9/16-18 UNJF-3B	1	15ZT-.510	2	AS5202-06-C5A	2	TMAU0563-18	1	ATKU06-5202
-8	AS5202-08O-075F	3/4-16 UNJF-3B	1	15OT-17.5	2	AS5202-08-C5A	2	TMAU0750-16	1	ATKU08-5202
-10	AS5202-10I-100F	7/8-14 UNJF-3B	1	15IT-20.5	2	AS5202-10-C5A	2	TMAU0875-14	1	ATKU10-5202
-12	AS5202-12Z-125F	1-1/16-12 UNJ-3B	1	15ZT-25	2	AS5202-12-C5A	2	TMAU1063-12	1	ATKU12-5202
-14	AS5202-14Z-125F	1-3/16-12 UNJ-3B	1	15ZT-1.109	2	AS5202-14-C5A	2	TMAU1063-12	1	ATKU14-5202
-16	AS5202-16Z-125F	1-5/16-12 UNJ-3B	1	15ZT-1.234	2	AS5202-16-C5A	2	TMAU1063-12	1	ATKU16-5202
-20	AS5202-20I-150F	1-5/8-12 UNJ-3B	1	453T-1.547	1	AS5202-20-C5A	2	TMAU1063-12	1	ATKU20-5202
-24	AS5202-24I-150F	1-7/8-12 UNJ-3B	1	453T-1.797	1	AS5202-24-C5A	2	TMAU1063-12	1	ATKU24-5202
-32	AS5202-32I-150F	2-1/2-12 UNJ-3B	1	454T-61.5	1	AS5202-32-C5A	2	TMAU1063-12	1	ATKU32-5202

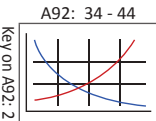
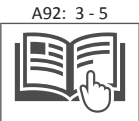
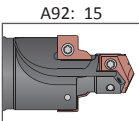


AccuThread® Port Specific Solid Carbide Thread Mills

Port Size	Pitch	Thread Mill (in)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4 to -5	20	0.335	0.600	0.375	3.5	4	TMAU0438-20
-6	18	0.370	0.666	0.375	3.5	4	TMAU0563-18
-8	16	0.495	0.750	0.500	3.5	4	TMAU0750-16
-10	14	0.495	0.857	0.500	3.5	4	TMAU0875-14
-12 to -32	12	0.495	0.917	0.500	3.5	4	TMAU1063-12

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

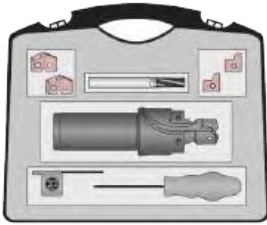
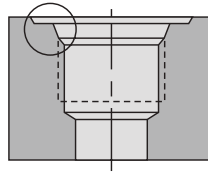
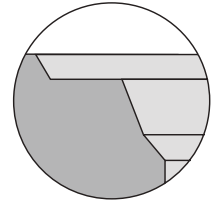
The length of cut allows full thread with one pass. Conforms with J1926 and SAE AS5202 port form specifications.



**Port and Thread Finishing Kits**

G1731 | Ferrous Materials

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JDS-G173.1

Port and Thread Finishing Kits

Tube Dash No.	AccuPort 432			GEN2 T-A® Insert		Port Form Insert		AccuThread® Thread Mill		Kit Part No.
	Part No.	Port Thread Size	Qty	Super Cobalt AM200®	Qty	C5 Carbide AM200	Qty	AM210®	Qty	
-4	G1731-04Y-16FM	M12 X 1.5	1	45YH-10.5	2	G1731-01-C3H	2	TMMK1000-150M	1	ATKK04-G1731
-5	G1731-05Z-16FM	M14 X 1.5	1	45ZH-12.5	2	G1731-01-C3H	2	TMMK1400-150M	1	ATKK05-G1731
-6	G1731-06O-20FM	M16 X 1.5	1	45OH-14.5	2	G1731-02-C3H	2	TMMK1400-150M	1	ATKK06-G1731
-8	G1731-08O-20FM	M18 X 1.5	1	45OH-16.5	2	G1731-02-C3H	2	TMMK1800-150M	1	ATKK08-G1731
-10	G1731-10I-25FM	M22 X 1.5	1	45IH-20.5	2	G1731-02-C3H	2	TMMK1800-150M	1	ATKK10-G1731
-12	G1731-12Z-32FM	M27 X 2	1	45ZH-25	2	G1731-03-C3H	2	TMMK2000-200M	1	ATKK12-G1731
-14	G1731-14Z-32FM	M30 X 2	1	45ZH-28	2	G1731-03-C3H	2	TMMK2000-200M	1	ATKK14-G1731
-16	G1731-16Z-32FM	M33 X 2	1	45ZH-31	2	G1731-04-C3H	2	TMMK2000-200M	1	ATKK16-G1731
-18	G1731-18Z-32FM	M38 X 2	1	45ZH-36	1	G1731-04-C3H	2	TMMK2000-200M	1	ATKK18-G1731
-20	G1731-20Z-32FM	M42 X 2	1	45ZH-40	1	G1731-05-C3H	2	TMMK2000-200M	1	ATKK20-G1731
-24	G1731-24Z-32FM	M48 X 2	1	45ZH-46	1	G1731-05-C3H	2	TMMK2000-200M	1	ATKK24-G1731
-32	G1731-32Z-32FM	M60 X 2	1	45ZH-58	1	G1731-06-C3H	2	TMMK2000-200M	1	ATKK32-G1731

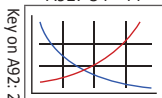
**AccuThread® Port Specific Solid Carbide Thread Mills**

Port Size	Pitch	Thread Mill (mm)				Flutes	Part No.
		D_1	L_6	D_2	L_1		
-4	1.50	7.40	19.50	8.00	64.00	4	TMMK1000-150M
-5 to -6	1.50	10.90	27.00	12.00	84.00	4	TMMK1400-150M
-8 to -10	1.50	11.90	31.50	12.00	84.00	4	TMMK1800-150M
-12 to -32	2.00	11.95	30.00	12.00	84.00	4	TMMK2000-200M

AccuPort 432 specific thread mills - International Unified Series (UN) manufactured specifically for use with AccuPort 432 hydraulic port forms.

The length of cut allows full thread with one pass. Conforms with J1926 and SAE A55202 port form specifications.

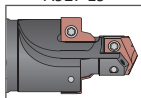
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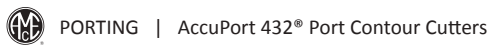
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Notes

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Notes

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This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.



Recommended Drilling Data | Metric (mm)

SOLID CARBIDE

ISO	Material	Hardness (BHN)	Geometry	Speed (m/min)	Feed Rate (mm/rev) by Tube Size		
					Tube No.: 2	Tube No.: 3	Tube No.: 4
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100-150	HPS	150	0.23	0.30	0.33
		150-200	HPS	145	0.22	0.28	0.30
		200-250	HPS	135	0.20	0.25	0.28
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPS	140	0.23	0.30	0.34
		125-175	HPS	135	0.22	0.29	0.33
		175-225	HPS	130	0.20	0.28	0.32
		225-275	HPS	125	0.20	0.25	0.30
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPS	135	0.19	0.28	0.30
		175-225	HPS	130	0.18	0.27	0.29
		225-275	HPS	120	0.18	0.27	0.28
		275-325	HPS	115	0.17	0.25	0.28
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPS	125	0.19	0.27	0.29
		175-225	HPS	115	0.18	0.25	0.28
		225-275	HPS	110	0.17	0.24	0.27
		275-325	HPS	105	0.15	0.23	0.25
	High-Strength Alloy 4340, 4330V, 300M, etc.	325-375	HPS	100	0.14	0.23	0.25
		225-300	HPS	105	0.17	0.24	0.27
		300-350	HPS	100	0.15	0.23	0.25
	Structural Steel A36, A285, A516, etc.	350-400	HPS	75	0.14	0.20	0.22
		100-150	HPS	135	0.20	0.30	0.33
		150-250	HPS	130	0.18	0.28	0.30
	Tool Steel H-13, H-21, A-4, S-3, etc.	250-350	HPS	120	0.17	0.24	0.27
		150-200	HPS	80	0.15	0.24	0.25
M	Stainless Steel 400 Series 416, 420, etc.	200-250	HPS	75	0.14	0.22	0.23
		185-275	HPS	75	0.17	0.23	0.24
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	275-350	HPS	60	0.14	0.20	0.22
		135-185	HPS	60	0.13	0.18	0.19
	Super Duplex Stainless Steel	185-275	HPS	55	0.10	0.15	0.17
K	SG / Nodular Cast Iron	135-185	HPS	45	0.13	0.18	0.18
		185-275	HPS	40	0.10	0.14	0.14
		120-150	HPS	150	0.28	0.36	0.39
		150-200	HPS	150	0.25	0.33	0.36
		200-220	HPS	145	0.23	0.30	0.33
	Gray/White Cast Iron	220-260	HPS	140	0.23	0.30	0.33
		260-320	HPS	125	0.22	0.29	0.32
		120-150	HPS	165	0.30	0.39	0.42
		150-200	HPS	160	0.28	0.37	0.39
		200-220	HPS	155	0.25	0.33	0.36
N	Cast Aluminum	220-260	HPS	145	0.25	0.33	0.36
		260-320	HPS	135	0.24	0.32	0.34
	Wrought Aluminum	120-150	HPS	290	0.25	0.37	0.41
		150-200	HPS	230	0.23	0.34	0.39
	Aluminum Bronze	180	HPS	335	0.28	0.37	0.43
		180	HPS	290	0.25	0.34	0.39
	Brass	100-200	HPS	115	0.18	0.23	0.25
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	200-250	HPS	95	0.15	0.18	0.20
		100	HPS	230	0.23	0.29	0.32
	Titanium Alloy	60	HPS	155	0.08	0.10	0.10
		140-220	HPS	35	0.10	0.14	0.15
	Aerospace Alloy S82	220-310	HPS	40	0.09	0.11	0.13
		140-220	HPS	45	0.10	0.15	0.15
H	Wear Plate Hardox®, AR400, T-1, etc.	220-310	HPS	35	0.09	0.13	0.14
		185-275	HPS	50	0.10	0.11	0.14
		275-350	HPS	40	0.09	0.10	0.11
	Hardened Steel	300-400	HPS	50	0.08	0.10	0.13
		400-500	HPS	45	0.08	0.10	0.10

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Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Solid Carbide Port Tool

- Speed and feed rates are based off the pilot diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

**Recommended Drilling Data | Metric (mm)****REPLACEABLE INSERT | HIGH-SPEED STEEL**

A92

ISO	Material	Hardness (BHN)	Grade	Speed (m/min)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	61	85	79	92
		150 - 200	HSS	55	79	72	87
		200 - 250	HSS	49	73	64	81
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	52	76	67	84
		125 - 175	HSS	49	73	64	81
		175 - 225	HSS	46	69	59	76
		225 - 275	HSS	43	64	55	70
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	49	73	64	79
		175 - 225	HSS	46	69	59	75
		225 - 275	HSS	43	64	55	70
		275 - 325	SC	40	59	52	66
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	46	64	59	69
		175 - 225	HSS	43	59	55	66
		225 - 275	HSS	40	55	52	60
		275 - 325	SC	37	52	47	56
		325 - 375	SC	34	47	44	55
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	SC	24	34	30	37
		300 - 350	SC	18	26	24	27
		350 - 400	SC	15	21	20	23
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	43	61	55	67
		150 - 250	HSS	37	52	47	56
		250 - 350	SC	30	43	40	47
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	24	34	32	37
		200 - 250	SC	18	27	26	31
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC	23	32	29	33
		275 - 350	SC	18	27	24	29
K	Nodular, Grey, Ductile Cast Iron	120 - 150	HSS	52	76	67	82
		150 - 200	HSS	46	69	59	75
		200 - 220	HSS	40	59	52	66
		220 - 260	SC	34	50	44	55
		260 - 320	SC	27	41	37	44
N	Cast Aluminum	30	HSS	183	259	229	—
		180	HSS	91	137	122	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	30	40	35	45
		220 - 310	SC	25	35	30	40

Formulas

1. RPM = $(318.47 \bullet \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2. mm/min = $\text{RPM} \bullet \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3. m/min = $\text{RPM} \bullet 0.003 \bullet \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)	

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | HIGH-SPEED STEEL

Feed Rate (mm/rev) by Tube Size & T-A® Insert Series					
Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3	Tube No.: 32 T-A Series: 4
0.18	0.25	0.33	0.41	0.51	0.58
0.18	0.25	0.33	0.41	0.51	0.58
0.15	0.25	0.33	0.41	0.51	0.58
0.15 ❖	0.23	0.30	0.38	0.48	0.58
0.15 ❖	0.23	0.30	0.38	0.48	0.58
0.13 ❖	0.20	0.25	0.36	0.46	0.53
0.13 ❖	0.20	0.25	0.36	0.46	0.53
0.15	0.23	0.30	0.38	0.48	0.58
0.13	0.20	0.25	0.36	0.46	0.53
0.13	0.20	0.25	0.36	0.46	0.53
0.10	0.18	0.23	0.30	0.41	0.48
0.15	0.20	0.25	0.36	0.43	0.48
0.13	0.20	0.25	0.36	0.43	0.48
0.13	0.18	0.25	0.36	0.43	0.48
0.10	0.15	0.23	0.30	0.38	0.43
0.08	0.15	0.23	0.30	0.38	0.43
0.13 ❖	0.18	0.23	0.25	0.36	0.43
0.10 ❖	0.18	0.23	0.25	0.36	0.43
0.08 ❖	0.15	0.20	0.23	0.30	0.38
0.15 ❖	0.25	0.30	0.36	0.46	0.53
0.13 ❖	0.23	0.25	0.30	0.41	0.48
0.10 ❖	0.20	0.23	0.25	0.36	0.43
0.10	0.15	0.20	0.25	0.30	0.38
0.10	0.15	0.20	0.25	0.30	0.38
0.15 ❖	0.20	0.23	0.28	0.36	0.41
0.13 ❖	0.18	0.20	0.25	0.30	0.36
0.18	0.30	0.41	0.51	0.61	0.69
0.15	0.28	0.36	0.46	0.56	0.64
0.15	0.23	0.30	0.41	0.46	0.53
0.13	0.18	0.23	0.30	0.36	0.43
0.10	0.15	0.18	0.23	0.30	0.36
0.20	0.33	0.41	0.51	0.56	0.64
0.20	0.33	0.41	0.46	0.56	0.64
0.08 ❖	0.18	0.20	0.25	0.30	0.38
0.08 ❖	0.15	0.18	0.20	0.25	0.30

❖ Contact our Application Engineering department for assistance when machining these materials.

**Recommended Drilling Data | Metric (mm)****REPLACEABLE INSERT | CARBIDE**

A92

ISO	Material	Hardness (BHN)	Grade	Speed (m/min)		
				TiN	TiAlN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	C1, C5	98	128	146
		150 - 200	C1, C5	85	110	126
		200 - 250	C1, C5	79	104	119
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	C1, C5	91	119	137
		125 - 175	C1, C5	79	104	119
		175 - 225	C1, C5	73	94	108
		225 - 275	C1, C5	64	82	94
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	C1, C5	79	104	119
		175 - 225	C1, C5	73	94	108
		225 - 275	C1, C5	64	82	94
		275 - 325	C1, C5	55	70	81
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	C1, C5	76	99	114
		175 - 225	C1, C5	70	91	105
		225 - 275	C1, C5	64	82	94
		275 - 325	C1, C5	61	76	87
		325 - 375	C1, C5	52	67	78
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	C1, C5	49	61	73
		300 - 350	C1, C5	43	55	62
		350 - 400	C1, C5	37	49	56
	Structural Steel A36, A285, A516, etc.	100 - 150	C1, C5	73	94	108
		150 - 250	C1, C5	61	76	87
		250 - 350	C1, C5	55	70	81
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	C1, C5	49	67	78
		200 - 250	C1, C5	37	52	59
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	C2	49	64	73
		275 - 350	C2	37	49	46
K	Nodular, Grey, Ductile Cast Iron	120 - 150	C2, C3	98	140	152
		150 - 200	C2, C3	82	122	146
		200 - 220	C2, C3	73	110	131
		220 - 260	C2, C3	64	94	113
		260 - 320	C2, C3	55	82	102
N	Cast Aluminum	30	C2	366	457	—
		180	C2	244	305	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	C2	24	32	36
		220 - 310	C2	18	26	29

Formulas

1. RPM = $(318.47 \bullet \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2. mm/min = $\text{RPM} \bullet \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3. m/min = $\text{RPM} \bullet 0.003 \bullet \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)	

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

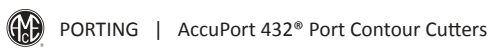
Recommended Drilling Data | Metric (mm)

REPLACEABLE INSERT | CARBIDE

Feed Rate (mm/rev) by Tube Size & T-A® Insert Series				
Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3
0.20	0.30	0.38	0.46	0.53
0.18	0.28	0.36	0.41	0.48
0.15	0.25	0.33	0.38	0.43
0.20 ❖	0.25	0.33	0.43	0.48
0.18 ❖	0.25	0.33	0.41	0.46
0.15 ❖	0.23	0.3	0.38	0.43
0.13 ❖	0.23	0.30	0.38	0.43
0.18	0.25	0.33	0.41	0.46
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.36	0.41
0.18	0.25	0.33	0.41	0.46
0.15	0.23	0.30	0.38	0.43
0.15	0.23	0.30	0.38	0.43
0.13	0.20	0.28	0.36	0.41
0.10	0.18	0.25	0.33	0.38
0.15 ❖	0.23	0.25	0.30	0.38
0.13 ❖	0.20	0.23	0.28	0.36
0.10 ❖	0.18	0.20	0.25	0.30
0.20 ❖	0.28	0.36	0.41	0.46
0.15 ❖	0.25	0.30	0.36	0.41
0.13 ❖	0.23	0.28	0.30	0.36
0.10	0.18	0.23	0.28	0.33
0.10	0.18	0.23	0.28	0.33
0.18 ❖	0.23	0.30	0.36	0.41
0.15 ❖	0.20	0.28	0.30	0.36
0.20	0.30	0.38	0.48	0.58
0.18	0.28	0.33	0.43	0.53
0.15	0.23	0.30	0.38	0.46
0.13	0.20	0.28	0.33	0.38
0.13	0.18	0.25	0.28	0.33
0.25	0.38	0.46	0.51	0.56
0.23	0.33	0.41	0.46	0.51
0.10 ❖	0.18	0.23	0.28	0.33
0.10 ❖	0.15	0.20	0.25	0.30

❖ Contact our Application Engineering department for assistance when machining these materials.

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Notes

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This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.



Recommended Drilling Data | Imperial (in)

SOLID CARBIDE

ISO	Material	Hardness (BHN)	Geometry	Speed (SFM)	Feed Rate (IPR) by Tube Size		
					Tube No.: 2	Tube No.: 3	Tube No.: 4
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100-150	HPS	500	0.0090	0.0120	0.0130
		150-200	HPS	475	0.0085	0.0110	0.0120
		200-250	HPS	450	0.0080	0.0100	0.0110
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPS	455	0.0090	0.0120	0.0135
		125-175	HPS	440	0.0085	0.0115	0.0130
		175-225	HPS	425	0.0080	0.0110	0.0125
		225-275	HPS	410	0.0080	0.0100	0.0120
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPS	440	0.0075	0.0110	0.0120
		175-225	HPS	430	0.0070	0.0105	0.0115
		225-275	HPS	400	0.0070	0.0105	0.0110
		275-325	HPS	375	0.0065	0.0100	0.0110
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPS	405	0.0075	0.0105	0.0115
		175-225	HPS	380	0.0070	0.0100	0.0110
		225-275	HPS	365	0.0065	0.0095	0.0105
		275-325	HPS	340	0.0060	0.0090	0.0100
	High-Strength Alloy 4340, 4330V, 300M, etc.	325-375	HPS	325	0.0055	0.0090	0.0100
		225-300	HPS	340	0.0065	0.0095	0.0105
		300-350	HPS	320	0.0060	0.0090	0.0100
		350-400	HPS	250	0.0055	0.0080	0.0085
	Structural Steel A36, A285, A516, etc.	100-150	HPS	450	0.0080	0.0120	0.0130
		150-250	HPS	425	0.0070	0.0110	0.0120
		250-350	HPS	390	0.0065	0.0095	0.0105
	Tool Steel H-13, H-21, A-4, S-3, etc.	150-200	HPS	270	0.0060	0.0095	0.0100
		200-250	HPS	250	0.0055	0.0085	0.0090
M	Stainless Steel 400 Series 416, 420, etc.	185-275	HPS	250	0.0065	0.0090	0.0095
		275-350	HPS	195	0.0055	0.0080	0.0085
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	200	0.0050	0.0070	0.0075
		185-275	HPS	175	0.0040	0.0060	0.0065
	Super Duplex Stainless Steel	135-185	HPS	150	0.0050	0.0070	0.0070
K	SG / Nodular Cast Iron	185-275	HPS	135	0.0040	0.0055	0.0055
		120-150	HPS	500	0.0110	0.0140	0.0155
		150-200	HPS	485	0.0100	0.0130	0.0140
		200-220	HPS	470	0.0090	0.0120	0.0130
		220-260	HPS	455	0.0090	0.0120	0.0130
	Gray/White Cast Iron	260-320	HPS	415	0.0085	0.0115	0.0125
		120-150	HPS	545	0.0120	0.0155	0.0165
		150-200	HPS	530	0.0110	0.0145	0.0155
		200-220	HPS	515	0.0100	0.0130	0.0140
		220-260	HPS	475	0.0100	0.0130	0.0140
		260-320	HPS	450	0.0095	0.0125	0.0135
N	Cast Aluminum	30	HPS	950	0.0100	0.0145	0.0160
		180	HPS	755	0.0090	0.0135	0.0155
	Wrought Aluminum	30	HPS	1100	0.0110	0.0145	0.0170
		180	HPS	950	0.0100	0.0135	0.0155
	Aluminum Bronze	100-200	HPS	370	0.0070	0.0090	0.0100
		200-250	HPS	310	0.0060	0.0070	0.0080
	Brass	100	HPS	750	0.0090	0.0115	0.0125
S	Copper	60	HPS	510	0.0030	0.0040	0.0040
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140-220	HPS	110	0.0040	0.0055	0.0060
		220-310	HPS	100	0.0035	0.0045	0.0050
	Titanium Alloy	140-220	HPS	150	0.0040	0.0060	0.0060
		220-310	HPS	120	0.0035	0.0050	0.0055
H	Aerospace Alloy S82	185-275	HPS	160	0.0040	0.0045	0.0055
		275-350	HPS	130	0.0035	0.0040	0.0045
H	Wear Plate Hardox®, AR400, T-1, etc.	400	HPS	170	0.0030	0.0040	0.0050
		500	HPS	140	0.0030	0.0040	0.0040
		600	HPS	100	0.0030	0.0040	0.0040
	Hardened Steel	300-400	HPS	170	0.0030	0.0040	0.0050
		400-500	HPS	140	0.0030	0.0040	0.0040

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Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Solid Carbide Port Tool

- Speed and feed rates are based off the pilot diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

**Recommended Drilling Data | Imperial (in)****REPLACEABLE INSERT | HIGH-SPEED STEEL**

A92

ISO	Material	Hardness (BHN)	Grade	Speed (SFM)			
				TiN	TiAlN	TiCN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HSS	200	280	260	325
		150 - 200	HSS	180	260	235	300
		200 - 250	HSS	160	240	210	280
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HSS	170	250	220	290
		125 - 175	HSS	160	240	210	275
		175 - 225	HSS	150	225	195	260
		225 - 275	HSS	140	210	180	240
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HSS	160	240	210	275
		175 - 225	HSS	150	225	195	260
		225 - 275	HSS	140	210	180	240
		275 - 325	SC	130	195	170	225
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	HSS	150	210	195	240
		175 - 225	HSS	140	195	180	225
		225 - 275	HSS	130	180	170	210
		275 - 325	SC	120	170	155	195
	High-Strength Alloy 4340, 4330V, 300M, etc.	325 - 375	SC	110	155	145	180
		225 - 300	SC	80	110	100	125
		300 - 350	SC	60	85	80	100
		350 - 400	SC	50	70	65	80
	Structural Steel A36, A285, A516, etc.	100 - 150	HSS	140	200	180	235
		150 - 250	HSS	120	170	155	190
		250 - 350	SC	100	140	130	160
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	SC	80	110	105	125
		200 - 250	SC	60	90	85	105
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	SC	75	105	95	110
		275 - 350	SC	60	90	80	100
K	Nodular, Grey, Ductile Cast Iron	120 - 150	HSS	170	250	220	290
		150 - 200	HSS	150	225	195	260
		200 - 220	HSS	130	195	170	225
		220 - 260	SC	110	165	145	190
		260 - 320	SC	90	135	120	155
N	Cast Aluminum	30	HSS	600	850	750	—
		180	HSS	300	450	400	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	SC	9	12	10	14
		220 - 310	SC	7	10	9	12

Formulas

1.	RPM = (3.82 • SFM) / DIA	2.	IPM = RPM • IPR
<i>where:</i> RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = diameter of drill (inch)		<i>where:</i> IPM = inches per minute (in/min) RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)	
3.	SFM = RPM • 0.262 • DIA		
<i>where:</i> SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)			

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Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | HIGH-SPEED STEEL

Feed Rate (IPR) by Tube Size & T-A® Insert Series					
Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3	Tube No.: 32 T-A Series: 4
0.007	0.010	0.013	0.016	0.020	0.023
0.007	0.010	0.013	0.016	0.020	0.023
0.006	0.010	0.013	0.016	0.020	0.023
0.006 ❖	0.009	0.012	0.015	0.019	0.023
0.006 ❖	0.009	0.012	0.015	0.019	0.023
0.005 ❖	0.008	0.010	0.014	0.018	0.021
0.005 ❖	0.008	0.010	0.014	0.018	0.021
0.006	0.009	0.012	0.015	0.019	0.023
0.005	0.008	0.010	0.014	0.018	0.021
0.005	0.008	0.010	0.014	0.018	0.021
0.004	0.007	0.009	0.012	0.016	0.019
0.006	0.008	0.010	0.014	0.017	0.019
0.005	0.008	0.010	0.014	0.017	0.019
0.005	0.007	0.010	0.014	0.017	0.019
0.004	0.006	0.009	0.012	0.015	0.017
0.003	0.006	0.009	0.012	0.015	0.017
0.005 ❖	0.007	0.009	0.010	0.014	0.017
0.004 ❖	0.007	0.009	0.010	0.014	0.017
0.003 ❖	0.006	0.008	0.009	0.012	0.015
0.006 ❖	0.010	0.012	0.014	0.018	0.021
0.005 ❖	0.009	0.010	0.012	0.016	0.019
0.004 ❖	0.009	0.009	0.010	0.014	0.017
0.004	0.006	0.008	0.010	0.014	0.015
0.004	0.006	0.008	0.010	0.012	0.015
0.006 ❖	0.008	0.009	0.011	0.012	0.016
0.005 ❖	0.007	0.008	0.010	0.012	0.014
0.007	0.012	0.016	0.020	0.024	0.027
0.006	0.011	0.014	0.018	0.022	0.025
0.006	0.009	0.012	0.016	0.018	0.021
0.005	0.007	0.009	0.012	0.014	0.017
0.004	0.006	0.007	0.009	0.012	0.014
0.008	0.013	0.016	0.020	0.022	0.025
0.008	0.013	0.016	0.018	0.022	0.025
0.003 ❖	0.007	0.008	0.010	0.012	0.015
0.003 ❖	0.006	0.007	0.008	0.010	0.012

❖ Contact our Application Engineering department for assistance when machining these materials.

**Recommended Drilling Data | Imperial (in)****REPLACEABLE INSERT | CARBIDE**

A92

ISO	Material	Hardness (BHN)	Grade	Speed (SFM)		
				TiN	TiAlN	AM200®
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	C1, C5	320	420	480
		150 - 200	C1, C5	280	360	415
		200 - 250	C1, C5	260	340	390
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	C1, C5	300	390	450
		125 - 175	C1, C5	260	340	390
		175 - 225	C1, C5	240	310	355
		225 - 275	C1, C5	210	270	310
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	C1, C5	260	340	390
		175 - 225	C1, C5	240	310	355
		225 - 275	C1, C5	210	270	310
		275 - 325	C1, C5	180	230	265
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	C1, C5	250	325	375
		175 - 225	C1, C5	230	300	345
		225 - 275	C1, C5	210	270	310
		275 - 325	C1, C5	200	250	285
		325 - 375	C1, C5	170	220	255
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	C1, C5	160	200	230
		300 - 350	C1, C5	140	180	205
		350 - 400	C1, C5	120	160	185
	Structural Steel A36, A285, A516, etc.	100 - 150	C1, C5	240	310	355
		150 - 250	C1, C5	200	250	285
		250 - 350	C1, C5	180	230	265
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	C1, C5	160	220	255
		200 - 250	C1, C5	120	170	195
M	Stainless Steel 400 Series 416, 420, etc.	185 - 275	C2	160	210	240
		275 - 350	C2	120	160	185
K	Nodular, Grey, Ductile Cast Iron	120 - 150	C2, C3	320	460	500
		150 - 200	C2, C3	270	400	480
		200 - 220	C2, C3	240	360	430
		220 - 260	C2, C3	210	310	370
		260 - 320	C2, C3	180	270	335
N	Cast Aluminum	30	C2	1200	1500	—
		180	C2	800	1000	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	C2	80	105	120
		220 - 310	C2	60	85	95

Formulas

1.	RPM = $(3.82 \bullet \text{SFM}) / \text{DIA}$ <i>where:</i> RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = diameter of drill (inch)	2.	IPM = $\text{RPM} \bullet \text{IPR}$ <i>where:</i> IPM = inches per minute (in/min) RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)
3.	SFM = $\text{RPM} \bullet 0.262 \bullet \text{DIA}$ <i>where:</i> SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)		

The table and equations on this page are found in the "Machinery's Handbook." Permission to simplify and print the equations is granted by the Editor of the "Machinery's Handbook."

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is available through our Application Engineering department.

Recommended Drilling Data | Imperial (in)

REPLACEABLE INSERT | CARBIDE

Feed Rate (IPR) by Tube Size & T-A® Insert Series				
Tube No.: 4 - 5 T-A Series: Y - Z	Tube No.: 6 - 8 T-A Series: 0	Tube No.: 10 T-A Series: 1	Tube No.: 12 - 16 T-A Series: 2	Tube No.: 20 - 24 T-A Series: 3
0.008	0.012	0.015	0.018	0.021
0.007	0.011	0.014	0.016	0.019
0.006	0.010	0.013	0.015	0.017
0.008 ❖	0.010	0.013	0.017	0.019
0.007 ❖	0.010	0.013	0.016	0.018
0.006 ❖	0.009	0.012	0.015	0.017
0.005 ❖	0.009	0.012	0.015	0.017
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.007	0.010	0.013	0.016	0.018
0.006	0.009	0.012	0.015	0.017
0.006	0.009	0.012	0.015	0.017
0.005	0.008	0.011	0.014	0.016
0.004	0.007	0.010	0.013	0.015
0.006 ❖	0.009	0.010	0.012	0.015
0.005 ❖	0.008	0.009	0.011	0.014
0.004 ❖	0.007	0.008	0.010	0.012
0.008 ❖	0.011	0.014	0.016	0.018
0.006 ❖	0.010	0.012	0.014	0.016
0.005 ❖	0.009	0.011	0.012	0.014
0.004	0.007	0.009	0.011	0.013
0.004	0.007	0.009	0.011	0.013
0.007 ❖	0.009	0.012	0.014	0.016
0.006 ❖	0.008	0.011	0.012	0.014
0.008	0.012	0.015	0.019	0.023
0.007	0.011	0.013	0.017	0.021
0.006	0.009	0.012	0.015	0.018
0.005	0.008	0.011	0.013	0.015
0.005	0.007	0.010	0.011	0.013
0.010	0.015	0.018	0.020	0.022
0.009	0.013	0.016	0.018	0.020
0.004 ❖	0.007	0.009	0.011	0.013
0.004 ❖	0.006	0.008	0.010	0.012

❖ Contact our Application Engineering department for assistance when machining these materials.

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**Coolant Recommendations | Metric (mm)****REPLACEABLE INSERT | HIGH-SPEED STEEL**

A92

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5	Tube No.: 6 - 8	Tube No.: 10	Tube No.: 12 - 16	Tube No.: 20 - 24	Tube No.: 32
			T-A Series: Y - Z	T-A Series: 0	T-A Series: 1	T-A Series: 2	T-A Series: 3	T-A Series: 4
P	Free-Machining Steel 1118, 1215, 12L14, etc.	BAR	12 - 13	7 - 8	7 - 10	6 - 8	6 - 7	3 - 4
		LPM	9.5 - 9.8	10.6 - 11.4	16.7 - 19.7	26.5 - 30.3	45.4 - 53.0	114 - 125
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11 - 12	5 - 6	5 - 7	4 - 6	4 - 5	2 - 3
		LPM	9.1 - 9.5	9.1 - 9.8	14.0 - 15.9	22.7 - 26.5	41.6 - 45.4	98 - 114
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	11	5 - 6	5 - 6	4 - 5	3 - 5	2 - 3
		LPM	8.7 - 9.1	8.7 - 9.8	13.6 - 15.5	18.9 - 22.7	37.9 - 45.4	98 - 114
	Alloy Steel 4140, 5140, 8640, etc.	BAR	11	5 - 6	5	3 - 5	3 - 4	2
		LPM	8.7 - 9.1	13.2 - 14.8	8.3 - 9.1	18.9 - 22.7	34.1 - 37.9	87 - 98
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2
		LPM	8.7 - 9.1	7.9 - 8.3	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87
	Structural Steel A36, A285, A516, etc.	BAR	11	5 - 6	5 - 6	3 - 4	3	2
		LPM	8.7 - 9.1	9.1 - 9.8	13.2 - 14.8	18.9 - 22.7	34.1 - 37.9	87 - 98
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	4	10 - 11	3	2	2	1 - 2
		LPM	7.9 - 8.3	8.7 - 9.1	11.0 - 11.7	15.1 - 18.9	26.5 - 30.3	79 - 87
M	Stainless Steel 400 Series 416, 420, etc.	BAR	11.4 - 11.7	4.8 - 5.8	4.5 - 5.2	2.7 - 3.8	2.7 - 3.4	1.7 - 2
		LPM	9.1 - 9.5	8.7 - 9.8	13.2 - 14	18.9 - 22.7	34.1 - 37.9	87 - 98
K	Nodular, Grey, Ductile Cast Iron	BAR	10.7 - 11.0	4.1 - 4.5	3.4 - 4.1	2 - 2.7	2 - 2.4	1.7 - 2
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.5	15.1 - 18.9	30.3 - 34.1	87 - 98
N	Aluminum	BAR	13.1 - 14.5	9.6 - 12.4	10.3 - 15.8	7.9 - 11	6.2 - 8.6	2.7 - 3.4
		LPM	9.8 - 10.2	12.5 - 14	20.1 - 23.1	30.3 - 34.1	53 - 60.6	114 - 125
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	BAR	10 - 11	4 - 5	3 - 4	2	2	2
		LPM	8.7 - 9.1	8.3 - 8.7	11.7 - 12.1	15.1 - 18.9	26.5 - 30.3	87 - 98

SOLID CARBIDE

Pressure or Flow Rate	Tube No.: 2	Tube No.: 3	Tube No.: 4
BAR	50	47	46
LPM	12	16	20

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

Coolant Recommendations | Metric (mm)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5	Tube No.: 6 - 8	Tube No.: 10	Tube No.: 12 - 16	Tube No.: 20 - 24
			T-A Series: Y - Z	T-A Series: 0	T-A Series: 1	T-A Series: 2	T-A Series: 3
P	Free-Machining Steel 1118, 1215, 12L14, etc.	BAR	20	16	17	15	12
		LPM	12.2	16.3	25.3	41.5	71.9
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	BAR	11.4	13.3	20.6	36.5	62
		LPM	17	10	10	10	8
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	BAR	17	9	10	8	7
		LPM	11.1	12.3	19.3	30	55.8
	Alloy Steel 4140, 5140, 8640, etc.	BAR	10.4	9.1	12.6	18.8	33.6
		LPM	16	9	8	7	5
	High-Strength Alloy 4340, 4330V, 300M, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
	Structural Steel A36, A285, A516, etc.	BAR	16	9	8	7	5
		LPM	10.8	12	17.5	27.8	47.1
	Tool Steel H-13, H-21, A-4, S-3, etc.	BAR	15	5	5	3	3
		LPM	10.4	9.1	13.6	19.7	36.5
M	Stainless Steel 400 Series 416, 420, etc.	BAR	22.7	16.5	17.9	17.2	13.1
		LPM	13	16.3	26.3	44.2	75
K	Nodular, Grey, Ductile Cast Iron	BAR	15.5	7.2	6.2	6.2	5.5
		LPM	10.7	10.8	15.4	26.5	48.7
N	Aluminum	BAR	24.1	22	21.7	19.6	13.8
		LPM	13.4	18.8	29	47.2	77
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	BAR	17	11.4	12.4	11	9
		LPM	11.1	13.5	21.9	35.4	62

A92

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

**Coolant Recommendations | Imperial (in)****REPLACEABLE INSERT | HIGH-SPEED STEEL**

A92

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5	Tube No.: 6 - 8	Tube No.: 10	Tube No.: 12 - 16	Tube No.: 20 - 24	Tube No.: 32
			T-A Series: Y - Z	T-A Series: 0	T-A Series: 1	T-A Series: 2	T-A Series: 3	T-A Series: 4
P	Free-Machining Steel 1118, 1215, 12L14, etc.	PSI	175 - 185	100 - 120	105 - 140	80 - 115	75 - 100	40 - 50
		GPM	2.5 - 2.6	2.8 - 3.0	4.4 - 5.2	7 - 8	12 - 14	30 - 33
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	165 - 170	75 - 90	75 - 95	60 - 80	55 - 75	30 - 40
		GPM	2.4 - 2.5	2.4 - 2.6	3.7 - 4.2	6 - 7	11 - 12	26 - 30
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	160 - 165	70 - 85	70 - 90	55 - 75	50 - 70	30 - 40
		GPM	2.3 - 2.4	2.3 - 2.6	3.7 - 4.2	5 - 6	10 - 12	26 - 30
	Alloy Steel 4140, 5140, 8640, etc.	PSI	160 - 165	65 - 75	65 - 80	50 - 70	45 - 60	30 - 35
		GPM	2.3 - 2.4	2.2 - 2.4	3.5 - 3.9	5 - 6	10 - 11	26 - 28
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	150 - 155	55 - 60	45 - 50	25 - 30	25 - 30	20 - 25
		GPM	2.3 - 2.4	2.1 - 2.2	2.9 - 3.1	4 - 5	7 - 8	21 - 23
M	Stainless Steel 400 Series 416, 420, etc.	PSI	171	86	75	55	51	29
		GPM	3	3	4	6	10	26
K	Nodular, Grey, Ductile Cast Iron	PSI	160	65	61	41	35	29
		GPM	2	2	3	5	9	26
N	Aluminum	PSI	210	180	230	159	125	51
		GPM	3	4	6	9	16	33
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30	25 - 30
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8	23 - 26

SOLID CARBIDE

Pressure or Flow Rate	Tube No.: 2	Tube No.: 3	Tube No.: 4
PSI	700	680	650
GPM	3	5	6

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.



Coolant Recommendations | Imperial (in)

REPLACEABLE INSERT | CARBIDE

ISO	Material	Pressure or Flow Rate	Tube No.: 4 - 5	Tube No.: 6 - 8	Tube No.: 10	Tube No.: 12 - 16	Tube No.: 20 - 24
			T-A Series: Y - Z	T-A Series: 0	T-A Series: 1	T-A Series: 2	T-A Series: 3
P	Free-Machining Steel 1118, 1215, 12L14, etc.	PSI	195	140	160	140	155
		GPM	2.6	3.3	5.5	9	18
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	PSI	180	105	105	110	115
		GPM	2.5	2.9	4.4	8	15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	PSI	175	100	90	100	75
		GPM	2.5	2.8	4.1	7	13
	Alloy Steel 4140, 5140, 8640, etc.	PSI	165	85	100	75	70
		GPM	2.4	2.6	4.3	6	12
	High-Strength Alloy 4340, 4330V, 300M, etc.	PSI	160	65	55	40	35
		GPM	2.4	2.3	3.2	5	8
	Structural Steel A36, A285, A516, etc.	PSI	175	115	105	75	70
		GPM	2.5	3	4.4	6	12
	Tool Steel H-13, H-21, A-4, S-3, etc.	PSI	155	60	55	40	35
		GPM	2.4	2.2	3.2	5	8
M	Stainless Steel 400 Series 416, 420, etc.	PSI	150 - 155	60 - 65	50 - 55	30 - 35	25 - 30
		GPM	2.3 - 2.4	2.2 - 2.3	3.1 - 3.2	4 - 5	7 - 8
K	Nodular, Grey, Ductile Cast Iron	PSI	329	239	260	250	190
		GPM	3	4	7	12	20
N	Aluminum	PSI	225	104	90	90	80
		GPM	3	3	4	7	13
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	PSI	350	319	315	284	200
		GPM	4	5	8	12	20

A92

IMPORTANT: The coolant pressure and flow rate recommendations above represent a good approximation to obtain optimum tool life and chip evacuation at Allied Machine recommended speeds and feeds. If lower coolant capabilities exist in a drilling application, the AccuPort 432 Port Contour Cutter will still function at reduced penetration rates. Contact our Application Engineering department for a more specific recommendation of coolant requirements and/or speeds and feeds.

WOHLHAUPTER® BORING PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

WOHLHAUPTER®

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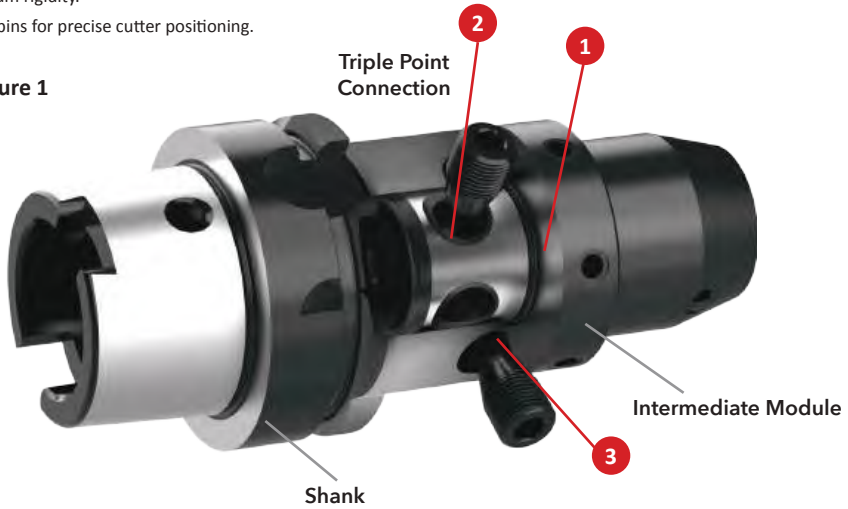


The MVS Connection

Wohlhaupter® GmbH developed the world's first modular tooling system called MultiBore® in 1973. The modular tooling system was designed to be compatible with all machine spindles, and its connection features a triple point clamp (Figure 1). The triple point clamp (1, 2, & 3) maximizes rigidity and creates an accuracy less than 3µm when the tool is changed.

- Ensures high axial clamping forces on mating surfaces.
- Provides maximum rigidity.
- Threaded taper pins for precise cutter positioning.

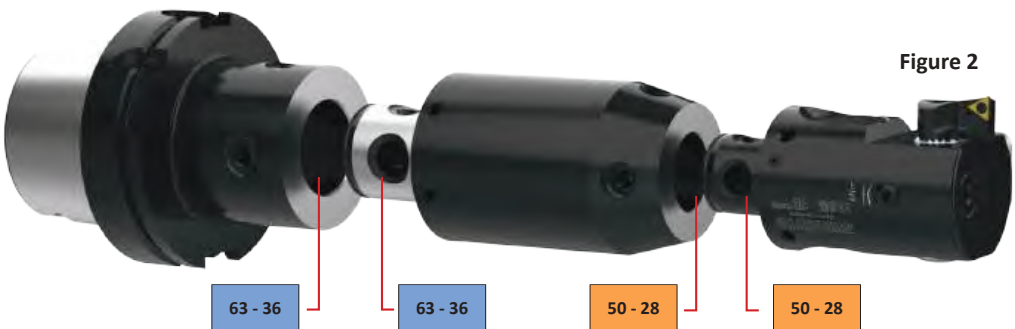
Figure 1



MVS Connection Color Guide

Wohlhaupter® created a unique color-coding system to find the right connections for different tool components quickly and easily. Each Wohlhaupter / MVS connection size has its own color-coding. Simply match the colors to select the correct combination of tool components (Figure 2).

Figure 2



M 8	19.5 - 11	22 - 11	25 - 14	32 - 18	40 - 22	50 - 28	63 - 36	80 - 36	100 - 56	D 40	D 60
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The MVS Connection

Example Machining Parameters

Hole Diameter: 75.00 mm (2.942")

Hole Depth: 200.00 mm (7.874")

Machine Spindle: HSK-A 100 DIN 69893

1 Select your boring tool.

- Example: 464 Balance Boring Head

2 Select the tool that meets the required boring range.

- MVS connection: **50 - 28**
- A = 65.00 mm - 83.00 mm (2.559" - 3.268")
- Part No. : 464006



1

WOLHAUPTER BORING | Fine Boring

464 (465) Boring Heads & In

MVS Connection	Boring Range	Boring Head	Part No.
50-28	65.00 - 83.00	1.66	464006
50-36	83.00 - 100.00	1.88	464007
50-40	100.00 - 130.00	1.90	464008
50-50	125.00 - 167.00	1.90	464009
50-63	162.00 - 205.00	1.90	464010

3 Select the master shank that fits your spindle.

- Machine spindle: DIN 69893 HSK

4 Choose the connection that fits your application.

- MVS connection: **63 - 36**
- Part No. : 245015



3

3

► **WOLHAUPTER BORING** | Master
HSK Master Shanks (DIN 69893)

WOLHAUPTER BORING | Master
HSK Master Shanks (DIN 69893)

4

	HSK-A	MVS Connection	Model	Shank	Weight (kg)	Part No.
	d_1 d_2	d_1 d_2	d_1 d_2	d_1 d_2		
BT	47-22	50.00			0.80	245015
	30-18	30.00			0.35	245016
	47-22	50.00			0.80	245017
SB	57-20	60.00	50.00		0.80	245018
	21-14	45.00	37.00		0.35	245019
	57-20	50.00	30.00		0.80	245020
	63-36	60.00	50.00		0.80	245021
GA	63-36	60.00	50.00		1.50	245022
	30-18	30.00			0.35	245023
	47-22	50.00	50.00	50.00	2.20	245024
	47-22	60.00	30.00		2.40	245025
	18-10	15.00			0.50	245026
	57-20	18.00	15.00		4.00	245027
	63-36	30.00			2.20	245028
	25-10	25.00	15.00	19.00	5.00	245029
	25-10	15.00			3.80	245030
	30-18	30.00			3.70	245031
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SECTION

B10-A

Master Shanks with MVS Connection

Master Shanks



Master Shanks with MVS Connection

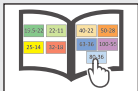
Wohlhaupter MVS connection shanks provide a high level of accuracy when building or replacing components. Our master shanks adapt to any machine tool spindle, making it easy to find the shank you need.

Applicable Industries

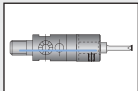
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-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

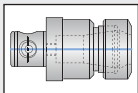
The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



248 (249) Boring Head
248 (249) boring head that connects into the adapter shanks.



Clamping Elements
Collet chucks for carbide shanks.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

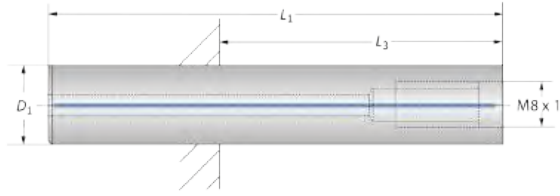
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Cylindrical Shanks

248 (249)



Metric (mm)

MVS Connection	Style	Shank			L ₃ min*				Weight (kg)	Part No.
		D ₁	L ₁	L ₃ max*	SK 40	SK 50	HSK-A 63	HSK-A 100		
m	Steel	15.00	85.00	37.00	—	—	—	—	0.10	248136
		18.00	100.00	52.00	—	—	5.00	12.00	0.20	248137
		23.00	117.00	69.00	—	—	22.00	29.00	0.40	248138
	Carbide	15.00	130.00	82.00	20.00	20.00	35.00	42.00	0.30	248142
		18.00	155.00	107.00	39.00	21.00	60.00	67.00	0.60	248143
		23.00	180.00	132.00	64.00	46.00	85.00	92.00	1.10	248144
		23.00	242.00	194.00	126.00	108.00	147.00	154.00	1.40	248145

Imperial (in)

MVS Connection	Style	Shank			L ₃ min*				Weight (lbs)	Part No.
		D ₁	L ₁	L ₃ max*	SK 40	SK 50	HSK-A 63	HSK-A 100		
i	Steel	0.591	3.346	1.456	—	—	—	—	0.220	248136
		0.709	3.937	2.047	—	—	0.196	0.472	0.440	248137
		0.906	4.606	2.716	—	—	0.866	1.141	0.881	248138
	Carbide	0.591	5.118	3.228	0.787	0.787	1.377	1.653	0.661	248142
		0.709	6.102	4.212	1.535	0.826	2.362	2.637	1.322	248143
		0.906	7.086	5.196	2.519	1.811	3.346	3.622	2.425	248144
		0.906	9.527	7.637	4.960	4.251	5.787	6.062	3.086	248145

*L₃ dimensions apply to collet chucks.

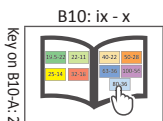
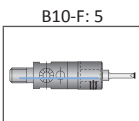
To guarantee good function, use only holding shanks of carbide metal for the shrinkage chucks.

WARNING

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- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlschlaegerBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

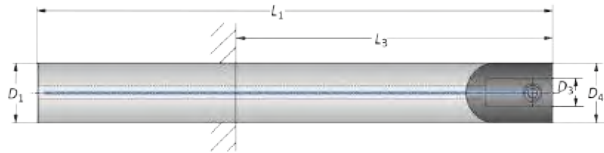


m = Metric (mm)
i = Imperial (in)



Cylindrical Shanks

Carbide Straight



Metric (mm)

MVS Connection	Shank			L_3 min				Weight (kg)	Part No.
$D_4 D_3$	D_1	L_1	L_3 max	SK 40	SK 50	HSK-A 63	HSK-A 100		
18 - 11	18.00	155.00	107.00	39.00	26.00	60.00	67.00	0.50	299009*
22 - 11	22.00	140.00	92.00	28.00	28.00	45.00	52.00	0.70	299001*
		190.00	142.00	74.00	56.00	95.00	102.00	0.90	299002*
		231.00	183.00	115.00	97.00	136.00	143.00	1.10	299003*
25 - 14	25.00	165.00	117.00	49.00	36.00	70.00	77.00	1.00	299004*
		215.00	167.00	99.00	81.00	120.00	127.00	1.30	299005*
32 - 18	32.00	210.00	—	136.00	136.00	139.00	137.00	2.10	299006**
		260.00	—	186.00	186.00	189.00	187.00	2.60	299007**
40 - 22	40.00	415.00	—	—	333.00	—	333.00	5.20	299008**

NOTE: Adapter shanks are used for extensions up to 10xD.

*Recommended clamping element: collet chuck ISO 15488 (DIN 6499-B) (pg. B10-J: 7).

**Recommended clamping element: collet chuck ISO 10897 (DIN 6388) (pg. B10-J: 6).

Imperial (in)

MVS Connection	Shank			L_3 min				Weight (lbs)	Part No.
$D_4 D_3$	D_1	L_1	L_3 max	SK 40	SK 50	HSK-A 63	HSK-A 100		
18 - 11	0.709	6.102	4.213	1.535	1.024	2.362	2.638	1.102	299009*
22 - 11	0.866	5.512	3.622	1.102	1.102	1.772	2.047	1.543	299001*
		7.480	5.591	2.913	2.205	3.740	4.016	1.984	299002*
		9.049	7.205	4.528	3.819	5.354	5.630	2.425	299003*
25 - 14	0.984	6.496	4.606	1.929	1.417	2.756	3.031	2.205	299004*
		8.465	6.575	3.898	3.189	4.724	5.000	2.866	299005*
32 - 18	1.260	8.268	-	5.354	5.354	5.572	5.394	4.630	299006**
		10.236	-	7.323	7.323	7.441	7.362	5.732	299007**
40 - 22	1.575	16.399	-	-	13.110	-	13.110	11.460	299008**

NOTE: Adapter shanks are used for extensions up to 10xD.

*Recommended clamping element: collet chuck ISO 15488 (DIN 6499-B) (pg. B10-J: 7).

**Recommended clamping element: collet chuck ISO 10897 (DIN 6388) (pg. B10-J: 6).

⚠ WARNING

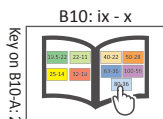
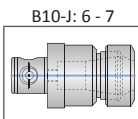
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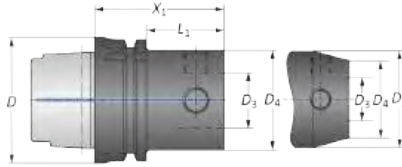
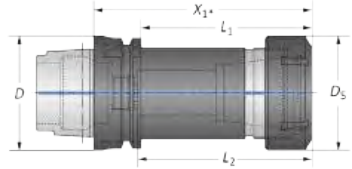
m = Metric (mm)

i = Imperial (in)



HSK Master Shanks (DIN 69893)

Balanced

* X_1 : with one-piece clamping nut

Metric (mm)

HSK-A	MVS Connection	Shank				Weight (kg)	Part No.
D	D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
40	40 - 22	56.00	—	—	—	0.40	246016
	50 - 28	70.00	—	—	—	0.70	246004
50	40 - 22	56.00	30.00	—	—	0.60	246015
	50 - 28	65.00	—	—	—	0.80	245011
63	25 - 14	46.00	20.00	—	—	0.70	246012
	32 - 18	56.00	30.00	—	—	0.80	246013
	40 - 22	56.00	30.00	—	—	0.80	246014
	50 - 28	65.00	39.00	—	—	1.10	245012
	63 - 36	80.00	—	—	—	1.50	245013
	80 - 36	80.00	—	—	—	2.10	246009
	ER 40	120.00	94.00	95.00	63.00	1.70	252090**
100	50 - 28	65.00	36.00	—	—	2.40	245014
		180.00	151.00	—	60.00	5.00	246020
	50 - 28*	180.00	151.00	—	—	4.00	246021
	63 - 36	80.00	51.00	—	—	2.90	245015
		205.00	176.00	—	78.00	7.80	246019
		205.00	176.00	—	—	7.80	246022
	80 - 36	80.00	51.00	—	—	3.70	245016
		255.00	226.00	—	90.00	12.60	246018
		255.00	226.00	—	—	10.40	246023
	100 - 56	100.00	—	—	—	5.00	246010
		300.00	—	—	—	17.50	246017
	ER 40	120.00	91.00	88.00	63.00	3.50	252091**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

*D₄ = 49.50 mm

**Balanced without clamping nut.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlfahrtBoringGuidelines.

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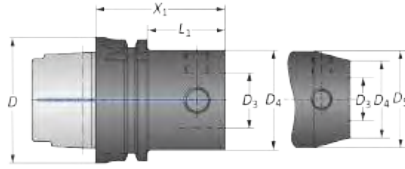
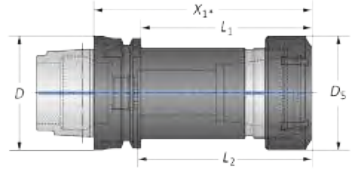
B10: ix - x





HSK Master Shanks (DIN 69893)

Balanced



X₁: with one-piece clamping nut



Imperial (in)

Taper Size	MVS Connection	Shank				Weight (lbs)	Part No.
D	D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
40	40 - 22	2.205	—	—	—	0.881	246016
	50 - 28	2.756	—	—	—	1.543	246004
50	40 - 22	2.205	1.181	—	—	1.322	246015
	50 - 28	2.559	—	—	—	1.763	245011
63	25 - 14	1.811	0.787	—	—	1.543	246012
	32 - 18	2.205	1.181	—	—	1.763	246013
	40 - 22	2.205	1.181	—	—	1.764	246014
	50 - 28	2.559	1.535	—	—	2.425	245012
	63 - 36	3.150	—	—	—	3.306	245013
	80 - 36	3.150	—	—	—	4.629	246009
	ER 40	4.724	3.700	3.740	2.480	3.747	252090**
100	50 - 28	2.559	1.417	—	—	5.291	245014
	50 - 28*	7.087	5.944	—	2.362	11.020	246020
	50 - 28*	7.087	5.944	—	—	6.393	246021
	63 - 36	3.150	2.007	—	—	6.393	245015
		8.071	6.929	—	3.070	17.190	246019
		8.071	6.929	—	—	17.190	246022
	80 - 36	3.150	2.007	—	—	8.157	245016
		10.03	8.897	—	3.543	27.770	246018
		10.03	8.897	—	—	22.920	246023
	100 - 56	3.937	—	—	—	11.020	246010
		11.810	—	—	—	38.580	246017
	ER 40	4.724	3.582	3.464	2.480	7.716	252091**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

*D₄ = 49.50 mm

**Balanced without clamping nut.

⚠ WARNING

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- Do not exceed the **allowable weight** for your machine tool.
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For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

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B10: ix - x



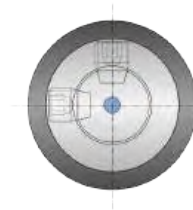
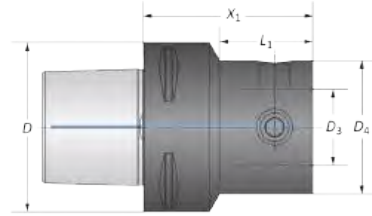
m = Metric (mm)

i = Imperial (in)



Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced



Metric (mm)

PSC	MVS Connection	Shank		Weight (kg)	Part No.
D	D ₄ D ₃	X ₁	L ₁		
50	40 - 22	54.00	31.10	0.70	227014
	50 - 28	65.00	—	1.00	227001
	63 - 36	80.00	—	1.50	227002
	80 - 36	80.00	—	2.50	227012
63	25 - 14	54.00	21.10	0.90	227010
	32 - 18	54.00	23.00	1.00	227009
	40 - 22	65.00	36.40	1.10	227008
	50 - 28	65.00	39.00	1.30	227003
	63 - 36	80.00	—	1.80	227004
	80 - 36	80.00	—	2.60	227005
80	50 - 28	65.00	25.00	2.20	227011
	63 - 36	80.00	45.10	2.60	227006
	80 - 36	80.00	—	3.30	227007
	100 - 56	100.00	—	4.74	227013

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

WARNING

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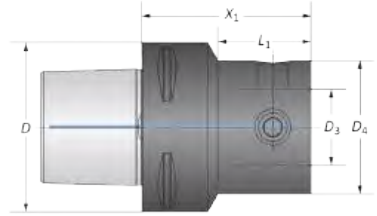
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



Polygon Shaft Master Shanks (PSC) (ISO 26623-1)

Balanced



Imperial (in)

PSC	MVS Connection	Shank		Weight (lbs)	Part No.
D	D ₄ D ₃	X ₁	L ₁		
50	40 - 22	2.126	1.224	1.543	227014
	50 - 28	2.559	—	2.205	227001
	63 - 36	3.150	—	3.307	227002
	80 - 36	3.150	—	5.512	227012
63	25 - 14	2.126	0.838	1.984	227010
	32 - 18	2.126	0.917	2.205	227009
	40 - 22	2.559	1.433	2.425	227008
	50 - 28	2.559	1.555	2.866	227003
	63 - 36	3.150	—	3.968	227004
	80 - 36	3.150	—	5.732	227005
80	50 - 28	2.559	1.047	4.850	227011
	63 - 36	3.150	1.783	5.732	227006
	80 - 36	3.150	—	7.275	227007
	100 - 56	3.937	—	10.450	227013

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

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B10: ix - x



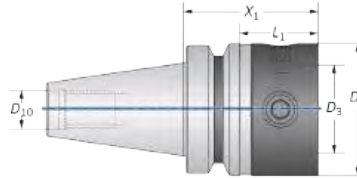
key on B10-A: 2

m = Metric (mm)

i = Imperial (in)



Dual Contact BT Master Shanks (JIS B 6339)



Metric (mm)

	Taper Size	D_{10}	MVS Connection	Shank		Weight (kg)	Part No.
			$D_4 D_3$	X_1	L_1		
m	40	M16 x 2	50 - 28	54.00	27.00	1.20	353070
			63 - 36	64.00	37.00	1.50	353071
	50	M24 x 3	50 - 28	65.00	26.80	4.00	353072
			63 - 36	75.00	36.80	4.20	353073
			80 - 36	75.00	36.80	4.80	353074
			100 - 56	90.00	51.80	5.50	353075

Imperial (in)

	Taper Size	D_{10}	MVS Connection	Shank		Weight (lbs)	Part No.
			$D_4 D_3$	X_1	L_1		
i	40	M16 x 2	50 - 28	2.126	1.063	2.646	353070
			63 - 36	2.520	1.457	3.308	353071
	50	M24 x 3	50 - 28	2.559	1.055	8.820	353072
			63 - 36	2.953	1.449	9.261	353073
			80 - 36	2.953	1.449	10.584	353074
			100 - 56	3.543	2.039	12.128	353075

WARNING

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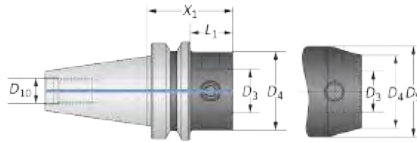
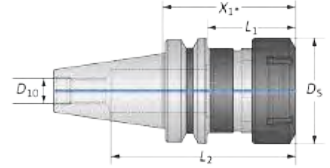
B10: ix - x





BT Master Shanks (JIS B 6339)

Balanced



*X₁: with one-piece clamping nut



Metric (mm)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (kg)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
30	M12 x 1.75	40 - 22	40.00	18.00	—	—	0.50	327012
		50 - 28	46.00	—	—	—	0.60	327013
40	M16 x 2	40 - 22	46.00	19.00	—	—	1.10	327016
		50 - 28	54.00	27.00	—	—	1.20	327019
		63 - 36	64.00	—	—	—	1.50	327020
		ER 40	70.00	43.00	104.00	63.00	1.20	259081*
50	M24 x 3	50 - 28	65.00	26.80	—	—	3.90	327021
			205.00	166.80	—	60.00	7.00	327029**
			205.00	166.80	—	49.50	5.90	327036**
		63 - 36	75.00	36.80	—	—	4.20	327022
			225.00	186.80	—	78.00	9.90	327030**
			225.00	186.80	—	—	7.80	327037**
		80 - 36	75.00	36.80	—	—	4.70	327023
			275.00	236.80	—	90.00	14.80	327031**
			275.00	236.80	—	—	14.80	327038**
		100 - 56	90.00	—	—	—	5.50	327024
			290.00	251.80	—	—	17.30	327032**
		ER 40	80.00	41.80	135.00	63.00	3.80	259082*

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

*Balanced without clamping nut.

**Available upon request.

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B10: ix - x



key on B10-A: 2

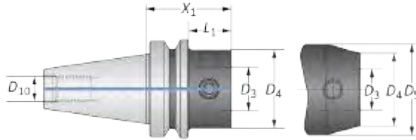
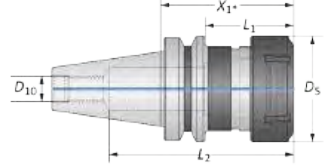
m = Metric (mm)

i = Imperial (in)



BT Master Shanks (JIS B 6339)

Balanced



X₁: with one-piece clamping nut

Imperial (in)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (lbs)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
30	M12 x 1.75	40 - 22	1.575	0.710	—	—	1.102	327012
		50 - 28	1.811	—	—	—	1.323	327013
40	M16 x 2	40 - 22	1.811	0.750	—	—	2.425	327016
		50 - 28	2.126	1.060	—	—	2.646	327019
		63 - 36	2.520	—	—	—	3.307	327020
		ER 40	2.755	1.692	4.094	2.480	2.645	259081*
50	M24 x 3	50 - 28	2.559	1.060	—	—	8.599	327021
			8.071	6.567	—	2.362	15.435	327029**
			8.071	6.567	—	1.949	13.010	327036**
		63 - 36	2.953	1.449	—	—	9.261	327022
			8.858	7.354	—	3.071	21.830	327030**
			8.858	7.354	—	—	17.199	327037**
		80 - 36	2.953	1.449	—	—	10.363	327023
			10.827	9.323	—	3.543	32.634	327031**
			10.827	9.323	—	—	32.634	327038**
		100 - 56	3.543	—	—	—	12.127	327024
			11.417	9.913	—	—	38.147	327032**
		ER 40	3.149	1.645	5.314	2.480	8.377	259082*

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/gk.

*Balanced without clamping nut.

**Available upon request.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

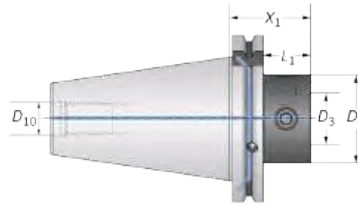
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlschlaegerBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



Dual Contact SK Master Shanks (DIN 69871-AD / B -D)



Metric (mm)

	Taper Size	D_{10}	MVS Connection	Shank		Weight (kg)	Part No.
			$D_4 \mid D_3$	X_1	L_1		
m	40	M16 x 2	50 - 28	46.00	26.90	1.10	353064
			63 - 36	66.00	46.90	1.50	353065
	50	M24 x 3	50 - 28	46.00	26.90	2.90	353066
			63 - 36	56.00	36.90	3.20	353067
			80 - 36	56.00	36.90	3.70	353068
			100 - 56	90.00	70.90	5.30	353069

Imperial (in)

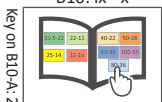
	Taper Size	D_{10}	MVS Connection	Shank		Weight (lbs)	Part No.
			$D_4 \mid D_3$	X_1	L_1		
i	40	M16 x 2	50 - 28	1.811	1.059	2.426	353064
			63 - 36	2.598	1.846	6.395	353065
	50	M24 x 3	50 - 28	1.811	1.059	6.395	353066
			63 - 36	2.205	1.453	7.056	353067
			80 - 36	2.205	1.453	8.159	353068
			100 - 56	3.543	2.791	11.687	353069

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlschlagBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

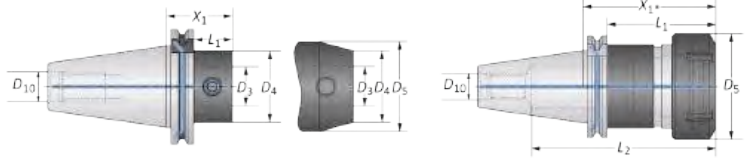
B10: ix - x

**m** = Metric (mm)**i** = Imperial (in)



SK Master Shanks (DIN 69871-AD / B -D)

Balanced



*X₁: with one-piece clamping nut

Metric (mm)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (kg)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
30	M12 x 1.75	40 - 22	46.00	26.90	—	—	0.50	327001
		50 - 28	58.00	—	—	—	0.80	327002
40	M16 x 2	32 - 18	55.00	35.90	—	40.00	1.10	327003
		40 - 22	46.00	26.90	—	—	1.00	327004
		50 - 28	46.00	26.90	—	—	1.10	327005
		63 - 36	66.00	46.90	—	—	1.40	327006
		80 - 36	66.00	—	—	—	1.90	327007
		ER 40	80.00	60.90	116.00	63.00	1.30	259079**
50	M24 x 3	50 - 28	46.00	26.90	—	—	2.90	327017
		50 - 28	186.00	166.90	—	60.00	6.00	327025
		50 - 28*	186.00	166.90	—	—	4.90	327033
		63 - 36	56.00	36.90	—	—	3.20	327018
		63 - 36	206.00	186.90	—	78.00	8.90	327026
		63 - 36	206.00	186.90	—	—	6.90	327034
		80 - 36	56.00	36.90	—	—	3.70	327010
		80 - 36	256.00	236.90	—	90.00	13.60	327027
		80 - 36	256.00	236.90	—	—	11.50	327035
		100 - 56	90.00	—	—	—	5.30	327011
		100 - 56	290.00	270.90	—	—	17.10	327028
		ER 40	80.00	55.20	134.00	63.00	3.10	259080**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

*D₄ = 49.50 mm

**Balanced without clamping nut.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

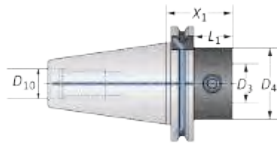
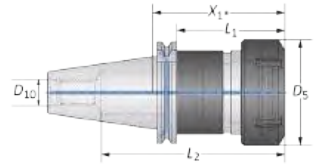
B10: ix - x





SK Master Shanks (DIN 69871-AD / B -D)

Balanced



*X₁: with one-piece clamping nut



Imperial (in)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (lbs)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
30	M12 x 1.75	40 - 22	1.811	1.059	—	—	1.103	327001
		50 - 28	2.283	—	—	—	1.764	327002
40	M16 x 2	32 - 18	2.165	1.413	—	1.575	2.426	327003
		40 - 22	1.811	1.059	—	—	2.205	327004
		50 - 28	1.811	1.059	—	—	2.426	327005
		63 - 36	2.598	1.846	—	—	3.087	327006
		80 - 36	2.598	—	—	—	4.190	327007
		ER 40	3.149	2.397	4.566	2.480	2.860	259079**
50	M24 x 3	50 - 28	1.811	1.059	—	—	6.395	327017
		50 - 28*	7.323	6.571	—	2.362	13.230	327025
		50 - 28*	7.323	6.571	—	—	10.805	327033
		63 - 36	2.205	1.453	—	—	7.056	327018
		63 - 36	8.110	7.358	—	3.071	19.625	327026
		63 - 36	8.110	7.358	—	—	15.215	327034
		80 - 36	2.205	1.453	—	—	8.159	327010
		80 - 36	10.079	9.327	—	3.543	29.988	327027
		80 - 36	10.079	9.327	—	—	25.353	327035
		100 - 56	3.543	—	—	—	11.687	327011
		100 - 56	11.417	10.665	—	—	37.706	327028
		ER 40	3.149	2.173	5.275	2.480	6.834	259080**

NOTE: Balanced refers to a specific residual imbalance of ≤4.00 gmm/kg.

*D₄ = 49.50 mm

**Balanced without clamping nut.

⚠ WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

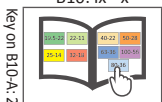
- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlschaeferBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

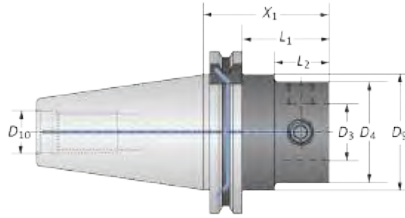


m = Metric (mm)

i = Imperial (in)



Dual Contact CAT Master Shanks with Imperial Threads



Metric (mm)

Taper Size	D_9	D_{10}	MVS Connection $D_4 D_3$	X_1	Shank L_1	L_2	Weight (kg)	Part No.
40	44.45	5/8 - 11	50 - 28	62.00	42.95	—	1.30	353062
			63 - 36	137.00	117.95	—	2.40	353076
			63 - 36	82.00	62.95	—	1.80	353063
50	69.85	1 - 8	50 - 28	62.00	42.95	27.00	3.30	353061
			50 - 28*	202.00	182.95	167.00	5.30	353077
			63 - 36	72.00	52.95	37.00	3.60	353078
			63 - 36	222.00	202.95	187.00	7.10	353079
			80 - 36	72.00	52.95	—	4.10	353060
			80 - 36	272.00	252.95	—	11.90	353080
			100 - 56	105.00	85.95	—	6.00	353081
				305.00	285.95	—	17.90	353082

* D_4 = 49.50 mm

Imperial (in)

Taper Size	D_9	D_{10}	MVS Connection $D_4 D_3$	X_1	Shank L_1	L_2	Weight (lbs)	Part No.
40	1.750	5/8 - 11	50 - 28	2.440	1.691	—	2.866	353062
			63 - 36	5.394	4.644	—	5.292	353076
			63 - 36	3.228	2.478	—	3.968	353063
50	2.750	1 - 8	50 - 28	2.440	1.691	1.062	7.275	353061
			50 - 28*	7.953	7.203	6.575	11.687	353077
			63 - 36	2.835	2.085	1.457	7.938	353078
			63 - 36	8.740	7.990	7.362	15.656	353079
			80 - 36	2.834	2.085	—	9.039	353060
			80 - 36	10.709	9.959	—	26.240	353080
			100 - 56	4.134	3.384	—	13.230	353081
				12.008	11.258	—	39.470	353082

* D_4 = 49.50 mm

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**

www.alliedmachine.com/WohlschlaegerBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

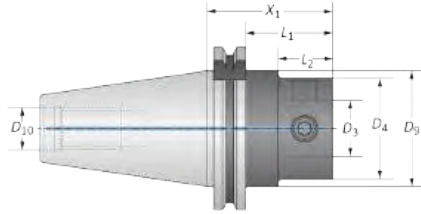


m = Metric (mm)

i = Imperial (in)



CAT Master Shanks with Metric Threads



Metric (mm)

Taper Size	D_9	D_{10}	MVS Connection	Shank			Weight (kg)	Part No.
			$D_4 D_3$	X_1	L_1	L_2		
40	44.45	M16 x 2	50 - 28	62.00	42.90	—	1.30	132022T016960
			63 - 36	82.00	62.90	—	1.80	132066T016960
50	69.85	M24 x 3	50 - 28	62.00	42.90	27.00	3.40	132022T016962
			63 - 36	72.00	52.90	37.00	3.70	132066T016962
			80 - 36	72.00	52.90	—	4.20	132088T016962
			100 - 56	105.00	85.90	—	5.20	132076T016962

⚠ WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

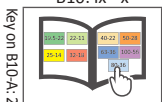
- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**

www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x



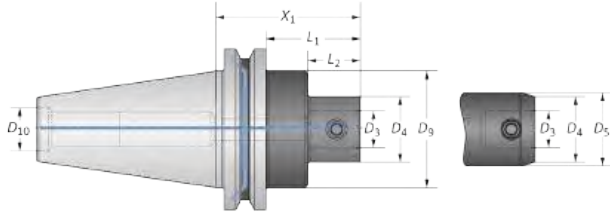
key on B10-A: 2

m = Metric (mm)

i = Imperial (in)



CAT Master Shanks with Imperial Threads



Imperial (in)

Taper Size	D ₉	D ₁₀	MVS Connection D ₄ D ₃	X ₁	L ₁	L ₂	D ₅	Weight (lbs)	Part No.
30	—	1/2 - 13	40 - 22	2.362	1.612	—	—	1.322	353001
			50 - 28	2.756	2.006	—	—	1.763	353002
40	1.750	5/8 - 11	25 - 14	2.165	1.415	0.787	—	2.204	353011
				5.551	4.800	4.173	1.102	3.306	353012
			32 - 18	2.559	1.809	1.181	—	2.425	353013
				6.732	5.982	5.354	1.378	4.188	353014
			40 - 22	2.165	1.415	0.787	—	2.491	353003
				6.378	5.628	—	1.850	5.511	353015
			50 - 28	2.441	1.691	—	—	2.821	353004
				5.394	4.644	—	—	5.291	353016
50	2.750	1 - 8	63 - 36	3.228	2.478	—	—	4.034	353005
				6.181	5.431	—	—	7.936	353017
			40 - 22	2.165	1.415	0.787	—	7.297	353006
				6.378	5.628	5.000	1.850	9.920	353018
			50 - 28	2.441	1.691	1.063	—	7.583	353007
				7.953	7.203	6.575	2.362	14.100	353019
			50 - 28*	7.953	7.203	6.575	—	11.680	353025
				2.835	2.085	1.457	—	8.223	353008
			63 - 36	8.740	7.990	7.362	—	15.650	353023
				8.740	7.990	—	3.071	20.500	353020
			80 - 36	2.835	2.085	—	—	9.413	353009
				10.709	9.959	—	—	26.230	353024
				10.709	9.959	—	3.543	31.300	353021
			100 - 56	4.134	3.384	—	—	13.600	353010
				12.008	11.258	—	—	39.460	353022

*D₄ = 49.50 mm

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

-Do not exceed the allowable weight for your machine tool.

-Do not exceed the recommended length-to-diameter ratio, which can impact tool stability and performance.

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www.alliedmachine.com/WohlfahrtBoringGuidelines.NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



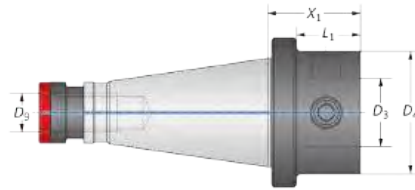
key on B10-A:2

M = Metric (mm)

I = Imperial (in)



NMTB Master Shanks



Metric (mm)

			MVS Connection	Shank			
Taper Size		D_9	$D_4 \mid D_3$	X_1	L_1	Weight (kg)	Part No.
m	40	5/8 - 11	50 - 28	38.00	26.40	1.30	132022T004498
			63 - 36	48.00	36.40	1.50	132066T004498
	50	1 - 8	50 - 28	42.00	26.80	3.00	132022T004480
			63 - 36	52.00	36.80	3.50	132066T004480
			80 - 36	52.00	36.80	4.00	132088T004480
			100 - 56	90.00	74.80	5.95	132076T004480

Imperial (in)

			MVS Connection	Shank			
Taper Size		D_9	D_4 D_3	X_1	L_1	Weight (lbs)	Part No.
i	40	5/8 - 11	50 - 28	1.496	1.039	2.900	132022T004498
			63 - 36	1.890	1.433	3.300	132066T004498
	50	1 - 8	50 - 28	1.654	1.060	6.600	132022T004480
			63 - 36	2.047	1.450	7.700	132066T004480
			80 - 36	2.047	1.450	8.800	132088T004480
			100 - 56	3.543	2.945	13.118	132076T004480

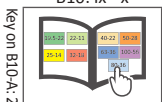
WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
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www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



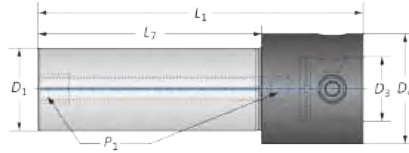
key on B10-A: 2

m = Metric (mm)

i = Imperial (in)



Straight Master Shanks



Imperial (in)

i	MVS Connection	Shank				Weight (lbs)	Part No.
	D_4 D_3	L_7	D_1	P_1	L_1		
	40 - 22	3-1/2	1-1/4	1/8-27 NPTF	5.080	1.764	K71547
	50 - 28	4	1-1/2	1/4-18 NPTF	5.810	3.086	K71548
	63 - 36	4-1/2	2	1/4-18 NPTF	6.700	5.952	K71549
	80 - 36	4-1/2	2	1/4-18 NPTF	6.700	7.716	K71550

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x

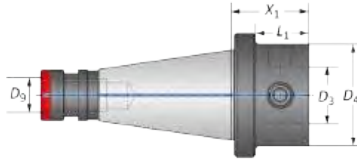
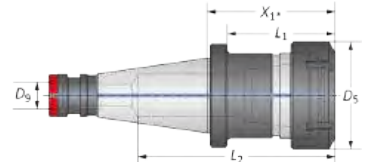


key on B10-A:2

= Metric (mm)

= Imperial (in)

DIN 2080 Master Shanks



*X₁: with one-piece clamping nut



Metric (mm)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (kg)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
40	M16 x 2	50 - 28	38.00	26.20	—	—	1.30	132022T010229
		63 - 36	48.00	36.20	—	—	1.50	132066T010229
50	M24 x 3	50 - 28	42.00	26.80	—	—	3.00	132022T003704
		63 - 36	52.00	36.80	—	—	3.50	132066T003704
		80 - 36	52.00	36.80	—	—	4.00	132088T003704
		100 - 56	90.00	74.80	—	—	4.90	132076T003704
		ER 40	80.00	64.80	134.00	63.00	3.30	259084

Imperial (in)

Taper Size	D ₁₀	MVS Connection	Shank				Weight (lbs)	Part No.
		D ₄ D ₃	X ₁	L ₁	L ₂	D ₅		
40	M16 x 2	50 - 28	1.496	1.031	—	—	2.866	132022T010229
		63 - 36	1.889	1.425	—	—	3.306	132066T010229
50	M24 x 3	50 - 28	1.653	1.055	—	—	6.613	132022T003704
		63 - 36	2.047	1.448	—	—	7.716	132066T003704
		80 - 36	2.047	1.448	—	—	8.818	132088T003704
		100 - 56	3.543	2.945	—	—	10.800	132076T003704
		ER 40	3.149	2.551	5.276	2.480	7.275	259084

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



m = Metric (mm)

i = Imperial (in)



Morse Taper Master Shanks (DIN 1806)



Metric (mm)

	Morse Taper Size	MVS Connection D_4 D_3	Shank		Weight (kg)	Part No.
			X_1	L_1		
m	4	50 - 28	43.00	36.50	1.10	132022T003590
	5	50 - 28	33.00	26.70	1.80	132022T003920
		63 - 36	53.00	46.70	2.20	132066T003920

Imperial (in)

	Morse Taper Size	MVS Connection D_4 D_3	Shank		Weight (lbs)	Part No.
			X_1	L_1		
i	4	50 - 28	1.693	1.440	2.425	132022T003590
	5	50 - 28	1.299	1.050	3.968	132022T003920
		63 - 36	2.087	1.840	4.850	132066T003920

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B10: ix - x



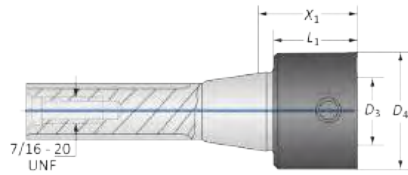
key on B10-A:2

m = Metric (mm)

i = Imperial (in)



R8 Master Shanks



Metric (mm)

	MVS Connection	Shank		Weight (kg)	Part No.
	D_4 D_3	X_1	L_1		
m	50 - 28	45.00	36.00	1.00	132022T007166
	63 - 36	60.00	51.00	1.30	132066T007166

Imperial (in)

	MVS Connection	Shank		Weight (lbs)	Part No.
	D_4 D_3	X_1	L_1		
i	50 - 28	1.770	1.417	2.204	132022T007166
	63 - 36	2.362	2.008	2.866	132066T007166

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

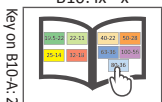
- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**

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B10: ix - x



key on B10-A: 2

m = Metric (mm)

i = Imperial (in)



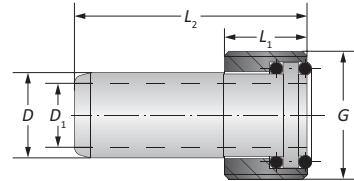
Accessories

Coolant Adapters | Service Keys | Clamping Nuts



Coolant Adapter Sets

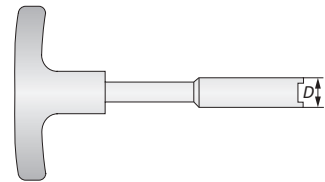
HSK	Thread G	D	D ₁	L ₁	L ₂	Part No.
32	M10 x 1.5 x 1.0	6.00	3.50	5.50	25.70	262002
40	M12 x 1.75 x 1.0	8.00	5.00	7.50	29.20	262003
50	M16 x 2 x 1.0	10.00	6.40	9.50	32.70	262004
63	M18 x 2.5 x 1.0	12.00	8.00	11.50	36.20	262005
80	M20 x 2.5 x 1.5	14.00	10.00	13.50	40.00	262006
100	M24 x 3 x 1.5	16.00	12.00	15.50	43.60	262007



Service Keys

HSK Shank Size	D	Part No.
32	8.50	315234
40	10.50	315235
50	14.50	215726
63	16.50	215727*
80	18.00	415127
100	22.00	215728

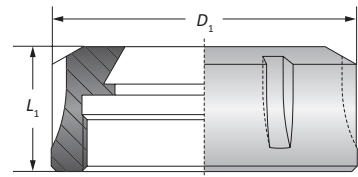
*Two piece



Type U (For use with coolant adapter set.)

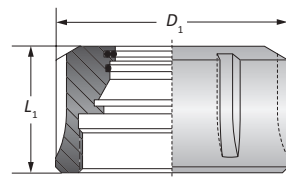
ISO 15488 (DIN 6499-B) One-piece Clamping Nut

	Nominal Size	Clamping Nut		Part No.
		L ₁	D ₁	
m	ER 40	25.50	63.00	215926
i	ER 40	1.004	2.480	215926



ISO 15488 (DIN 6499-B) Sealing Disk One-piece Clamping Nut

	Nominal Size	Sealing Disk Clamping Nut		Part No.
		L ₁	D ₁	
m	ER 40	34.00	63.00	278001
i	ER 40	1.339	2.480	278001



m = Metric (mm)
i = Imperial (in)

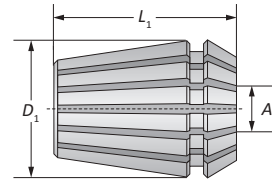


Accessories

ISO 15488 (DIN 6499-B) Collet Chuck Accessories

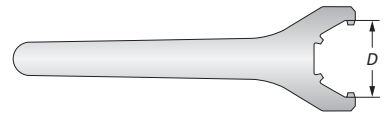
ISO 15488 (DIN6499-B) Collets

	Clamping Range	Collet		Part No.
	A	L_1	D_1	
m	15.00 - 14.00	46.00	40.00	071790
	18.00 - 17.00	46.00	40.00	071793
	20.00 - 19.00	46.00	40.00	071795
	23.00 - 22.00	46.00	40.00	071798
i	0.591 - 0.551	1.811	1.575	071790
	0.709 - 0.669	1.811	1.575	071793
	0.787 - 0.748	1.811	1.575	071795
	0.906 - 0.866	1.811	1.575	071798



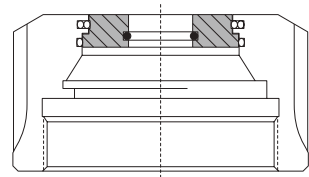
ISO 15488 (DIN 6499-B) Service Keys

	Nominal Size	Service Key D	Part No.
m	ER 40	63.00	215931

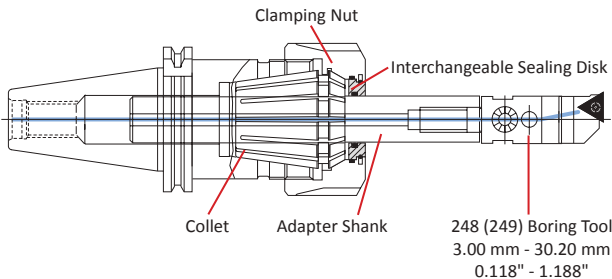
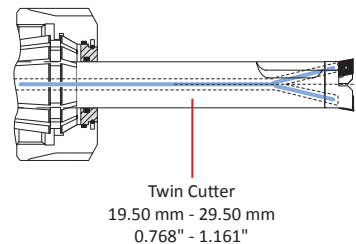


ISO 15488 (DIN6499-B) Collet Sealing Disk

	Clamping Range	Part No.
m	15.00 - 14.50	278029
	18.00 - 17.50	278035
	20.00 - 19.50	278039
	23.00 - 22.50	278045
i	0.591 - 0.551	278029
	0.709 - 0.669	278035
	0.787 - 0.748	278039
	0.906 - 0.866	278045



Application with clamping nuts and sealing disks when using central coolant feed:



m = Metric (mm)
i = Imperial (in)



Accessories

Mounting Fixtures



Mounting Fixture		
Code	Type	Part No.
Basic Body*	—	098060
Adapter	30 Taper	098073
Adapter	40 Taper	098061
Adapter	50 Taper	098062
Adapter	HSK-A 32	098063
Adapter	HSK-A 40	098064
Adapter	HSK-A 50	098065
Adapter	HSK-A 63	098066
Adapter	HSK-A 80	098067
Adapter	HSK-A 100	098068
Adapter	PSC 50	098069
Adapter	PSC 63	098070
Adapter	PSC 80	098071

*Basic body and adapters sold separately.

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Notes



SECTION

B10-B

Intermediate Modules

Intermediate Modules



Increase Tool Stability with Intermediate Modules

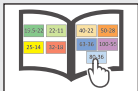
- ▶ Allow for expanded use of existing components.
- ▶ Add flexibility to setups.
- ▶ Reduce need for specials and their associated cost and lead time.
- ▶ Each component individually balanced.

Applicable Industries

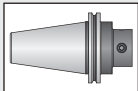
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

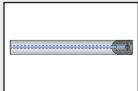
The following icons will appear throughout the catalog to help you navigate between products.



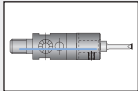
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Shanks
A variety of shanks for different machines.



248 (249) Shanks
A variety of shanks for different machines.



248 (249) Boring Head
248 (249) boring head that connects into the adapter shanks.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

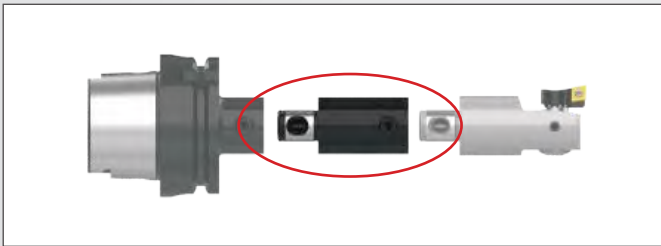
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Intermediate MODULES

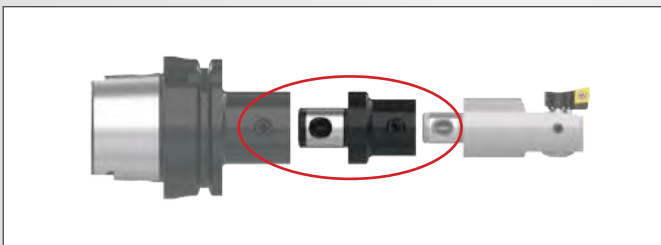
Extensions



Features:

- ▶ Used to increase bore depth.
- ▶ Connects quickly and easily with the MVS connection.
- ▶ Aluminum components available to reduce stress on the spindle.

Reducers



Features:

- ▶ Improves rigidity by stepping down to smaller MVS connection sizes.
- ▶ Connects quickly and easily with the MVS connection.
- ▶ Accommodates smaller diameter applications.



Case Study

WOHLHAUPTER® Fine Boring Head with NOVI^{TECH}®

Are you looking for more from your tooling?

After facing problems with chatter and chipping inserts, our customer, who machines fueling machine head rotors from ASTM A276 - 304L in the nuclear power industry, sought a better solution to their machining process.

The customer turned to Allied for help finding a new solution. Once the causes of insert failure and chatter were identified, our experienced team was able to create the best assembly suitable for the application. Using **Wohlhaupter's analog balanced fine boring head** paired with the **NOVI^{TECH} vibration damper module**, they were able to eliminate the issues our customers were facing.

With the previous tooling, the customer achieved only 12 minutes of tool life, but with Allied's Wohlhaupter assembly, they achieved more than four times the life for 65 minutes!

Allied's Wohlhaupter assembly improved the machining process by making it more consistent and saved the customer money by reducing cost per hole. If you are looking to save time and money, **give us a call, and we will help you find the right solution.**



Product:	Wohlhaupter analog balanced fine boring head with NOVI ^{TECH}	Measure	Competitor Boring Head	Wohlhaupter Fine Boring Head with NOVI ^{TECH}
Objectives:	(1) Decrease cycle time (2) Improve process	RPM	106	372
Industry:	Renewable energy/energy	Speed Rate	40 m/min (131.234 SFM)	140 m/min (459.318 SFM)
Part:	Nuclear fueling machine head rotor	Feed Rate	0.076 mm/rev (0.003 IPR)	0.16 mm/rev (0.006 IPR)
Material:	ASTM A276-304L	Penetration Rate	8 mm/min (0.315 IPM)	60 mm/min (2.362 IPM)
Hole Ø:	120 mm (4.7244")	Cycle Time	2 hr 10 min	17 min
Hole Depth:	1040 mm (40.9449")	Tool Life	12 min	65 min
Wohlhaupter offered 93.32% cost per hole savings over the competitor tooling.				

► Analog balanced fine boring head
Item No. 464038*
*replacement for 364047

► Boring insert
Item No. 297994WHC111

► NOVI^{TECH} vibration damping intermediate module
Item No. 519004

86.92%
cycle time reduction



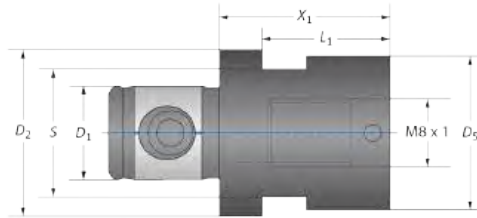
The Wohlhaupter boring head with the NOVI^{TECH} vibration damper module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Increased tool life
- ✓ Decreased cost per hole



248 (249) Adapters

Standard and Balanced Adapters



Metric (mm)

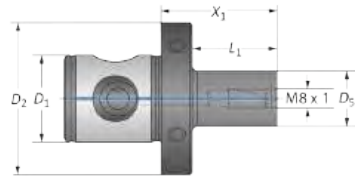
m	MVS Connection	Connection	Adapter				Weight (kg)	Service Key	Part No.
	$D_2 D_1$		X_1	L_1	S	D_5			
	19.5 - 11	M8 x 1	20.00	15.00	15/P	18.00	0.05	15 S / P	219168
	23 - 11	M8 x 1	20.00	—	19/P	23.00	0.07	19 S / P	219169

Imperial (in)

i	MVS Connection	Connection	Adapter				Weight (lbs)	Service Key	Part No.
	$D_2 D_1$		X_1	L_1	S	D_5			
	19.5 - 11	M8 x 1	0.787	0.590	15/P	0.708	0.110	15 S / P	219168
	23 - 11	M8 x 1	0.787	—	19/P	0.905	0.154	19 S / P	219169



Threaded Hole for Balancing Screw



Metric (mm)

m	MVS Connection	Connection	Adapter				Weight (kg)	Balancing Screw	Part No.
	$D_2 D_1$		X_1	L_1	D_5				
	50 - 28	M8 x 1	32.00	19.00	15.00		0.35	M6 x 1 x 10	219185
			48.00	35.00	18.00		0.40	M6 x 1 x 10	219176
			48.00	35.00	23.00		0.45	M6 x 1 x 10	219177

Imperial (in)

i	MVS Connection	Connection	Adapter				Weight (lbs)	Balancing Screw	Part No.
	$D_2 D_1$		X_1	L_1	D_5				
	50 - 28	M8 x 1	1.259	0.748	0.590		0.771	M6 x 1 x 10	219185
			1.890	1.377	0.708		0.881	M6 x 1 x 10	219176
			1.890	1.377	0.905		0.992	M6 x 1 x 10	219177

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

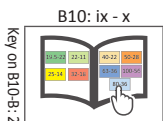
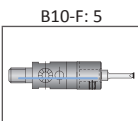
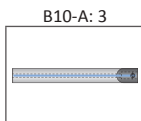
WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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key on B10-B: 2

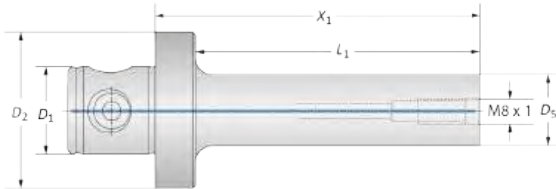
m = Metric (mm)
i = Imperial (in)

B10-B: 5

www.alliedmachine.com | 1.330.343.4283

248 (249) Adapters

Vibration Reducing Heavy Metal Adapters



Metric (mm)

	MVS Connection	Connection	Adapter			Weight (kg)	Part No.
	$D_2 \mid D_1$		X_1	L_1	D_3		
	50 - 28	M8 x 1	68	55	15	0.80	248147
			84	71	19	1.00	248148
			104	91	23	1.30	248149

Imperial (in)

	MVS Connection	Connection	Adapter			Weight (lbs)	Part No.
	$D_2 \mid D_1$		X_1	L_1	D_3		
	50 - 28	M8 x 1	2.677	2.165	0.59	1.763	248147
			3.307	2.795	0.748	2.204	248148
			4.094	3.582	0.905	2.866	248149

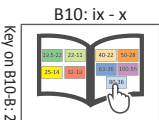
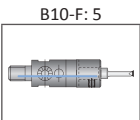
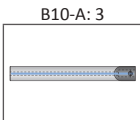
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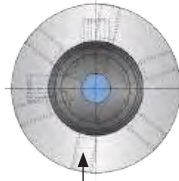


 = Metric (mm)
 = Imperial (in)

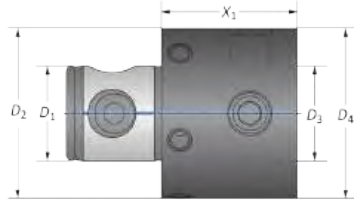


Extensions

Balanced



Balancing Screw



Metric (mm)

MVS Connection		Extension	X ₁	Weight (kg)	Balancing Screw	Part No.
D ₂ D ₁	D ₄ D ₃					
19.5 - 11	19.5 - 11		40.00	0.10	—	219043
22 - 11	22 - 11		40.00	0.10	—	219044
25 - 14	25 - 14		25.00	0.10	—	219068
			40.00	0.10	—	119001
32 - 18	32 - 18		40.00	0.20	—	119002
40 - 22	40 - 22		40.00	0.40	—	119003
50 - 28	50 - 28		40.00	0.60	M6 x 1 x 10	119004
			75.00	1.10	M6 x 1 x 10	219097*
			75.00	1.10	M6 x 1 x 10	219082
			100.00	1.50	M6 x 1 x 10	119058
63 - 36	63 - 36		50.00	1.10	M6 x 1 x 10	119005
			75.00	1.70	M6 x 1 x 15	219083
			125.00	2.90	M6 x 1 x 15	119065
80 - 36	80 - 36		50.00	1.90	M6 x 1 x 15	119006
			75.00	2.80	M6 x 1 x 15	219084
			125.00	4.80	M6 x 1 x 15	119066
			200.00	7.40	M8 x 1.25 x 21	219094
100 - 56	100 - 56		275.00	10.10	M8 x 1.25 x 21	119069
			75.00	4.30	M8 x 1.25 x 20	219095
			100.00	5.60	M8 x 1.25 x 20	219061
			150.00	8.10	M8 x 1.25 x 20	219096
			200.00	10.20	M8 x 1.25 x 20	219062
			300.00	14.60	M8 x 1.25 x 20	219063

*D₂ / D₄ = 49.50 mm (1.949") for boring 50.00 mm (1.969") diameter applications.

NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

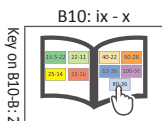
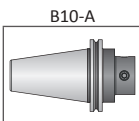
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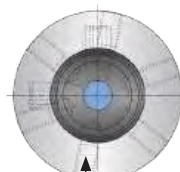
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i = Imperial (in)

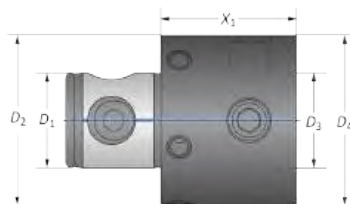


Extensions

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Extension	Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
19.5 - 11	19.5 - 11	1.575	0.220	—	219043
22 - 11	22 - 11	1.575	0.220	—	219044
		0.984	0.220	—	219068
25 - 14	25 - 14	1.575	0.220	—	119001
32 - 18	32 - 18	1.575	0.440	—	119002
40 - 22	40 - 22	1.575	0.881	—	119003
50 - 28	50 - 28	1.575	1.322	M6 x 1 x 10	119004
		2.953	2.425	M6 x 1 x 10	219097*
		2.953	2.425	M6 x 1 x 10	219082
		3.937	3.306	M6 x 1 x 10	119058
63 - 36	63 - 36	1.969	2.425	M6 x 1 x 10	119005
		2.953	3.747	M6 x 1 x 15	219083
		4.921	6.393	M6 x 1 x 15	119065
80 - 36	80 - 36	1.969	4.188	M6 x 1 x 15	119006
		2.953	6.172	M6 x 1 x 15	219084
		4.921	10.580	M6 x 1 x 15	119066
		7.874	16.310	M8 x 1.25 x 21	219094
100 - 56	100 - 56	10.827	22.260	M8 x 1.25 x 21	119069
		2.953	9.479	M8 x 1.25 x 20	219095
		3.937	12.340	M8 x 1.25 x 20	219061
		5.906	17.850	M8 x 1.25 x 20	219096
		7.874	22.480	M8 x 1.25 x 20	219062
		11.811	32.180	M8 x 1.25 x 20	219063

* $D_2 / D_4 = 49.50 \text{ mm (1.949")}$ for boring $50.00 \text{ mm (1.969")}$ diameter applications.

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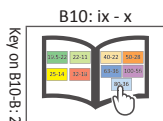
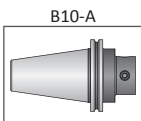
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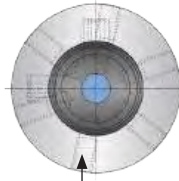
m = Metric (mm)

i = Imperial (in)

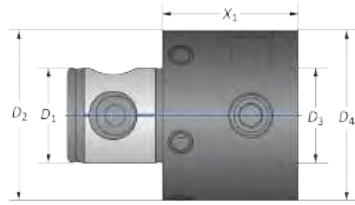


Extensions

Alu-Line® Balanced



Balancing Screw



Metric (mm)

MVS Connection		Extension	Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
50 - 28	50 - 28	40.00	0.20	M6 x 1 x 8	319021
		75.00	0.40	M6 x 1 x 10	319022
		100.00	0.60	M6 x 1 x 10	319023
63 - 36	63 - 36	50.00	0.40	M6 x 1 x 8	319002
		125.00	1.10	M6 x 1 x 10	319003
		50.00	0.70	M6 x 1 x 10	319004
80 - 36	80 - 36	75.00	1.00	M6 x 1 x 10	319016
		125.00	1.80	M6 x 1 x 10	319005
		200.00	2.70	M6 x 1 x 10	319017
		275.00	3.70	M6 x 1 x 10	319006
		75.00	1.50	M8 x 1.25 x 20	319019
100 - 56	100 - 56	100.00	2.20	M8 x 1.25 x 20	319007
		150.00	3.00	M8 x 1.25 x 20	319018
		200.00	3.80	M8 x 1.25 x 20	319008
		300.00	5.40	M8 x 1.25 x 20	319009

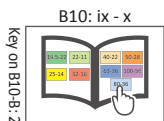
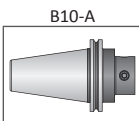
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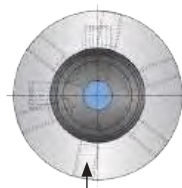


m = Metric (mm)
i = Imperial (in)

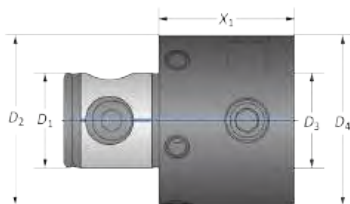


Extensions

Alu-Line® Balanced



Balancing Screw



Imperial (in)

MVS Connection		Extension	Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1			
50 - 28	50 - 28	1.575	0.440	M6 x 1 x 8	319021
		2.953	0.881	M6 x 1 x 10	319022
		3.937	1.322	M6 x 1 x 10	319023
63 - 36	63 - 36	1.969	0.881	M6 x 1 x 8	319002
		4.921	2.425	M6 x 1 x 10	319003
		1.969	1.543	M6 x 1 x 10	319004
80 - 36	80 - 36	2.953	2.204	M6 x 1 x 10	319016
		4.921	3.968	M6 x 1 x 10	319005
		7.874	5.952	M6 x 1 x 10	319017
		10.827	8.157	M6 x 1 x 10	319006
		2.953	3.306	M8 x 1.25 x 20	319019
100 - 56	100 - 56	3.937	4.850	M8 x 1.25 x 20	319007
		5.906	6.613	M8 x 1.25 x 20	319018
		7.874	8.377	M8 x 1.25 x 20	319008
		11.811	11.900	M8 x 1.25 x 20	319009

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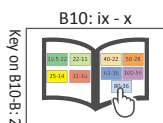
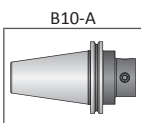
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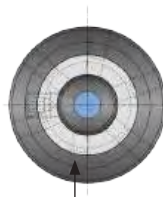
m = Metric (mm)

i = Imperial (in)

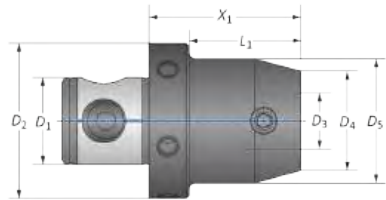


Reducers

Balanced



Balancing Screw



Metric (mm)

MVS Connection		Reducer			Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
25 - 14	19.5 - 11	30.00	21.00	—	0.10	—	219034
	22 - 11	30.00	21.00	—	0.20	—	219035
32 - 18	22 - 11	12.00	0.50	—	0.10	—	219036
	25 - 14	30.00	21.00	—	0.10	—	219037
40 - 22	22 - 11	12.00	0.50	—	0.20	—	219038
	25 - 14	30.00	21.00	—	0.20	—	219039
50 - 28	32 - 18	30.00	—	40.00	0.50	—	219040
	19.5 - 11	54.00	41.00	—	0.40	M6 x 1 x 10	219051
	22 - 11	14.00	0.50	—	0.30	M6 x 1 x 10	219041
		54.00	41.00	—	0.40	M6 x 1 x 10	219052
	25 - 14	14.00	0.50	—	0.30	M6 x 1 x 7	119094
		59.00	46.00	—	0.40	M6 x 1 x 10	119054
		59.00	46.00	32.00	0.50	M6 x 1 x 10	119055
		119.00	106.00	32.00	0.90	M6 x 1 x 10	119010
		119.00	106.00	36.00	1.00	M6 x 1 x 10	219030*
		49.00	36.00	35.00	0.90	M6 x 1 x 10	219085
	32 - 18	109.00	96.00	35.00	1.00	M6 x 1 x 10	219086
		109.00	96.00	40.00	1.10	M6 x 1 x 10	119012
		109.00	96.00	46.00	1.30	M6 x 1 x 10	219032*
	40 - 22	40.00	27.00	—	0.50	M6 x 1 x 10	219087
		100.00	87.00	47.00	1.30	M6 x 1 x 10	219088
	63 - 36	50.00	—	—	1.00	M6 x 1 x 10	119059

*Reinforced reducer.

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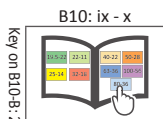
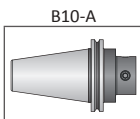
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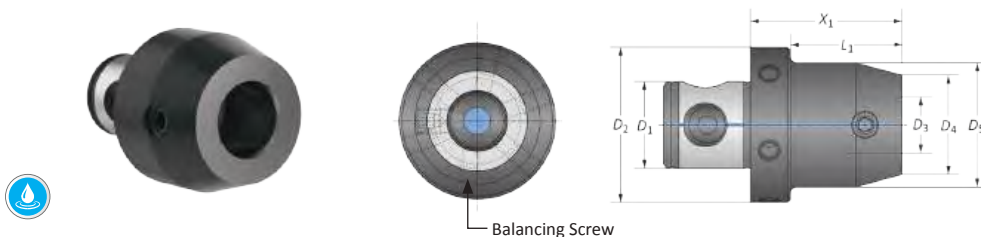
M = Metric (mm)

I = Imperial (in)



Reducers

Balanced



Metric (mm)

MVS Connection		Reducer					
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5	Weight (kg)	Balancing Screw	Part No.
63 - 36	19.5 - 11	54.00	41.00	—	0.60	M6 x 1 x 10	219053
	22 - 11	14.00	0.50	—	0.60	M6 x 1 x 10	219042
		54.00	41.00	—	0.70	M6 x 1 x 10	219054
		14.00	0.50	—	0.60	M6 x 1 x 10	119095
	25 - 14	59.00	46.00	—	0.70	M6 x 1 x 10	119060
		59.00	46.00	32.00	0.80	M6 x 1 x 10	119061
		119.00	106.00	32.00	1.10	M6 x 1 x 15	119019
		119.00	106.00	36.00	1.30	M6 x 1 x 10	219031*
		49.00	36.00	35.00	0.70	M6 x 1 x 10	219089
		109.00	96.00	35.00	1.20	M6 x 1 x 10	219090
	32 - 18	109.00	96.00	40.00	1.40	M6 x 1 x 10	119021
		109.00	96.00	46.00	1.60	M6 x 1 x 10	219033*
		40.00	27.00	—	0.80	M6 x 1 x 10	219091
	40 - 22	100.00	87.00	47.00	1.60	M6 x 1 x 15	219092
		150.00	137.00	50.00	2.40	M6 x 1 x 15	119067
		40.00	—	63.00	1.00	M6 x 1 x 10	119064
	50 - 28	40.00	27.00	—	0.80	M6 x 1 x 10	119096**
		100.00	—	63.00	2.40	M6 x 1 x 15	119025
		100.00	87.00	—	1.70	M6 x 1 x 10	119097**
		80.00	—	80.00	1.60	M6 x 1 x 15	119098
80 - 36	63 - 36	50.00	—	80.00	1.60	M6 x 1 x 15	119098
100 - 56	80 - 36	70.00	52.00	—	3.60	M8 x 1.25 x 20	219066

* Reinforced reducer.

**For milling applications.

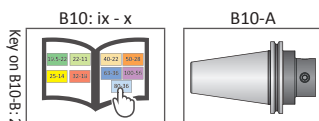
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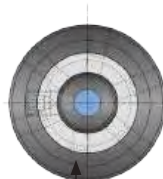


m = Metric (mm)
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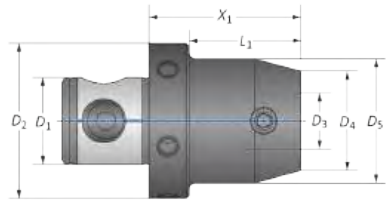


Reducers

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1	D_5			
25 - 14	19.5 - 11	1.181	0.827	—	0.220	—	219034
	22 - 11	1.181	0.827	—	0.440	—	219035
32 - 18	22 - 11	0.472	0.020	—	0.220	—	219036
	25 - 14	1.181	0.827	—	0.220	—	219037
40 - 22	22 - 11	0.472	0.020	—	0.440	—	219038
	25 - 14	1.181	0.827	—	0.440	—	219039
50 - 28	32 - 18	1.181	—	1.575	1.102	—	219040
	19.5 - 11	2.126	1.614	—	0.881	M6 x 1 x 10	219051
	22 - 11	0.551	0.020	—	0.661	M6 x 1 x 10	219041
		2.126	1.614	—	0.881	M6 x 1 x 10	219052
	25 - 14	0.551	0.020	—	0.661	M6 x 1 x 7	119094
		2.323	1.811	—	0.881	M6 x 1 x 10	119054
		2.323	1.811	1.260	1.102	M6 x 1 x 10	119055
		4.685	4.173	1.260	1.984	M6 x 1 x 10	119010
		4.685	4.173	1.417	2.204	M6 x 1 x 10	219030*
		1.929	1.417	1.378	1.984	M6 x 1 x 10	219085
	32 - 18	4.291	3.780	1.378	2.204	M6 x 1 x 10	219086
		4.291	3.780	1.575	2.425	M6 x 1 x 10	119012
		4.291	3.780	1.811	2.866	M6 x 1 x 10	219032*
	40 - 22	1.575	1.063	—	1.102	M6 x 1 x 10	219087
		3.937	3.425	1.850	2.866	M6 x 1 x 10	219088
	63 - 36	1.969	—	—	2.204	M6 x 1 x 10	119059

*Reinforced reducer.

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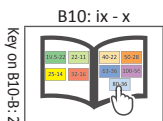
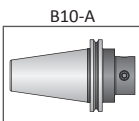
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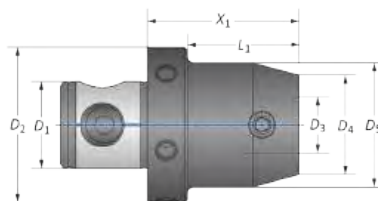


Reducers

Balanced



Balancing Screw



Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Balancing Screw	Part No.
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5			
63 - 36	19.5 - 11	2.126	1.614	—	1.322	M6 x 1 x 10	219053
	22 - 11	0.551	0.020	—	1.322	M6 x 1 x 10	219042
	25 - 14	2.126	1.614	—	1.543	M6 x 1 x 10	219054
		0.551	0.020	—	1.322	M6 x 1 x 10	119095
		2.323	1.811	—	1.543	M6 x 1 x 10	119060
		2.323	1.811	1.260	1.763	M6 x 1 x 10	119061
		4.685	4.173	1.260	2.425	M6 x 1 x 15	119019
		4.685	4.173	1.417	2.866	M6 x 1 x 10	219031*
	32 - 18	1.929	1.417	1.378	1.543	M6 x 1 x 10	219089
		4.291	3.780	1.378	2.645	M6 x 1 x 10	219090
		4.291	3.780	1.575	3.086	M6 x 1 x 10	119021
		4.291	3.780	1.811	3.527	M6 x 1 x 10	219033*
	40 - 22	1.575	1.063	—	1.763	M6 x 1 x 10	219091
		3.937	3.425	1.850	3.527	M6 x 1 x 15	219092
		5.906	5.394	1.969	5.291	M6 x 1 x 15	119067
	50 - 28	1.575	—	2.480	2.204	M6 x 1 x 10	119064
		1.575	1.063	—	1.763	M6 x 1 x 10	119096**
		3.937	—	2.480	5.291	M6 x 1 x 15	119025
		3.937	3.425	—	3.747	M6 x 1 x 10	119097**
80 - 36	63 - 36	1.969	—	3.150	3.527	M6 x 1 x 15	119098
100 - 56	80 - 36	2.756	2.047	—	7.936	M8 x 1.25 x 20	219066

* Reinforced reducer.

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IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

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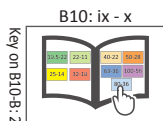
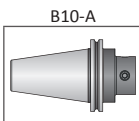
-Do not exceed the **allowable weight** for your machine tool.

-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**

www.alliedmachine.com/WohlschaeferBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



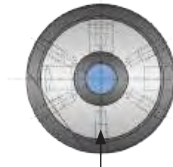
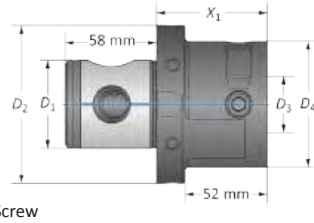
m = Metric (mm)

i = Imperial (in)



Reducers

Alu-Line® Balanced



Metric (mm)

MVS Connection		Reducer		Weight (kg)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1			
100 - 56	80 - 36	70.00	52.00	1.30	M8 x 1.25 x 20	319013

Imperial (in)

MVS Connection		Reducer		Weight (lbs)	Balancing Screw	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1			
100 - 56	80 - 36	2.756	2.047	2.866	M8 x 1.25 x 20	319013

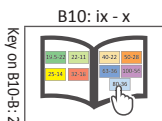
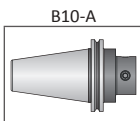
NOTE: Balance refers to a specific residual imbalance of ≤ 10 g mm/kg.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
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NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

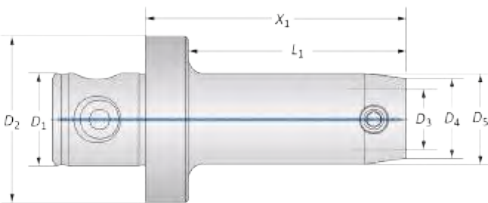


= Metric (mm)
 = Imperial (in)



Reducers

Vibration Reducing Heavy Metal Reducers



Metric (mm)

MVS Connection		Reducer			Weight (kg)	Part No.
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5		
m 50 - 28	19.5 - 11	90.00	77.00	—	1.00	219055
	22 - 11	110.00	97.00	23.00	1.30	219056
	25 - 14	124.00	111.00	28.00	1.70	219057
		144.00	131.00	32.00	2.30	219058
		164.00	151.00	35.00	2.90	219059
	32 - 18	154.00	141.00	37.00	2.90	219093
		154.00	141.00	42.00	3.70	219060

Imperial (in)

MVS Connection		Reducer			Weight (lbs)	Part No.
$D_2 \mid D_1$	$D_4 \mid D_3$	X_1	L_1	D_5		
i 50 - 28	19.5 - 11	3.543	3.031	—	2.204	219055
	22 - 11	4.331	3.819	0.906	2.866	219056
	25 - 14	4.882	4.370	1.102	3.747	219057
		5.669	5.157	1.260	5.070	219058
		6.457	5.945	1.378	6.393	219059
	32 - 18	6.063	5.551	1.457	6.393	219093
		6.063	5.551	1.654	8.157	219060

NOTE: Heavy metal reducers are used to reduce vibration when machining deep boring applications. When using heavy metal reducers, the maximum cutting speed (V_c) is 200 m/min. If steel extensions are also used, reduce the cutting speed by 50% and use replaceable inserts where $r = 0.10$ mm.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

WARNING

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- Do not exceed the **allowable weight** for your machine tool.
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www.alliedmachine.com/WohlschaeferBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

key on B10-B: 2

B10: ix - x

B10-A

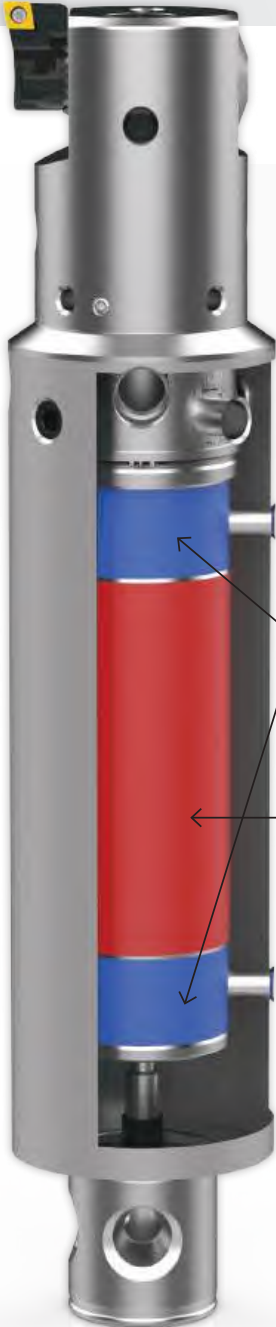
m = Metric (mm)
i = Imperial (in)



NOVI^{TECH}® Vibration Damping Intermediate Modules Overview



THE DEEP HOLE 10xD BORING SOLUTION YOU'VE BEEN LOOKING FOR



Damper module with
viscoelastic bearing

Absorber mass

OUR **SOLUTION**

- ▶ Machine up to **10xD**.
- ▶ Connect quickly and easily with the **MVS connection**.
- ▶ Utilize existing **Wohlhaupter** components.
- ▶ **Increase** your productivity, surface quality, and process reliability.
- ▶ **Increase** your tool and spindle life.

▶ YOUR **ADVANTAGE**

THE SURFACE QUALITY TELLS IT ALL

When our customer was machining alloy steel to 9xD, the NOVITECH provided reliable machining, which achieved high surface quality ($R_a = 32$).



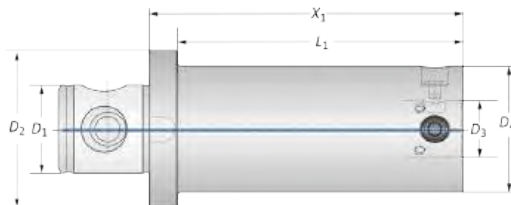
Standard tool
construction with
steel extension

Wohlhaupter
NOVI^{TECH} with
VarioBore precision
boring head



NOVI^{TECH}: 50.00 mm - 205.00 mm (1.969" - 8.071")

Vibration Damping Intermediate Modules



Metric

MVS Connection		NOVI ^{TECH}		Weight (kg)	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1		
50 - 28	40 - 22	200.00	—	2.80	519002*
63 - 36	50 - 28	200.00	—	5.70	519003
80 - 36	63 - 36	200.00	—	7.50	519004
	80 - 36	200.00	—	7.50	519005
100 - 56	80 - 36	200.00	182.00	9.90	519006

Imperial

MVS Connection		NOVI ^{TECH}		Weight (lbs)	Part No.
$D_2 D_1$	$D_4 D_3$	X_1	L_1		
50 - 28	40 - 22	7.874	—	6.172	519002*
63 - 36	50 - 28	7.874	—	12.560	519003
80 - 36	63 - 36	7.874	—	16.530	519004
	80 - 36	7.874	—	16.530	519005
100 - 56	80 - 36	7.874	7.165	21.825	519006

* D_2 = 49.50 mm

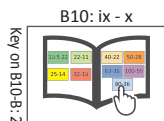
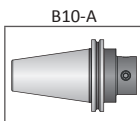
NOTE: The NOVI^{TECH} intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlschneiderBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)

i = Imperial (in)

SECTION

B10-C

Rough Machining

Rough Machining



Variety of tooling | Versatile operations

A versatile range of tools for rough machining includes rough boring, chamfering, and reverse machining. The insert holders with various insert pockets as well as height displaced insert holders are able to be easily adjusted for a quick setup process.

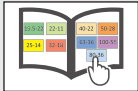
- ▶ **Twin Cutters**
 - ▶ 19.50 mm - 205.00 mm (0.768" - 8.071")
- ▶ **Chamfering Tools**
 - ▶ 19.00 mm - 216.00 mm (0.748" - 8.504")
- ▶ **Reverse Machining**
 - ▶ 29.00 mm - 245.00 mm (1.142" - 9.646")

Applicable Industries

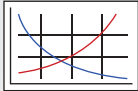
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

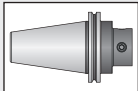
The following icons will appear throughout the catalog to help you navigate between products.



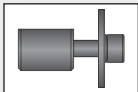
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



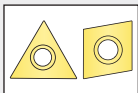
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Shanks
A variety of shanks for different machines.



Clamping Elements
For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Roughing Tools ROUGH MACHINING

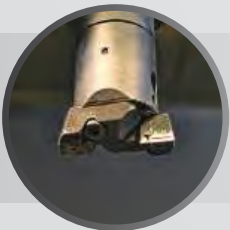
Versatile tools for a variety of applications.

- ▶ Diameter range: 19.50 mm - 245.00 mm (0.768" - 9.646").
- ▶ Tangential inserts and insert holders also available.
- ▶ Serrated tool bodies can be used for multiple applications including rough boring, chamfering, back boring, and axial grooving.
- ▶ Insert holders can be used on large diameter Alu-Line® serrated tool bodies and slides: 100.00 mm - 3255.00 mm (3.937" - 128.15").

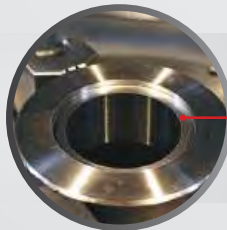
Roughing Applications



- ▶ **Twin Cutter Assembly:**
 - (1) Reducer: 219087
 - (2) Serrated tool body: 148004
 - (3) Insert holders: 151004
 - (4) Inserts: 297241WHC79



- ▶ **Tangential Cutter Assembly:**
 - (1) Shank: 353007
 - (2) Serrated tool body: 148005
 - (3) Insert holders: 151043
 - (4) Inserts: 397594WHC198



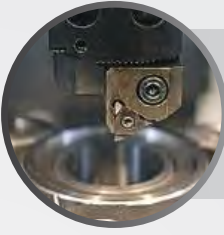
First Tangential Cut



- **Tangential Cutter Assembly:**
 (1) Shank: 353008
 (2) Serrated tool body: 148006
 (3) Insert holders: 151035
 (4) Inserts: 397594WHC198



Second Tangential Cut



- **Axial Grooving Assembly:**
 (1) Shank: 353009
 (2) Serrated tool body: 148007
 (3) Support block: 226011
 (4) Insert holder: 226010
 (5) Insert: 297978WCH136



Axial Groove Cut



- **Chamfer Assembly:**
 (1) Shank: 353003
 (2) Serrated tool body: 148004
 (3) Insert holder: 201009
 (4) Inserts: 297497WHC79



Top Chamfer

Bottom Chamfer



- **Radial Grooving Assembly:**
 (1) Shank: 353007
 (2) Grooving tool: 143055
 (3) Inserts: 097254WCH136



Grooves

Finished Application

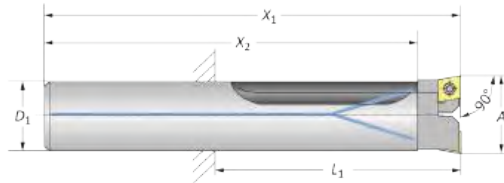




Twin Cutters Same Level

90° | Diameter Range: 19.50 mm - 30.00 mm (0.768" - 1.181")

Cylindrical Shank



Metric (mm)

Connection	Boring Range	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
18	19.50 - 23.00	150.00	138.00	80.00	0.25	235021	101	235031
20	22.50 - 26.00	150.00	138.00	90.00	0.31	235022	101	235032
23	25.50 - 30.00	160.00	148.00	100.00	0.44	235023	101	235033

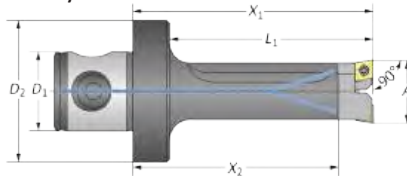
Imperial (in)

Connection	Boring Range	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
18	0.768 - 0.906	5.910	5.433	3.149	0.551	235021	101	235031
20	0.886 - 1.024	5.910	5.433	3.543	0.683	235022	101	235032
23	1.004 - 1.181	6.299	5.826	3.937	0.970	235023	101	235033

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.



MVS Style



Metric (mm)

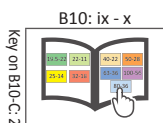
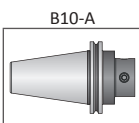
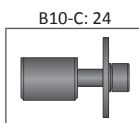
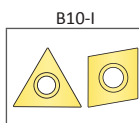
MVS Connection	Boring Range	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
50 - 28	19.50 - 23.00	85.00	73.00	72.00	0.40	235001	101	235031
	22.50 - 26.00	90.00	78.00	77.00	0.45	235002	101	235032
	25.50 - 30.00	95.00	83.00	82.00	0.50	235003	101	235033
63 - 36	19.50 - 23.00	85.00	73.00	72.00	0.70	235011	101	235031
	22.50 - 26.00	90.00	78.00	77.00	0.72	235012	101	235032
	25.50 - 30.00	95.00	83.00	82.00	0.83	235013	101	235033

Imperial (in)

MVS Connection	Boring Range	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
D ₂ D ₁	A	X ₁	X ₂	L ₁			Form	Part No.
50 - 28	0.768 - 0.906	3.346	2.874	2.834	0.881	235001	101	235031
	0.886 - 1.024	3.543	3.070	3.031	0.992	235002	101	235032
	1.004 - 1.181	3.740	3.268	3.228	1.102	235003	101	235033
63 - 36	0.768 - 0.906	3.346	2.874	2.834	1.543	235011	101	235031
	0.886 - 1.024	3.543	3.070	3.031	1.587	235012	101	235032
	1.004 - 1.181	3.740	3.268	3.228	1.843	235013	101	235033

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

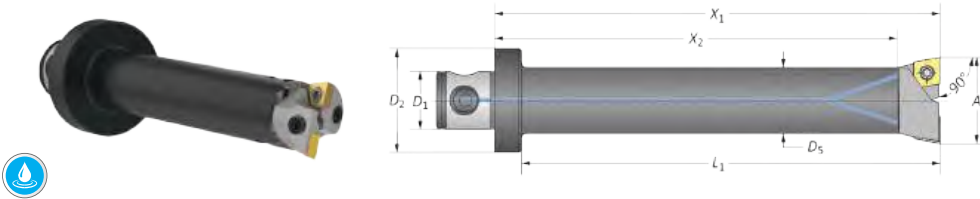
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.





Twin Cutters Same Level

90° | 5xD | Diameter Range: 29.00 mm - 66.00 mm (1.142" - 2.598")



Metric (mm)

Connection	Boring Range	Twin Cutter					Serrated Body	Insert Holder	
		$D_2 D_1$	X_1	X_2	L_1	D_5		Form	Part No.
m	50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90	148021	103 151001
		36.00 - 44.00	175.00	161.00	162.00	32.00	1.30	148022	103 151002
		43.00 - 54.00	215.00	195.00	202.00	37.00	1.90	148023	103 151023
								104 151003	104 151003
		53.00 - 66.00	215.00	195.00	202.00	44.00	2.50	148024	103 151024
								104 151004	104 151004

Imperial (in)

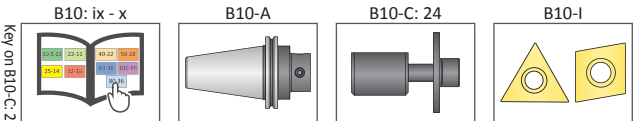
Connection	Boring Range	Twin Cutter					Serrated Body	Insert Holder	
		$D_2 D_1$	X_1	X_2	L_1	D_5		Form	Part No.
i	50 - 28	1.142 - 1.457	6.102	5.551	5.59	1.023	1.984	148021	103 151001
		1.417 - 1.732	6.889	6.338	6.377	1.259	2.866	148022	103 151002
		1.693 - 2.126	8.465	7.677	7.952	1.456	4.188	148023	103 151023
								104 151003	104 151003
		2.087 - 2.598	8.465	7.677	7.952	1.732	5.511	148024	103 151024
								104 151004	104 151004

NOTE: Different lengths available upon request.

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.



IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



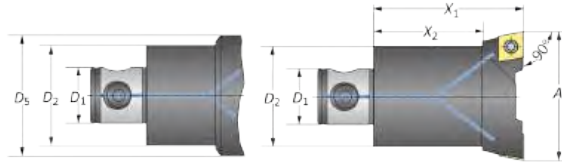
key on B10-C: 2

m = Metric (mm)
i = Imperial (in)
Inserts sold separately.



Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")

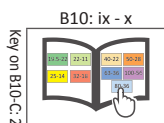
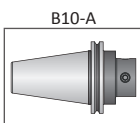
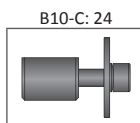
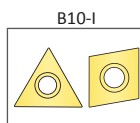


Metric (mm)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2	D_3			Form	Part No.
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	148001	103	151001
	36.00 - 44.00	56.00	42.00	30.00	0.20	148002	103	151002
32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40	148017	103	151002
	43.00 - 54.00	66.00	46.00	36.00	0.40	148003	103	151023
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	148018	104	151003
							103	151024
	53.00 - 66.00	75.00	55.00	—	0.70	148004	104	151004
							103	151025
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	148005	104	151005
							103	151026
63 - 36	82.00 - 103.00	90.00	60.00	—	1.90	148006	104	151086
							105	151006
							103	151027
							104	151087
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	105	151007
							103	151028
							104	151088
	125.00 - 155.00	90.00	60.00	—	3.20	148007	105	151008
							103	151028
							104	151088
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	105	151008
							103	151028

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

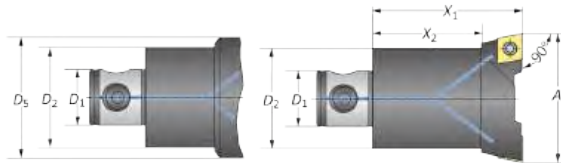


m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Twin Cutters Same Level

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")

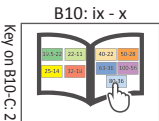
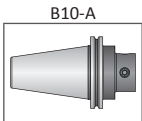
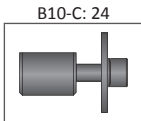
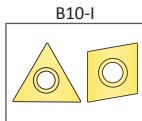


Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_3			Form	Part No.
25 - 14	1.142 - 1.457	2.205	1.653	—	0.441	148001	103	151001
	1.417 - 1.732	2.205	1.653	1.181	0.441	148002	103	151002
32 - 18	1.417 - 1.732	2.205	1.653	1.181	0.881	148017	103	151002
	1.693 - 2.126	2.598	1.811	1.417	0.881	148003	103	151023
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	148018	104	151003
							103	151024
	2.087 - 2.598	2.953	2.165	—	1.543	148004	104	151004
							103	151025
50 - 28	2.559 - 3.268	2.953	2.165	—	2.425	148005	104	151005
							103	151026
63 - 36	3.228 - 4.055	3.543	2.362	—	4.188	148006	104	151086
							105	151006
							103	151027
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	104	151087
							105	151007
							103	151028
	4.921 - 6.102	3.543	2.362	—	7.054	148007	104	151088
							105	151008
							103	151028
							104	151088
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	105	151008

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

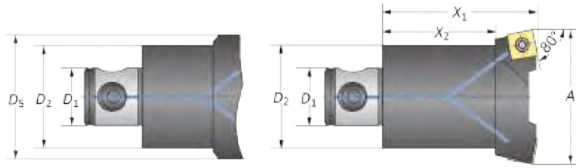


= Metric (mm)
 = Imperial (in)
Inserts sold separately.



Twin Cutters Same Level

80° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")



Metric (mm)

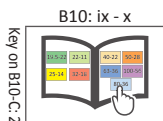
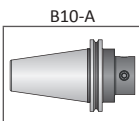
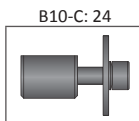
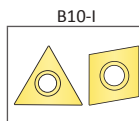
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	Part No.
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	148001	112	151011
	36.00 - 44.00	56.00	42.00	30.00	0.20	148002	112	151012
32 - 18	36.00 - 44.00	62.00	42.00	30.00	0.40	148017	112	151012
	43.00 - 54.00	66.00	46.00	36.00	0.40	148003	113	151013
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	148018	113	151013
	53.00 - 66.00	75.00	55.00	—	0.70	148004	113	151014
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	148005	113	151015
	82.00 - 103.00	90.00	60.00	—	2.30	148006	113	151036
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	113	151037
	125.00 - 155.00	90.00	60.00	—	3.20	148007	113	151038
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	113	151038

Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	Part No.
25 - 14	1.142 - 1.457	2.205	1.653	—	0.440	148001	112	151011
	1.417 - 1.732	2.205	1.653	1.181	0.440	148002	112	151012
32 - 18	1.417 - 1.732	2.441	1.653	1.181	0.881	148017	112	151012
	1.693 - 2.126	2.598	1.811	1.417	0.440	148003	113	151013
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	148018	113	151013
	2.087 - 2.598	2.952	2.165	—	1.543	148004	113	151014
50 - 28	2.559 - 3.268	2.952	2.165	—	2.425	148005	113	151015
	3.228 - 4.055	3.543	2.362	—	5.070	148006	113	151036
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	113	151037
	4.921 - 6.102	3.543	2.362	—	7.054	148007	113	151038
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	113	151038

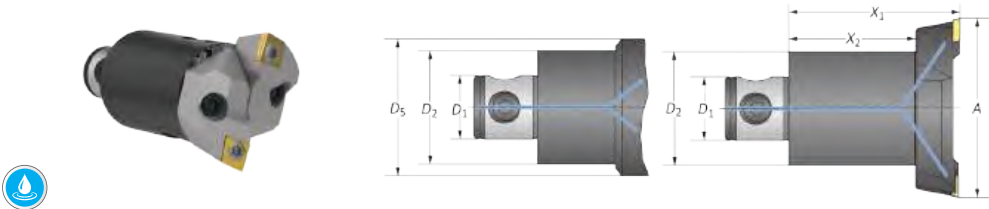
NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Twin Cutters Same Level

90° Tangential Inserts | Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")



Metric (mm)

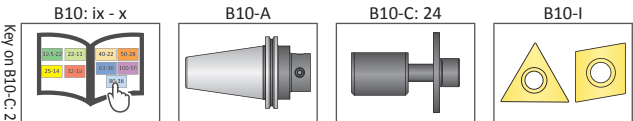
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	Part No.
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	148004	04	151022
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	148005	04 05	151032 151043
63 - 36	82.00 - 103.00	90.00	60.00	—	2.20	148006	05	151035
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	05	151009
	125.00 - 155.00	90.00	60.00	—	3.10	148007	05	151010
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	05	151010

Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Insert Holder	
		X_1	X_2	D_5			Form	Part No.
40 - 22	2.087 - 2.598	2.953	2.165	—	1.543	148004	04	151022
50 - 28	2.559 - 3.268	2.953	2.165	—	2.204	148005	04 05	151032 151043
63 - 36	3.228 - 4.055	3.543	2.362	—	4.850	148006	05	151035
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	05	151009
	4.921 - 6.102	3.543	2.362	—	6.843	148007	05	151010
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	05	151010

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

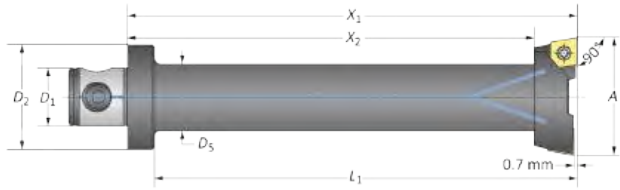


m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Twin Cutters Height Displaced

90° | 5xD | Diameter Range: 29.00 mm - 66.00 mm (1.142" - 2.598")



Metric (mm)

Connection		Boring Range	Twin Cutter				Weight	Serrated	Insert Holders		
$D_2 \mid D_1$		A	X_1	X_2	L_1	D_3	(kg)	Body	Form	①	② (-0.7 mm)
m	50 - 28	29.00 - 37.00	155.00	141.00	142.00	26.00	0.90	148021	103	151001	151061
		36.00 - 44.00	175.00	161.00	162.00	32.00	1.30	148022	103	151002	151062
		43.00 - 54.00	215.00	195.00	202.00	37.00	1.90	148023	104	151003	151093
		53.00 - 66.00	215.00	195.00	202.00	44.00	2.50	148024	104	151004	151094

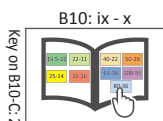
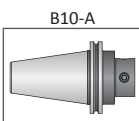
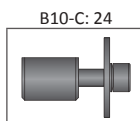
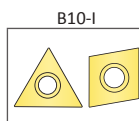
Imperial (in)

Connection		Boring Range	Twin Cutter					Weight (lbs)	Serrated Body	Insert Holders		
D ₂ D ₁		A	X ₁	X ₂	L ₁	D ₃			Form	①	② (-0.0276")	
① 50 - 28	1.142 - 1.457	6.102	5.551	5.590	1.023	1.984	148021	103	151001	151061		
	1.417 - 1.732	6.889	6.338	6.377	1.259	2.866	148022	103	151002	151062		
	1.693 - 2.126	8.465	7.677	7.952	1.456	4.188	148023	104	151003	151093		
	2.087 - 2.598	8.465	7.677	7.951	1.732	5.511	148024	104	151004	151094		

NOTE: Different lengths available upon request.

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

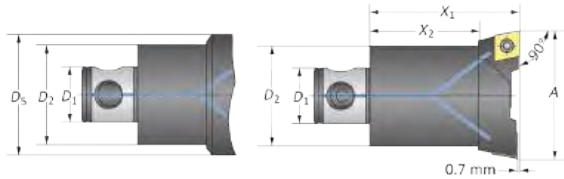


m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Twin Cutters Height Displaced

90° | Diameter Range: 29.00 mm - 205.00 mm (1.142" - 8.071")



Metric (mm)

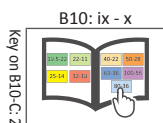
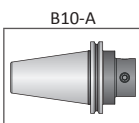
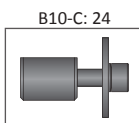
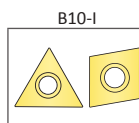
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.7 mm)
25 - 14	29.00 - 37.00	56.00	42.00	—	0.20	148001	103	151001	151061
	36.00 - 44.00	56.00	42.00	30.00	0.20	148002	103	151002	151062
32 - 18	36.00 - 44.00	56.00	42.00	30.00	0.40	148017	103	151002	151062
	43.00 - 54.00	66.00	46.00	36.00	0.40	148003	104	151003	151093
40 - 22	43.00 - 54.00	66.00	46.00	36.00	0.70	148018	104	151003	151093
	53.00 - 66.00	75.00	55.00	—	0.70	148004	104	151004	151094
50 - 28	65.00 - 83.00	75.00	55.00	—	1.10	148005	104	151005	151095
							104	151086	151090
63 - 36	82.00 - 103.00	90.00	60.00	—	2.40	148006	105	151006	151096
							104	151087	151091
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	105	151007	151097
							104	151088	151092
	125.00 - 155.00	90.00	60.00	—	3.20	148007	105	151008	151098
							104	151088	151092
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	105	151008	151098

Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.0276")
25 - 14	1.142 - 1.457	2.205	1.653	—	0.440	148001	103	151001	151061
	1.417 - 1.732	2.205	1.653	1.181	0.440	148002	103	151002	151062
32 - 18	1.417 - 1.732	2.205	1.653	1.181	0.881	148017	103	151002	151062
	1.693 - 2.126	2.598	1.811	1.417	0.881	148003	104	151003	151093
40 - 22	1.693 - 2.126	2.598	1.811	1.417	1.543	148018	104	151003	151093
	2.087 - 2.598	2.953	2.165	—	1.543	148004	104	151004	151094
50 - 28	2.559 - 3.268	2.953	2.165	—	2.425	148005	104	151005	151095
							104	151086	151090
63 - 36	3.228 - 4.055	3.543	2.362	—	5.291	148006	105	151006	151096
							104	151087	151091
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	105	151007	151097
							104	151088	151092
	4.921 - 6.102	3.543	2.362	—	7.054	148007	105	151008	151098
							104	151088	151092
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	105	151008	151098

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

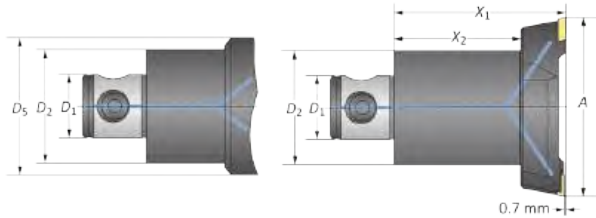


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Twin Cutters Height Displaced

Tangential Inserts | Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")



Metric (mm)

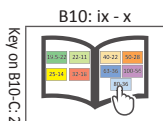
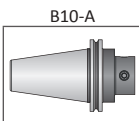
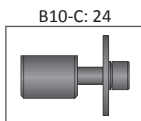
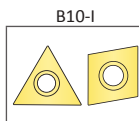
Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (kg)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.7 mm)
40 - 22	53.00 - 66.00	75.00	55.00	—	0.70	148004	04	151022	268009
50 - 28	65.00 - 83.00	75.00	55.00	—	1.00	148005	04 05	151032 151043	268010 268019
63 - 36	82.00 - 103.00	90.00	60.00	—	2.20	148006	04 05	151034 151035	268020 268021
80 - 36	100.00 - 130.00	90.00	60.00	—	3.00	148007	05	151009	268022
	125.00 - 155.00	90.00	60.00	—	3.10	148007	05	151010	268023
	150.00 - 205.00	90.00	60.00	125.00	4.00	148009	05	151010	268023

Imperial (in)

Connection $D_2 D_1$	Boring Range A	Twin Cutter			Weight (lbs)	Serrated Body	Form	Insert Holders	
		X_1	X_2	D_5				①	② (-0.0276")
40 - 22	2.087 - 2.598	2.953	2.165	—	1.543	148004	04	151022	268009
50 - 28	2.559 - 3.268	2.953	2.165	—	2.204	148005	04 05	151032 151043	268010 268019
63 - 36	3.229 - 4.055	3.543	2.362	—	5.291	148006	04 05	151034 151035	268020 268021
80 - 36	3.937 - 5.118	3.543	2.362	—	6.613	148007	05	151009	268022
	4.921 - 6.102	3.543	2.362	—	6.834	148007	05	151010	268023
	5.906 - 8.071	3.543	2.362	4.921	8.818	148009	05	151010	268023

NOTE: Insert holders sold in quantities of 1, and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



B10-C: 13

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= Metric (mm)
 = Imperial (in)
 Inserts sold separately.

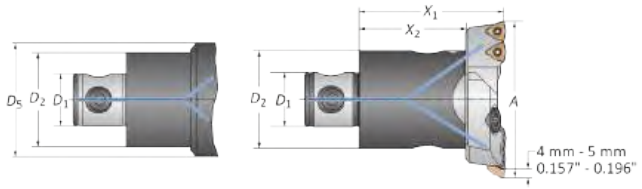
Notes

[illegible]



VolCut Insert Holders

Diameter Range: 65.00 mm - 3255.00 mm (2.559" - 128.150")



Metric (mm)

Connection $D_2 D_1$	Boring Range		Serrated Body			Weight (kg)	Number of Inserts	Serrated Body	Insert Holder	
	A	A_{min}^{**}	X_1	X_2	D_5				Form	Part No.
50 - 28	65.00 - 83.00	65.00 - 70.00	74.00	55.00	—	1.10	2	148005	464	151019
63 - 36	82.00 - 103.00	82.00 - 87.00	89.00	60.00	—	2.20	3	148006	464	151039
80 - 36	100.00 - 130.00	100.00 - 105.00	89.00	60.00	—	3.00	3	148007	464	151059
	125.00 - 155.00	125.00 - 130.00	89.00	60.00	—	3.20	3	148007	464	151069
	150.00 - 205.00	150.00 - 155.00	89.00	60.00	125.00	5.10	3	148009	464	151069
⚠ D60	200.00 - 3255.00	—	—	—	—	—	3	*	464	149030

Imperial (in)

Connection $D_2 D_1$	Boring Range		Serrated Body			Weight (lbs)	Number of Inserts	Serrated Body	Insert Holder	
	A	A_{min}^{**}	X_1	X_2	D_5				Form	Part No.
50 - 28	2.559 - 3.268	2.559 - 2.756	2.913	2.165	—	2.425	2	148005	464	151019
63 - 36	3.228 - 4.055	3.228 - 3.425	3.504	2.362	—	4.850	3	148006	464	151039
80 - 36	3.937 - 5.118	3.937 - 4.134	3.504	2.362	—	6.613	3	148007	464	151059
	4.921 - 6.102	4.921 - 5.118	3.504	2.362	—	7.054	3	148007	464	151069
	5.906 - 8.071	5.906 - 6.102	3.504	2.362	4.921	11.243	3	148009	464	151069
⚠ D60	7.874 - 128.150	—	—	—	—	—	3	*	464	149030

NOTE: Inserts, insert holders, and serrated body are sold separately.

*For large diameter serrated slides, please contact Application Engineering (330.343.4283) and see section B10-H.

**For smaller diameters, both cartridges must be set to the same diameter. Only the outside insert on each cartridge can be engaged in the material.

IC Inserts

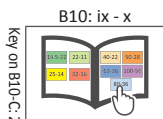
Carbide Grade	Geometry	Part No.  AM300®	Insert Screws*	Driver
P35 (C5)	Standard	OP-05T308-P	IS-10-1	8T-9
K35 (C1)		OP-05T308-1P		
K25 (C2)		OP-05T308-2P		
P35 (C5)	High Rake	OP-05T308-PHR	IS-10-1	8T-9

NOTE: See section A70 in the Allied Drilling Catalog for recommended cutting data, cutting materials, and geometries.

⚠ WARNING For large diameter boring with VolCut insert holders, please:

- Contact our Application Engineering department before purchasing: appeng@alliedmachine.com.
- Refer to section B10-H.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



VolCut Technical Information

Setup Instructions | Minimum Pilot Calculation



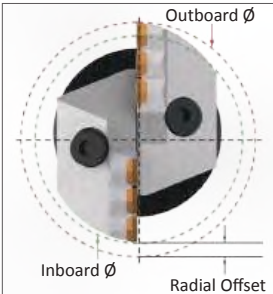
Step 1:
Loosen the mounting screws on both cartridges.



Step 2:
Set one cartridge to the finish diameter by tightening the adjustment screw against the adjustment pin.



Step 3:
Tighten the mounting screws on the cartridge to 15-19 N·m (11-14 ft-lbf).



Step 4:
Set the opposing cartridge with 4.00 mm - 5.00 mm (0.157" - 0.196") radial offset inward by tightening the adjustment screw against the adjustment pin (optimum situation for each insert to remove equal material).



Step 5:
Tighten the mounting screws on the cartridge to 15-19 N·m (11-14 ft-lbf).

Note: Drilling systems with OP inserts are used as single cutters. The replaceable inserts are mounted offset in diameter. Please review the assembly instructions.

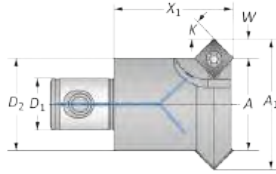
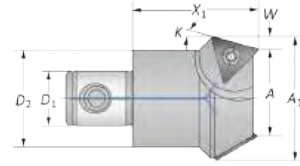
Minimum Pilot Calculation		
Calculation: Finish Diameter - Opening Range = Minimum Pilot Hole Diameter		
Insert Holder	Diameter Range	Opening Range
151019	65.00 mm - 70.00 mm (2.559" - 2.756")	15.24 mm (0.600")
	70.00 mm - 83.00 mm (2.756" - 3.268")	47.75 mm (1.880")
151039	82.00 mm - 87.00 mm (3.228" - 3.425")	15.24 mm (0.600")
	87.00 mm - 103.00 mm (3.425" - 4.055")	68.07 mm (2.680")
151059	100.00 mm - 105.00 mm (3.937" - 4.134")	15.24 mm (0.600")
	105.00 mm - 130.00 mm (4.134" - 5.118")	68.07 mm (2.680")
151069	125.00 mm - 130.00 mm (4.921" - 5.118")	15.24 mm (0.600")
	130.00 mm - 205.00 mm (5.118" - 8.071")	68.07 mm (2.680")
149030	200.00 mm - 325.00 mm (7.874" - 12.815")	68.07 mm (2.680")

Example: To open an existing hole to 114.30 mm (4.500") diameter, a 151059 insert holder would be used with a 148007 serrated tool body, and the minimum pilot diameter would be 114.30 mm - 68.07 mm = 46.23 mm (4.500" - 2.680" = 1.820").



Chamfering Tools

Solid Body | Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")



Metric (mm)

Connection		Approach Angle	Boring Range	Cutter Diameter	Chamfering Tool		Weight (kg)	Insert Form	Number of Inserts	Part No.
$D_2 \mid D_1$		K	A	A_1	X_1	W				
m	25 - 14	15°	25.00	33.00	31.00	4.00	0.15	163	2	201087
		45°	20.00	33.00	31.00	6.50	0.15	112	2	201082
	32 - 18	15°	32.00	40.00	41.00	4.00	0.20	163	2	201088
		30°	25.00	41.00	41.00	8.00	0.20	163	2	201089
		45°	32.00	45.00	41.00	6.50	0.20	112	3	201083

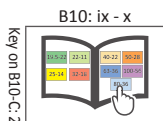
Imperial (in)

Connection		Approach Angle	Boring Range	Cutter Diameter	Chamfering Tool		Weight (lbs)	Insert Form	Number of Inserts	Part No.
$D_2 \mid D_1$		K	A	A_1	X_1	W				
<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><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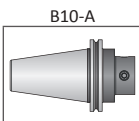
NOTE: K45° for front and reverse chamfering.

NOTE: Inserts sold separately.

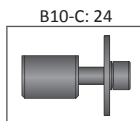
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



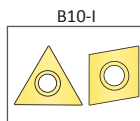
B10: ix - x



B10-A



B10-C: 24



B10-I

 = Metric (mm)
 = Imperial (in)
 Inserts sold separately.

Notes

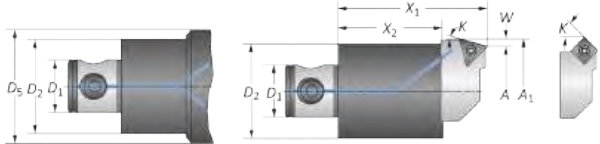


C



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



Metric (mm)

Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (kg)	Serrated Body	Insert Holder	
				X_1	X_2	D_5	W			Form	Part No.
25 - 14	15°	24.00 - 32.00	29.00 - 37.00	60.00	42.00	-	2.50	0.20	148001	161	201057
		31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20	148002	161	201058
	20°	22.00 - 30.00	29.00 - 37.00	60.00	42.00	-	3.50	0.20	148001	161	201017
		29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20	148002	161	201018
	30°	20.00 - 28.00	29.00 - 37.00	60.00	42.00	-	4.50	0.20	148001	161	201067
		27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20	148002	161	201068
	45°	19.00 - 27.00	33.00 - 41.00	58.00	42.00	-	5.00	0.20	148001	161	201003*
		26.00 - 34.00	38.00 - 46.00	58.00	42.00	-	5.00	0.20	148001	112	201004
	45°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	148002	112	201007
32 - 18	15°	31.00 - 39.00	36.00 - 44.00	60.00	42.00	30.00	2.50	0.20	148017	161	201058
		35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	148003	163	201059
	20°	29.00 - 37.00	36.00 - 44.00	60.00	42.00	30.00	3.50	0.20	148017	161	201018
		33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	148003	163	201019
	30°	27.00 - 35.00	36.00 - 44.00	60.00	42.00	30.00	4.50	0.20	148017	161	201068
		28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	148003	163	201069
	45°	31.00 - 39.00	43.00 - 51.00	60.00	42.00	30.00	6.00	0.20	148017	112	201007
		35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	148003	113	201008
	45°	35.00 - 46.00	43.00 - 54.00	71.00	46.00	36.00	4.00	0.40	148018	163	201059
		37.00 - 50.00	45.00 - 58.00	80.00	55.00	-	4.00	0.70	148004	163	201060
40 - 22	20°	33.00 - 44.00	43.00 - 54.00	71.00	46.00	36.00	5.00	0.40	148018	163	201019
		37.00 - 50.00	47.00 - 60.00	80.00	55.00	-	5.00	0.70	148004	163	201020
	30°	28.00 - 39.00	43.00 - 54.00	71.00	46.00	36.00	7.50	0.40	148018	163	201069
		37.00 - 50.00	52.00 - 65.00	80.00	55.00	-	7.50	0.70	148004	163	201070
	45°	35.00 - 46.00	50.00 - 61.00	66.00	46.00	36.00	7.50	0.40	148018	113	201008
		43.00 - 56.00	58.00 - 71.00	80.00	55.00	-	7.50	0.70	148004	113	201009

*Insert holder cannot be used for reverse machining.

NOTE: K45° insert holders for reverse chamfering above Ø 31.00 mm (1.2205").

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

B10-A

B10-C: 24

B10-I

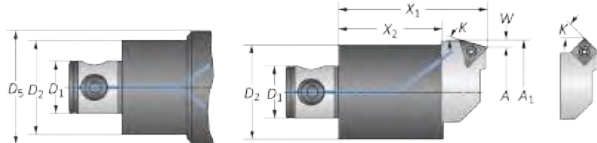
key on B10-C:2

= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



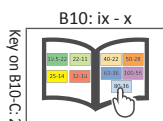
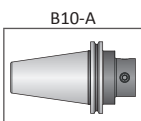
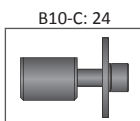
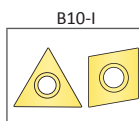
Metric (mm)

Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (kg)	Serrated Body	Insert Holder	
				X_1	X_2	D_5	W			Form	Part No.
50 - 28	15°	50.00 - 68.00	58.00 - 76.00	80.00	55.00	-	4.00	1.00	148005	163	201061
	20°	50.00 - 68.00	60.00 - 78.00	80.00	55.00	-	5.00	1.00	148005	163	201021
	30°	50.00 - 68.00	65.00 - 83.00	80.00	55.00	-	7.50	1.00	148005	163	201071
	45°	55.00 - 73.00	70.00 - 88.00	80.00	55.00	-	7.50	1.00	148005	113	201010
63 - 36	15°	68.00 - 89.00	76.00 - 97.00	90.00	60.00	-	4.00	1.90	148006	163	201062
	20°	68.00 - 89.00	78.00 - 99.00	90.00	60.00	-	5.00	1.90	148006	163	201022
	30°	68.00 - 89.00	83.00 - 104.00	90.00	60.00	-	7.50	1.90	148006	163	201072
	45°	72.00 - 93.00	87.00 - 108.00	90.00	60.00	-	7.50	1.90	148006	113	201011
80 - 36	15°	89.00 - 119.00	97.00 - 127.00	90.00	60.00	-	4.00	2.60	148007	163	201063
		119.00 - 149.00	127.00 - 159.00	90.00	60.00	-	4.00	2.70	148007	163	201064
		144.00 - 199.00	152.00 - 207.00	90.00	60.00	125.00	4.00	3.60	148009	163	201064
	20°	89.00 - 119.00	99.00 - 129.00	90.00	60.00	-	5.00	2.60	148007	163	201023
		119.00 - 149.00	129.00 - 159.00	90.00	60.00	-	5.00	2.70	148007	163	201024
		144.00 - 199.00	154.00 - 209.00	90.00	60.00	125.00	5.00	3.60	148009	163	201024
	30°	89.00 - 119.00	104.00 - 134.00	90.00	60.00	-	7.50	2.60	148007	163	201073
		119.00 - 149.00	134.00 - 164.00	90.00	60.00	-	7.50	2.70	148007	163	201074
		144.00 - 199.00	159.00 - 214.00	90.00	60.00	125.00	7.50	3.60	148009	163	201074
	45°	92.00 - 122.00	107.00 - 137.00	90.00	60.00	-	7.50	2.60	148007	113	201012
		121.00 - 151.00	136.00 - 166.00	90.00	60.00	-	7.50	2.70	148007	113	201013
		146.00 - 201.00	161.00 - 216.00	90.00	60.00	125.00	7.50	3.60	148009	113	201013

NOTE: K45° for front and reverse chamfering above $\varnothing$ 31.00 mm.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

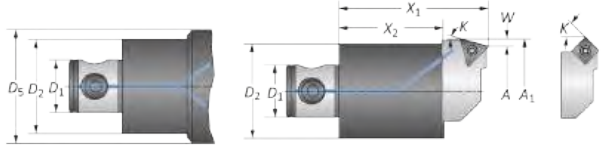


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



Imperial (in)

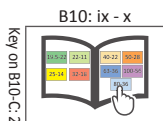
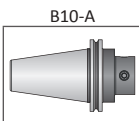
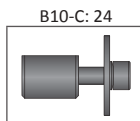
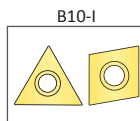
Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (lbs)	Serrated Body	Insert Holder	
				X_1	X_2	D_5	W			Form	Part No.
25 - 14	15°	0.945 - 1.260	1.141 - 1.457	2.362	1.653	-	0.098	0.440	148001	161	201057
		1.220 - 1.535	1.417 - 1.732	2.362	1.653	1.181	0.098	0.440	148002	161	201058
	20°	0.866 - 1.181	1.141 - 1.456	2.362	1.653	-	0.138	0.440	148001	161	201017
		1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440	148002	161	201018
	30°	0.787 - 1.102	1.141 - 1.456	2.362	1.653	-	0.177	0.440	148001	161	201067
		1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440	148002	161	201068
	45°	0.748 - 1.063	1.299 - 1.614	2.283	1.653	-	0.197	0.440	148001	161	201003*
		1.024 - 1.339	1.496 - 1.811	2.283	1.653	-	0.197	0.440	148001	112	201004
32 - 18	15°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440	148002	112	201007
		1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881	148017	161	201058
	20°	1.142 - 1.457	1.417 - 1.732	2.362	1.653	1.181	0.138	0.440	148017	161	201018
		1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881	148003	163	201019
	30°	1.063 - 1.378	1.417 - 1.732	2.362	1.653	1.181	0.177	0.440	148017	161	201068
		1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.297	0.881	148003	163	201069
	45°	1.220 - 1.535	1.692 - 2.007	2.362	1.653	1.181	0.236	0.440	148017	112	201007
		1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881	148003	113	201008
40 - 22	15°	1.378 - 1.811	1.692 - 2.125	2.795	1.811	1.417	0.157	0.881	148018	163	201059
		1.457 - 1.969	1.771 - 2.283	3.150	2.165	-	0.157	1.543	148004	163	201060
	20°	1.299 - 1.732	1.692 - 2.125	2.795	1.811	1.417	0.197	0.881	148018	163	201019
		1.457 - 1.969	1.850 - 2.362	3.150	2.165	-	0.197	1.543	148004	163	201020
	30°	1.102 - 1.535	1.692 - 2.125	2.795	1.811	1.417	0.295	0.881	148018	163	201069
		1.457 - 1.969	2.047 - 2.559	3.150	2.165	-	0.295	1.543	148004	163	201070
	45°	1.378 - 1.811	1.968 - 2.401	2.598	1.811	1.417	0.295	0.881	148018	113	201008
		1.963 - 2.205	2.283 - 2.795	3.150	2.165	-	0.295	1.543	148004	113	201009

*Insert holder cannot be used for reverse machining.

NOTE: K45° for front and reverse chamfering above $\varnothing$ 31.00 mm.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

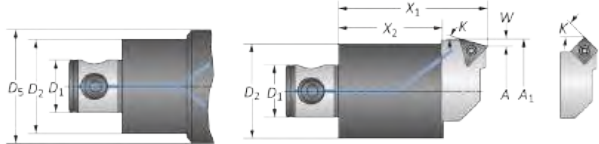


m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Chamfering Tools

Insert Holders | Diameter Range: 19.00 mm - 216.00 mm (0.748" - 8.504")



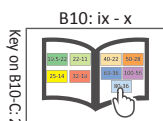
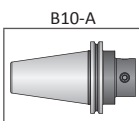
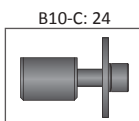
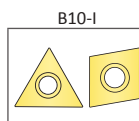
Imperial (in)

Connection $D_2 D_1$	Approach Angle (K)	Boring Range (A)	Chamfering Range (A_1)	Chamfering Tool				Weight (lbs)	Serrated Body	Insert Holder	
				X_1	X_2	D_3	W			Form	Part No.
50 - 28	15°	1.969 - 2.677	2.283 - 2.992	3.150	2.165	-	0.157	2.204	148005	163	201061
	20°	1.969 - 2.677	2.362 - 3.070	3.150	2.165	-	0.197	2.204	148005	163	201021
	30°	1.969 - 2.677	2.559 - 3.267	3.150	2.165	-	0.197	2.204	148005	163	201071
	45°	2.165 - 2.874	2.755 - 3.464	3.150	2.165	-	0.295	2.204	148005	113	201010
63 - 36	15°	2.677 - 3.504	2.992 - 3.818	3.543	2.362	-	0.157	4.188	148006	163	201062
	20°	2.677 - 3.504	3.070 - 3.897	3.543	2.362	-	0.197	4.188	148006	163	201022
	30°	2.677 - 3.504	3.268 - 4.094	3.543	2.362	-	0.295	4.188	148006	163	201072
	45°	2.835 - 3.661	3.425 - 4.251	3.543	2.362	-	0.295	4.188	148006	113	201011
80 - 36	15°	3.504 - 4.685	3.818 - 5.000	3.543	2.362	-	0.157	5.732	148007	163	201063
		4.685 - 5.866	5.000 - 6.259	3.543	2.362	-	0.157	5.952	148007	163	201064
		5.669 - 7.835	5.984 - 8.149	3.543	2.362	4.921	0.157	7.936	148009	163	201064
	20°	3.504 - 4.685	3.989 - 5.078	3.543	2.362	-	0.197	5.732	148007	163	201023
		4.685 - 5.866	5.078 - 6.259	3.543	2.362	-	0.197	5.952	148007	163	201024
		5.669 - 7.835	6.062 - 8.228	3.543	2.362	4.921	0.197	7.936	148009	163	201024
	30°	3.504 - 4.685	4.094 - 5.275	3.543	2.362	-	0.295	5.732	148007	163	201073
		4.685 - 5.866	5.275 - 6.456	3.543	2.362	-	0.295	5.952	148007	163	201074
		5.669 - 7.835	6.259 - 8.425	3.543	2.362	4.921	0.295	7.936	148009	163	201074
	45°	3.622 - 4.803	4.212 - 5.393	3.543	2.362	-	0.295	5.732	148007	113	201012
		4.764 - 5.945	5.354 - 6.535	3.543	2.362	-	0.295	5.952	148007	113	201013
		5.748 - 7.913	6.338 - 8.504	3.543	2.362	4.921	0.295	7.936	148009	113	201013

NOTE: K45° for front and reverse chamfering above $\varnothing$ 31.00 mm.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

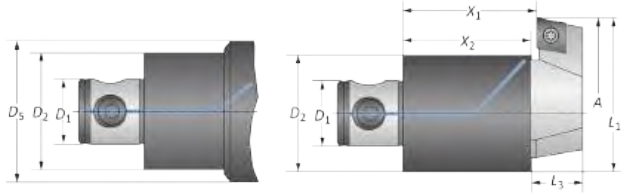


= Metric (mm)
 = Imperial (in)
 Inserts sold separately.



Reverse Machining Tools

Diameter Range: 29.00 mm - 245.00 mm (1.142" - 9.646")



$$L_1 = \frac{D_2}{2} + \frac{A}{2} + 0.5 \text{ mm}$$



Metric (mm)

Connection $D_2 D_1$	Boring Range A	Reverse Machining				Weight (kg)	Serrated Tool Body	Insert Holder	
		X_1	X_2	L_3	D_5			Form	Part No.
25 - 14	29.00 - 37.00	40.00	39.00	14.00	—	0.20	148011	103	251001
	34.00 - 42.00	40.00	39.00	14.00	—	0.20	148011	103	251002
	36.00 - 44.00	40.00	39.00	14.00	—	0.20	148012	103	251002
	44.00 - 52.00	40.00	39.00	18.00	—	0.20	148012	104	251003
32 - 18	43.00 - 54.00	40.00	39.00	18.00	—	0.30	148013	104	251003
	55.00 - 66.00	40.00	39.00	18.00	—	0.40	148013	104	251004
40 - 22	53.00 - 72.00	40.00	39.00	18.00	—	0.50	148014	104	251004
	66.00 - 85.00	40.00	39.00	18.00	—	0.50	148014	104	251005
50 - 28	70.00 - 95.00	56.00	55.00	22.00	—	1.10	148015	104	251006
	92.00 - 117.00	56.00	55.00	22.00	—	1.30	148015	104	251007
63 - 36	92.00 - 122.00	56.00	55.00	22.00	—	1.70	148016	104	251007
	120.00 - 150.00	62.00	60.00	26.00	—	2.70	148007	104	251008
	166.00 - 196.00	62.00	60.00	26.00	—	2.90	148007	104	251009
	145.00 - 200.00	62.00	60.00	26.00	125.00	3.60	148009	104	251008
80 - 36	190.00 - 245.00	62.00	60.00	26.00	125.00	3.70	148009	104	251009

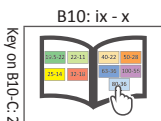
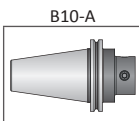
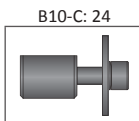
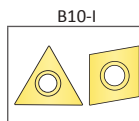
Imperial (in)

Connection $D_2 D_1$	Boring Range A	Reverse Machining				Weight (lbs)	Serrated Tool Body	Insert Holder	
		X_1	X_2	L_3	D_5			Form	Part No.
25 - 14	1.142 - 1.457	1.575	1.535	0.551	—	0.440	148011	103	251001
	1.339 - 1.654	1.575	1.535	0.551	—	0.440	148011	103	251002
	1.417 - 1.732	1.575	1.535	0.551	—	0.440	148012	103	251002
	1.732 - 2.047	1.575	1.535	0.708	—	0.440	148012	104	251003
32 - 18	1.693 - 2.126	1.575	1.535	0.708	—	0.661	148013	104	251003
	2.165 - 2.598	1.575	1.535	0.708	—	0.881	148013	104	251004
40 - 22	2.087 - 2.835	1.575	1.535	0.708	—	1.102	148014	104	251004
	2.598 - 3.346	1.575	1.535	0.708	—	1.102	148014	104	251005
50 - 28	2.756 - 3.740	2.205	2.165	0.866	—	2.425	148015	104	251006
	3.622 - 4.606	2.205	2.165	0.866	—	2.866	148015	104	251007
63 - 36	3.622 - 4.803	2.205	2.165	0.866	—	3.747	148016	104	251007
	4.724 - 5.906	2.441	2.362	1.023	—	5.952	148007	104	251008
	6.535 - 7.717	2.441	2.362	1.023	—	6.393	148007	104	251009
	5.709 - 7.874	2.441	2.362	1.023	4.921	7.936	148009	104	251008
80 - 36	7.480 - 9.646	2.441	2.362	1.023	4.921	8.157	148009	104	251009

NOTE: Only use inserts with chip grooves all around.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



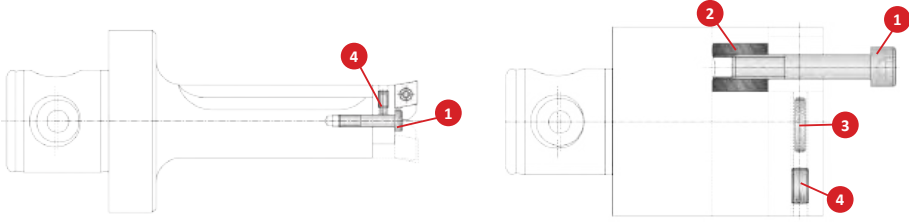
B10-C: 23

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M = Metric (mm)
I = Imperial (in)
 Inserts sold separately.

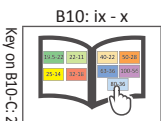


Clamping Elements



Clamping Elements

Connection	Serrated Tool Body	Part No.					
		1. Cap Screw	Service Key	2. Clamping Nut	3. Adjustment Pin	4. Thread Pin	Service Key
Ø 18	235021	415111	T25 / B	–	–	215346	s1.5 / A
Ø 20	235022	415112	T25 / B	–	–	215346	s1.5 / A
Ø 23	235023	415113	T25 / B	–	–	215346	s1.5 / A
25 - 14	148001	140108	s4 / B	140114	–	115280	s2.5 / A
	148002	148110	s5 / B	115667	–	126157	s2.5 / A
	148011	148110	s5 / B	148113	–	117148	s2.5 / A
	148012	148110	s5 / B	115666	–	117148	s2.5 / A
32 - 18	148003	140110	s5 / B	115667	–	126157	s2.5 / A
	148013	148110	s5 / B	148114	–	115192	s2.5 / A
	148017	148110	s5 / B	115667	–	126157	s2.5 / A
40 - 22	148004	140110	s5 / B	140116	–	115407	s2.5 / A
	148014	148110	s5 / B	148114	–	126157	s2.5 / A
	148018	140110	s5 / B	115667	–	126157	s2.5 / A
50 - 28	148005	140111	s6 / B	140117	–	140121	s2.5 / A
	148010	140111	s6 / B	140117	–	140121	s2.5 / A
	148015	140112	s6 / B	140117	–	215111	s2.5 / A
	235001	415111	T25 / B	–	–	215346	s1.5 / A
	235002	415112	T25 / B	–	–	215346	s1.5 / A
	235003	415113	T25 / B	–	–	215346	s1.5 / A
	148021	140108	s4 / B	140114	–	115280	s2.5 / A
	148022	140110	s5 / B	115667	–	126157	s2.5 / A
	148023	140110	s5 / B	115667	–	126157	s2.5 / A
	148024	140110	s5 / B	140116	–	115407	s2.5 / A
63 - 36	148006	140112	s6 / B	140118	–	140121	s2.5 / A
	148016	140112	s6 / B	140117	–	116550	s2.5 / A
	235011	415111	T25 / B	–	–	215346	s1.5 / A
	235012	415112	T25 / B	–	–	215346	s1.5 / A
80 - 36	235013	415113	T25 / B	–	–	215346	s1.5 / A
	148007	115730	s6 / B	140119	–	116550	s2.5 / A
	148009	115730	s6 / B	140119	140120	115519	s2.5 / A



m = Metric (mm)

i = Imperial (in)

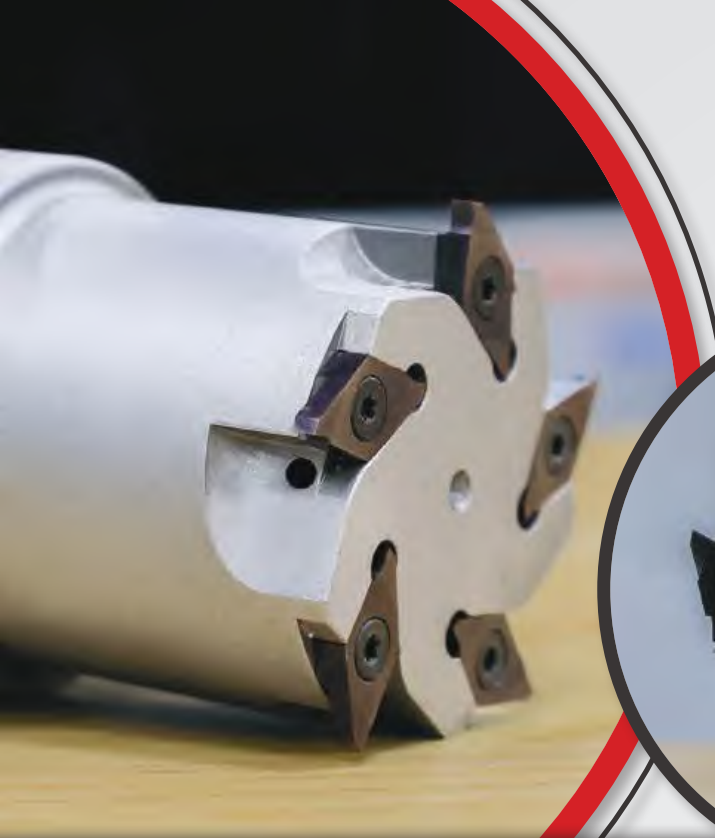
Inserts sold separately.

SECTION

B10-D

Grooving Tools

Grooving Tools



Get Your Groove On

Create radial and axial grooves on any machine with Wohlhaupter® grooving tools. Wohlhaupter grooving tools feature replaceable inserts to reduce costs and an MVS connection to adapt to any machine.

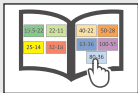
- ▶ Radial Groovers
 - ▶ 20.00 mm - 79.00 mm (0.787" - 3.110")
- ▶ Axial Groovers
 - ▶ 20.00 mm - 210.00 mm (0.787" - 8.268")

Applicable Industries

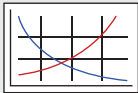
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

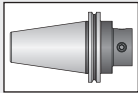
The following icons will appear throughout the catalog to help you navigate between products.



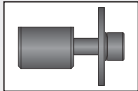
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



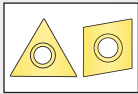
Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Shanks
A variety of shanks for different machines.



Clamping Elements
For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

Table of Contents

Grooving Tools

Grooving Tools for Circular Milling	3
Axial Grooving Tools	4

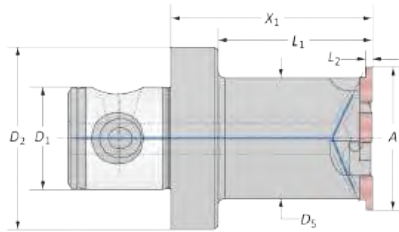
Accessories

Cap and Adjustment Screws	5
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Grooving Tools for Circular Milling

Diameter Range: $\varnothing > 20.00$ mm (0.787")



Metric (mm)

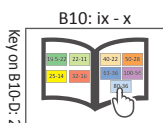
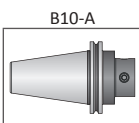
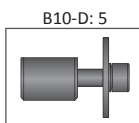
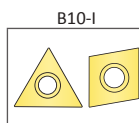
MVS	Cutter Diameter	Grooving Tool			Groove		Number of Inserts	Weight (kg)	Insert Form	Part No.
$D_2 D_1$	A	X_1	L_1	D_5	L_2 (min)	Depth (max)				
32 - 18	39.00	40.00	40.00	33.00	3.37	2.50	4	0.30	90	143054
40 - 22	49.00	40.00	40.00	43.00	3.37	2.50	5	0.50	90	143056
50 - 28	20.00	55.00	40.00	17.00	2.37	1.50	2	0.40	89	143051
	20.00	95.00	82.00	17.00	2.37	1.50	2	0.40	89	143052
	39.00	55.00	42.00	33.00	3.37	2.50	4	0.60	90	143053
	49.00	55.00	40.00	43.00	3.37	2.50	5	0.70	90	143055
63 - 36	63.00	40.00	40.00	53.00	5.87	4.70	6	0.70	91	143057
	79.00	40.00	40.00	69.00	5.87	4.70	8	1.20	91	143058

Imperial (in)

MVS	Cutter Diameter	Grooving Tool			Groove		Number of Inserts	Weight (lbs)	Insert Form	Part No.
$D_2 D_1$	A	X_1	L_1	D_5	L_2 (min)	Depth (max)				
32 - 18	1.535	1.575	1.575	1.299	0.133	0.098	4	0.661	90	143054
40 - 22	1.929	1.575	1.575	1.692	0.133	0.098	5	1.102	90	143056
50 - 28	0.787	2.165	1.575	0.669	0.093	0.059	2	0.881	89	143051
	0.787	3.740	3.228	0.669	0.093	0.059	2	0.881	89	143052
	1.535	2.165	1.654	1.299	0.133	0.098	4	1.322	90	143053
	1.929	2.165	1.575	1.692	0.133	0.098	5	1.543	90	143055
63 - 36	2.480	1.575	1.575	2.086	0.231	0.185	6	1.543	91	143057
	3.110	1.575	1.575	2.716	0.231	0.185	8	2.645	91	143058

NOTE: Different lengths available upon request.

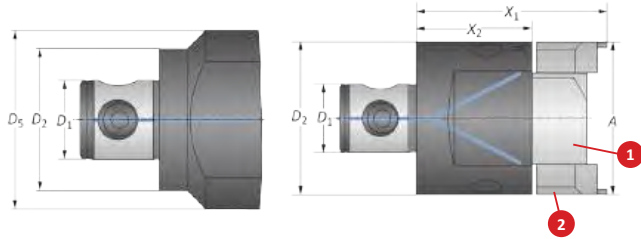
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.

Axial Grooving Tools

Diameter Range: 20.00 mm - 210.00 mm (0.787" - 8.268")



Metric (mm)

MVS $D_2 \mid D_1$	Cutter Diameter A	Grooving Tool			Weight (kg)	Insert Form	Part No.			
		X_1	X_2	D_5			Serrated Tool Body	1. Support Block	2. Insert Holder	
m	50 - 28	20.00 - 65.00	83.00	55.00	63.00	1.30	304	148010	—	226030
	80 - 36	57.00 - 95.00	100.00	60.00	—	2.60	304	148007	226011	226031
		82.00 - 155.00	100.00	60.00	125.00	3.70	304	148009	226012	226031
		156.00 - 210.00	100.00	60.00	125.00	3.70	304	148009	226013	226031



Imperial (in)

	MVS	Cutter Diameter	Grooving Tool			Weight (lbs)	Insert Form	Part No.		
	D ₂ D ₁	A	X ₁	X ₂	D ₅			Serrated Tool Body	1. Support Block	2. Insert Holder
1	50 - 28	0.787 - 2.559	3.268	2.165	2.48	2.866	304	148010	—	226030
	80 - 36	2.244 - 3.740	3.937	2.362	—	5.732	304	148007	226011	226031
		3.228 - 6.102	3.937	2.362	4.921	8.157	304	148009	226012	226031
		6.142 - 8.268	3.937	2.362	4.921	8.157	304	148009	226013	226031

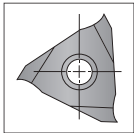
NOTE: Groove width is 1.00 mm - 7.00 mm (0.039" - 0.276"). (With Twin Cutter and diameter offset, up to 12.00 mm is possible.)

Groove depth is 1.00 mm - 6.00 mm (0.039" - 0.236").

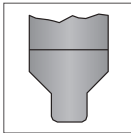
NOTE: Support block with machining diameters smaller than 123.00 mm (4.842") can only be secured with one screw.

NOTE: Insert holders, support blocks, and inserts sold separately.

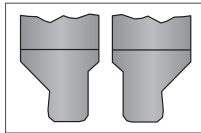
Examples of recessing replaceable inserts include:



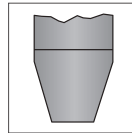
Other insert types available upon request.



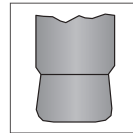
Two-sided cutting form.



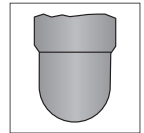
Single-sided cutting form (right / left).



Two-sided angle cutting.

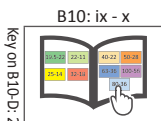
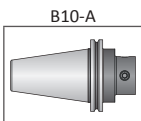
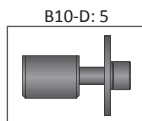
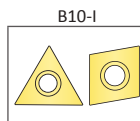


With corner radius.



Full radius.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

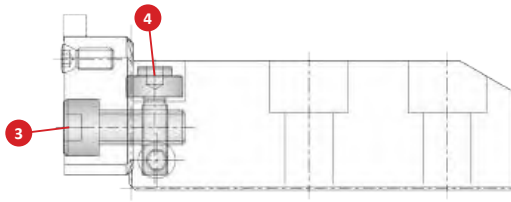


m = Metric (mm)
i = Imperial (in)
Inserts sold separately.



Accessories

Cap and Adjustment Screws

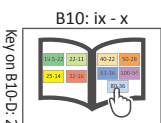


Axial Grooving Accessories

Support Base	3. Cap Screw		4. Axial Adjustment Screw	
	Part No.	Service Key	Part No.	Service Key
226011	023182	s6 / B	215374	s4 / B
226012	023182	s6 / B	215374	s4 / B
226013	023182	s6 / B	215374	s4 / B



D



key on B10-D: 2

B10-D: 5

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m = Metric (mm)
i = Imperial (in)
Inserts sold separately.

[illegible]

SECTION

B10-E

Combi-Line: Rough and Finish Boring

Combi-Line



One tool | Two operations

The Wohlhaupter Combi-Line combines both rough and finish boring into one operation. The front insert holder is the roughing cutting edge while the shorter holder finishes the hole, saving you time and money.

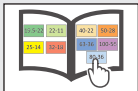
- ▶ 24.50 mm - 201.00 mm (0.965" - 7.913")

Applicable Industries

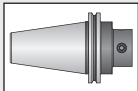
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

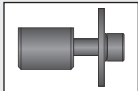
The following icons will appear throughout the catalog to help you navigate between products.



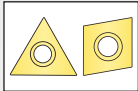
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Shanks
A variety of shanks for different machines.



Clamping Elements
For use with insert holders and boring heads.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

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NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
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Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Technical Information	
Material Removal Percentages	7
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Combi-Line ROUGH & FINISH BORING

Two operations. One Tool.

Decrease cycle time and tool changes with the Wohlhaupter Combi-Line. The Combi-Line combines rough and finish boring into one tool with height displaced insert holders.

Reduce your cycle time with the Combi-Line.

- ▶ Diameter range: 24.50 mm - 201.00 mm (0.965" - 7.913").
- ▶ Reduce cycle and tool changing time.
- ▶ Available in semi-standard same level or height displaced insert holders.
- ▶ Coolant through.
- ▶ 0.002 mm (0.0001") vernier adjustment on finishing insert holder.
- ▶ Max spindle speed: 1524 m/min (5,000 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

Case Study

Cycle time is crucial. Why not choose the best process?

Application: Ductile Cast Iron

Finish Diameter: 50 mm (1.968") (+/- 0.013 mm [0.0005"])

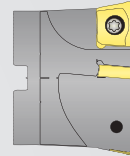
Pre-Hole Diameter: 45 mm (1.771")

Boring Depth: 209 mm (8.228")

Hole Finish: 0.8 Ra µm (32 Ra)



Measure	1st Process Option	
	Step 1 Rough 49 mm Competitor 1.5" High Feed Milling Tool	Step 2 Finish 50 mm Wohlhaupter 310 (320) Boring Head
Speed	2500 RPM (1000 SFM)	1165 RPM (600 SFM)
Feed Rate	153 IPM (0.020 IPT)	4.66 IPM (0.004 IPR)
Total Passes	77	1
Cycle Time (per hole)	1.93 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	3 min 54 sec	



1.5" High Feed Milling Tool



Wohlhaupter 320 Boring Head



Measure	2nd Process Option	
	Step 1 Rough 49 mm Wohlhaupter Twin Cutter	Step 2 Finish 50 mm Wohlhaupter 310 (320) Boring Head
Speed	990 RPM (500 SFM)	1165 RPM (600 SFM)
Feed Rate	11.88 IPM (0.012 IPR)	4.66 IPM (0.004 IPR)
Total Passes	1	1
Cycle Time (per hole)	0.69 min	1.77 min
Tool Change Time	15 sec	
Cycle Time (per part)	2 min 46 sec	



Wohlhaupter Twin Cutter



Wohlhaupter 310 (320) Boring Head

OUR **SOLUTION**

Combi-Line Rough and Finish Boring

Measure	3rd Process Option Finish 50 mm Wohlhaupter Combi-Line
Speed	1165 RPM (600 SFM)
Feed Rate	4.66 IPM (0.004 IPR)
Total Passes	1
Cycle Time (per hole)	1.77 min
Tool Change Time	0
Cycle Time (per part)	1 min 46 sec



- Combi-Line assembly:
- (1) Insert holders (x2): 402021
 - (2) Serrated tool body: 404006
 - (3) Shank: 353014

- Boring inserts
► Item No. 297653WHC19

*60 seconds of
total cycle time saved*

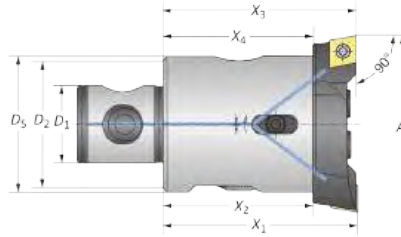


1 tool vs. 2 tools saves you time and money



Boring Heads and Insert Holders

Diameter Range: 24.50 mm - 201.00 mm (0.965" - 7.913")



Metric (mm)

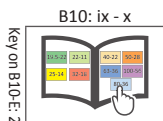
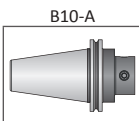
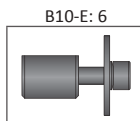
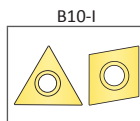
MVS	Boring Range	Boring Head							Insert Holder (x2)*		
		$D_2 \mid D_1$	A	X_1	X_3	X_2	X_4	D_5	Weight (kg)	Part No.	Insert Form
m	22 - 11	24.50 - 29.50	46.00	45.75	34.00	33.75	—	0.10	401003	101	402029
	25 - 14	29.00 - 37.00	56.00	55.75	41.00	40.75	26.00	0.20	401004	101	402009
										103	402011
		36.00 - 44.00	56.00	55.75	41.00	40.75	30.00	0.30	401005	101	402017
									103	402019	
	32 - 18	43.00 - 54.00	66.00	65.70	48.00	47.70	34.00	0.40	401006	103	402021
	40 - 22	53.00 - 66.00	75.00	74.70	55.00	54.70	—	0.70	401007	103	402005
	50 - 28	65.00 - 83.00	75.00	74.70	55.00	54.70	—	1.10	401008	103	402013
	63 - 36	82.00 - 103.00	90.00	89.70	70.00	69.70	—	2.20	401009	103	402001
	80 - 36	102.00 - 127.00	90.00	89.70	66.00	65.70	85.00	3.00	401010	103	402025
		127.00 - 152.00	90.00	89.70	66.00	65.70	85.00	3.10	401010	103	402026
		151.00 - 176.00	90.00	89.70	66.00	65.70	134.00	3.80	401011	103	402025
176.00 - 201.00		90.00	89.70	66.00	65.70	134.00	3.90	401011	103	402026	

Imperial (in)

MVS	Boring Range	Boring Head							Insert Holder (x2)*	
$D_2 \mid D_1$	A	X_1	X_3	X_2	X_4	D_5	Weight (lbs)	Part No.	Insert Form	Part No.
22 - 11	0.965 - 1.161	1.811	1.801	1.339	1.329	—	0.220	404003	101	402029
25 - 14	1.142 - 1.457	2.205	2.195	1.614	1.604	1.024	0.440	404004	101	402009
									103	402011
	1.417 - 1.732	2.205	2.195	1.614	1.604	1.181	0.661	404005	101	402017
									103	402019
32 - 18	1.693 - 2.126	2.598	2.587	1.890	1.878	1.339	0.881	404006	103	402021
40 - 22	2.087 - 2.598	2.953	2.941	2.165	2.154	—	1.543	404007	103	402005
50 - 28	2.559 - 3.268	2.953	2.941	2.165	2.154	—	2.425	404008	103	402013
63 - 36	3.228 - 4.055	3.543	3.531	2.756	2.744	—	4.850	404009	103	402001
80 - 36	4.016 - 5.000	3.543	3.531	2.598	2.587	3.346	6.613	404010	103	402025
	5.000 - 5.984	3.543	3.531	2.598	2.587	3.346	6.834	404010	103	402026
	5.945 - 6.929	3.543	3.531	2.598	2.587	5.276	8.377	404011	103	402025
	6.929 - 7.913	3.543	3.531	2.598	2.587	5.276	8.598	404011	103	402026

*(2) insert holders are required and are sold individually.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



B10-E: 5

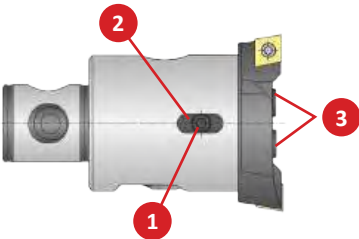
www.alliedmachine.com | 1.330.343.4283

m = Metric (mm)
i = Imperial (in)
 Inserts sold separately.



Accessories

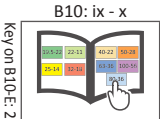
Screws | Clamping Elements



Boring Head Part No.		1. Clamp Screw		2. Clamping Piece	3. Cap Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Part No.	Service Key
401003	404003	401223	s2.5 / A	—	401323	s3 / B
401004	404004	401224	s2.5 / B	401204	401324	s4 / B
401005	404005	401225	s2.5 / B	401205	401324	s4 / B
401006	404006	401226	s3 / B	401206	401324	s4 / B
401007	404007	401227	s3 / B	401207	401327	s5 / B
401008	404008	115288	s4 / B	401208	401329	s6 / B
401009	404009	215501	s4 / B	401209	401329	s6 / B
401010	404010	401230	s4 / B	401210	019183	s8 / C
401011	404011	401230	s4 / B	401210	019183	s8 / C



NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



m = Metric (mm)
i = Imperial (in)



Technical Information

Material Removal Percentages



Material removal up to 4.00 mm (0.157") on diameter:
50% roughing and 50% finishing



Material removal up to 4.00 mm - 7.00 mm (0.157" - 0.276") on diameter: **60% roughing 40% finishing**



Material removal up to 7.00 mm - 10.00 mm (0.276" - 0.394") on diameter: **70% roughing 30% finishing**

- For tools with a length-to-diameter ratio greater than 4:1, the existing hole diameter should be no more than 4.00 mm (0.157") smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.
- When boring with severe interruptions, the existing hole diameter should be no more than 4.00 mm (0.157") smaller than the finish diameter. The 50% roughing and 50% finishing rule should be applied.

IMPORTANT:

Consult application engineering for technical support when using Combi-Line tools in holes with interruptions:
appeng@alliedmachine.com.

Tool Usage

- For most applications, the same inserts should be used in both the roughing and finishing insert holders.
- To insure proper chip breaking, the finishing insert holder DOC must be at least 0.50 mm (0.020").
- Up to a 4:1 length-to-diameter ratio, standard insert holders with a height displacement of up to 0.30 mm (0.012") can be used.
- Inserts with wiper geometry are recommended only for special Combi-Line applications.

[illegible]

SECTION

B10-F

Versatile Fine Boring

Versatile Fine Boring



Precision boring at its finest

From high precision to high production, Wohlhaupter has the right solution for your hole finishing applications. With the most reliable digital readout displays, the Wohlhaupter versatile boring product line offers the most precise and flexible modular system on the market.

- ▶ 248 (249)
 - ▶ 3.00 mm - 30.20 mm (0.118" - 1.189")
- ▶ PrimeBore
 - ▶ 3.00 mm - 208.00 mm (0.118" - 8.189")
- ▶ VarioBore
 - ▶ 0.40 mm - 152.00 mm (0.016" - 5.984")
- ▶ Digital 510 (511)
 - ▶ 0.40 mm - 12.00 mm (0.016" - 1.339")
- ▶ DigiBore
 - ▶ 3.00 mm - 208.00 mm (0.118" - 8.189")

Applicable Industries



Aerospace



Agriculture



Automotive



Defense



General Production



Heavy Equipment



Hydraulics



Marine



Medical



Oil and Gas



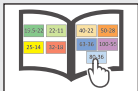
Renewable Energy/ Energy



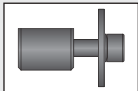
Tool, Mold, and Die

Reference Icons

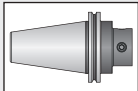
The following icons will appear throughout the catalog to help you navigate between products.



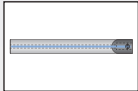
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



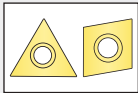
Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



248 (249) Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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248 (249) VERSATILE FINE BORING



Compact design. Precision boring.

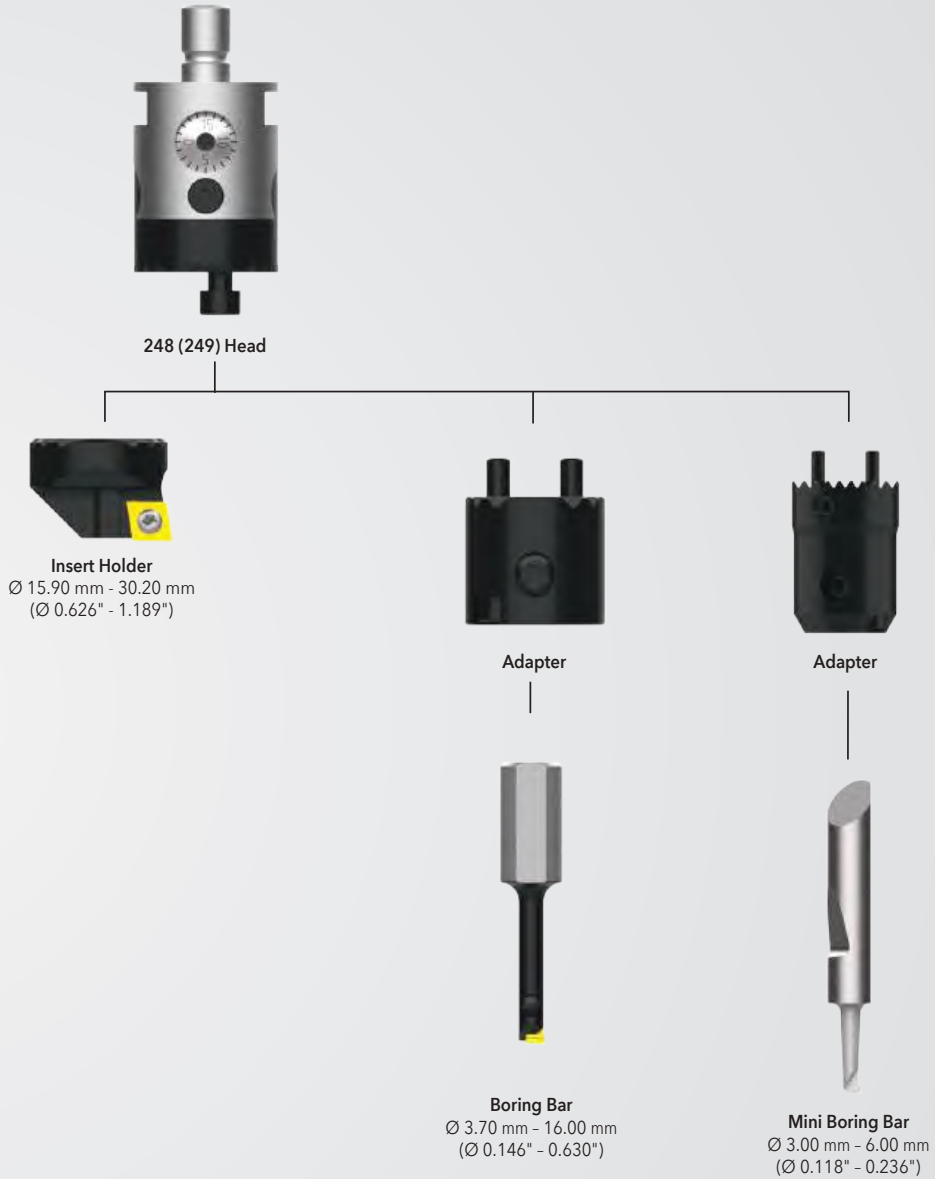
The Wohlhaupter® 248 (249) compact boring head allows for higher spindle speeds and achieves long-reach boring jobs. Its cylindrical shank provides variable length adjustments up to 10xD.

Test this **compact design** for finish machining today.

- ▶ Diameter range: 3.00 mm - 30.20 mm (0.118" - 1.189").
- ▶ Length adjustment up to 10xD.
- ▶ Coolant-through boring tool.
- ▶ 0.01 mm (0.0005") adjust on diameter.
- ▶ Max spindle speed: 20,000 RPM.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

248 (249) Product Overview

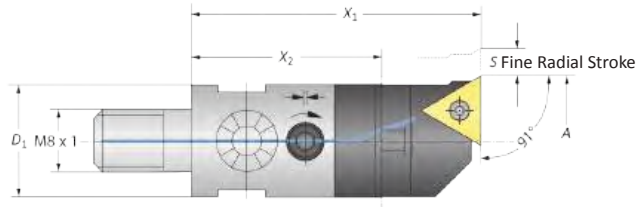


OPERATION **VERSATILITY**
 from **3.00 mm** to **30.20 mm** (0.118" to 1.189")



Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")



Metric (mm)

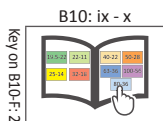
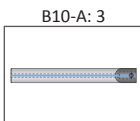
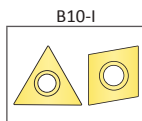
Boring Connection		Boring Range	Boring Head						Insert Holder	
		A	X ₁	X ₂	D ₁	S	Weight (kg)	Part No.	Insert Form	Part No.
M	M8 x 1	15.90 - 20.10	42.00	26.00	15.00	1.40	0.06	248001	20*	248051
									101	248054
		19.90 - 24.80	46.00	30.00	18.00	1.80	0.09	248002	20*	248052
									101	248055
		24.50 - 30.20	46.00	30.00	23.00	2.30	0.13	248003	20*	248053
									101	248056

Imperial (in)

Boring Connection		Boring Range	Boring Head						Insert Holder	
		A	X ₁	X ₂	D ₁	S	Weight (lbs)	Part No.	Insert Form	Part No.
i	M8 x 1	0.626 - 0.791	1.654	1.024	0.591	0.025	0.132	249001	20*	248051
									101	248054
		0.783 - 0.976	1.811	1.181	0.709	0.071	0.198	249002	20*	248052
									101	248055
		0.965 - 1.189	1.811	1.181	0.906	0.091	0.287	249003	20*	248053
									101	248056

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

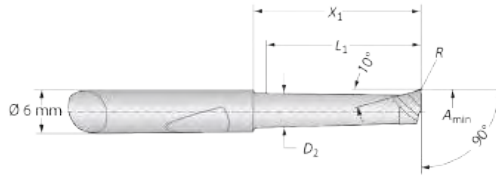


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 6.00 mm (0.118" - 0.236")



Metric (mm)

	Boring Range A_{min}	Boring Bar					Part No.		
		D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
m	3.00	6.00	2.60	11.50	10.00	0.10	081306WHC05	—	081322WBN150
				16.50	15.00	0.10	081307WHC05	081307WHW04	—
	4.00	6.00	3.60	12.00	10.00	0.20	081308WHC05	—	081317WBN150
				17.00	15.00	0.20	081309WHC05	—	081341WBN150
				22.00	20.00	0.20	081310WHC05	081310WHW04	—
	5.00	6.00	4.60	12.00	10.00	0.20	081311WHC05	—	—
				22.00	20.00	0.20	081312WHC05	—	081319WBN150
				32.00	30.00	0.20	081313WHC05	081313WHW04	—
	6.00	6.00	5.60	22.00	20.00	0.20	081314WHC05	—	081320WBN150
				32.00	30.00	0.20	081315WHC05	—	081321WBN150
				42.00	40.00	0.20	081316WHC05	081316WHW04	—

Imperial (in)

	Boring Range A_{min}	Boring Bar					Part No.		
		D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
i	0.118	0.236	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
				0.649	0.590	0.003	081307WHC05	081307WHW04	—
	0.157	0.236	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
				0.669	0.590	0.007	081309WHC05	—	081341WBN150
				0.866	0.787	0.007	081310WHC05	081310WHW04	—
	0.196	0.236	0.181	0.472	0.393	0.007	081311WHC05	—	—
				0.866	0.787	0.007	081312WHC05	—	081319WBN150
				1.259	1.181	0.007	081313WHC05	081313WHW04	—
	0.236	0.236	0.220	0.866	0.787	0.007	081314WHC05	—	081320WBN150
				1.259	1.181	0.007	081315WHC05	—	081321WBN150
				1.653	1.574	0.007	081316WHC05	081316WHW04	—

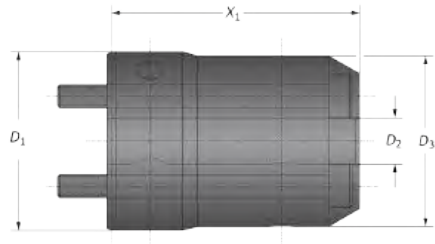
Adapter for Mini Boring Bars

Metric (mm)

Boring Head	Adapter				Part No.
	X_1	D_1	D_2	D_3	
m 248003	32.00	23.00	6.00	22.00	248071

Imperial (in)

Boring Head	Adapter				Part No.
	X_1	D_1	D_2	D_3	
i 249003	1.260	0.906	6.00 mm	0.866	248071



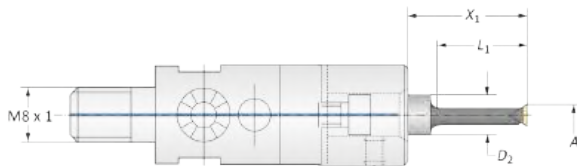
m = Metric (mm)

i = Imperial (in)



Boring Bars

Diameter Range: 3.70 mm - 16.00 mm (0.146" - 0.630")



Metric (mm)

	Boring Range	Boring Bar			Insert Form	Part No.
	A	D ₂	X ₁	L ₁		
m	3.70 - 5.00	8.00	20.80	18.00	325*	218074
	4.90 - 6.00	8.00	26.00	23.00	47*	218075
	5.90 - 8.00	8.00	27.00	25.00	211*	218076
	7.90 - 10.00	8.00	30.50	30.00	211*	218077
	9.90 - 12.00	8.00	35.00	35.00	20*	218079
					101	218082
	11.90 - 14.00	10.00	45.00	45.00	20*	218080
					101	218083
	13.90 - 16.00	10.00	50.00	50.00	20*	218081
					101	218084

Imperial (in)

	Boring Range	Boring Bar			Insert Form	Part No.
	A	D ₂	X ₁	L ₁		
i	0.146 - 0.197	0.315	0.819	0.709	325*	218074
	0.193 - 0.236	0.315	1.024	0.906	47*	218075
	0.232 - 0.315	0.315	1.063	0.984	211*	218076
	0.311 - 0.394	0.315	1.201	1.181	211*	218077
	0.390 - 0.472	0.315	1.378	1.378	20*	218079
					101	218082
	0.469 - 0.551	0.394	1.772	1.772	20*	218080
					101	218083
	0.547 - 0.630	0.394	1.969	1.968	20*	218081
					101	218084

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

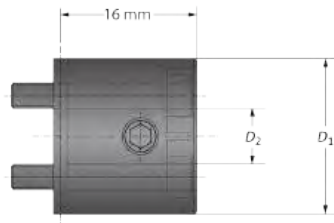
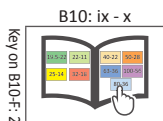
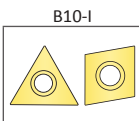
Adapter for Boring Bars

Metric (mm)

	Boring Head	Adapter		Part No.
		D ₁	D ₂	
m	248002	18.00	8.00	248063
	248003	23.00	8.00	248064
	248003	23.00	10.00	248065

Imperial (in)

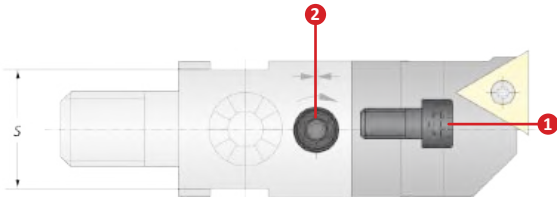
	Boring Head	Adapter		Part No.
		D ₁	D ₂	
i	249002	0.709	8.00 mm	248063
	249003	0.906	8.00 mm	248064
	249003	0.906	10.00 mm	248065



Inserts sold separately.

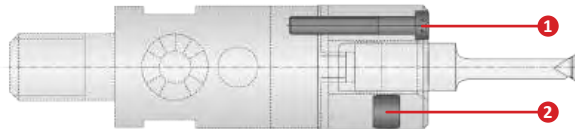
m = Metric (mm)
i = Imperial (in)

Accessories



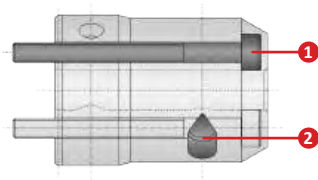
Clamping Elements for Boring Heads

Boring Head		Service Key	1. Cap Screw		2. Set Screw	
Metric	Imperial	S / Type	Part No.	Service Key	Part No.	Service Key
248001	249001	13 S / P	315631	s3 / A	315629	s2 / A
248002	249002	15 S / P	315631	s3 / A	315684	s2 / A
248003	249003	19 S / P	315631	s3 / A	315687	s2 / A



Clamping Elements for Adapters

Adapters	1. Cap Screw		2. Set Screw	
	Part No.	Service Key	Part No.	Service Key
248063	315801	S 2.5 / A	115136	S 2.5 / A
248064	315801	S 2.5 / A	031141	S 2.5 / A
248065	315801	S 2.5 / A	031141	S 2.5 / A



Screws for Adapter

Adapters	1. Cap Screw		2. Set Screw	
	Part No.	Service Key	Part No.	Service Key
248071	515166	S 2.5 / A	415244	S 3 / A

PrimeBore Product Overview

PrimeBore VERSATILE FINE BORING

Advancing versatile technology.

With over 30 years of development, the Wohlhaupter® PrimeBore boring head offers versatility and precision. The PrimeBore head can bore multiple hole sizes ranging from 3.00 mm - 208.00 mm (0.118" - 8.189") with our broad range of compatible boring bars.

Complete your boring job with ***technology that continues to advance.***

- ▶ Diameter range: 3.00 mm - 208.00 mm (0.118" - 8.189").
- ▶ Ease the stress of working on different day-to-day projects with boring kits.
- ▶ 0.002 mm (0.0001") adjust on diameter.
- ▶ Economical precision and versatility.
- ▶ Max spindle speed: 12,000 RPM.
- ▶ Coolant through.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

PrimeBore Product Overview

PRIME BORE

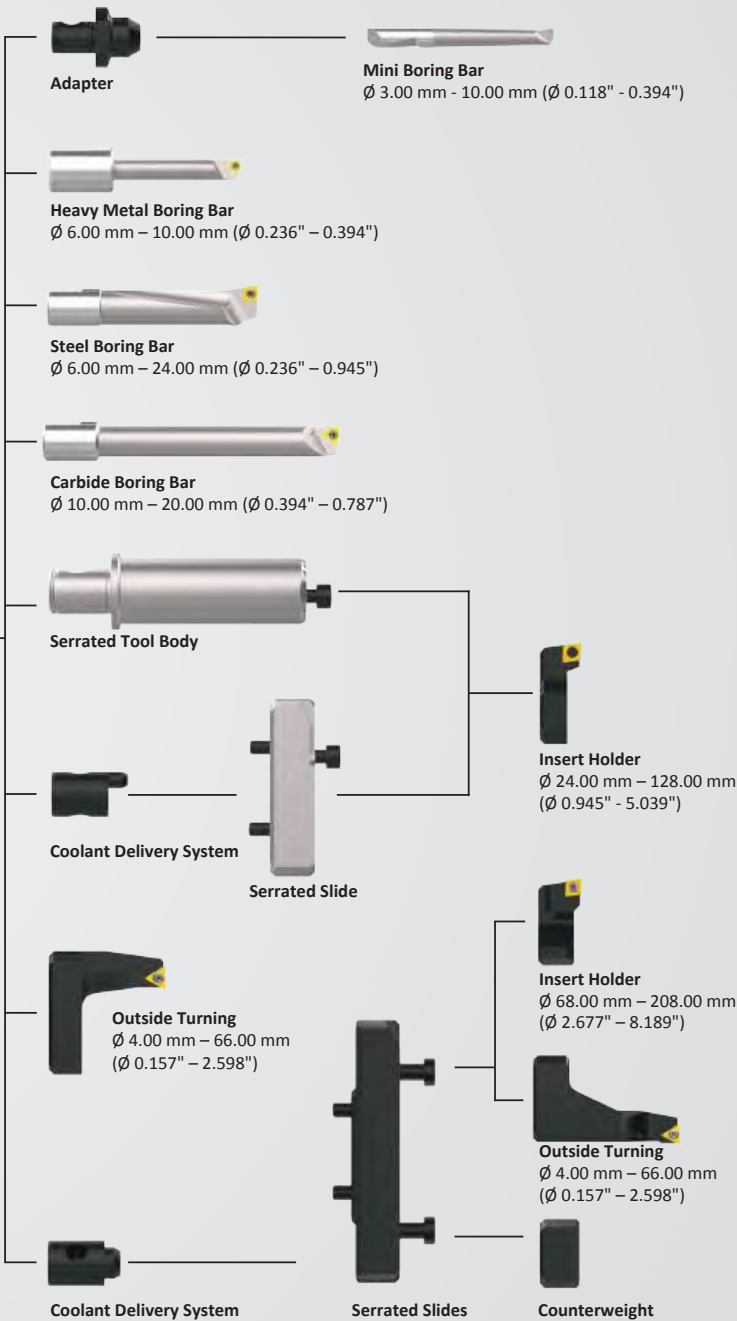
OPERATION VERSATILITY

from
3.00 mm to 208.00 mm
(0.118" to 8.189")
plus outside turning.



PrimeBore Head

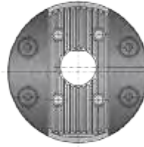
NOTE: Vernier adjustment
accuracy of 0.002 mm (0.0001")
on diameter.



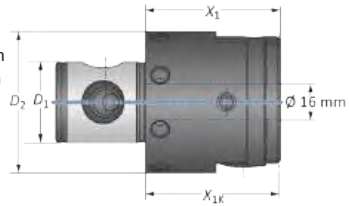


Boring Heads

Diameter Range: 15.90 mm - 30.20 mm (0.626" - 1.189")



+4.5 mm
-0.1 mm
Fine
Radial
Stroke



Metric (mm)

MVS Connection		Boring Head		Weight (kg)	Part No.
$D_2 D_1$	Boring Range	X_1	X_{1K}		
 63 - 36	3.00 - 208.00	60.00	59.50	1.30	450001

Imperial (in)

MVS Connection		Boring Head		Weight (lbs)	Part No.
$D_2 D_1$	Boring Range	X_1	X_{1K}		
 63 - 36	0.118 - 8.189	2.362	2.343	2.866	451001



F

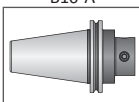
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



B10-F: 11

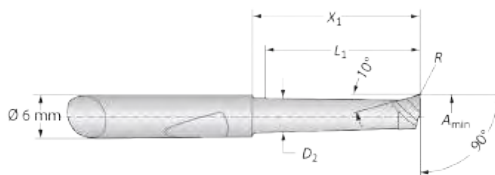
B10-A



 = Metric (mm)
 = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 6.00 mm (0.118" - 0.236")



Metric (mm)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	081306WHC05	—	081322WBN150
				16.50	15.00	0.10	081307WHC05	081307WHW04	—
	4.00	6.00	3.60	12.00	10.00	0.20	081308WHC05	—	081317WBN150
				17.00	15.00	0.20	081309WHC05	—	081341WBN150
				22.00	20.00	0.20	081310WHC05	081310WHW04	—
	5.00	6.00	4.60	12.00	10.00	0.20	081311WHC05	—	—
				22.00	20.00	0.20	081312WHC05	—	081319WBN150
				32.00	30.00	0.20	081313WHC05	081313WHW04	—
	6.00	6.00	5.60	22.00	20.00	0.20	081314WHC05	—	081320WBN150
				32.00	30.00	0.20	081315WHC05	—	081321WBN150
				42.00	40.00	0.20	081316WHC05	081316WHW04	—
	8.00	8.00	7.60	25.00	23.00	0.20	081323WHC05	—	—
				50.00	48.00	0.20	081324WHC05	—	—

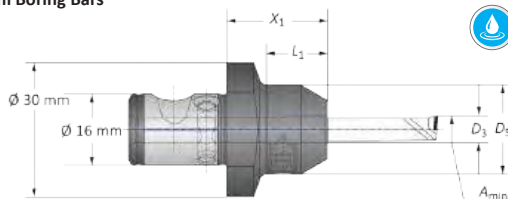
Imperial (in)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
				0.649	0.590	0.003	081307WHC05	081307WHW04	—
	0.157	0.236	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
				0.669	0.590	0.007	081309WHC05	—	081341WBN150
				0.866	0.787	0.007	081310WHC05	081310WHW04	—
	0.196	0.236	0.181	0.472	0.393	0.007	081311WHC05	—	—
				0.866	0.787	0.007	081312WHC05	—	081319WBN150
				1.259	1.181	0.007	081313WHC05	081313WHW04	—
	0.236	0.236	0.220	0.866	0.787	0.007	081314WHC05	—	081320WBN150
				1.259	1.181	0.007	081315WHC05	—	081321WBN150
				1.653	1.574	0.007	081316WHC05	081316WHW04	—
	0.315	0.315	0.229	0.984	0.905	0.007	081323WHC05	—	—
				1.968	1.889	0.007	081324WHC05	—	—

Adapter for Mini Boring Bars

Metric (mm)

	Adapter				Part No.
	D_3	D_5	X_1	L_1	
	6.00	20.00	22.50	14.00	319010
	8.00	22.00	22.50	14.00	236071



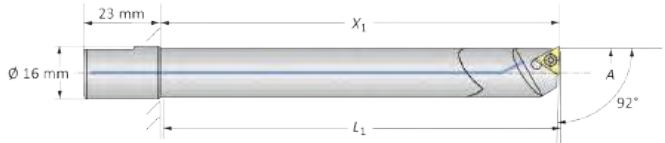
 = Metric (mm)

 = Imperial (in)



Boring Bars

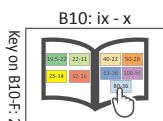
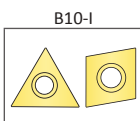
Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")



Metric (mm)

Substrate	Boring Range A	Boring Bar		Weight (kg)	Insert Form	Part No.
Steel	6.00 - 10.00	22.00 - 32.00	20.00	0.04	211*	450026
	10.00 - 16.00	35.00 - 45.00	33.00	0.06	20*	450038
					101	450027
	16.00 - 24.00	60.00 - 70.00	58.00	0.10	20*	450039
Heavy Metal	6.00 - 8.00	32.00	29.00	0.08	211*	081055
	8.00 - 10.00	45.00	42.00	0.09	211*	218072
Carbide	10.00 - 12.00	55.00	52.00	0.07	20*	218037
					101	218042
		75.00	72.00	0.09	20*	218029
					101	218032
	12.00 - 14.00	70.00	67.00	0.10	20*	218038
					101	218043
		90.00	87.00	0.15	20*	218030
					101	218033
	14.00 - 16.00	75.00	72.00	0.16	20*	218039
					101	218044
		100.00	97.00	0.20	20*	218040
					101	218045
	16.00 - 20.00	90.00	87.00	0.26	20*	218041
					101	218046
		120.00	117.00	0.33	20*	218031
					101	218034

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

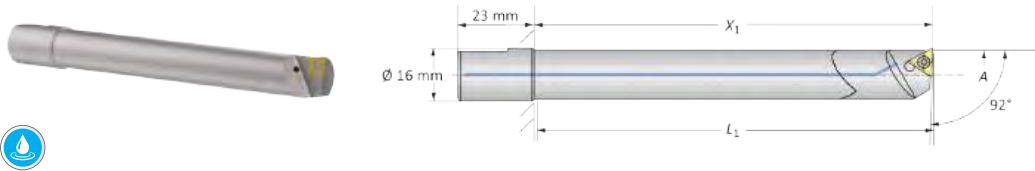


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Bars

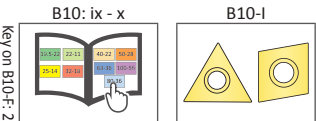
Diameter Range: 6.00 mm - 24.00 mm (0.236" - 0.945")



Imperial (in)

Substrate	Boring Range A	Boring Bar		Weight (lbs)	Insert Form	Part No.
		X ₁	L ₁			
Steel	0.236 - 0.394	0.866 - 1.260	0.787	0.090	211*	450026
	0.394 - 0.630	1.378 - 1.772	1.299	0.130	20*	450038
					101	450027
	0.630 - 0.945	2.362 - 2.756	2.283	0.220	20*	450039
Heavy Metal	0.236 - 0.315	1.260	1.142	0.176	211*	081055
	0.315 - 0.394	1.772	1.654	0.198	211*	218072
Carbide	0.394 - 0.472	2.165	2.047	0.154	20*	218037
					101	218042
		2.953	2.835	0.198	20*	218029
					101	218032
	0.472 - 0.551	2.756	2.638	0.220	20*	218038
					101	218043
		3.543	3.425	0.331	20*	218030
					101	218033
	0.551 - 0.630	2.953	2.835	0.353	20*	218039
					101	218044
		3.937	3.819	0.441	20*	218040
					101	218045
	0.630 - 0.787	3.543	3.425	0.573	20*	218041
					101	218046
		4.724	4.606	0.728	20*	218031
					101	218034

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

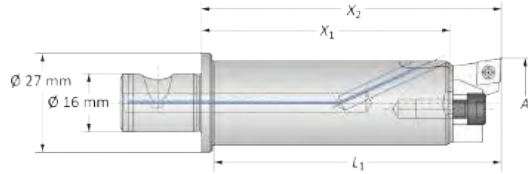


Inserts sold separately.
m = Metric (mm)
i = Imperial (in)
B10-F: 14



Serrated Tool Bodies

Diameter Range: 24.00 mm - 65.00 mm (0.945" - 2.559")



Metric (mm)

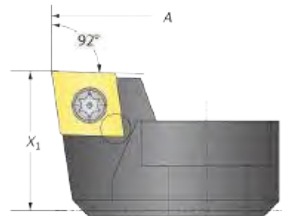
	Boring Range	Serrated Tool Body			Weight (kg)	Part No.
	A	X ₁	X ₂	L ₁		
m	24.00 - 65.00	68.00	82.00	79.00	0.20	450021

Imperial (in)

	Boring Range	Serrated Tool Body			Weight (lbs)	Part No.
	A	X ₁	X ₂	L ₁		
i	0.945 - 2.559	2.667	3.228	3.110	0.441	450021



Insert Holders



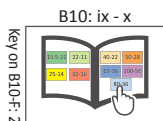
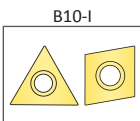
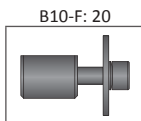
Metric (mm)

	Boring Range	Insert Holder	Weight (kg)	Insert Form	Part No.
	A	X ₁			
m	24.00 - 40.00	14.00	0.02	20*	450040
				101	450022
	40.00 - 65.00	14.00	0.03	20*	450041
				101	450023

Imperial (in)

	Boring Range	Insert Holder	Weight (lbs)	Insert Form	Part No.
	A	X ₁			
i	0.945 - 1.575	0.551	0.044	20*	450040
				101	450022
	1.575 - 2.559	0.551	0.066	20*	450041
				101	450023

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



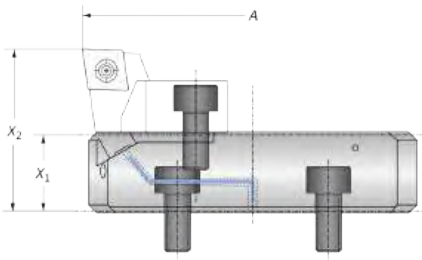
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



Serrated Slides

Diameter Range: 65.00 mm - 128.00 mm (2.559" - 5.039")



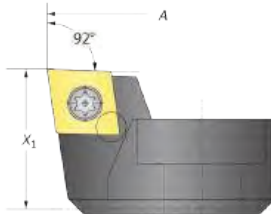
Metric (mm)

	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	65.00 - 128.00	14.50	29.50	0.08	450024

Imperial (in)

	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.559 - 5.039	0.571	1.161	0.176	450024

Insert Holders



Metric (mm)

	Boring Range	Insert Holder	Weight (kg)	Insert Form	Part No.
	A	X ₁			
	65.00 - 128.00	14.00	0.03	20*	450041
				101	450023

Imperial (in)

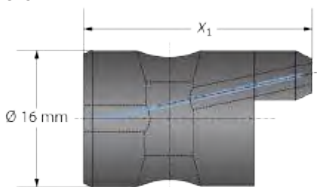
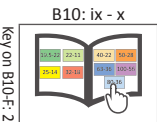
	Boring Range	Insert Holder	Weight (lbs)	Insert Form	Part No.
	A	X ₁			
	2.559 - 5.039	0.551	0.066	20*	450041
				101	450023

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

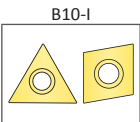
Alu-Line Coolant Delivery Sections

Metric (mm)

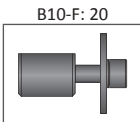
	X ₁	Weight (kg)	Part No.
	26.75	0.01	450125



B10: ix - x



B10-I



B10-F: 20

Inserts sold separately.

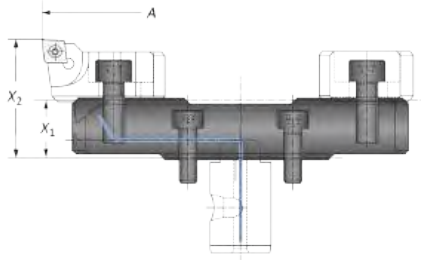
= Metric (mm)

= Imperial (in)



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")



Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		501054
	96.00 - 124.00	16.00	32.50		501055
	124.00 - 152.00	16.00	32.50		501056
	152.00 - 180.00	22.00	38.50		501058
	180.00 - 208.00	22.00	38.50		501059

Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.667 - 3.780	0.630	1.280		501054
	3.780 - 4.882	0.630	1.280		501055
	4.882 - 5.984	0.630	1.280		501056
	5.984 - 7.087	0.866	1.516		501058
	7.087 - 8.189	0.866	1.516		501059

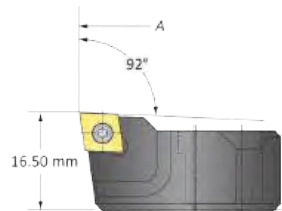
Insert Holders

Metric (mm)

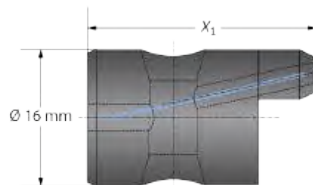
Boring Range		Weight (kg)	Insert Form	Part No.
	A			
m	68.00 - 208.00	0.05	20	502069
			101	502064

Imperial (in)

Boring Range		Weight (lbs)	Insert Form	Part No.
	A			
i	2.677 - 8.189	0.110	20	502069
			101	502064



NOTE: Other insert holders available upon request.

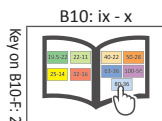
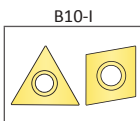
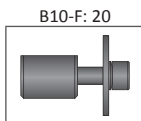


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



Inserts sold separately.

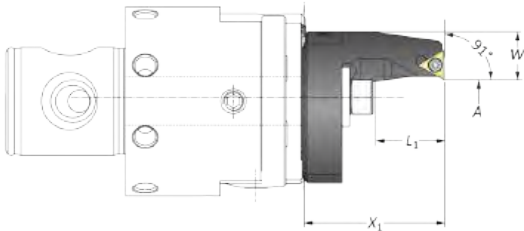
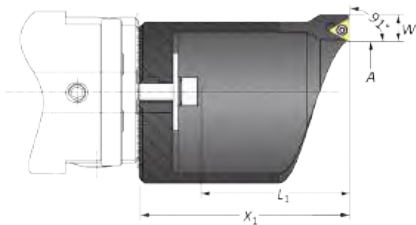
m = Metric (mm)

i = Imperial (in)



Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")



Metric (mm)

Type	Boring Range	Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W			
m	A	4.00 - 17.50	40.50	20.00	16.60	20*	236081
	A	16.50 - 30.00	50.50	30.00	11.10	20*	236082
B	B	29.00 - 44.00	75.50	54.00	9.60	20*	236083
	B	43.00 - 66.00	100.50	79.00	9.60	20*	236084



Imperial (in)

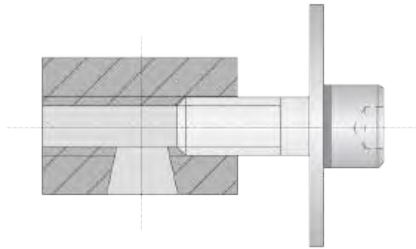
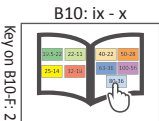
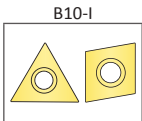
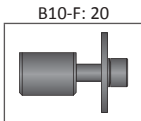
Type	Boring Range	Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W			
i	A	0.157 - 0.689	1.594	0.787	0.653	20*	236081
	A	0.650 - 1.181	1.988	1.181	0.437	20*	236082
B	B	1.142 - 1.732	2.952	2.126	0.377	20*	236083
	B	1.693 - 2.598	3.956	3.110	0.377	20*	236084

NOTE: Clockwise and neutral execution.

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range A (mm)	Service Key	Part No.
A	4.00 - 30.00	s5	236088
B	29.00 - 66.00	s5	236089



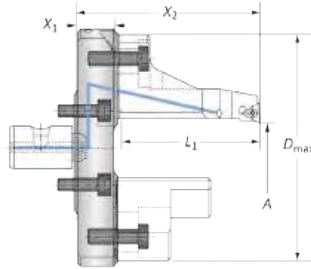
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")



Metric (mm)

	Boring Range		Serrated Slide				Weight (kg)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
m	2.00 - 30.00		16.00	73.00	55.00	101.00	0.35	501064
	30.00 - 58.00		16.00	73.00	55.00	129.00	0.44	501065
	58.00 - 86.00		22.00	79.00	55.00	157.00	0.60	501066
	86.00 - 114.00		22.00	79.00	55.00	185.00	0.73	501067

Imperial (in)

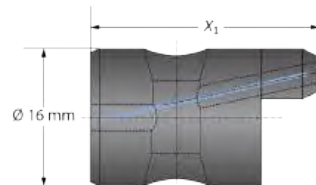
	Boring Range		Serrated Slide				Weight (lbs)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
i	0.078 - 1.181		0.630	2.874	2.165	3.396	0.771	501064
	1.181 - 2.283		0.630	2.874	2.165	5.078	0.970	501065
	2.283 - 3.386		0.866	3.110	2.165	6.181	1.322	501066
	3.386 - 4.488		0.866	3.110	2.165	7.283	1.609	501067



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	in	mm	in	kg	lbs		
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

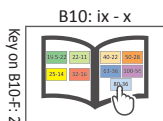
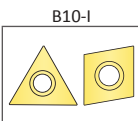
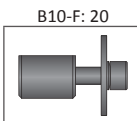


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



key on B10-F: 2

Inserts sold separately.

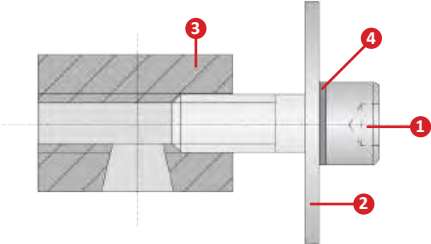
m = Metric (mm)

i = Imperial (in)

Accessories

Clamping Elements

Clamping Elements for Insert Holders

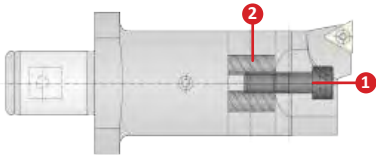


Metric (mm)

	1.		2.	3.	4.	
Boring Range	Cap Screw	Hex Size	Washer	Clamping Nut	Locking Washer	Part No.
 4.00 - 30.00	070153	s5	315155	236120	215254	236088
 29.00 - 66.00	070153	s5	315156	236120	215254	236089

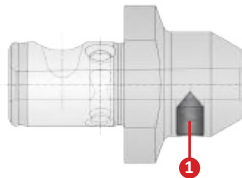
Clamping Elements for Serrated Tool Body

1.		2.
Cap Screw	Hex Size	Clamping Piece
027154	s4	145184



Thread Pin

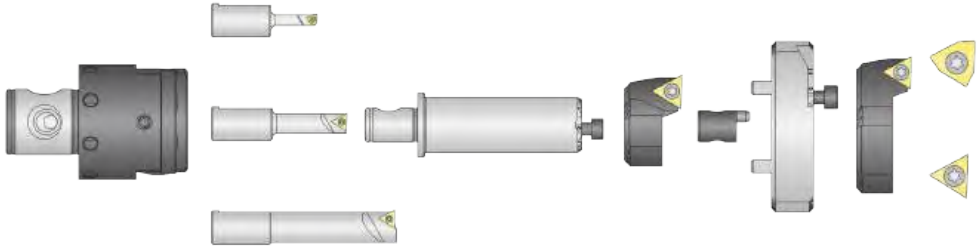
	1.
Service Key	Part No.
S3 / A	415244





PrimeBore Kit

Form 20 | Diameter Range: 6.00 mm - 128.00 mm (0.236" - 5.039")



Metric (mm)

Kit Part No.	
m	103089
Kit Components	Part No.
(1) Boring Head	450001
(3) Boring Bars	450026 (Form 211)
	450038
	450039
(2) Insert Holders	450040
	450041
(1) Serrated Tool Body	450021
(1) Serrated Slide	450024
(1) Coolant Delivery	450125
(3) Service Keys	003195 (s4)
	515451 (T6)
	515453 (T7)

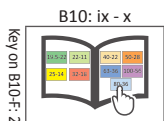
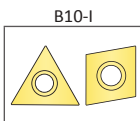
Imperial (in)

Kit Part No.	
i	104089
Kit Components	Part No.
(1) Boring Head	451001
(3) Boring Bars	450026 (Form 211)
	450038
	450039
(2) Insert Holders	450040
	450041
(1) Serrated Tool Body	450021
(1) Serrated Slide	450024
(1) Coolant Delivery	450125
(3) Service Keys	003195 (s4)
	515451 (T6)
	515453 (T7)

NOTE: Inserts sold separately.

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
Metric (mm)	Imperial (in)						
6.00 - 10.00	0.236 - 0.394	450026	—	—	—	—	Form 211
10.00 - 16.00	0.394 - 0.630	450038	—	—	—	—	Form 20
16.00 - 24.00	0.630 - 0.945	450039	—	—	—	—	Form 20
24.00 - 40.00	0.945 - 1.575	—	450021	—	—	450040	Form 20
40.00 - 65.00	1.575 - 2.559	—	450021	—	—	450041	Form 20
65.00 - 128.00	2.559 - 5.039	—	—	450125	450024	450041	Form 20



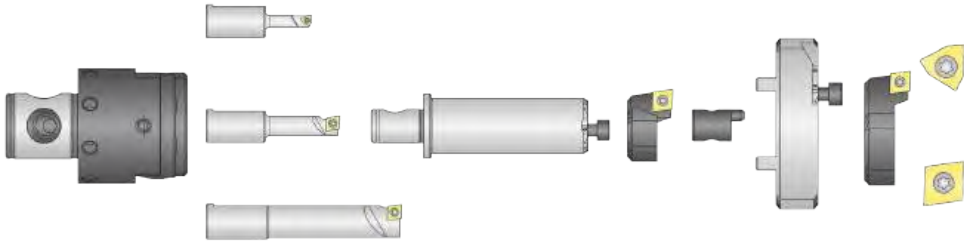
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



PrimeBore Kit

Form 101 | Diameter Range: 6.00 mm - 128.00 mm (0.236" - 5.039")



Metric (mm)

Kit Part No.	
m	103088
Kit Components	Part No.
(1) Boring Head	450001
	450026 (Form 211)
	450027
(3) Boring Bars	450028
	450022
	450023
(2) Insert Holders	450021
(1) Serrated Tool Body	450024
(1) Serrated Slide	450125
(1) Coolant Delivery	003195 (s4)
(3) Service Keys	515451 (T6)
	515452 (T8)

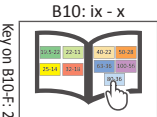
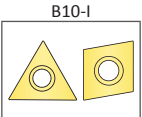
Imperial (in)

Kit Part No.	
i	104088
Kit Components	Part No.
(1) Boring Head	451001
	450026 (Form 211)
	450027
(3) Boring Bars	450028
	450022
	450023
(2) Insert Holders	450021
(1) Serrated Tool Body	450024
(1) Serrated Slide	450125
(1) Coolant Delivery	003195 (s4)
(3) Service Keys	515451 (T6)
	515452 (T8)

NOTE: Inserts sold separately.

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Coolant Delivery	Serrated Slide	Insert Holder	Insert
Metric (mm)	Imperial (in)						
6.00 - 10.00	0.236 - 0.394	450026	—	—	—	—	Form 211
10.00 - 16.00	0.394 - 0.630	450027	—	—	—	—	Form 101
16.00 - 24.00	0.630 - 0.945	450028	—	—	—	—	Form 101
24.00 - 40.00	0.945 - 1.575	—	450021	—	—	450022	Form 101
40.00 - 65.00	1.575 - 2.559	—	450021	—	—	450023	Form 101
65.00 - 128.00	2.559 - 5.039	—	—	450125	450024	450023	Form 101



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Product Overview



VarioBore VERSATILE FINE BORING

Need more versatility?

The Wohlhaupter® VarioBore head offers precision and versatility, and the 3E^{TECH+} docking port provides convenient and simple diameter adjustments.

Experience **precision boring** for yourself.

- ▶ Diameter range: 0.40 mm - 152.00 mm (0.016" - 5.984").
- ▶ Offers outside turning capabilities: 2.00 mm - 66.00 mm (0.079" - 2.598").
- ▶ Ease the stress of working on different day-to-day projects with boring kits.
- ▶ 3E^{TECH+} module provides a simple digital readout.
- ▶ Max spindle speed: 27,500 RPM.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

VarioBore Product Overview

VARIO BORE

OPERATION VERSATILITY

from
0.40 mm to 152.00 mm
(0.016" to 5.984")
plus outside turning.



VarioBore Head

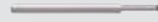


3ETECH+
Digital Readout
Module

NOTE: 3ETECH+ adjustment accuracy of 0.001 mm (0.00005") and vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.



Reducing Sleeve



Coated Carbide Mini Boring Bar
Ø 0.40 mm - 3.00 mm (Ø 0.016" - 0.118")



Adapter



Mini Boring Bar
Ø 3.00 mm - 10.00 mm (Ø 0.118" - 0.394")



Heavy Metal Boring Bar
Ø 6.00 mm - 10.00 mm (Ø 0.236" - 0.394")



Steel Boring Bar
Ø 6.00 mm - 27.00 mm (Ø 0.236" - 1.063")



Carbide Boring Bar
Ø 10.00 mm - 20.00 mm (Ø 0.394" - 0.787")



Serrated Tool Body



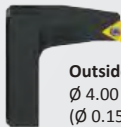
Insert Holder
Ø 20.00 mm - 32.00 mm
(Ø 0.787" - 1.260")



Serrated Tool Body



Insert Holder
Ø 29.00 mm - 53.00 mm
(Ø 1.142" - 2.087")



Outside Turning
Ø 4.00 mm - 66.00 mm
(Ø 0.157" - 2.598")



Insert Holder
Ø 68.00 mm - 152.00 mm
(Ø 2.677" - 5.984")



Insert Holder
Ø 52.00 mm - 102.00 mm
(Ø 2.047" - 4.016")



Outside Turning
Ø 2.00 mm - 58.00 mm
(Ø 0.079" - 2.283")



Coolant Delivery System



Serrated Slides



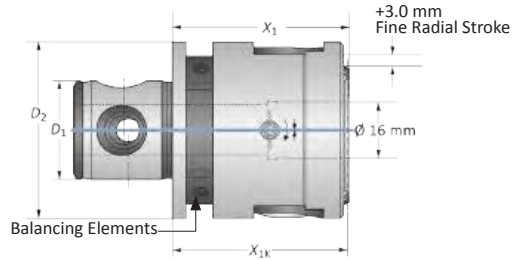
Counterweight





Analog Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")



Metric (mm)

MVS Connection		Boring Head			Part No.*
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}	Weight (kg)	
 50 - 28	0.40 - 152.00	50.00	49.50	0.70	536001

Imperial (in)

MVS Connection		Boring Head			Part No.*
$D_2 \mid D_1$	Boring Range	X_1	X_{1K}	Weight (lbs)	
 50 - 28	0.016 - 5.984	1.969	1.949	1.543	563001

*Not equipped with digital capabilities.

NOTE: Balancing elements must be ordered separately.

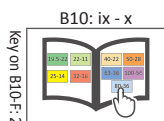
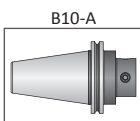
NOTE: VarioBore heads are compatible with Kaiser® connection.



Adjustment Accuracy

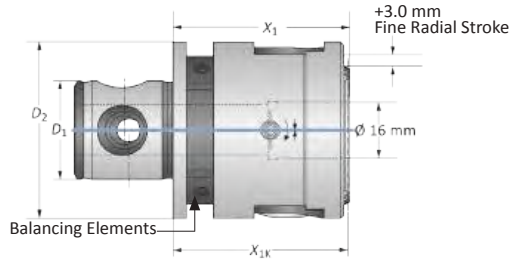
Vernier	0.002 mm	0.0001"
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IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Digital 3E^{TECH+} Boring Heads

Diameter Range: 0.40 mm - 152.00 mm (0.016" - 5.984")



Metric (mm)

MVS Connection		Boring Head				
$D_2 \mid D_1$		Boring Range	X_1	X_{1K}	Weight (kg)	Part No.
	50 - 28	0.40 - 152.00	50.00	49.50	0.70	536002

Imperial (in)

MVS Connection		Boring Head				
	$D_2 \mid D_1$	Boring Range	X_1	X_{1K}	Weight (lbs)	Part No.
	50 - 28	0.016 - 5.984	1.969	1.949	1.543	563002

NOTE: Balancing elements must be ordered separately.

NOTE: VarioBore heads are compatible with Kaiser® connection.

Adjustment Accuracy		
3E ^{TECH+}	0.001 mm	0.00005"
Vernier	0.002 mm	0.0001"



3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

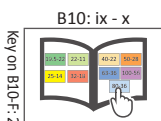
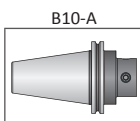
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

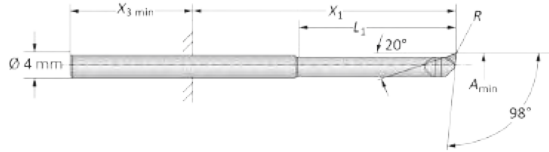
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.





Mini Boring Bars

Diameter Range: 0.40 mm - 3.00 mm (0.016" - 0.118")



Metric (mm)

Boring Range		Boring Bar				
A_{min}		X_1	$X_{3\min}$	L_1	R	Part No.
m	0.40	3.00 - 17.00	25.00	2.00	0.03	081401WHC126
	0.60	4.00 - 18.00	25.00	3.00	0.04	081402WHC126
	0.80	5.00 - 19.00	25.00	4.00	0.04	081403WHC126
	1.00	6.00 - 20.00	25.00	5.00	0.05	081404WHC126
	1.50	8.50 - 22.50	25.00	7.50	0.05	081405WHC126
	2.00	11.00 - 25.00	25.00	10.00	0.05	081406WHC126
	2.50	13.50 - 27.50	25.00	12.50	0.05	081407WHC126
	2.80	15.00 - 28.00	25.00	14.00	0.07	081408WHC126

Imperial (in)

Boring Range		Boring Bar				
A_{min}		X_1	$X_{3\ min}$	L_1	R	Part No.
i	0.016	0.118 - 0.669	0.980	0.079	0.0010	081401WHC126
	0.024	0.157 - 0.709	0.980	0.118	0.0020	081402WHC126
	0.031	0.197 - 0.748	0.980	0.157	0.0020	081403WHC126
	0.039	0.236 - 0.787	0.980	0.197	0.0025	081404WHC126
	0.059	0.335 - 0.886	0.980	0.295	0.0025	081405WHC126
	0.079	0.433 - 0.984	0.980	0.394	0.0025	081406WHC126
	0.098	0.531 - 1.083	0.980	0.492	0.0025	081407WHC126
	0.110	0.591 - 1.142	0.980	0.551	0.0030	081408WHC126

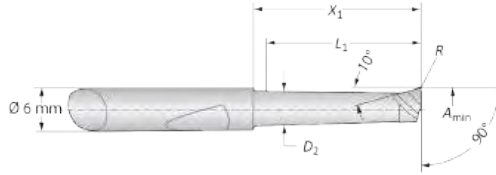
NOTE: Fixture-through reducing sleeve required (B10-F: 39).

m = Metric (mm)

i = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")



Metric (mm)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	3.00	6.00	2.60	11.50	10.00	0.10	081306WHC05	—	081322WBN150
				16.50	15.00	0.10	081307WHC05	081307WHW04	—
	4.00	6.00	3.60	12.00	10.00	0.20	081308WHC05	—	081317WBN150
				17.00	15.00	0.20	081309WHC05	—	081341WBN150
				22.00	20.00	0.20	081310WHC05	081310WHW04	—
	5.00	6.00	4.60	12.00	10.00	0.20	081311WHC05	—	—
				22.00	20.00	0.20	081312WHC05	—	081319WBN150
				32.00	30.00	0.20	081313WHC05	081313WHW04	—
	6.00	6.00	5.60	22.00	20.00	0.20	081314WHC05	—	081320WBN150
				32.00	30.00	0.20	081315WHC05	—	081321WBN150
				42.00	40.00	0.20	081316WHC05	081316WHW04	—
	8.00	8.00	7.60	25.00	23.00	0.20	081323WHC05	—	—
				50.00	48.00	0.20	081324WHC05	—	—

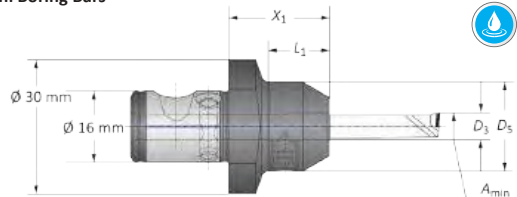
Imperial (in)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
	0.118	0.236	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
				0.649	0.590	0.003	081307WHC05	081307WHW04	—
	0.157	0.236	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
				0.669	0.590	0.007	081309WHC05	—	081341WBN150
				0.866	0.787	0.007	081310WHC05	081310WHW04	—
	0.196	0.236	0.181	0.472	0.393	0.007	081311WHC05	—	—
				0.866	0.787	0.007	081312WHC05	—	081319WBN150
				1.259	1.181	0.007	081313WHC05	081313WHW04	—
	0.236	0.236	0.220	0.866	0.787	0.007	081314WHC05	—	081320WBN150
				1.259	1.181	0.007	081315WHC05	—	081321WBN150
				1.653	1.574	0.007	081316WHC05	081316WHW04	—
	0.315	0.315	0.229	0.984	0.905	0.007	081323WHC05	—	—
				1.968	1.889	0.007	081324WHC05	—	—

Adapter for Mini Boring Bars

Metric (mm)

Boring Range		Adapter				Part No.
	A_{min}	D_3	D_5	X_1	L_1	
m	3.00	6.00	20.00	22.50	14.00	319010
	8.00	8.00	22.00	22.50	14.00	236071

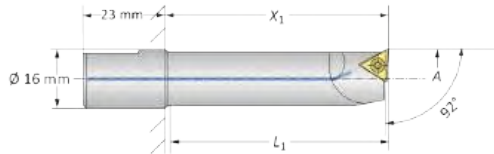


 = Metric (mm)
 = Imperial (in)



Boring Bars

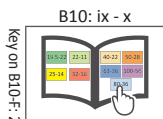
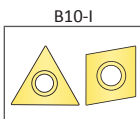
Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



Metric (mm)

Substrate	Boring Range A	Boring Bar		Weight (kg)	Insert Form	Part No.
Steel	6.00 - 8.00	22.00	19.00	0.03	211*	081053
	8.00 - 10.00	30.00	27.00	0.04	211*	218071
	10.00 - 12.00	25.00	22.00	0.04	20*	218058
					101	218047
					20*	218059
	12.00 - 14.00	35.00	32.00	0.05	101	218048
		45.00	42.00	0.05	20*	081044
					20*	218014
	14.00 - 16.00	30.00	27.00	0.05	101	218012
		45.00	42.00	0.06	20*	218060
					101	218049
	16.00 - 20.00	35.00	32.00	0.06	20*	218061
					101	218050
		50.00	47.00	0.08	20*	218062
	15.00 - 17.00	37.00	34.00	0.06	101	218051
		60.00	57.00	0.08	20*	081048
					20*	081045
	16.00 - 20.00				101	081041
		40.00	37.00	0.08	20*	218063
					101	218052
	20.00 - 25.00	60.00	57.00	0.09	20*	218064
					101	218053
		37.00	34.00	0.07	20*	081049
	25.00 - 27.00	70.00	67.00	0.11	20*	081046
					101	081042
		37.00	34.00	0.07	20*	081050
		70.00	67.00	0.11	20*	081047
					101	081043
Heavy Metal	6.00 - 8.00	32.00	29.00	0.08	211*	081055
	8.00 - 10.00	45.00	42.00	0.09	211*	218072
Carbide	10.00 - 12.00	55.00	52.00	0.07	20*	218037
					101	218042
		75.00	72.00	0.09	20*	218029
	12.00 - 14.00				101	218032
		70.00	67.00	0.10	20*	218038
					101	218043
	14.00 - 16.00	90.00	87.00	0.15	20*	218030
					101	218033
		75.00	72.00	0.16	20*	218039
	16.00 - 20.00				101	218044
		100.00	97.00	0.20	20*	218040
					101	218045
	16.00 - 20.00	90.00	87.00	0.26	20*	218041
					101	218046
		120.00	117.00	0.33	20*	218031
					101	218034

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



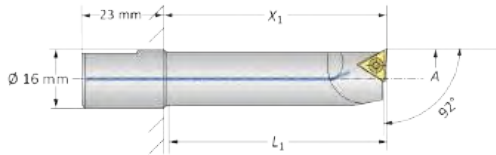
Inserts sold separately.

= Metric (mm)

= Imperial (in)

Boring Bars

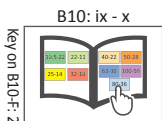
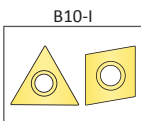
Diameter Range: 6.00 mm - 27.00 mm (0.236" - 1.063")



Imperial (in)

Substrate	Boring Range A	Boring Bar X ₁	Boring Bar L ₁	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.315	0.866	0.748	0.070	211*	081053
	0.315 - 0.394	1.181	1.063	0.090	211*	218071
	0.394 - 0.472	0.984	0.866	0.090	101	218047
					20*	218058
		1.378	1.260	0.110	101	218048
					20*	218059
	0.472 - 0.551	1.772	1.654	0.110	20*	081044
		1.181	1.063	0.110	101	218012
					20*	218014
		1.772	1.654	0.130	101	218049
					20*	218060
	0.551 - 0.630	1.378	1.260	0.130	101	218050
					20*	218061
		1.969	1.850	0.180	101	218051
					20*	218062
	0.591 - 0.669	1.457	1.339	0.130	20*	081048
					101	081041
		2.362	2.244	0.180	20*	081045
					101	218052
	0.630 - 0.786	1.575	1.457	0.180	20*	218063
					101	218053
		2.362	2.244	0.200	20*	218064
		1.457	1.339	0.150	20*	081049
Carbide	0.787 - 0.984	2.756	2.638	0.240	101	081042
					20*	081046
		1.457	1.339	0.150	20*	081050
		2.756	2.638	0.240	101	081043
	0.984 - 1.063				20*	081047
		1.260	1.142	0.176	211*	081055
		1.772	1.654	0.198	211*	218072
	0.236 - 0.315				101	218042
					20*	218037
	0.394 - 0.472				101	218032
					20*	218029
	0.472 - 0.551	2.165	2.047	0.154	101	218043
					20*	218038
		2.756	2.638	0.220	101	218033
		3.543	3.425	0.331	20*	218030
	0.551 - 0.630	2.953	2.835	0.353	101	218044
					20*	218039
		3.937	3.819	0.441	101	218045
					20*	218040
	0.630 - 0.787	3.543	3.425	0.573	101	218046
					20*	218041
		4.724	4.606	0.728	101	218034
					20*	218031

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



Inserts sold separately.

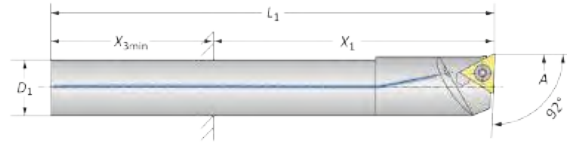
 = Metric (mm)

 = Imperial (in)



Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")

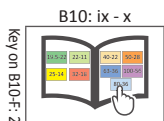
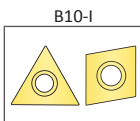


Metric (mm)

Substrate		Boring Range		Boring Bar			Weight (kg)	Insert Form	Part No.
		A	D ₁	X ₁	X _{3 min}	L ₁			
Steel		6.00 - 8.00	5.00	12.50 - 25.00	25.00	70.00	0.01	211*	514032
		8.00 - 10.00	7.00	17.50 - 35.00	25.00	81.00	0.02	211*	514033
		10.00 - 12.00	8.00	20.00 - 40.00	25.00	85.00	0.03	20*	514004
								101	514003
		12.00 - 14.00	10.00	25.00 - 50.00	25.00	100.00	0.05	20*	514006
								101	514005
		14.00 - 16.00	12.00	30.00 - 60.00	30.00	114.00	0.09	20*	514008
								101	514007
		16.00 - 18.00	14.00	56.00 - 70.00	30.00	121.00	0.13	20*	514010
								101	514009
18.00 - 20.00	14.00	56.00 - 70.00	30.00	121.00	0.13	101	514011		
						20*	514012		
Carbide	M	6.00 - 8.00	5.00	12.50 - 40.00	25.00	90.00	0.02	211*	514034
		8.00 - 10.00	7.00	21.00 - 56.00	25.00	109.00	0.05	211*	514035
		10.00 - 12.00	8.00	22.00 - 64.00	25.00	117.00	0.07	20*	514016
								101	514015
		12.00 - 14.00	10.00	51.00 - 80.00	25.00	140.00	0.13	20*	514018
								101	514017
		14.00 - 16.00	12.00	68.00 - 96.00	30.00	162.00	0.22	20*	514020
								101	514019
		16.00 - 18.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	514022
								101	514021
				77.00 - 112.00	30.00	142.00	0.26	20*	514024
								101	514023
		18.00 - 20.00	14.00	112.00 - 147.00	30.00	177.00	0.33	20*	514026
								101	514025
				77.00 - 112.00	30.00	142.00	0.26	20*	514028
								101	514027

NOTE: Fixture-through reducing sleeve required (B10-F: 39).

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

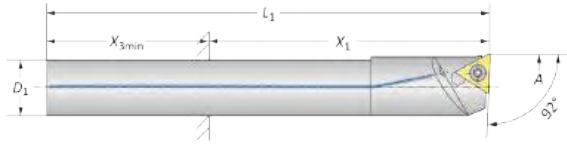


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")

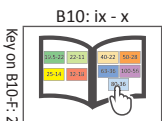
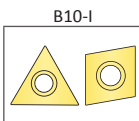


Imperial (in)

Substrate	Boring Range	Boring Bar				Weight (lbs)	Insert Form	Part No.
	A	D ₁ (mm)	X ₁	X _{3 min}	L ₁			
Steel	0.236 - 0.315	5.00	0.492 - 0.984	0.984	2.756	0.022	211*	514032
	0.315 - 0.394	7.00	0.689 - 1.378	0.984	3.189	0.044	211*	514033
	0.394 - 0.472	8.00	0.787 - 1.575	0.984	3.346	0.066	20*	514004
	0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	101	514003
	0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	20*	514006
	0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	101	514005
	0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	101	514011
Carbide	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	211*	514012
	0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	211*	514034
	0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	20*	514016
	0.472 - 0.551	10.00	2.008 - 3.150	0.984	5.512	0.287	101	514015
	0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	20*	514018
	0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	101	514017
	0.709 - 0.787	14.00	4.409 - 5.787	1.181	6.969	0.728	20*	514020
							101	514019
							20*	514022
							101	514021
							20*	514024
							101	514023
							20*	514026
							101	514025
							20*	514028
							101	514027

NOTE: Fixture-through reducing sleeve required (B10-F: 39).

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



Inserts sold separately.

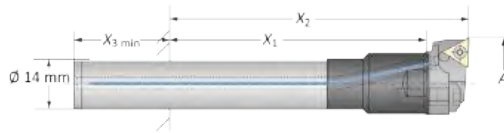
 = Metric (mm)

 = Imperial (in)



Serrated Tool Bodies

Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")



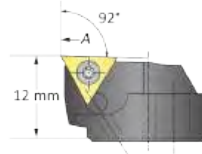
Metric (mm)

	Substrate	Boring Range A	Serrated Tool Body			Weight (kg)	Part No.
			X ₁	X ₂	X _{3 min}		
m	Steel	20.00 - 32.00	37.00 - 72.00	49.00 - 84.00	30.00	0.13	514029
	Carbide	20.00 - 32.00	65.00 - 100.00	77.00 - 112.00	30.00	0.25	514030
			100.00 - 135.00	112.00 - 147.00	30.00	0.33	514031

Imperial (in)

	Substrate	Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
			X ₁	X ₂	X _{3 min}		
i	Steel	0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287	514029
	Carbide	0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551	514030
			3.937 - 5.315	4.409 - 5.787	1.181	0.728	514031

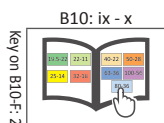
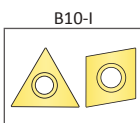
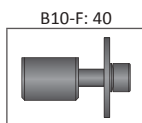
NOTE: Fixture-through reducing sleeve required (B10-F: 39).



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	502046
				101	502052
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	502047
				101	502053
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	502048
				101	502054
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	502049
				101	502055
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	502050
				101	502056
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	502051
				101	502057

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

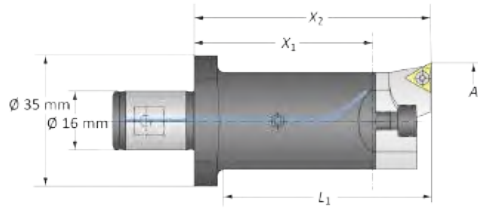


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Serrated Tool Bodies

Diameter Range: 29.00 mm - 53.00 mm (1.142" - 2.087")

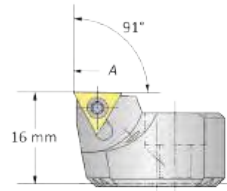


Metric (mm)

Boring Range A	Serrated Tool Body			Weight (kg)	Part No.
	X ₁	X ₂	L ₁		
 29.00 - 53.00	48.00	64.00	56.00	0.20	236021
	84.00	100.00	92.00	0.30	236031

Imperial (in)

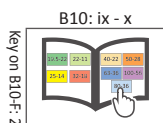
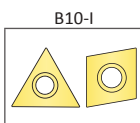
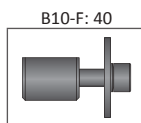
Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
	X ₁	X ₂	L ₁		
 1.142 - 2.087	1.890	2.520	2.205	0.441	236021
	3.307	3.937	3.622	0.661	236031



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
29.00 - 41.00	1.142 - 1.614	0.04	0.088	20*	236022
				101	236023
40.00 - 53.00	1.575 - 2.087	0.06	0.132	20*	236024
				101	236025

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



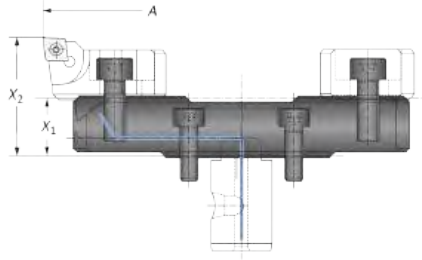
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")

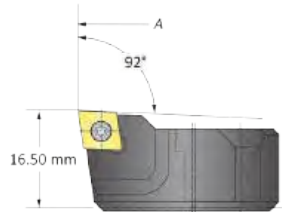


Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		501054
	96.00 - 124.00	16.00	32.50		501055
	124.00 - 152.00	16.00	32.50	0.20	501056

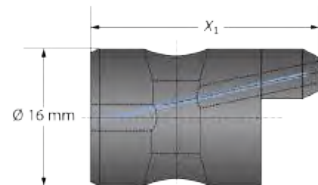
Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.677 - 3.780	0.630	1.279		501054
	3.780 - 4.882	0.630	1.279		501055
	4.882 - 5.984	0.630	1.279	0.440	501056



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	502069
				101	502064

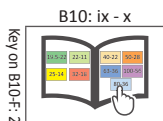
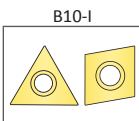
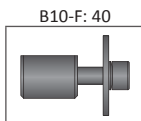


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



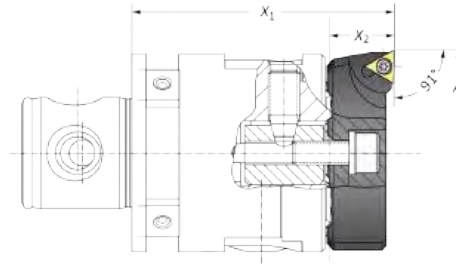
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Insert Holders for Boring Heads

Diameter Range: 52.00 mm - 102.00 mm (2.047" - 4.016")



Metric (mm)

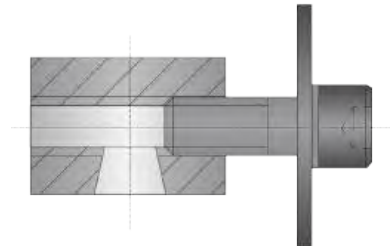
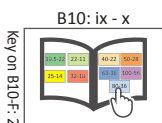
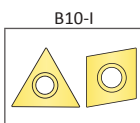
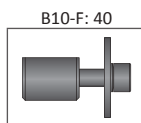
	Boring Range A	Serrated Slide		Weight (kg)	Insert Form	Part No.
		X ₁	X ₂			
	52.00 - 77.00	66.00	16.50	0.06	20	236026
					101	236027
	76.00 - 102.00	66.00	16.50	0.10	20	236028
					101	236029

Imperial (in)

	Boring Range A	Serrated Slide		Weight (kg)	Insert Form	Part No.
		X ₁	X ₂			
	2.047 - 3.031	2.598	0.650	0.132	20	236026
					101	236027
	2.992 - 4.016	2.598	0.650	0.220	20	236028
					101	236029

Clamping Piece for Insert Holder

Boring Range A (mm)	Service Key	Part No.
52.00 - 102.00	s5	236020



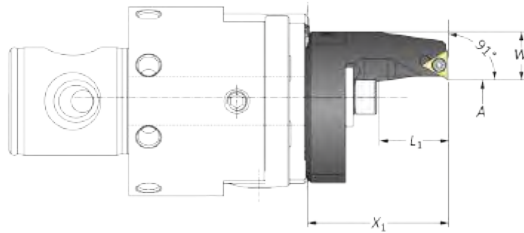
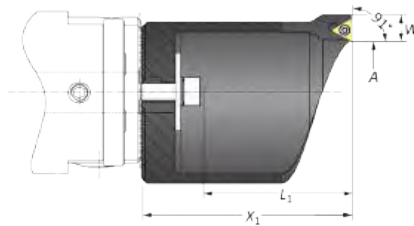
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")



Metric (mm)

Type	Boring Range	Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W			
A	4.00 - 17.50	40.50	20.00	16.60	0.10	20*	236081
	16.50 - 30.00	50.50	30.00	11.10	0.10	20*	236082
B	29.00 - 44.00	75.50	54.00	9.60	0.30	20*	236083
	43.00 - 66.00	100.50	79.00	9.60	0.40	20*	236084

Imperial (in)

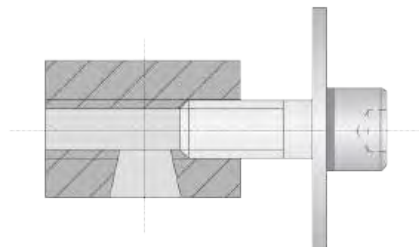
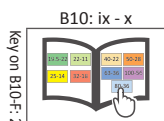
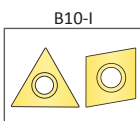
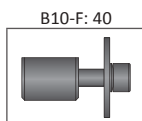
Type	Boring Range	Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W			
A	0.157 - 0.689	1.594	0.787	0.653	0.220	20*	236081
	0.650 - 1.181	1.988	1.181	0.437	0.220	20*	236082
B	1.142 - 1.732	2.952	2.126	0.377	0.661	20*	236083
	1.693 - 2.598	3.956	3.110	0.377	0.882	20*	236084

NOTE: Clockwise and neutral execution.

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range A (mm)	Service Key	Part No.
A	4.00 - 30.00	s5	236088
B	29.00 - 66.00	s5	236089



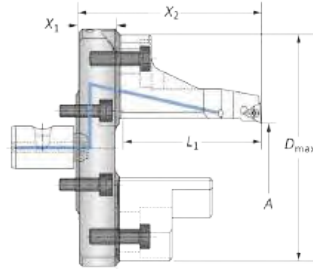
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 58.00 mm (0.078" - 2.283")



Metric (mm)

Boring Range		Serrated Slide				Weight (kg)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
	2.00 - 30.00	16.00	73.00	55.00	101.00	0.35	501064
	30.00 - 58.00	16.00	73.00	55.00	129.00	0.44	501065

Imperial (in)

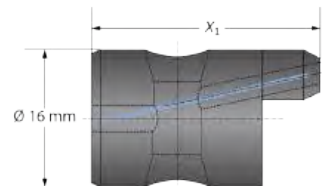
Boring Range		Serrated Slide				Weight (lbs)	Part No.
A		X ₁	X ₂	L ₁	D _{max}		
	0.078 - 1.181	0.630	2.874	2.165	3.396	0.771	501064
	1.181 - 2.283	0.630	2.874	2.165	5.078	0.970	501065



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	A	mm	X ₁	kg	lbs		
	in	in	in				
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

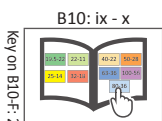
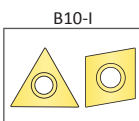
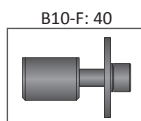


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	450137



Inserts sold separately.

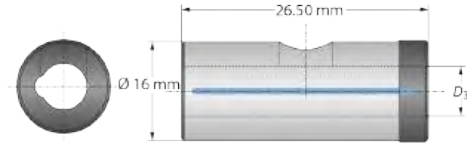
= Metric (mm)

= Imperial (in)



Accessories

Reducing Sleeves



Metric (mm)

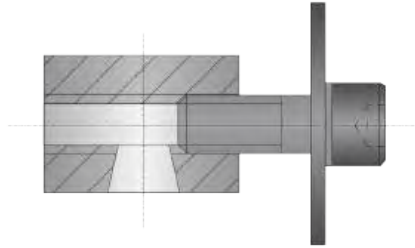
m	Reducing Sleeve	Weight (kg)	Part No.
	D_3		
	4.00	0.05	450129
	5.00	0.04	450130
	7.00	0.04	450132
	8.00	0.04	450133
	10.00	0.03	450134
	12.00	0.02	450135
	14.00	0.01	450136

Imperial (in)

i	Reducing Sleeve	Weight (lbs)	Part No.
	D_3		
	0.125	0.110	450142
	0.250	0.088	450143
	0.312	0.088	450144
	0.375	0.088	450145
	0.500	0.088	450146



Accessories

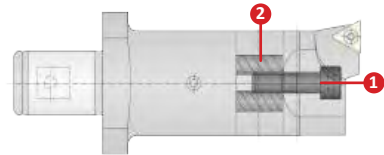


Clamping Elements for Insert Holders

	1. Boring Range	1. Cap Screw	Hex Size	2. Washer	3. Clamping Nut	4. Locking Washer	Complete Part No.
m	4.00 - 30.00	070153	s5	315155	236120	215254	236088
	29.00 - 66.00	070153	s5	315156	236120	215254	236089
	52.00 - 102.00	115147	s5	115725	236120	—	236020

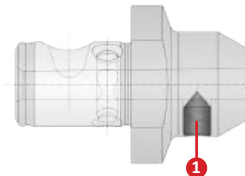
Clamping Elements for Serrated Tool Body

1. Cap Screw	Hex Size	2. Clamping Piece
027154	s4	145184



Thread Pin

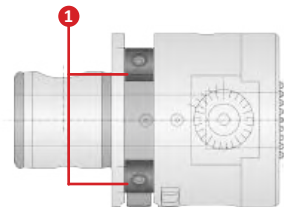
Service Key	1. Part No.
S3 / A	415244



Balancing Element with Screw

Nominal Size	Key Size / Type	1. Part No.
M8 x 1.25 x 8	s2 / A	536005

NOTE: Balancing elements sold separately.



3E^{TECH}+ Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3E^{TECH}+ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



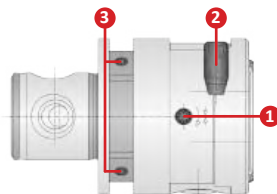
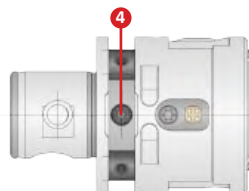
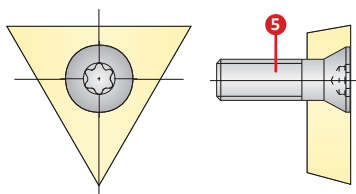
m = Metric (mm)

i = Imperial (in)



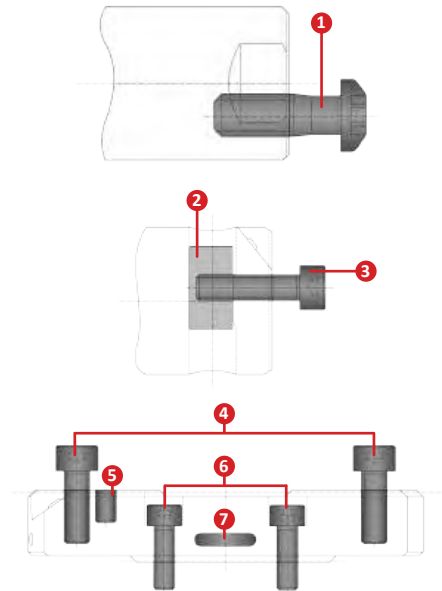
Accessories

No.	Part	Insert Form	Size	Part No.
1	Clamping screw	—	—	070333
2	Thread pin for tool clamping	—	—	215674
3	Clamping screw for balance weight	—	—	115470
4	Balancing screw plug	—	—	115119
5	Insert screws	Form 20 Form 101 Form 211	T7 T8 T6	115535 115676 215377
6	Hex wrench	—	s2.5 s2	115575 215473
7	Hex wrench	—	s4	115576
8	TORX® driver	— — — (0.6 N·m) Form 211 (0.9 N·m) Form 20 (1.2 N·m) Form 101	T6 T7 T8 T6 T7 T8	115537 115591 115590 415507 415508 415514



Accessories

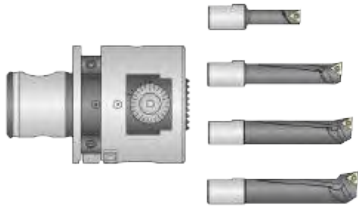
No.	Part	Size	Part No.
1	Screw for securing insert holder	T25	415112
2	Clamping piece	—	145184
3	Cap screw for securing insert holders	s4	027154
4	Cap screw for securing insert holder/ counterweight	s4	315248
5	Set screw - coolant	s1.5	114224
6	Cap screw for securing serrated slide	s3	116289
7	Sealing ring for coolant delivery	—	415386





VarioBore Kit | Analog

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

Kit Part No.	
m	103049
Kit Components	Part No.
(1) Boring Head	536002
(4) Boring Bars	218059
	081045
	081046
	081047
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115591 (T7)

Imperial (in)

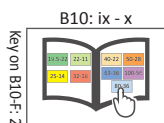
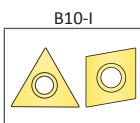
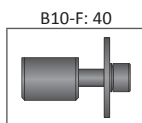
Kit Part No.	
i	104049
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218059
	081045
	081046
	081047
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115591 (T7)



Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
10.00 - 15.00	0.393 - 0.590	218059	Form 20
15.00 - 20.00	0.590 - 0.787	081045	Form 20
20.00 - 25.00	0.787 - 0.984	081046	Form 20
25.00 - 30.00	0.984 - 1.181	081047	Form 20

NOTE: Balancing elements and inserts sold separately.

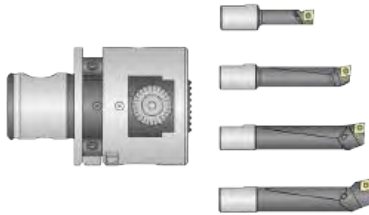


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Analog

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

Kit Part No.	
m	103050
Kit Components	Part No.
(1) Boring Head	536001
	218048
	081041
	081042
(4) Boring Bars	081043
	115575 (s2.5)
	215403 (s4)
	115590 (T8)
(3) Service Keys	

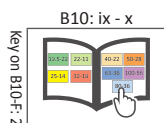
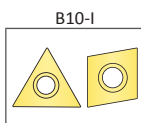
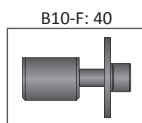
Imperial (in)

Kit Part No.	
i	104050
Kit Components	Part No.
(1) Boring Head	563001
	218048
	081041
	081042
(4) Boring Bars	081043
	115575 (s2.5)
	215403 (s4)
	115590 (T8)
(3) Service Keys	

Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
10.00 - 15.00	0.393 - 0.590	218048	Form 101
15.00 - 20.00	0.590 - 0.787	081041	Form 101
20.00 - 25.00	0.787 - 0.984	081042	Form 101
25.00 - 30.00	0.984 - 1.181	081043	Form 101

NOTE: Balancing elements and inserts sold separately.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

**VarioBore Kit | Analog**

Form 20 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")

**Metric (mm)**

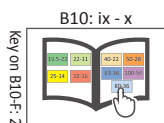
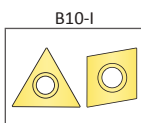
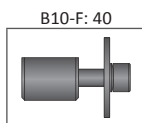
Kit Part No.	
m	103051
Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Imperial (in)

Kit Part No.	
i	104051
Kit Components	Part No.
(1) Boring Head	563001
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
10.00 - 15.00	0.393 - 0.590	218059	—	—	—	Form 20
15.00 - 20.00	0.590 - 0.787	081045	—	—	—	Form 20
20.00 - 25.00	0.787 - 0.984	081046	—	—	—	Form 20
25.00 - 30.00	0.984 - 1.181	081047	—	—	—	Form 20
29.00 - 41.00	1.142 - 1.614	—	236021	236022	—	Form 20
40.00 - 53.00	1.575 - 2.087	—	236021	236024	—	Form 20
52.00 - 77.00	2.047 - 3.031	—	—	236026	236020	Form 20
76.00 - 102.00	2.992 - 4.016	—	—	236028	236020	Form 20

NOTE: Balancing elements and inserts sold separately.

Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Analog

Form 101 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

Kit Part No.	
	103052
Kit Components	Part No.
(1) Boring Head	536001
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

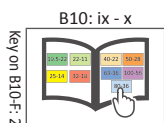
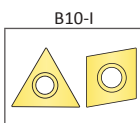
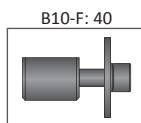
Imperial (in)

Kit Part No.	
	104052
Kit Components	Part No.
(1) Boring Head	563001
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
10.00 - 15.00	0.393 - 0.590	218048	—	—	—	Form 101
15.00 - 20.00	0.590 - 0.787	081041	—	—	—	Form 101
20.00 - 25.00	0.787 - 0.984	081042	—	—	—	Form 101
25.00 - 30.00	0.984 - 1.181	081043	—	—	—	Form 101
29.00 - 41.00	1.142 - 1.614	—	236021	236023	—	Form 101
40.00 - 53.00	1.575 - 2.087	—	236021	236025	—	Form 101
52.00 - 77.00	2.047 - 3.031	—	—	236027	236020	Form 101
76.00 - 102.00	2.992 - 4.016	—	—	236029	236020	Form 101

NOTE: Balancing elements and inserts sold separately.



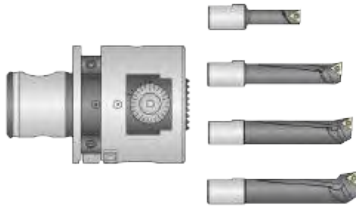
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



VarioBore Kit | Digital 3E^{TECH+}

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

Kit Part No.	
m	103045
Kit Components	Part No.
(1) Boring Head	536002
	218059
	081045
	081046
(4) Boring Bars	081047
	115575 (s2.5)
	215403 (s4)
	115591 (T7)
(3) Service Keys	

Imperial (in)

Kit Part No.	
i	104045
Kit Components	Part No.
(1) Boring Head	563002
	218059
	081045
	081046
(4) Boring Bars	081047
	115575 (s2.5)
	215403 (s4)
	115591 (T7)
(3) Service Keys	

Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
10.00 - 15.00	0.393 - 0.590	218059	Form 20
15.00 - 20.00	0.590 - 0.787	081045	Form 20
20.00 - 25.00	0.787 - 0.984	081046	Form 20
25.00 - 30.00	0.984 - 1.181	081047	Form 20

NOTE: Balancing elements and inserts sold separately.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

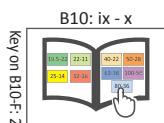
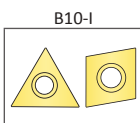
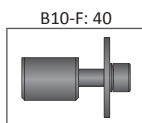
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

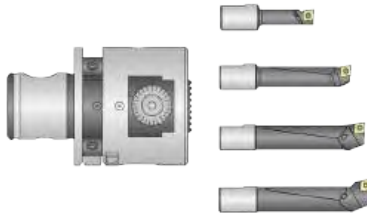


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Digital 3E^{TECH+}

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.393" - 1.181")



Metric (mm)

Kit Part No.	
	103046
Kit Components	Part No.
(1) Boring Head	536002
(4) Boring Bars	218048
	081041
	081042
	081043
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115590 (T8)

Imperial (in)

Kit Part No.	
	104046
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218048
	081041
	081042
	081043
(3) Service Keys	115575 (s2.5)
	215403 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Boring Bar	Insert
Metric (mm)	Imperial (in)		
10.00 - 15.00	0.393 - 0.590	218048	Form 101
15.00 - 20.00	0.590 - 0.787	081041	Form 101
20.00 - 25.00	0.787 - 0.984	081042	Form 101
25.00 - 30.00	0.984 - 1.181	081043	Form 101

NOTE: Balancing elements and inserts sold separately.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

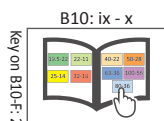
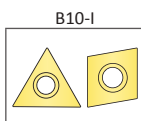
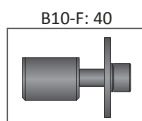
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



VarioBore Kit | Digital 3E^{TECH+}

Form 20 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

Kit Part No.	
m	103047
Kit Components	Part No.
(1) Boring Head	536002
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Imperial (in)

Kit Part No.	
i	104047
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218059
	081045
	081046
	081047
(1) Serrated Tool Body	236021
(4) Insert Holders	236022
	236024
	236026
	236028
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115591 (T7)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
10.00 - 15.00	0.393 - 0.590	218059	—	—	—	Form 20
15.00 - 20.00	0.590 - 0.787	081045	—	—	—	Form 20
20.00 - 25.00	0.787 - 0.984	081046	—	—	—	Form 20
25.00 - 30.00	0.984 - 1.181	081047	—	—	—	Form 20
29.00 - 41.00	1.142 - 1.614	—	236021	236022	—	Form 20
40.00 - 53.00	1.575 - 2.087	—	236021	236024	—	Form 20
52.00 - 77.00	2.047 - 3.031	—	—	236026	236020	Form 20
76.00 - 102.00	2.992 - 4.016	—	—	236028	236020	Form 20

NOTE: Balancing elements and inserts sold separately.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

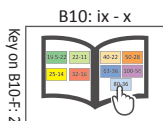
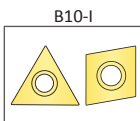
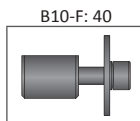
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

VarioBore Kit | Digital 3E^{TECH+}

Form 101 | Diameter Range: 10.00 mm - 102.00 mm (0.393" - 4.016")



Metric (mm)

Kit Part No.	
	103048
Kit Components	Part No.
(1) Boring Head	536002
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

Imperial (in)

Kit Part No.	
	104048
Kit Components	Part No.
(1) Boring Head	563002
(4) Boring Bars	218048
	081041
	081042
	081043
(1) Serrated Tool Body	236021
(4) Insert Holders	236023
	236025
	236027
	236029
(1) Clamping Piece	236020
(4) Service Keys	115575 (s2.5)
	215403 (s4)
	215521 (s5)
	115590 (T8)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Clamping Piece	Insert
Metric (mm)	Imperial (in)					
10.00 - 15.00	0.393 - 0.590	218048	—	—	—	Form 101
15.00 - 20.00	0.590 - 0.787	081041	—	—	—	Form 101
20.00 - 25.00	0.787 - 0.984	081042	—	—	—	Form 101
25.00 - 30.00	0.984 - 1.181	081043	—	—	—	Form 101
29.00 - 41.00	1.142 - 1.614	—	236021	236023	—	Form 101
40.00 - 53.00	1.575 - 2.087	—	236021	236025	—	Form 101
52.00 - 77.00	2.047 - 3.031	—	—	236027	236020	Form 101
76.00 - 102.00	2.992 - 4.016	—	—	236029	236020	Form 101

NOTE: Balancing elements and inserts sold separately.

NOTE: 3E^{TECH+} digital readout module and charging station sold separately.

3E^{TECH+} Digital Readout Module

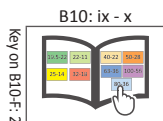
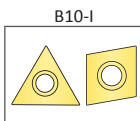
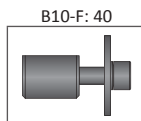
Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Inserts sold separately.

 = Metric (mm)

 = Imperial (in)

B10-F: 50

Digital 510 (511) VERSATILE FINE BORING

Improve your boring job with the digital 510 (511) boring head.

The Wohlhaupter® digital 510 (511) boring head offers precision, quality, and efficiency. Our integrated digital display makes the 510 (511) the smallest precision boring tool available and allows for easy optoelectronic adjusting.

Experience **precision boring** for yourself.

- ▶ Diameter range: 0.40 mm - 12.00 mm (0.016" - 1.339").
- ▶ Easy-to-read digital display.
- ▶ Coolant through.
- ▶ External counterweight for balancing.
- ▶ Protected against coolant and dust according to IP65.
- ▶ Fine adjustments of 0.002 mm (0.0001").
- ▶ Ideal for CAT40, BT30, HSK40.
- ▶ Max spindle speed:
 - ▶ 510001 and 511001: 35,000 RPM.
 - ▶ 511021: 30,000 RPM
- ▶ Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

Digital 510 (511) Product Overview



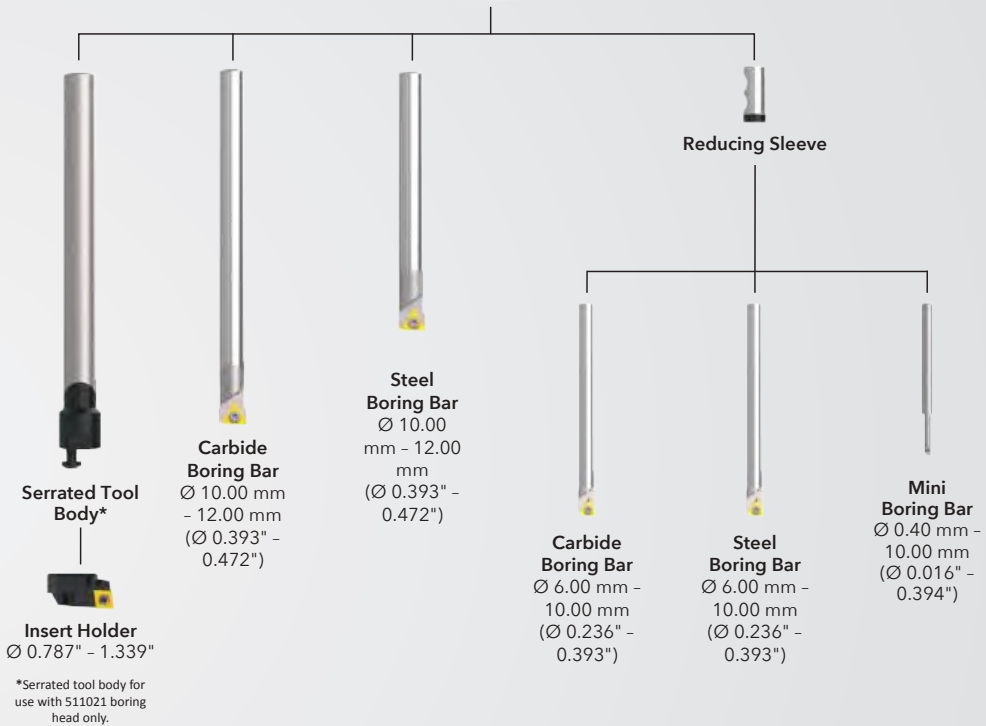
DIGITAL

Digital 511021 Boring Head
 $\varnothing$ 0.016" - 1.339"

Digital 511001 (510001) Boring Head
 $\varnothing$ 0.40 mm - 12.00 mm (0.016" - 0.472")

NOTE: Metric item pictured.

NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

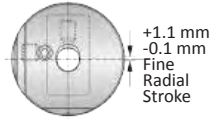
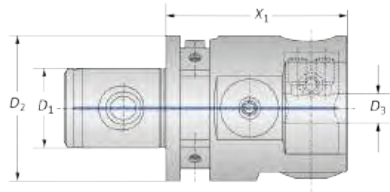


OPERATION **VERSATILITY**
 from **0.40 mm to 12.00 mm (0.016" to 1.339")**



Digital Boring Heads

Diameter Range: 0.40 mm - 12.00 mm (0.016" - 1.339")



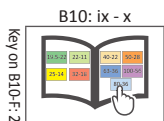
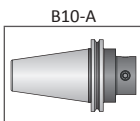
NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection	Boring Range	Boring Head		Weight (kg)	Part No.
		D_3	X_1		
$D_2 D_1$					
m 40 - 22	0.40 - 12.00	8.00	50.00	0.42	510001

Imperial (in)

MVS Connection	Boring Range	Boring Head		Weight (lbs)	Part No.
		D_3	X_1		
$D_2 D_1$					
i 40 - 22	0.016 - 0.472	0.315	1.969	0.926	511001
50 - 28	0.016 - 1.339	0.551	2.165	1.565	511021



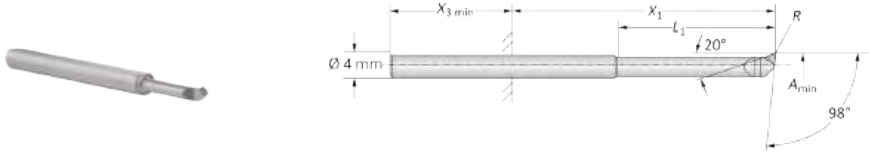
B10-F: 53

www.alliedmachine.com | 1.330.343.4283

m = Metric (mm)
i = Imperial (in)

Mini Boring Bars

Diameter Range: 0.40 mm - 3.00 mm (0.016" - 0.118")



Metric (mm)

Boring Head		Boring Range	Boring Bar				Part No.
		A_{min}	X_1	X_{3min}	L_1	R	
	510001	0.40	3.00 - 26.00	16.00	2.00	0.03	081401WHC126
		0.60	4.00 - 27.00	16.00	3.00	0.04	081402WHC126
		0.80	5.00 - 28.00	16.00	4.00	0.04	081403WHC126
		1.00	6.00 - 29.00	16.00	5.00	0.05	081404WHC126
		1.50	8.50 - 31.50	16.00	7.50	0.05	081405WHC126
		2.00	11.00 - 34.00	16.00	10.00	0.05	081406WHC126
		2.50	13.50 - 36.50	16.00	12.50	0.05	081407WHC126
		2.80	15.00 - 38.00	16.00	14.00	0.07	081408WHC126

Imperial (in)

Boring Head		Boring Range	Boring Bar				Part No.
		A_{min}	X_1	$X_{3\min}$	L_1	R	
511001		0.016	0.118 - 1.042	0.630	0.079	0.001	081401WHC126
		0.024	0.157 - 1.063	0.630	0.118	0.002	081402WHC126
		0.031	0.197 - 1.102	0.630	0.157	0.002	081403WHC126
		0.039	0.236 - 1.142	0.630	0.197	0.002	081404WHC126
		0.059	0.335 - 1.220	0.630	0.295	0.002	081405WHC126
		0.079	0.433 - 1.339	0.630	0.394	0.002	081406WHC126
		0.098	0.531 - 1.437	0.630	0.492	0.002	081407WHC126
		0.110	0.591 - 1.496	0.630	0.551	0.003	081408WHC126
511021		0.016	0.118 - 0.669	0.980	0.079	0.001	081401WHC126
		0.024	0.157 - 0.709	0.980	0.118	0.002	081402WHC126
		0.031	0.197 - 0.748	0.980	0.157	0.002	081403WHC126
		0.039	0.236 - 0.787	0.980	0.197	0.002	081404WHC126
		0.059	0.335 - 0.886	0.980	0.295	0.002	081405WHC126
		0.079	0.433 - 0.984	0.980	0.394	0.002	081406WHC126
		0.098	0.531 - 1.083	0.980	0.492	0.002	081407WHC126
		0.110	0.591 - 1.142	0.980	0.551	0.003	081408WHC126

NOTE: Fixture-through reducing sleeve required (B10-F: 58).



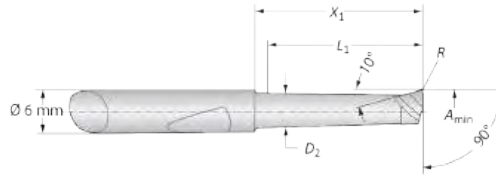
m = Metric (mm)

i = Imperial (in)



Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")



Metric (mm)

Boring Range	Boring Bar					Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide
3.00	6.00	2.60	11.50	10.00	0.10	081306WHC05	—	081322WBN150
			16.50	15.00	0.10	081307WHC05	081307WHW04	—
4.00	6.00	3.60	12.00	10.00	0.20	081308WHC05	—	081317WBN150
			17.00	15.00	0.20	081309WHC05	—	081341WBN150
			22.00	20.00	0.20	081310WHC05	081310WHW04	—
5.00	6.00	4.60	12.00	10.00	0.20	081311WHC05	—	—
			22.00	20.00	0.20	081312WHC05	—	081319WBN150
			32.00	30.00	0.20	081313WHC05	081313WHW04	—
6.00	6.00	5.60	22.00	20.00	0.20	081314WHC05	—	081320WBN150
			32.00	30.00	0.20	081315WHC05	—	081321WBN150
			42.00	40.00	0.20	081316WHC05	081316WHW04	—
8.00	8.00	7.60	25.00	23.00	0.20	081323WHC05	—	—
			50.00	48.00	0.20	081324WHC05	—	—

Imperial (in)

Boring Range	Boring Bar					Part No.		
	A_{min}	D_1 (mm)	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide
0.118	6.00	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
			0.649	0.590	0.003	081307WHC05	081307WHW04	—
0.157	6.00	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
			0.669	0.590	0.007	081309WHC05	—	081341WBN150
			0.866	0.787	0.007	081310WHC05	081310WHW04	—
0.196	6.00	0.181	0.472	0.393	0.007	081311WHC05	—	—
			0.866	0.787	0.007	081312WHC05	—	081319WBN150
			1.259	1.181	0.007	081313WHC05	081313WHW04	—
0.236	6.00	0.220	0.866	0.787	0.007	081314WHC05	—	081320WBN150
			1.259	1.181	0.007	081315WHC05	—	081321WBN150
			1.653	1.574	0.007	081316WHC05	081316WHW04	—
0.315	8.00	0.229	0.984	0.905	0.007	081323WHC05	—	—
			1.968	1.889	0.007	081324WHC05	—	—

NOTE: Fixture-through reducing sleeve required (B10-F: 58).

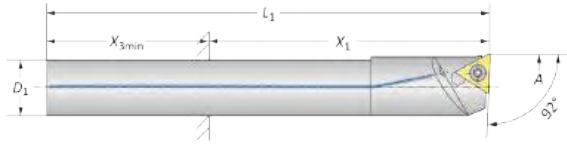
Inserts sold separately.

= Metric (mm)

= Imperial (in)

Boring Bars

Diameter Range: 6.00 mm - 12.00 mm (0.236" - 0.787")



Metric (mm)

Substrate		Boring Head	Boring Range A	D ₁	Boring Bar X ₁ X _{3 min} L ₁			Weight (kg)	Insert Form	Part No.
M	Steel	510001	6.00 - 8.00	5.00	12.50 - 25.00	16.00	70.00	0.01	211**	514032*
			8.00 - 10.00	7.00	17.50 - 35.00	16.00	81.00	0.02	211**	514033*
			10.00 - 12.00	8.00	20.00 - 40.00	19.00	85.00	0.03	20**	514004
								101	514003	
	Carbide	510001	6.00 - 8.00	5.00	12.50 - 40.00	16.00	90.00	0.02	211**	514034*
			8.00 - 10.00	7.00	21.00 - 56.00	16.00	109.00	0.05	211**	514035*
			10.00 - 12.00	8.00	22.00 - 64.00	19.00	117.00	0.07	20**	514016
								101	514015	

Imperial (in)

Substrate	Boring Head	Boring Range A	Boring Bar D ₁ (mm)	X ₁	X _{3 min}	L ₁	Weight (lbs)	Insert Form	Part No.
i	Steel	511001	0.236 - 0.315	5.00	0.492 - 0.984	0.630	2.756	0.022	211** 514032*
			0.315 - 0.394	7.00	0.689 - 1.378	0.630	3.189	0.044	211** 514033*
			0.394 - 0.472	8.00	0.787 - 1.575	0.748	3.346	0.066	20** 514004
		511021	0.236 - 0.315	5.00	0.492 - 0.984	0.984	2.756	0.022	101 514003
			0.315 - 0.394	7.00	0.689 - 1.378	0.984	3.189	0.044	211** 514032*
			0.394 - 0.472	8.00	0.787 - 1.575	0.984	3.346	0.066	211** 514033*
			0.472 - 0.551	10.00	0.984 - 1.969	0.984	3.937	0.110	20** 514004*
			0.551 - 0.630	12.00	1.181 - 2.362	1.181	4.488	0.198	101 514003*
			0.630 - 0.709	14.00	2.205 - 2.756	1.181	4.764	0.287	20** 514006*
			0.709 - 0.787	14.00	2.205 - 2.756	1.181	4.764	0.287	101 514005*
									20** 514007*
	Carbide	511001	0.236 - 0.315	5.00	0.492 - 1.575	0.63	3.543	0.044	101 514010
			0.315 - 0.394	7.00	0.827 - 2.205	0.63	4.291	0.110	20** 514009
			0.394 - 0.472	8.00	0.866 - 2.520	0.748	4.606	0.154	20** 514012
		511021	0.236 - 0.315	5.00	0.492 - 1.575	0.984	3.543	0.044	101 514011
			0.315 - 0.394	7.00	0.827 - 2.205	0.984	4.291	0.110	211** 514034*
			0.394 - 0.472	8.00	0.866 - 2.520	0.984	4.606	0.154	211** 514035*
			0.472 - 0.551	10.00	2.008 - 3.150	1.181	5.512	0.287	20** 514016*
			0.551 - 0.630	12.00	2.677 - 3.780	1.181	6.378	0.485	101 514015*
			0.630 - 0.709	14.00	3.031 - 4.409	1.181	5.591	0.573	20** 514018*
			0.709 - 0.787	14.00	4.409 - 5.787	1.181	6.969	0.728	101 514017*
									20** 514020*
									101 514019*
									20** 514022
									101 514021
									20** 514024
									101 514023
									20** 514026
									101 514025
									20** 514028
									101 514027

*Fixture-through reducing sleeve required (B10-F: 58).

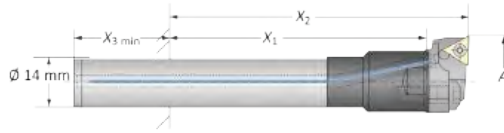
**Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Inserts sold separately.



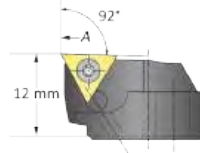
Serrated Tool Bodies

Diameter Range: 0.787" - 1.260"



Imperial (in)

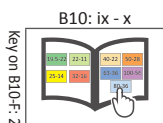
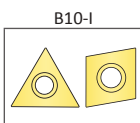
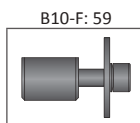
	Substrate	Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
			X ₁	X ₂	X _{3 min}		
i	Steel	0.787 - 1.260	1.457 - 2.835	1.929 - 3.307	1.181	0.287	514029
	Carbide	0.787 - 1.260	2.550 - 3.937	3.031 - 4.409	1.181	0.551	514030
			3.937 - 5.315	4.409 - 5.787	1.181	0.728	514031



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	502046
				101	502052
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	502047
				101	502053
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	502048
				101	502054
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	502049
				101	502055
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	502050
				101	502056
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	502051
				101	502057

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

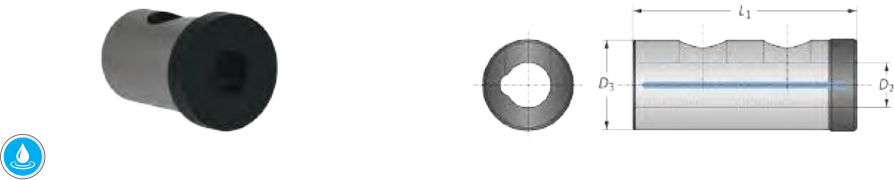


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Accessories

Reducing Sleeves



Metric (mm)

Reducing Sleeve			
L_1	D_3	D_2	Part No.
8.00	8.00	4.00	514201
		5.00	514202
		6.00	514210
		7.00	514203
32.00	14.00	4.00	514204
		5.00	514205
		6.00	514211
		7.00	514206
		8.00	514207
		10.00	514208
		12.00	514209



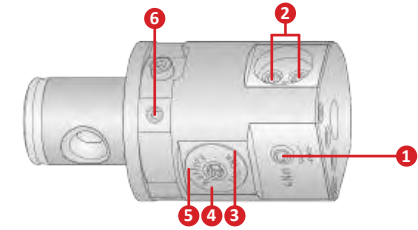
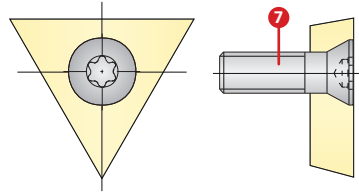
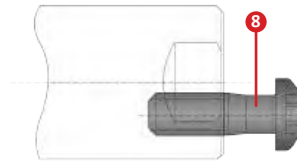


Accessories

No.	Part	Insert Form	Size	Part No.	
				510001/ 511001	511021
1	Clamping screw	—	—	115985	315943
2	Thread pin for tool clamping	—	—	070333	115181
3	Sealing ring for battery cover	—	—	415895	415895
4	Battery*	—	—	415896	415896
5	Battery cover with sealing ring	—	—	501016	501016
6	Thread pin	—	—	510114	510114
7	Insert screws	Form 20	T7	115535	115535
		Form 101	T8	115676	115676
		Form 211	T6	515286	515286
8	Clamping screw	—	T25	—	415112
9	Hex wrench	—	s2	215473	215473
10	Service Key	—	s2.5	415577	415577
			s3.0	415578	415578
			s4.0	115576	115576
11	TORX® driver	—	T6	115537	115537
		—	T7	115591	115591
		—	T8	115590	115590
		—	T20	215150	215150
		(0.6 N·m) Form 211	T6	415507	415507
		(0.9 N·m) Form 20	T7	415508	415508
		(1.2 N·m) Form 101	T8	415514	415514

*Always change two batteries.

NOTE: Please use VARTA batteries.



This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin gray lines. There are no margins, text, or other markings on the page.





DigiBore VERSATILE FINE BORING

Advanced versatile technology.

The Wohlhaupter® DigiBore boring head provides internal balancing, which makes this tool the stress-free choice to meet your required surface finish. Its digital display allows for quick and accurate diameter corrections at the machine.

Engineered with the *future in mind*.

- ▶ Diameter range: 3.00 mm - 208.00 mm (0.118" - 8.189").
- ▶ Offers outside turning capabilities: 4.00 mm - 114.00 mm (0.157" - 4.488").
- ▶ Digital readout for simple 0.002 mm (0.0001") diameter adjustments.
- ▶ Ease the stress of working on different day-to-day projects with boring kits.
- ▶ Automatic internal balancing improves surface finish, tool life, and accuracy.
- ▶ Max spindle speed: 16,000 RPM.
- ▶ Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

DigiBore Product Overview

DIGI BORE

OPERATION VERSATILITY

from
3.00 mm to 208.00 mm
(0.118" to 8.189")
plus outside turning.



DigiBore Head

NOTE: Digital adjustment
accuracy of 0.002 mm (0.0001") on
diameter.



Adapter



Mini Boring Bar

Ø 3.00 mm - 10.00 mm (Ø 0.118" - 0.394")



Steel Boring Bar

Ø 6.00 mm - 20.00 mm (Ø 0.236" - 0.787")



Carbide Boring Bar

Ø 10.00 mm - 20.00 mm (Ø 0.394" - 0.787")



Serrated Tool Body



Carbide Serrated Tool Body



Insert Holder

Ø 20.00 mm - 32.00 mm
(Ø 0.787" - 1.260")



F



Serrated Tool Body



Insert Holder

Ø 32.00 mm - 68.00 mm
(Ø 1.260" - 2.677")



Outside Turning

Ø 4.00 mm - 66.00 mm
(Ø 0.157" - 2.598")



Insert Holder

Ø 68.00 mm - 208.00 mm
(Ø 2.677" - 8.189")



Serrated Slides



Outside Turning

Ø 2.00 mm - 114.00 mm
(Ø 0.079" - 4.488")



Coolant Delivery System



Counterweight

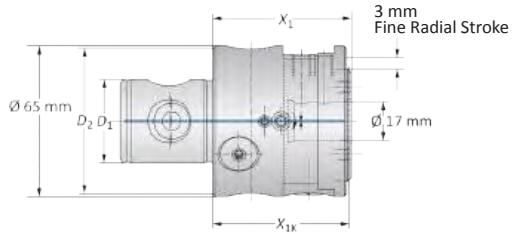


Digital Boring Heads

Diameter Range: 3.00 mm - 208.00 mm (0.118" - 8.189")



NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.



Metric (mm)

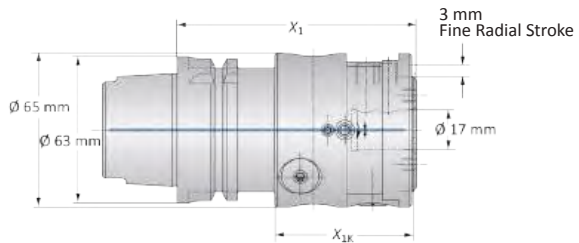
MVS Connection	Boring Range	Boring Head		Weight (kg)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
m 50 - 28	3.00 - 208.00	60.00	59.50	1.30	501005
63 - 36	3.00 - 208.00	60.00	59.50	1.50	501001

Imperial (in)

MVS Connection	Boring Range	Boring Head		Weight (lbs)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
i 50 - 28	0.118 - 8.189	2.362	2.342	2.866	504003
63 - 36	0.118 - 8.189	2.362	2.342	3.307	504001



NOTE: Metric item pictured.
NOTE: Adjustment accuracy of 0.002 mm (0.0001") on diameter.



Metric (mm)

Connection	Boring Range	Boring Head		Weight (kg)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
m HSK-A 63	3.00 - 208.00	102.00	59.50	2.10	501004
PSC 63 (Polygon Shank)	3.00 - 208.00	102.00	59.50	2.10	501019

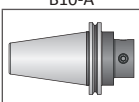
Imperial (in)

Connection	Boring Range	Boring Head		Weight (lbs)	Part No.
		X_1	X_{1K}		
$D_2 D_1$					
i HSK-A 63	0.118 - 8.189	4.015	2.342	4.630	501004
PSC 63 (Polygon Shank)	0.118 - 8.189	4.015	2.342	4.630	501019

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

B10-A



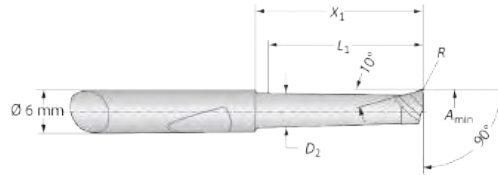
B10-F: 63

www.alliedmachine.com | 1.330.343.4283

m = Metric (mm)
i = Imperial (in)

Mini Boring Bars

Diameter Range: 3.00 mm - 10.00 mm (0.118" - 0.394")



Metric (mm)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
m	3.00	6.00	2.60	11.50	10.00	0.10	081306WHC05	—	081322WBN150
				16.50	15.00	0.10	081307WHC05	081307WHW04	—
	4.00	6.00	3.60	12.00	10.00	0.20	081308WHC05	—	081317WBN150
				17.00	15.00	0.20	081309WHC05	—	081341WBN150
				22.00	20.00	0.20	081310WHC05	081310WHW04	—
	5.00	6.00	4.60	12.00	10.00	0.20	081311WHC05	—	—
				22.00	20.00	0.20	081312WHC05	—	081319WBN150
				32.00	30.00	0.20	081313WHC05	081313WHW04	—
	6.00	6.00	5.60	22.00	20.00	0.20	081314WHC05	—	081320WBN150
				32.00	30.00	0.20	081315WHC05	—	081321WBN150
				42.00	40.00	0.20	081316WHC05	081316WHW04	—
	8.00	8.00	7.60	25.00	23.00	0.20	081323WHC05	—	—
				50.00	48.00	0.20	081324WHC05	—	—

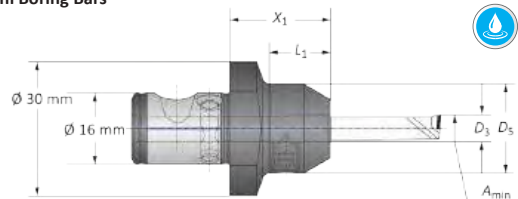
Imperial (in)

	Boring Range		Boring Bar				Part No.		
	A_{min}	D_1	D_2	X_1	L_1	R	Coated Carbide	Uncoated Carbide	CBN
i	0.118	0.236	0.102	0.452	0.393	0.003	081306WHC05	—	081322WBN150
				0.649	0.590	0.003	081307WHC05	081307WHW04	—
	0.157	0.236	0.141	0.472	0.393	0.007	081308WHC05	—	081317WBN150
				0.669	0.590	0.007	081309WHC05	—	081341WBN150
				0.866	0.787	0.007	081310WHC05	081310WHW04	—
	0.196	0.236	0.181	0.472	0.393	0.007	081311WHC05	—	—
				0.866	0.787	0.007	081312WHC05	—	081319WBN150
				1.259	1.181	0.007	081313WHC05	081313WHW04	—
	0.236	0.236	0.220	0.866	0.787	0.007	081314WHC05	—	081320WBN150
				1.259	1.181	0.007	081315WHC05	—	081321WBN150
				1.653	1.574	0.007	081316WHC05	081316WHW04	—
	0.315	0.315	0.229	0.984	0.905	0.007	081323WHC05	—	—
				1.968	1.889	0.007	081324WHC05	—	—

Adapter for Mini Boring Bars

Metric (mm)

	Adapter				Part No.
	D_3	D_5	X_1	L_1	
m	6.00	20.00	22.50	14.00	319010
	8.00	22.00	22.50	14.00	236071

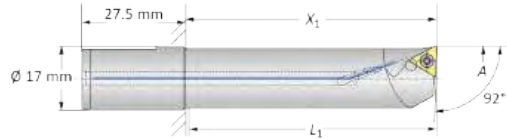


m = Metric (mm)
i = Imperial (in)



Boring Bars

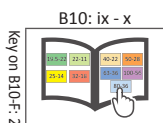
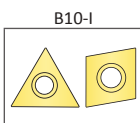
Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



Metric (mm)

Substrate	Boring Range A	Boring Bar		Weight (kg)	Insert Form	Part No.
Steel	6.00 - 8.00	22.00	19.00	0.05	211*	502068
	8.00 - 10.00	30.00	27.00	0.05	211*	502066
	10.00 - 11.00	30.00	27.00	0.06	20*	502001
					101	502012
	11.00 - 12.00	30.00	27.00	0.06	20*	502070
					101	502075
	12.00 - 13.00	45.00	42.00	0.07	20*	502002
					101	502013
	13.00 - 14.00	45.00	42.00	0.08	20*	502071
					101	502076
	14.00 - 15.00	50.00	47.00	0.08	20*	502003
					101	502014
	15.00 - 16.00	50.00	47.00	0.09	20*	502072
					101	502077
Carbide	16.00 - 17.00	60.00	57.00	0.10	20*	502004
					101	502015
	17.00 - 18.00	60.00	57.00	0.12	20*	502073
					101	502078
	18.00 - 19.00	68.00	65.00	0.13	20*	502005
					101	502016
	19.00 - 20.00	68.00	65.00	0.14	20*	502074
					101	502079
	10.00 - 12.00	55.00	52.00	0.12	20*	502088
					101	502093
		70.00	67.00	0.14	20*	502023
					101	502034
	12.00 - 14.00	65.00	62.00	0.13	20*	502089
					101	502094
		85.00	82.00	0.18	20*	502024
					101	502035
	14.00 - 16.00	75.00	72.00	0.17	20*	502090
					101	502095
		90.00	87.00	0.22	20*	502025
					101	502036
	16.00 - 18.00	85.00	82.00	0.26	20*	502091
					101	502096
		110.00	107.00	0.32	20*	502026
					101	502037
	18.00 - 20.00	95.00	92.00	0.28	20*	502092
					101	502097
		120.00	117.00	0.40	20*	502027
					101	502038

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

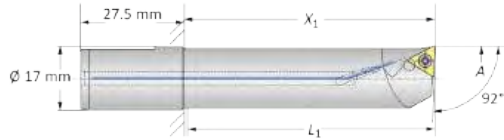


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Bars

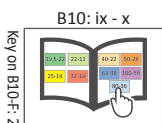
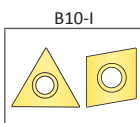
Diameter Range: 6.00 mm - 20.00 mm (0.236" - 0.787")



Imperial (in)

Substrate	Boring Range A	Boring Bar X ₁	Boring Bar L ₁	Weight (lbs)	Insert Form	Part No.
Steel	0.236 - 0.315	0.866	0.748	0.110	211*	502068
	0.315 - 0.394	1.181	1.063	0.110	211*	502066
	0.394 - 0.433	1.181	1.063	0.132	20*	502001
	0.433 - 0.472	1.181	1.063	0.132	101	502012
	0.472 - 0.512	1.772	1.654	0.154	20*	502070
	0.512 - 0.551	1.772	1.654	0.176	101	502075
	0.551 - 0.591	1.968	1.850	0.176	20*	502002
	0.591 - 0.630	1.968	1.850	0.198	101	502013
	0.630 - 0.669	2.362	2.244	0.220	20*	502071
	0.669 - 0.709	2.362	2.244	0.265	101	502076
	0.709 - 0.748	2.677	2.559	0.287	20*	502003
	0.748 - 0.787	2.677	2.559	0.309	101	502014
					20*	502072
					101	502077
Carbide	0.394 - 0.472	2.165	2.047	0.265	20*	502004
		2.756	2.638	0.309	101	502015
	0.472 - 0.551	2.559	2.441	0.287	20*	502073
		3.346	3.228	3.975	101	502078
	0.551 - 0.630	2.953	2.835	0.375	20*	502005
		3.543	3.425	0.485	101	502016
	0.630 - 0.709	3.346	3.228	0.573	20*	502074
		4.331	4.213	0.706	101	502079
	0.709 - 0.787	3.740	3.622	0.617	20*	502088
		4.724	4.606	0.882	101	502093
					20*	502023
					101	502034
					20*	502089
					101	502094
					20*	502024
					101	502035
					20*	502090
					101	502095
					20*	502025
					101	502036
					20*	502091
					101	502096
					20*	502026
					101	502037
					20*	502092
					101	502097
					20*	502027
					101	502038

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



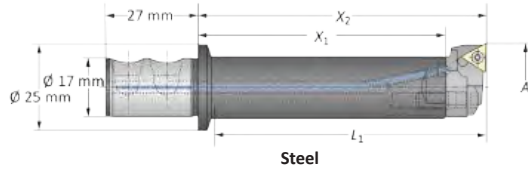
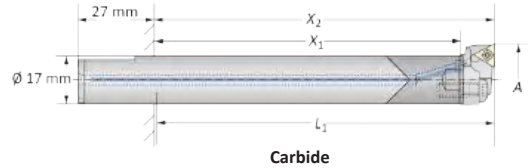
Inserts sold separately.

 = Metric (mm)
 = Imperial (in)



Serrated Tool Bodies

Diameter Range: 20.00 mm - 32.00 mm (0.787" - 1.260")

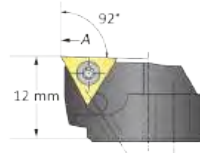


Metric (mm)

m	Substrate	Boring Range A	Serrated Tool Body			Weight (kg)	Part No.
			X ₁	X ₂	L ₁		
	Steel	20.00 - 32.00	72.00	84.00	77.00	0.20	502045
	Carbide	20.00 - 32.00	108.00	120.00	117.00	0.40	502062

Imperial (in)

i	Substrate	Boring Range A	Serrated Tool Body			Weight (lbs)	Part No.
			X ₁	X ₂	L ₁		
	Steel	0.787 - 1.260	2.835	3.307	3.031	0.441	502045
	Carbide	0.787 - 1.260	4.252	4.724	4.606	0.882	502062



Insert Holders

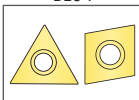
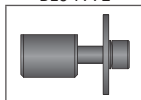
Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
20.00 - 22.00	0.787 - 0.866	0.01	0.022	20*	502046
				101	502052
22.00 - 24.00	0.866 - 0.945	0.01	0.022	20*	502047
				101	502053
24.00 - 26.00	0.945 - 1.024	0.01	0.022	20*	502048
				101	502054
26.00 - 28.00	1.024 - 1.102	0.01	0.022	20*	502049
				101	502055
28.00 - 30.00	1.102 - 1.181	0.01	0.022	20*	502050
				101	502056
30.00 - 32.00	1.181 - 1.260	0.01	0.022	20*	502051
				101	502057

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

B10: ix - x

B10-I

B10-F: 72



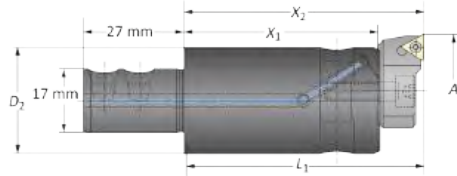
Inserts sold separately.

W = Metric (mm)

i = Imperial (in)

Serrated Tool Bodies

Alu-Line® | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.677")



Metric (mm)

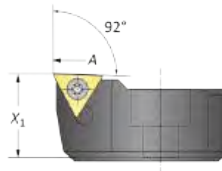
Boring Range A		Boring Bar				Weight (kg)	Part No.
		D ₂	X ₁	X ₂	L ₁		
	32.00 - 50.00	28.50	52.00	66.00	63.00	0.10	501052
			88.00	102.00	99.00	0.20	501060
	50.00 - 68.00	46.00	61.00	75.00	72.00	0.20	501053
			106.00	120.00	117.00	0.30	501061

Imperial (in)

Boring Range A		Boring Bar				Weight (lbs)	Part No.
		D ₂	X ₁	X ₂	L ₁		
	1.260 - 1.968	1.122	2.047	2.598	2.480	0.220	501052
			3.465	4.016	3.898	0.441	501060
	1.968 - 2.677	1.811	2.402	2.953	2.835	0.441	501053
			4.173	4.724	4.606	0.661	501061



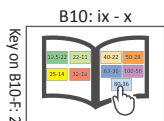
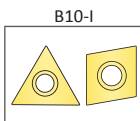
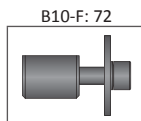
F



Insert Holders

Serrated Tool Body	Boring Range (A)		X ₁		Weight		Insert Form	Part No.
	mm	in	mm	in	kg	lbs		
501052 / 501060	32.00 - 41.00	1.260 - 1.614	14.00	0.551	0.03	0.066	20*	502060
							101	502058
	41.00 - 50.00	1.614 - 1.968	14.00	0.551	0.04	0.088	20*	502061
							101	502059
501053 / 501061	50.00 - 59.00	1.968 - 2.323	14.00	0.551	0.03	0.066	20*	502060
							101	502058
	59.00 - 68.00	2.323 - 2.677	14.00	0.551	0.04	0.088	20*	502061
							101	502059

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").



Inserts sold separately.

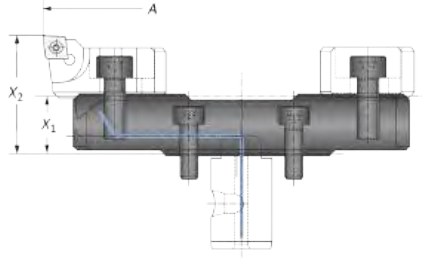
 = Metric (mm)
 = Imperial (in)

B10-F: 68



Alu-Line® Serrated Slides

Diameter Range: 68.00 mm - 208.00 mm (2.667" - 8.189")

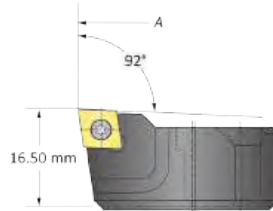


Metric (mm)

m	Boring Range	Serrated Slide		Weight (kg)	Part No.
	A	X ₁	X ₂		
	68.00 - 96.00	16.00	32.50		
	96.00 - 124.00	16.00	32.50		
	124.00 - 152.00	16.00	32.50		
	152.00 - 180.00	22.00	38.50		
	180.00 - 208.00	22.00	38.50		

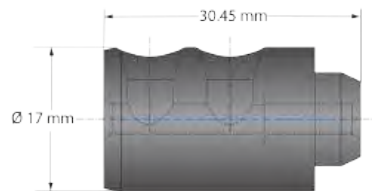
Imperial (in)

i	Boring Range	Serrated Slide		Weight (lbs)	Part No.
	A	X ₁	X ₂		
	2.667 - 3.780	0.630	1.280		
	3.780 - 4.881	0.630	1.280		
	4.881 - 5.984	0.630	1.280		
	5.984 - 7.088	0.866	1.516		
	7.088 - 8.189	0.866	1.516		



Insert Holders

Boring Range (A)		Weight		Insert Holder	
mm	in	kg	lbs	Form	Part No.
68.00 - 152.00	2.677 - 5.984	0.05	0.110	20	502069
				101	502064

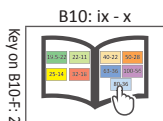
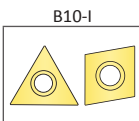
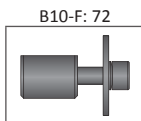


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
13.40	0.528	0.05	0.110	502165

Alu-Line® Coolant Delivery Sections

Weight		Part No.
kg	lbs	
0.02	0.044	501157



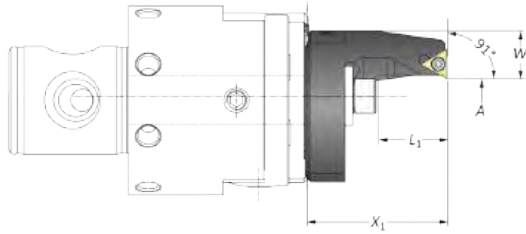
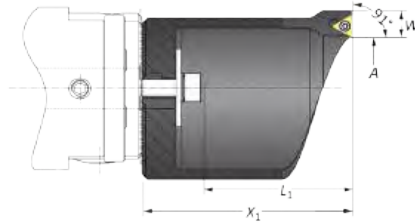
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Outside Turning Insert Holders for Boring Heads

Diameter Range: 4.00 mm - 66.00 mm (0.157" - 2.598")



Metric (mm)

Type	Boring Range	Insert Holder			Weight (kg)	Insert Form	Part No.
	A	X ₁	L ₁	W			
m	A	4.00 - 17.50	40.50	20.00	16.60	20*	236081
		16.50 - 30.00	50.50	30.00	11.10	20*	236082
B		29.00 - 44.00	75.50	54.00	9.60	20*	236083
		43.00 - 66.00	100.50	79.00	9.60	20*	236084



Imperial (in)

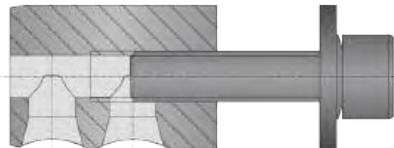
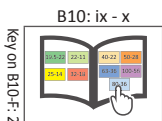
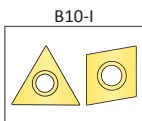
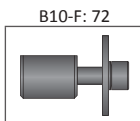
Type	Boring Range	Insert Holder			Weight (lbs)	Insert Form	Part No.
	A	X ₁	L ₁	W			
i	A	0.157 - 0.689	1.594	0.787	0.653	20*	236081
		0.650 - 1.181	1.988	1.181	0.437	20*	236082
B		1.142 - 1.732	2.952	2.126	0.377	20*	236083
		1.693 - 2.598	3.956	3.110	0.377	20*	236084

NOTE: Clockwise and neutral execution.

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

Clamping Pieces for Outside Turning Insert Holders

Insert Holder Type	Boring Range (A)		Service Key	Part No.
	mm	in		
A	4.00 - 30.00	0.157 - 1.181	s5	502080
B	29.00 - 66.00	1.142 - 2.598	s5	502081



Inserts sold separately.

m = Metric (mm)

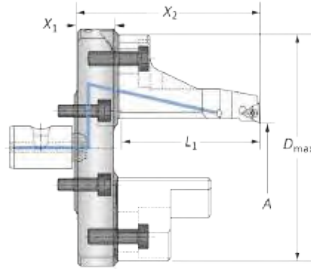
i = Imperial (in)

B10-F: 70



Outside Turning Serrated Slides

Diameter Range: 2.00 mm - 114.00 mm (0.078" - 4.488")



Metric (mm)

m	Boring Range		Serrated Slide				Weight (kg)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
	2.00 - 30.00		16.00	73.00	55.00	101.00		
	30.00 - 58.00		16.00	73.00	55.00	129.00		
	58.00 - 86.00		22.00	79.00	55.00	157.00		
	86.00 - 114.00		22.00	79.00	55.00	185.00		

Imperial (in)

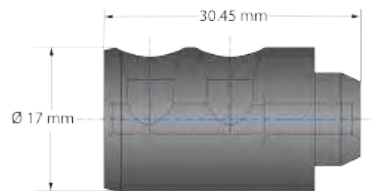
i	Boring Range		Serrated Slide				Weight (lbs)	Part No.
	A		X ₁	X ₂	L ₁	D _{max}		
	0.078 - 1.181		0.630	2.874	2.165	3.396		
	1.181 - 2.283		0.630	2.874	2.165	5.078		
	2.283 - 3.386		0.866	3.110	2.165	6.181		
	3.386 - 4.488		0.866	3.110	2.165	7.283		



Insert Holders

Outside Turning Range		Insert Holder		Weight (kg)		Insert Form	Part No.
mm	in	mm	in	kg	lbs		
2.00 - 114.00	0.079 - 4.488	57.00	2.244	0.15	0.331	20	502082

NOTE: Clockwise and neutral execution.

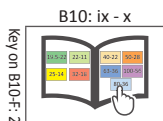
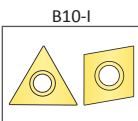
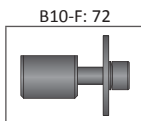


Counterweights

X ₁		Weight		Part No.
mm	in	kg	lbs	
37.75	1.486	0.16	0.350	502183

Alu-Line® Coolant Delivery Sections

X ₁		Weight		Part No.
mm	in	kg	lbs	
25.50	1.004	0.01	0.022	501157



Inserts sold separately.

m = Metric (mm)

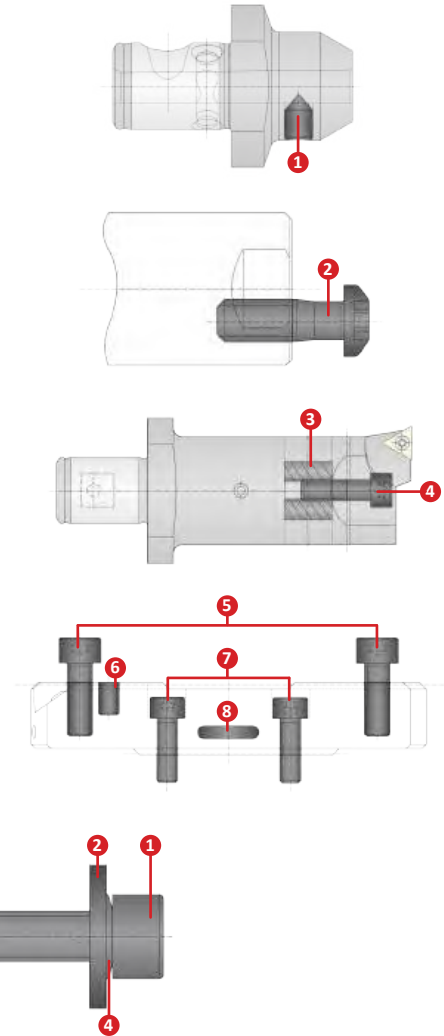
i = Imperial (in)

B10-F: 71

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Accessories

No.	Part		Size	Part No.
1	Set screw		s3	415244
2	Screw for securing insert holder		T25	415112
3	Clamping piece		-	145184
4	Cap screw for securing insert holders		s4	027154
5	Cap screw for securing insert holder/counterweight		s4	315248
6	Set screw - coolant	501054, 501055, 501056	s1.5	114224
		501058, 501059	s1.5	115303
7	Cap screw for securing serrated slide		s4	115166
8	Sealing ring for coolant delivery		-	415386



Metric (mm)

			Clamping Screw Parts				Complete Part No.
Boring Range	Type	Hex Size	1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	
 4.00 - 30.00	A	s5	070153	315155	502180	215254	502080
29.00 - 66.00	B	s5	070153	315156	502180	215254	502081

Imperial (in)

			Clamping Screw Parts				Complete Part No.
Boring Range	Type	Hex Size	1. Cap Screw	2. Washer	3. Clamping Piece	4. Locking Washer	
 0.157 - 1.181	A	s5	070153	315155	502180	215254	502080
1.142 - 2.598	B	s5	070153	315156	502180	215254	502081

 = Metric (mm)

 = Imperial (in)

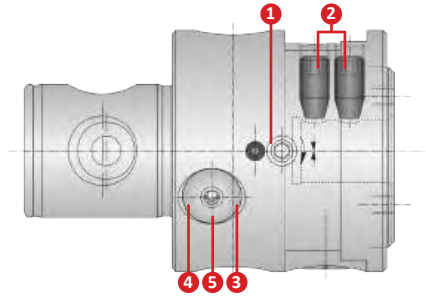
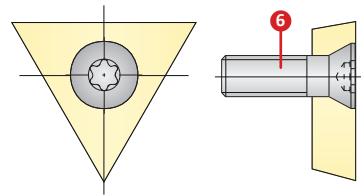


Accessories

No.	Part	Insert Form	Size	Part No.
1	Clamping screw	—	—	415353
2	Set screw for clamping tool	—	—	215674
3	Battery cover	—	—	415895
4	Battery*	—	—	415896
5	Battery access cover with sealing ring	—	—	501016
6	Insert screws	Form 211 Form 20 Form 101	T6 T7 T8	215377 115535 115676
7	Hex driver	—	s1.5 s3	215472 115630
8	Service key	—	s4	115576
9	TORX® driver	— — — — (0.6 N·m) Form 211 (0.9 N·m) Form 20 (1.2 N·m) Form 101	T6 T7 T8 T20 T6 T7 T8	115537 115591 115590 215150 415507 415508 415514

*Always change two batteries.

NOTE: Please use VARTA batteries (V392 SR41).



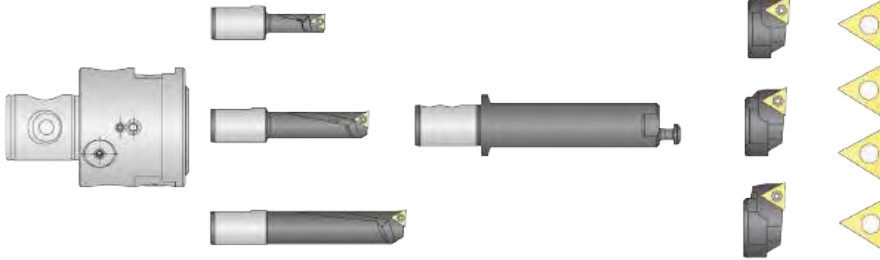
This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin gray lines. There are no margins, text, or other markings on the page.





DigiBore Kit

Form 20 | Diameter Range: 10.00 mm - 30.00 mm (0.394" - 1.181")



Metric (mm)

Kit Part No.	
m	103062

Kit Components	Part No.
(1) Boring Head	501001
(3) Boring Bars	502001
	502003
	502005
(1) Serrated Tool Body	502045
(3) Insert Holders	502046
	502048
	502050
(3) Service Keys	115576 (s4)
	415121 (T25)
	115591 (T8)

Imperial (in)

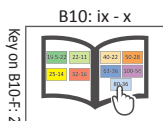
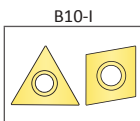
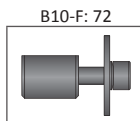
Kit Part No.	
i	104062

Kit Components	Part No.
(1) Boring Head	504001
(3) Boring Bars	502001
	502003
	502005
(1) Serrated Tool Body	502045
(3) Insert Holders	502046
	502048
	502050
(3) Service Keys	115576 (s4)
	415121 (T25)
	115591 (T8)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)				
10.00 - 11.00	0.394 - 0.433	502001	—	—	Form 20
14.00 - 15.00	0.551 - 0.591	502003	—	—	Form 20
18.00 - 19.00	0.709 - 0.748	502005	—	—	Form 20
20.00 - 22.00	0.787 - 0.866	—	502045	502046	Form 20
24.00 - 26.00	0.945 - 1.024	—	502045	502048	Form 20
28.00 - 30.00	1.102 - 1.181	—	502045	502050	Form 20

NOTE: Balancing elements and inserts sold separately.

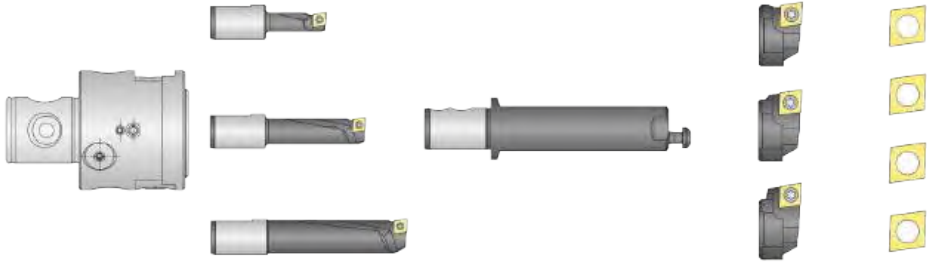


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 10.00 mm - 30.00 mm (0.394" - 1.181")



Metric (mm)

Kit Part No.	
m	103061

Kit Components	Part No.
(1) Boring Head	501001
(3) Boring Bars	502012
	502014
	502016
(1) Serrated Tool Body	502045
(3) Insert Holders	502052
	502054
	502056
(3) Service Keys	115576 (s4)
	415121 (T25)
	115590 (T8)

Imperial (in)

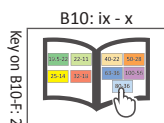
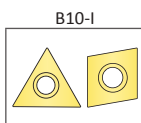
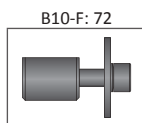
Kit Part No.	
i	104061

Kit Components	Part No.
(1) Boring Head	504001
(3) Boring Bars	502012
	502014
	502016
(1) Serrated Tool Body	502045
(3) Insert Holders	502052
	502054
	502056
(3) Service Keys	115576 (s4)
	415121 (T25)
	115590 (T8)

Component Assemblies

Boring Range		Boring Bar	Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)				
10.00 - 11.00	0.394 - 0.433	502012	—	—	Form 101
14.00 - 15.00	0.551 - 0.591	502014	—	—	Form 101
18.00 - 19.00	0.709 - 0.748	502016	—	—	Form 101
20.00 - 22.00	0.787 - 0.866	—	502045	502052	Form 101
24.00 - 26.00	0.945 - 1.024	—	502045	502054	Form 101
28.00 - 30.00	1.102 - 1.181	—	502045	502056	Form 101

NOTE: Balancing elements and inserts sold separately.



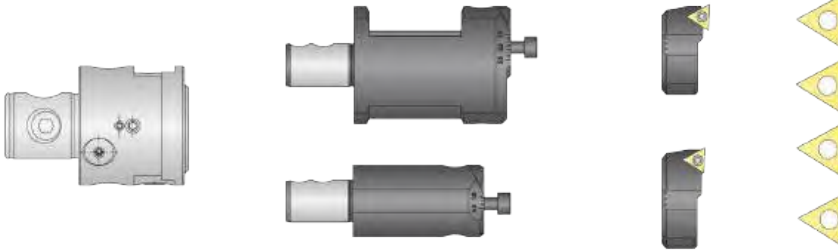
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



DigiBore Kit

Form 20 | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.667")



Metric (mm)

Kit Part No.	
m	103064
Kit Components	Part No.
(1) Boring Head	501001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502060
	502061
(2) Service Keys	115576 (s4)
	115590 (T8)

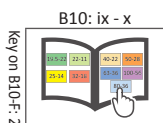
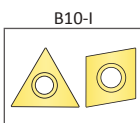
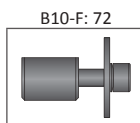
Imperial (in)

Kit Part No.	
i	104064
Kit Components	Part No.
(1) Boring Head	504001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502060
	502061
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)			
32.00 - 50.00	1.260 - 1.968	501052	502060	Form 20
50.00 - 68.00	1.968 - 2.677	501053	502061	Form 20

NOTE: Balancing elements and inserts sold separately.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 32.00 mm - 68.00 mm (1.260" - 2.667")



Metric (mm)

Kit Part No.	
m	103063
Kit Components	Part No.
(1) Boring Head	501001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502058
	502059
(2) Service Keys	115576 (s4)
	115590 (T8)

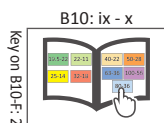
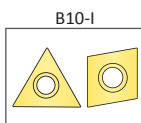
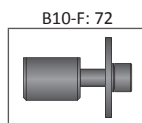
Imperial (in)

Kit Part No.	
i	104063
Kit Components	Part No.
(1) Boring Head	504001
(2) Serrated Tool Bodies	501052
	501053
(2) Insert Holders	502058
	502059
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Serrated Tool Body	Insert Holder	Insert
Metric (mm)	Imperial (in)			
32.00 - 50.00	1.260 - 1.968	501052	502058	Form 101
50.00 - 68.00	1.968 - 2.677	501053	502059	Form 101

NOTE: Balancing elements and inserts sold separately.



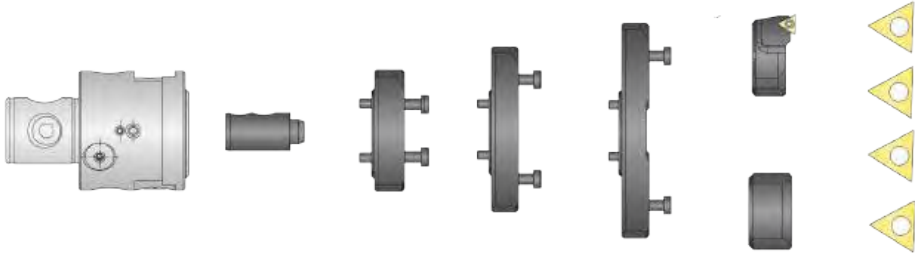
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



DigiBore Kit

Form 20 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

Kit Part No.	
m	103066

Kit Components	Part No.
(1) Boring Head	501001
(3) Serrated Slides	501054
	501055
	501056
m (1) Insert Holder	502069
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Imperial (in)

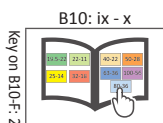
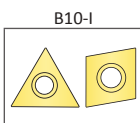
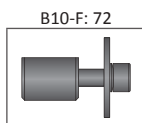
Kit Part No.	
i	104066

Kit Components	Part No.
(1) Boring Head	504001
(3) Serrated Slides	501054
	501055
	501056
i (1) Insert Holder	502069
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
68.00 - 96.00	2.667 - 3.780	501157	501054	502064	502165	Form 20
96.00 - 124.00	3.780 - 4.881	501157	501055	502064	502165	Form 20
124.00 - 152.00	4.881 - 5.984	501157	501056	502064	502165	Form 20

NOTE: Balancing elements and inserts sold separately.

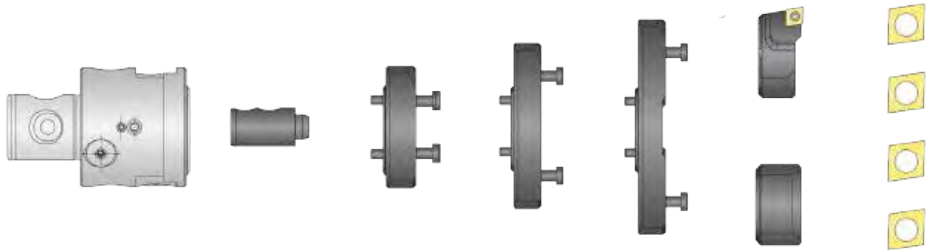


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 68.00 mm - 152.00 mm (2.667" - 5.984")



Metric (mm)

Kit Part No.	
m	103065

Kit Components	Part No.
(1) Boring Head	501001
(3) Serrated Slides	501054
	501055
	501056
m (1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Imperial (in)

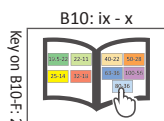
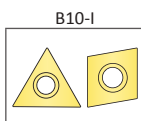
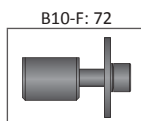
Kit Part No.	
i	104065

Kit Components	Part No.
(1) Boring Head	504001
(3) Serrated Slides	501054
	501055
	501056
i (1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
68.00 - 96.00	2.667 - 3.780	501157	501054	502064	502165	Form 101
96.00 - 124.00	3.780 - 4.881	501157	501055	502064	502165	Form 101
124.00 - 152.00	4.881 - 5.984	501157	501056	502064	502165	Form 101

NOTE: Balancing elements and inserts sold separately.



Inserts sold separately.

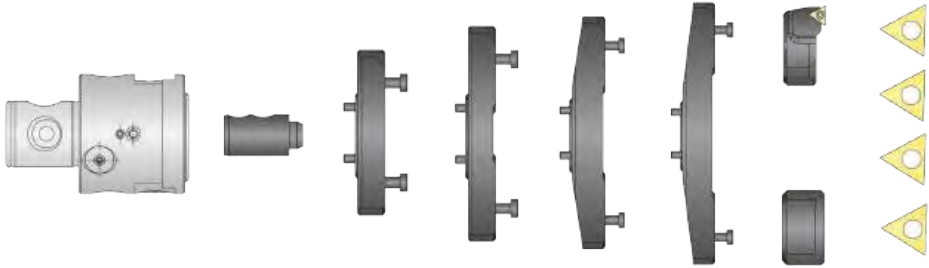
m = Metric (mm)
i = Imperial (in)

B10-F: 80



DigiBore Kit

Form 20 | Diameter Range: 96.00 mm - 208.00 mm (3.780" - 8.189")



Metric (mm)

Kit Part No.	
m	103080

Kit Components	Part No.
(1) Boring Head	501001
(4) Serrated Slides	501055
	501056
	501058
	501059
(1) Insert Holder	502060
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Imperial (in)

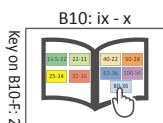
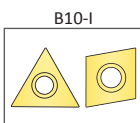
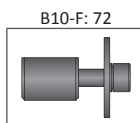
Kit Part No.	
i	104080

Kit Components	Part No.
(1) Boring Head	504001
(4) Serrated Slides	501055
	501056
	501058
	501059
(1) Insert Holder	502060
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115591 (T7)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
96.00 - 124.00	3.780 - 4.881	501157	501055	502060	502165	Form 20
124.00 - 152.00	4.881 - 5.984	501157	501056	502060	502165	Form 20
152.00 - 180.00	5.984 - 7.088	501157	501058	502060	502165	Form 20
180.00 - 208.00	7.088 - 8.189	501157	501059	502060	502165	Form 20

NOTE: Balancing elements and inserts sold separately.

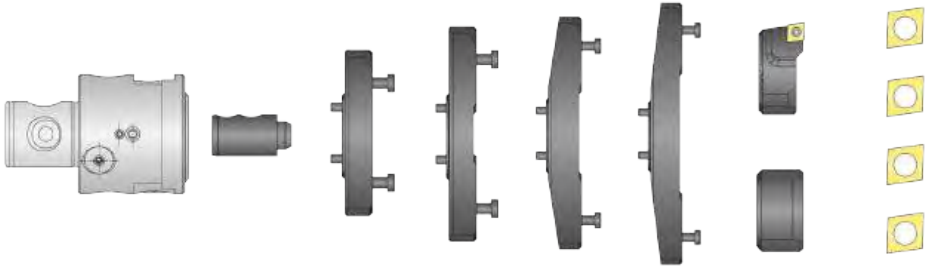


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

DigiBore Kit

Form 101 | Diameter Range: 96.00 mm - 208.00 mm (3.780" - 8.189")



Metric (mm)

Kit Part No.	
m	103081

Kit Components	Part No.
(1) Boring Head	501001
(4) Serrated Slides	501055
	501056
	501058
	501059
(1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Imperial (in)

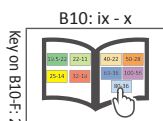
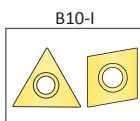
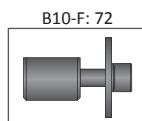
Kit Part No.	
i	104081

Kit Components	Part No.
(1) Boring Head	504001
(4) Serrated Slides	501055
	501056
	501058
	501059
(1) Insert Holder	502064
(1) Counterweight	502165
(1) Coolant Delivery	501157
(2) Service Keys	115576 (s4)
	115590 (T8)

Component Assemblies

Boring Range		Coolant Delivery	Serrated Slide	Insert Holder	Counterweight	Insert
Metric (mm)	Imperial (in)					
96.00 - 124.00	3.780 - 4.881	501157	501055	502064	502165	Form 101
124.00 - 152.00	4.881 - 5.984	501157	501056	502064	502165	Form 101
152.00 - 180.00	5.984 - 7.088	501157	501058	502064	502165	Form 101
180.00 - 208.00	7.088 - 8.189	501157	501059	502064	502165	Form 101

NOTE: Balancing elements and inserts sold separately.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

SECTION

B10-G

Fine Boring

Fine Boring



Boring at its finest

Wohlhaupter's fine boring systems are offered in both vernier and easy-to-read digital readout boring heads and cassettes. The lightweight Alu-Line serrated tool bodies reduce weight on the machine spindle.

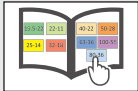
- ▶ 310 (320)
 - ▶ *Analog*: 20.00 mm - 205.00 mm (0.787" - 8.071")
- ▶ 410 (420)
 - ▶ *3E^{TECH+}*: 20.00 mm - 29.00 mm (0.787" - 1.142")
- ▶ 364 (365) Balance
 - ▶ *Analog*: 20.00 mm - 29.50 mm (0.787" - 1.161")
- ▶ 464 (465) Balance
 - ▶ *Analog & 3E^{TECH+}*: 29.00 mm - 205.00 mm (1.142" - 8.070")
- ▶ 564 (565) Balance
 - ▶ *Digital*: 50.00 mm - 205.00 mm (1.969" - 8.071")
- ▶ 537 (538) Cassette
 - ▶ *Analog & 3E^{TECH+}*: 100.00 mm - 205.00 mm (3.937" - 8.071")

Applicable Industries

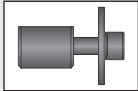
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

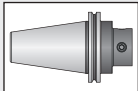
The following icons will appear throughout the catalog to help you navigate between products.



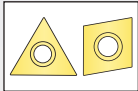
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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310 (320) FINE BORING



Engineered with wear and tear in mind.

310 (320) Wohlhaupter boring heads are made from steel for $\varnothing$ 20.00 mm - 103.00 mm (0.787" - 4.055") and coated Alu-Line material for $\varnothing$ 100.00 mm - 205.00 mm (3.937" - 8.071") to protect against corrosion and wear. The insert holder can be rotated quickly for reverse machining.

- ▶ Diameter range: 20.00 mm - 205.00 mm (0.787" - 8.071").
- ▶ Alu-Line diameter range: 100.00 mm - 205.00 mm (3.937" - 8.071").
 - ▶ Special coating on Alu-Line provides hard, durable surface.
 - ▶ Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- ▶ Coolant through.
- ▶ Vernier diameter adjustment of 0.002 mm (0.0001").
- ▶ Max cutting speed: 1,000 m/min (3,281 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

Wohlhaupter® 310 (320) Boring Head with NOVI^{TECH}®

Time is money, so make it count.

If you want to improve your machining processes, cycle time is a key factor to examine. After all, the longer it takes you to produce a part, the fewer parts you can produce in a given time. Our customer was experiencing lengthy cycle times while machining pumps from grey cast iron. The parts required three bored holes, each with a 304.8 mm (12") depth and a 558.8 mm (22") reach.

In order to free up machine time, the customer questioned if their process could be more efficient. The main objectives were to decrease the current cycle time and to maintain the required surface finish to perform the burnishing process that followed.

The previous tooling ran at a slow 11.938 mm/min (0.47 IPM) and a paint-drying 84-minute cycle time to bore the three holes on each part. With our Wohlhaupter 310 (320) boring head utilizing the NOVI^{TECH} vibration dampening module, the customer increased to a more efficient 95.25 mm/min (3.75 IPM) and slashed the cycle time to 10.5 minutes (an 87% decrease). Along with the increased speed, the Wohlhaupter tooling also achieved a 3.94 µm Ra (155 µin Ra) finish, accomplishing everything the customer needed.

The Wohlhaupter solution reduced the process cycle time by 74 minutes. Improvements in speed and cycle time can free up machine hours, which means more throughput and higher profit for your company.

Are you losing money on applications with substantially long cycle times?



Product:	Wohlhaupter 310 (320) boring head with NOVI ^{TECH}	Measure	Competitor Boring Head	320 Boring Head w/ NOVI ^{TECH}
Objectives:	(1) Decrease cycle time (2) Maintain 4.06 µm Ra (160 µin Ra) hole finish	RPM	39	469
Industry:	Oil and gas/petrochemical	Speed Rate	17.069 m/min (56 SFM)	205.74 m/min (675 SFM)
Part:	Pump	Feed Rate	0.305 mm/rev (0.012 IPR)	0.203 mm/rev (0.008 IPR)
Material:	Grey cast iron	Penetration Rate	11.938 mm/min (0.47 IPM)	92.25 mm/min (3.75 IPM)
Hole Ø:	139.7 mm (5.500")	Cycle Time (per hole)	27 min 54 sec	3 min 32 sec
Hole Depth:	304.8 mm (12.000")			

► Boring head
310 (320) series
Item No. 320008

► NOVI^{TECH}
vibration dampening
intermediate module
Item No. 519005



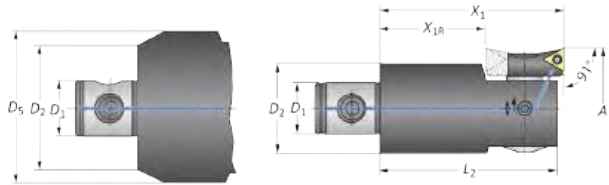
The Wohlhaupter 310 (320) boring head with the NOVI^{TECH} vibration dampening module provided:

- ✓ Increased penetration rate
- ✓ Decreased cycle time
- ✓ Excellent finish in deep hole application



310 (320) Boring Heads and Insert Holders

Analog | Diameter Range: 20.00 mm - 205.00 mm (0.787" - 8.071")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
19 - 11	20.00 - 24.50	46.00	—	43.00	—	0.10	310010	20*	364077
22 - 11	24.50 - 29.50	46.00	—	43.50	23.00	0.15	310020	20	210059
								101	210069
25 - 14	29.00 - 37.00	56.00	—	53.50	26.00	0.20	310001	20	210059
								101	210069
	36.00 - 44.00	56.00	28.00	53.50	26.00	0.20	310001	20	210052
32 - 18	43.00 - 54.00	66.00	38.00	63.50	—	0.40	310003	101	210062
								20	210052
40 - 22	53.00 - 66.00	75.00	39.00	72.50	—	0.70	310004	20	210020
								101	210063
								103	210064
50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	1.20	310005	20	210020
								101	210063
								103	210064
63 - 36	82.00 - 103.00	90.00	54.00	87.50	—	2.20	310006	20	210020
								101	210063
								103	210064

m



Alu-Line Boring Heads

Metric (mm)

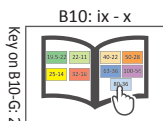
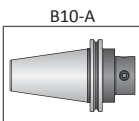
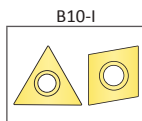
MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.40	310007	20	210020
								101	210063
								103	210064
	125.00 - 167.50	90.00	54.00	87.50	100.00	1.80	310008	20	210020
								101	210063
								103	210064
	162.50 - 205.00	90.00	54.00	87.50	135.00	2.40	310009	20	210020
								101	210063
								103	210064

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

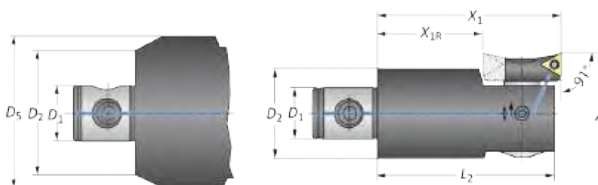
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Analog	Diameter Range: 20.00 mm - 205.00 mm (0.787" - 8.071")
--------	--



Imperial (in)

MVS Connection	Boring Range	Boring Head						Insert Holder	
$D_2 D_1$	A	X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form	Part No.
19 - 11	0.787 - 0.965	1.810	—	1.693	—	0.221	320010	20*	364077
22 - 11	0.965 - 1.161	1.810	—	1.713	0.906	0.331	320020	20	210059
								101	210069
25 - 14	1.142 - 1.457	2.200	—	2.106	1.024	0.441	320001	20	210059
								101	210069
	1.417 - 1.732	2.200	1.100	2.106	1.024	0.441	320001	20	210052
								101	210062
32 - 18	1.693 - 2.126	2.590	1.490	2.500	—	0.882	320003	20	210052
								101	210062
40 - 22	2.087 - 2.598	2.950	1.530	2.854	—	1.543	320004	20	210020
								101	210063
								103	210064
50 - 28	2.559 - 3.268	2.950	1.530	2.854	—	2.646	320005	20	210020
								101	210063
								103	210064
63 - 36	3.228 - 4.055	3.540	2.120	3.445	—	4.850	320006	20	210020
								101	210063
								103	210064



Alu-Line Boring Heads

Imperial (in)

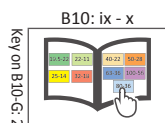
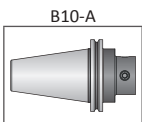
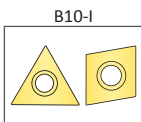
MVS Connection		Boring Range	Boring Head					Insert Holder		
$D_2 \mid D_1$		A	X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form	Part No.
i	80 - 36	3.937 - 5.118	3.543	2.126	3.445	—	3.086	320007	20	210020
									101	210063
									103	210064
		4.921 - 6.594	3.543	2.126	3.445	3.937	3.968	320008	20	210020
									101	210063
									103	210064
		6.397 - 8.071	3.543	2.126	3.445	5.315	5.291	320009	20	210020
									101	210063
									103	210064

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

NOTE: X_{1b} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

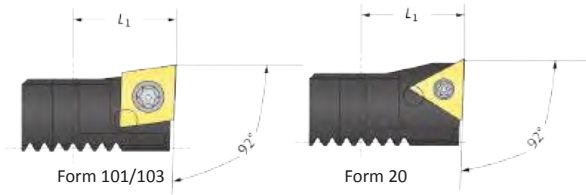
Ⓜ = Metric (mm)

i = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 53.00 mm - 205.00 mm (2.087" - 8.071")



Metric (mm)

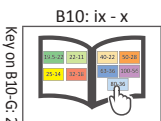
	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
m	53.00 - 205.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

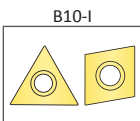
	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
i	2.087 - 8.071	0.709	0.066	20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



key on B10-G: 2



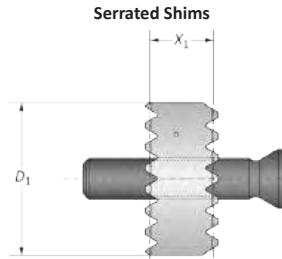
Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

Accessories

Serrated Shims | Screws

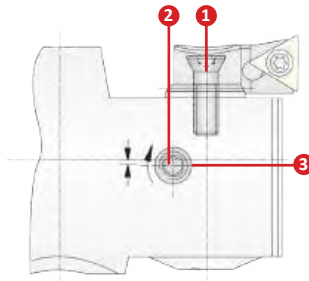


Metric (mm)

	Boring Range	Additional Boring Range	Serrated Shim			Part No.	
			X_1	D_1	Weight (kg)	Serrated Shim and Screw	Replacement Screw
m	29.00 - 54.00	8.00	4.00	12.00	0.01	310070	415360
		12.00	6.00	12.00	0.01	310071	415342
	53.00 - 205.00	10.00	5.00	18.00	0.01	310074	515595
		15.00	7.50	18.00	0.01	310075	515596

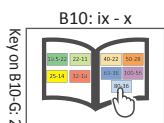
Imperial (in)

	Boring Range	Additional Boring Range	Serrated Shim			Part No.	
			X_1	D_1	Weight (lbs)	Serrated Shim and Screw	Replacement Screw
i	1.141 - 2.126	0.315	0.157	0.472	0.022	310070	415360
		0.472	0.236	0.472	0.022	310071	415342
	2.087 - 8.071	0.394	0.196	0.708	0.022	310074	515595
		0.590	0.295	0.708	0.022	310075	515596



Screws

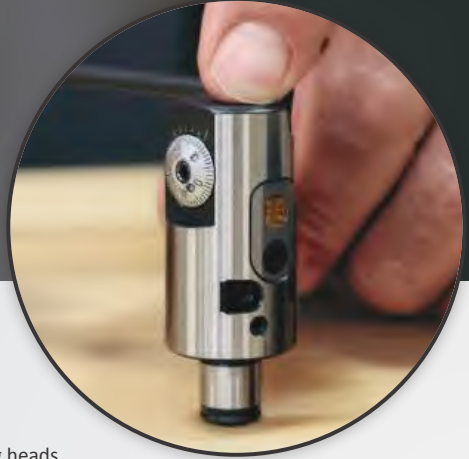
Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
310010	320010	215323	T15 / H	364260	s2.0 / A	364270
310020	320020	215338	T15 / H	364138	s2.5 / A	364139
310001	320001	215338	T15 / H	115136	s2.5 / A	—
310003	320003	215338	T15 / H	115180	s2.5 / A	—
310004	320004	215462	T20 / H	115249	s4 / B	—
310005	320005	215462	T20 / H	115185	s4 / B	—
310006	320006	215462	T20 / H	315279	s4 / B	—
310007	320007	215462	T20 / H	115186	s4 / B	—
310008	320008	215462	T20 / H	115186	s4 / B	—
310009	320009	215462	T20 / H	115186	s4 / B	—



m = Metric (mm)
i = Imperial (in)



410 (420) FINE BORING



Boring has never been more exciting.

Equipped with a 3E^{TECH+} docking port, the Wohlhaupter 410 (420) boring heads offer precision boring and easy digital diameter adjustments. As the world's smallest digital boring head with a peripheral cutting edge, it's capable of boring as small as 20.00 mm (0.787").

- ▶ Diameter range: 20.00 mm – 29.00 mm (0.787" – 1.142").
- ▶ Equipped with a 3E^{TECH+} digital readout module docking port.
 - ▶ Digital diameter adjustment of 0.002 mm (0.0001").
- ▶ Coolant through.
- ▶ Max cutting speed: 1,700 m/min (5,577 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

410 (420) Product Overview



WOHLHAUPTER®

Get the **DIGITAL** *Advantage*

- ✓ Eliminate guesswork
- ✓ Increase accuracy
- ✓ Increase productivity
- ✓ Reduce scrap & rework
- ✓ Reduce costly setup time

3ETECH+

DIGITAL READOUT MODULE

Improve productivity and quality with the 3ETECH+ external digital readout module that docks onto boring heads and cassettes to make easy diameter adjustments at the machine.



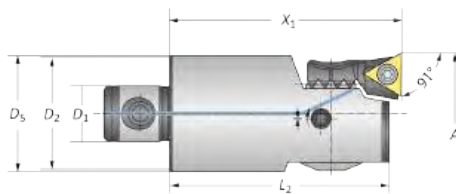
NOTE: 3ETECH+ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.





410 (420) Boring Heads and Insert Holders

Digital 3E^{TECH+} | Diameter Range: 20.00 mm - 29.00 mm (0.787" - 1.142")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head				Insert Holder	
			X_1	L_2	D_5	Weight (kg)	Part No.	Form
m	19 - 11	20.00 - 24.50	46.00	43.00	—	0.09	410001	20*
	22 - 11	24.50 - 29.00	46.00	43.50	23.00	0.13	410002	20 101

Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head				Insert Holder	
			X_1	L_2	D_5	Weight (lbs)	Part No.	Form
i	19 - 11	0.787 - 0.965	1.811	1.693	—	0.198	420001	20*
	22 - 11	0.965 - 1.142	1.811	1.713	0.906	0.286	420002	20 101

*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

NOTE: 3E^{TECH+} module, charging unit, insert holders, and inserts sold separately.



3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

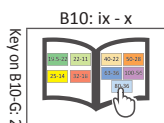
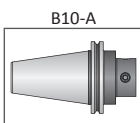
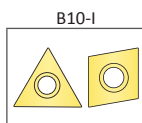
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

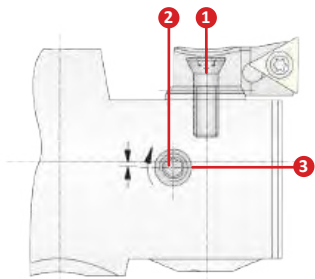
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
410001	420001	215323	T15 / H	410151	s2.0 / A	364270
410002	420002	215338	T15 / H	410152	s2.0 / A	364270

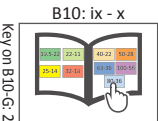
3ETECH⁺ Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

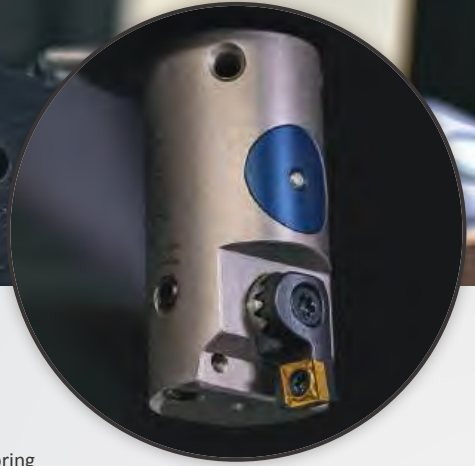
*Charging unit sold separately.

NOTE: 3ETECH⁺ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



B10: ix - x

364 (365) Balance FINE BORING



Analog fine boring for high-production jobs.

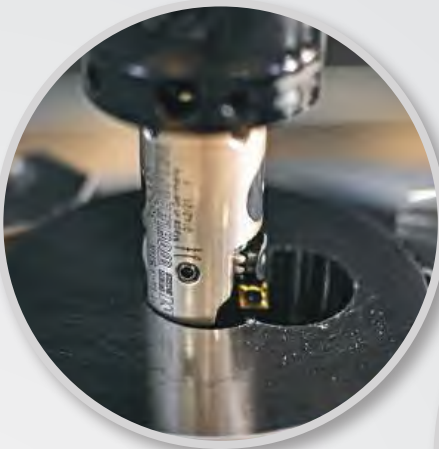
The Wohlhaupter 364 (365) balance boring head combines precision boring with automatic balancing for stable, accurate results. It's advanced design minimizes residual imbalance caused by insert holder displacement and features a rotatable insert holder for reverse machining applications.

- ▶ Diameter range: 20.00 mm - 29.50 mm (0.787" - 1.161").
- ▶ Coolant through.
- ▶ Vernier diameter adjustment of 0.002 mm (0.0001").
- ▶ Internal balancing improves tool life and surface finish.
- ▶ Max cutting speed: 1,000 m/min (3,281 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

364 (365) Balance Product Overview

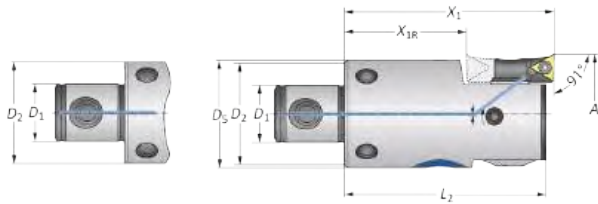
Finished "Figure 8" Boring Application





364 (365) Boring Heads and Insert Holders

Analog | Diameter Range: 20.00 mm - 29.50 mm (0.787" - 1.161")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

m	MVS Connection	Boring Range	Boring Head					Insert Holder	
	D_2 D_1	A	X_1	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
	19 - 11	20.00 - 24.50	46.00	43.00	—	0.09	364030	20*	364077
	22 - 11	24.50 - 29.50	46.00	43.50	23.00	0.15	364031	20 101	210059 210069

Imperial (in)

MVS Connection		Boring Range	Boring Head					Insert Holder	
$D_2 \mid D_1$		A	X_1	L_2	D_5	Weight (lbs)	Part No.	Form	Part No.
i	19 - 11	0.787 - 0.965	1.811	1.693	—	0.198	365030	20*	364077
	22 - 11	0.965 - 1.161	1.811	1.713	0.906	0.331	365031	20 101	210059 210069

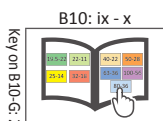
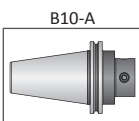
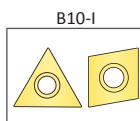
*Not suitable for indexable inserts with a radius of 0.80 mm (0.031").

NOTE: Insert holders and inserts sold separately.



G

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

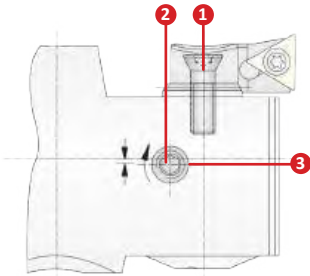


Inserts sold separately.

m = Metric (mm)

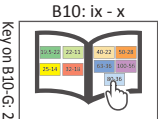
i = Imperial (in)

Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
364030	365030	215323	T15 / H	364260	s2.0 / A	364270
364031	365031	215338	T15 / H	364138	s2.5 / A	364139



key on B10-G: 2

464 (465) Balance Product Overview



464 (465) Balance FINE BORING



Engineered for easy precision.

Designed for precision and flexibility, the 464 (465) boring head combines automatic balancing with easy adjustment options for efficient fine boring. It is available in an analog version or with a docking port for the 3E^{TECH+} digital readout module, enabling simple digital adjustments. An enhanced clamping mechanism improves performance while its advanced design minimizes residual imbalance caused by insert holder displacement. The insert holder can also be rotated for reverse machining applications.

- ▶ Diameter range: 29.00 mm - 205.00 mm (1.142" - 8.071").
- ▶ Alu-Line diameter range: 65.00 mm - 205.00 mm (2.559" - 8.071").
 - ▶ Special coating on Alu-Line provides hard, durable surface.
 - ▶ Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- ▶ Unique internal balancing improves tool life and surface finish.
- ▶ Boring heads are available in analog or with a 3E^{TECH+} digital readout module docking port.
- ▶ Max cutting speed: 1,700 m/min (5,577 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



464 (465) Balance Product Overview

464 (465) BORING HEADS

Features an **enhanced** clamping mechanism from our trusted line of 564 (565) balance digital fine boring heads.

Aluminum bodies with **wear-resistant** coating from 65.00 mm - 205.00 mm (2.559" - 8.071")



EXPERIENCE PRECISION BORING TODAY



3E^{TECH+} digital readout compatibility



High-production fine boring

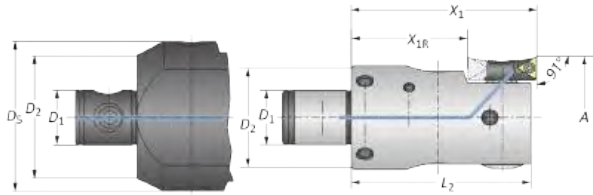


Easy digital diameter adjustment



464 (465) Boring Heads and Insert Holders

Analog | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
m	25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.20	464033	20
									101
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.40	464034	20
									101
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	464035	20
									101

Alu-Line Boring Heads

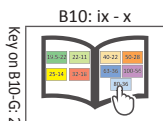
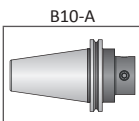
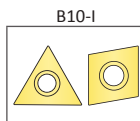
Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
m	50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	464036	20
									101
									103
									20
	63 - 36	82.00 - 103.00	90.00	54.00	87.50	—	1.00	464037	101
									103
									20
	80 - 36	100.00 - 130.00	90.00	54.00	87.50	—	1.50	464038	20
									101
									103
		125.00 - 167.50	90.00	54.00	87.50	100.00	1.90	464039	20
									101
									103
		162.50 - 205.00	90.00	54.00	87.50	135.00	2.50	464040	20
									101
									103

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

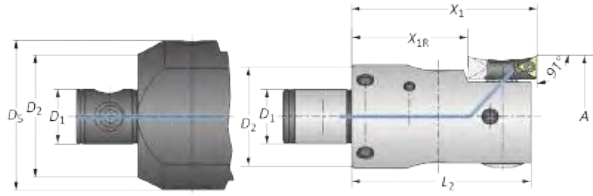


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

464 (465) Boring Heads and Insert Holders

Analog | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	25 - 14	1.142 - 1.516	2.205	—	2.106	1.063	0.441	465033	20 210059 101 210069
	32 - 18	1.496 - 1.988	2.598	1.496	2.450	1.339	0.882	465034	20 264051 101 264077
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	465035	20 210052 101 210062

Alu-Line Boring Heads

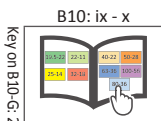
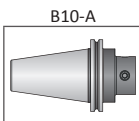
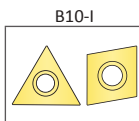
Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	50 - 28	2.559 - 3.268	2.953	1.535	2.854	—	1.323	465036	20 210020 101 210063 103 210064
	63 - 36	3.228 - 4.055	3.543	2.126	3.445	—	2.205	465037	20 210020 101 210063 103 210064
	80 - 36	3.937 - 5.118	3.543	2.126	3.445	—	3.307	465038	20 210020 101 210063 103 210064
		4.921 - 6.594	3.543	2.126	3.445	3.937	4.189	465039	20 210020 101 210063 103 210064
		6.398 - 8.071	3.543	2.126	3.445	5.315	5.512	465040	20 210020 101 210063 103 210064

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



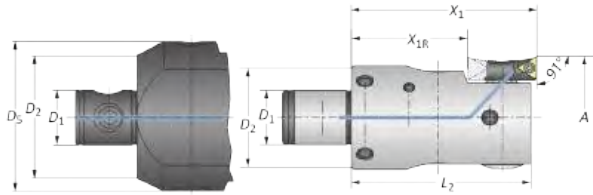
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



464 (465) Boring Heads and Insert Holders

Digital 3E^{TECH+} | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
	25 - 14	29.00 - 38.00	56.00	—	53.50	27.00	0.21	464003	20
									101
	32 - 18	38.00 - 50.00	66.00	38.00	63.50	34.00	0.41	464004	20
									101
	40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	464005	20
									101

Alu-Line Boring Heads

Metric (mm)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form
	50 - 28	65.00 - 83.00	75.00	39.00	72.50	—	0.60	464006	20
									101
									103
	63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	464007	20
									101
									103
	80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	464008	20
									101
									103
		125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	464009	20
									101
									103
		162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	464010	20
									101
									103

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: 3E^{TECH+} module, charging unit, insert holders, and inserts sold separately.

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

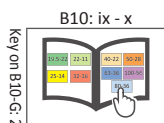
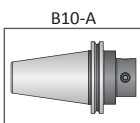
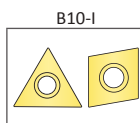
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

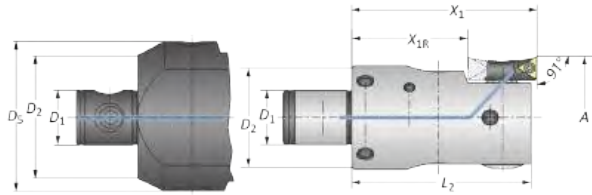


Inserts sold separately.

= Metric (mm)
 = Imperial (in)

464 (465) Boring Heads and Insert Holders

Digital 3E^{TECH+} | Diameter Range: 29.00 mm - 205.000 mm (1.142" - 8.071")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	25 - 14	1.142 - 1.496	2.205	—	2.106	1.063	0.463	465003	20 210059 101 210069
	32 - 18	1.496 - 1.969	2.598	1.496	2.500	1.339	0.904	465004	20 264051 101 264077
	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	465005	20 210052 101 210062

Alu-Line Boring Heads

Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)	Part No.	Form Part No.
i	50 - 28	2.559 - 3.268	2.953	1.535	2.874	—	1.323	465006	20 210020 101 210063 103 210064
									20 210020 101 210063 103 210064
									20 210020 101 210063 103 210064
	63 - 36	3.228 - 4.055	3.543	2.126	3.464	—	2.205	465007	20 210020 101 210063 103 210064
									20 210020 101 210063 103 210064
									20 210020 101 210063 103 210064
	80 - 36	3.937 - 5.118	3.543	2.126	3.464	—	3.307	465008	20 210020 101 210063 103 210064
		4.921 - 6.594	3.543	2.126	3.464	3.937	4.189	465009	20 210020 101 210063 103 210064
		6.398 - 8.071	3.543	2.126	3.464	5.315	5.512	465010	20 210020 101 210063 103 210064

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

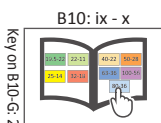
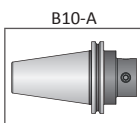
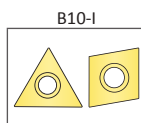
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

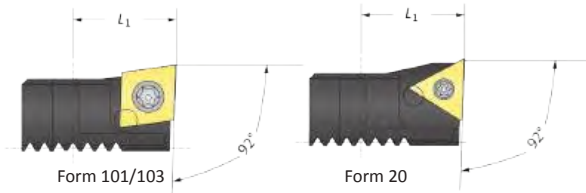
m = Metric (mm)

i = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")



Metric (mm)

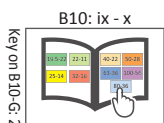
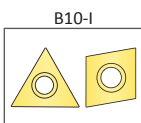
m	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
				103	211065

Imperial (in)

i	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

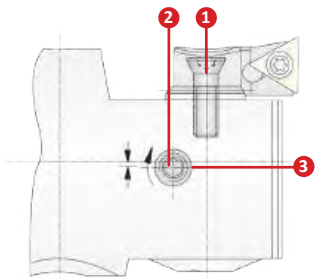


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



Accessories



Screws

Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Ball
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.
464003	465003	215338	T15 / H	364138	s2.5 / A	364139
464004	465004	215338	T15 / H	115180	s2.5 / A	—
464005	465005	215338	T15 / H	115505	s3 / B	—
464006	465006	215462	T20 / H	315943	s4 / B	—
464007	465007	215462	T20 / H	515178	s4 / B	—
464008	465008	215462	T20 / H	515178	s4 / B	—
464009	465009	215462	T20 / H	515178	s4 / B	—
464010	465010	215462	T20 / H	515178	s4 / B	—
464033	465033	215338	T15 / H	364138	s2.5 / A	364139
464034	465034	215338	T15 / H	115180	s2.5 / A	—
464035	465035	215338	T15 / H	115505	s3 / B	—
464036	465036	215462	T20 / H	315943	s4 / B	—
464037	465037	215462	T20 / H	515178	s4 / B	—
464038	465038	215462	T20 / H	515178	s4 / B	—
464039	465039	215462	T20 / H	515178	s4 / B	—
464040	465040	215462	T20 / H	515178	s4 / B	—



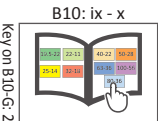
3ETECH⁺ Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3ETECH⁺ digital adjustment accuracy of 0.001 mm (0.00005") on diameter.





564 (565) Balance FINE BORING

Adjustable diameter for precise machining.

Wohlhaupter® digital 564 (565) balance boring heads feature automatic balancing with an easy-to-read digital display. For diameter ranges above 65.00 mm (2.559"), 564 (565) boring heads are made of lightweight aluminum. 564 (565) boring heads are specifically engineered to minimize the residual imbalance produced by insert holder displacement. For added versatility, the insert holders can be rotated for reverse boring applications.

- ▶ Diameter range: 50.00 mm - 205.00 mm (1.969" - 8.071").
- ▶ Alu-Line diameter range: 65.00 mm - 205.00 mm (2.559" - 8.071").
 - ▶ Special coating on Alu-Line for wear-resistant surface.
 - ▶ Alu-Line body reduces tool weight by 50%, reducing stress on the spindle.
- ▶ Digital diameter adjustment of 0.002 mm (0.0001").
- ▶ Coolant through.
- ▶ Internal balancing improves tool life and surface finish.
- ▶ Max cutting speed: 2,000 m/min (6,562 SFM).
- ▶ Max coolant pressure: 40 bar (580 PSI).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

564 (565) Balance Digital Boring Head with NOVI^{TECH}[®]

Product:	Wohlhaupter 564 (565) balance digital boring head with NOVI ^{TECH}	Measure	564 (565) Balance Digital Boring Head with NOVI ^{TECH}
Objectives:	0.005 mm (0.0002") concentricity over the length of two bores spaced 355.60 mm (14") apart.	RPM	430
Material:	Cast iron	Speed	107.28 m/min (352 SFM)
Hole Ø:	79.38 mm (3.125")	Feed Rate	0.08 mm/rev (0.003 IPR)
Hole Depth:	469.9 mm (18.5")	Penetration Rate	33 mm/min (1.29 IPM)
Stock Removal:	0.80 mm (0.030") on diameter		

- ▶ Boring head
564 (565) series
Item No. 565045
- ▶ NOVI^{TECH} vibration dampening
intermediate module
Item No. 519005
- ▶ Wohlhaupter boring insert:
**Item No. 397239WHC79 (F103
04MN158 WHC79)**

The balanced 564 (565) digital boring head with the NOVI^{TECH} vibration damper module provided:

- ✓ Precision concentricity over 7xD
- ✓ Eliminated vibration and chatter



NOTE: Metric item pictured.
NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

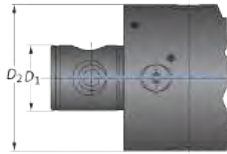
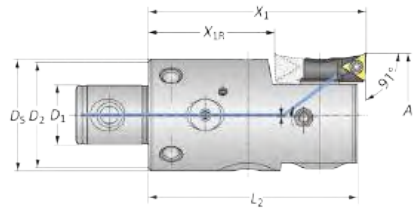
Aluminum Boring Head
65.00 mm - 205.00 mm
(2.559" - 8.071")

Steel Boring Head
50.00 mm - 65.50 mm
(1.969" - 2.579")



564 (565) Boring Heads and Insert Holders

Digital | Diameter Range: 50.00 mm - 205.000 mm (1.969" - 8.071")



NOTE: Metric item pictured.

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
 40 - 22	50.00 - 65.50	75.00	47.00	72.50	42.00	0.80	564034	20	210052
								101	210062

Alu-Line Boring Heads

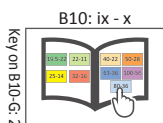
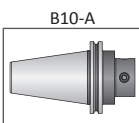
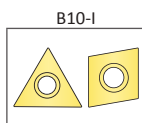
Metric (mm)

MVS Connection $D_2 D_1$	Boring Range A	Boring Head						Insert Holder	
		X_1	X_{1R}	L_2	D_5	Weight (kg)	Part No.	Form	Part No.
 50 - 28	65.00 - 83.00	75.00	39.00	73.00	—	0.60	564045	20	210020
								101	210063
								103	210064
 63 - 36	82.00 - 103.00	90.00	54.00	88.00	—	1.00	564046	20	210020
								101	210063
								103	210064
 80 - 36	100.00 - 130.00	90.00	54.00	88.00	—	1.50	564047	20	210020
								101	210063
								103	210064
	125.00 - 167.50	90.00	54.00	88.00	100.00	1.90	564048	20	210020
								101	210063
								103	210064
	162.50 - 205.00	90.00	54.00	88.00	135.00	2.50	564049	20	210020
								101	210063
								103	210064

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



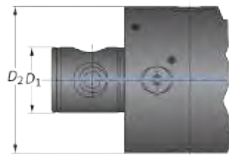
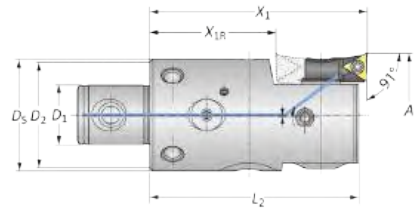
Inserts sold separately.

 = Metric (mm)

 = Imperial (in)

564 (565) Boring Heads and Insert Holders

Digital | Diameter Range: 50.00 mm - 205.000 mm (1.969" - 8.071")



NOTE: Metric item pictured.

NOTE: Digital adjustment accuracy of 0.002 mm (0.0001") on diameter.

Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Part No.	Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)		Form	Part No.
i	40 - 22	1.969 - 2.579	2.953	1.850	2.854	1.654	1.764	565034	20	210052
									101	210062

Alu-Line Boring Heads

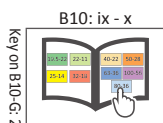
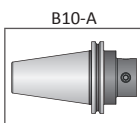
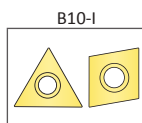
Imperial (in)

	MVS Connection $D_2 D_1$	Boring Range A	Boring Head					Part No.	Insert Holder	
			X_1	X_{1R}	L_2	D_5	Weight (lbs)		Form	Part No.
i	50 - 28	2.559 - 3.268	2.953	1.535	2.874	—	1.323	565045	20	210020
									101	210063
									103	210064
	63 - 36	3.228 - 4.055	3.543	2.126	3.464	—	2.205	565046	20	210020
									101	210063
									103	210064
	80 - 36	3.937 - 5.118	3.543	2.126	3.464	—	3.307	565047	20	210020
									101	210063
									103	210064
		4.921 - 6.594	3.543	2.126	3.464	3.397	4.189	565048	20	210020
									101	210063
									103	210064
		6.398 - 8.071	3.543	2.126	3.464	5.315	5.512	565049	20	210020
									101	210063
									103	210064

NOTE: X_{1R} = rotated insert holder for reverse machining.

NOTE: Insert holders and inserts sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

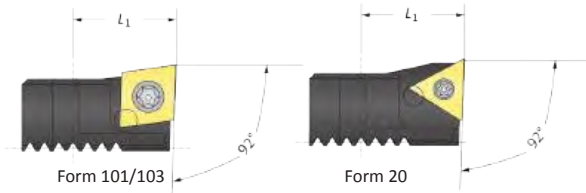
m = Metric (mm)

i = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 65.00 mm - 205.00 mm (2.559" - 8.071")



Metric (mm)

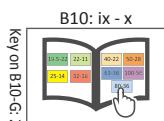
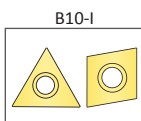
m	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
				103	211065

Imperial (in)

i	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
				20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.

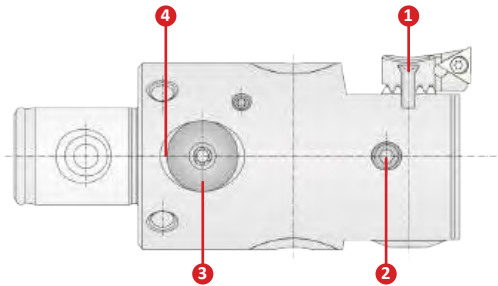


Inserts sold separately.

m = Metric (mm)

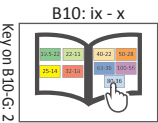
i = Imperial (in)

Accessories



Boring Head		1 Countersunk Screw		2 Clamping Screw		3 Battery Cover		4 Sealing Ring	Battery*
Metric	Imperial	Part No.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	
564034	565034	215338	T15 / H	115505	s3 / B	501016	T20 / H	415895	415896
564045	565045	215462	T20 / H	315943	s4 / B	501016	T20 / H	415895	415896
564046	565046	215462	T20 / H	515178	s4 / B	501016	T20 / H	415895	415896
564047	565047	215462	T20 / H	515178	s4 / B	501016	T20 / H	415895	415896
564048	565048	215462	T20 / H	515178	s4 / B	501016	T20 / H	415895	415896
564049	565049	215462	T20 / H	515178	s4 / B	501016	T20 / H	415895	415896

*Replace both batteries.



537 (538) Cassettes Product Overview



537 (538) Cassettes FINE BORING

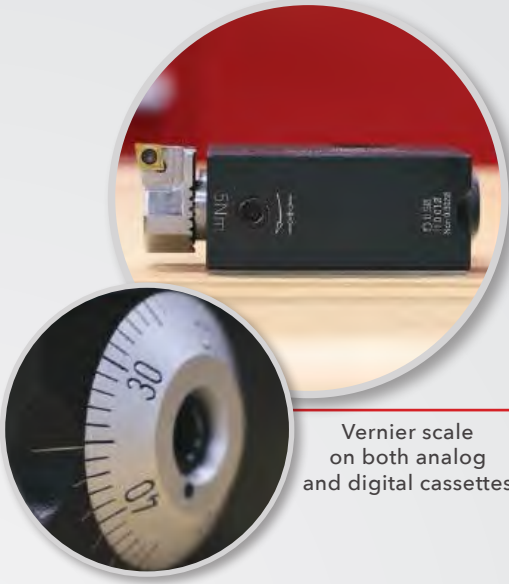
Experience digital precision boring for yourself.

537 (538) fine boring cassettes deliver high-accuracy performance and are available in an easy-to-use digital or analog version. The digital version features a docking port for the 3E^{TECH+} digital readout module, enabling μ -accurate diameter adjustments, while the analog cassettes provide highly accurate adjustments through the vernier scale. Made from hardened steel, these cassettes can be used on serrated tool bodies and slides from 100.00 mm to 3255.00 mm (3.937" to 128.150"). The insert holder can also be rotated easily for reverse machining applications.

- ▶ Diameter range: 100.00 mm - 205.00 mm (3.937" - 8.071").
- ▶ Cassette can be used on large diameter serrated slides.
 - ▶ 200.00 mm - 3255.00 mm (7.874" - 128.150").
- ▶ Coolant through.
- ▶ 3E^{TECH+} module provides a simple digital readout.
- ▶ Analog version with a vernier scale.
- ▶ Max cutting speed: 900 m/min (2,953 SFM).

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

537 (538) Cassettes Product Overview



Vernier scale
on both analog
and digital cassettes



Digital 537 (538)
cassettes with
3E^{TECH} docking port

- ✓ Convenient tool handling
- ✓ Large range of applications
- ✓ Hardened steel bodies

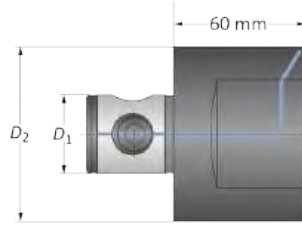


NOTE: Adjustment accuracy of 3E^{TECH} is 0.001 mm (0.00005")
and vernier is 0.002 mm (0.0001") on diameter.



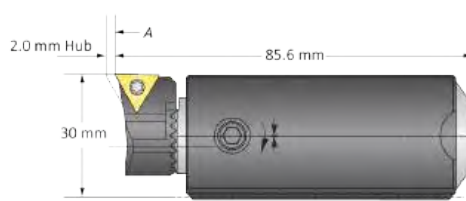
537 (538) Cassettes, Insert Holders and Serrated Tool Body

Analog | Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")



Serrated Tool Body

MVS Connection $D_2 D_1$	Boring Range		Part No.
	Metric (mm)	Imperial (in)	
80 - 36	100.00 - 155.00	3.937 - 6.102	148007
	150.00 - 205.00	5.906 - 8.071	148009



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

Boring Range (A)	Cassette*		Clamping Piece	Insert Holder	
	Weight (kg)	Part No.		Insert Form	Part No.
100.00 - 205.00	0.60	537051	137026	20	210020
				101	210063
				103	210064

Imperial (in)

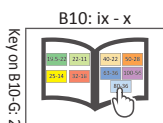
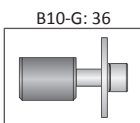
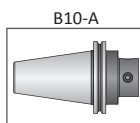
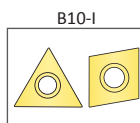
Boring Range (A)	Cassette*		Clamping Piece	Insert Holder	
	Weight (lbs)	Part No.		Insert Form	Part No.
3.937 - 8.071	1.323	538051	137026	20	210020
				101	210063
				103	210064

*Required serrated tool body sold separately.

NOTE: Cassette and insert holder can be used on large diameter serrated slides.

NOTE: Insert holders, inserts, and clamping pieces sold separately.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



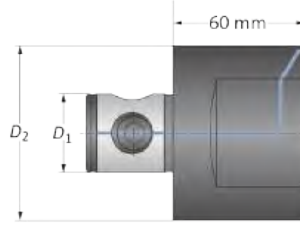
Inserts sold separately.

= Metric (mm)
 = Imperial (in)



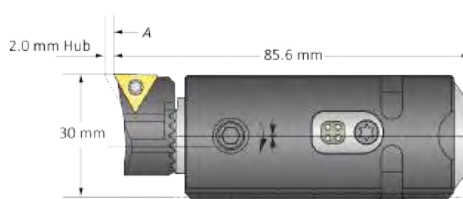
537 (538) Cassettes, Insert Holders and Serrated Tool Body

Digital 3E^{TECH+} | Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")



Serrated Tool Body

MVS Connection	Boring Range		Part No.
$D_2 D_1$	Metric (mm)	Imperial (in)	
80 - 36	100.00 - 155.00	3.937 - 6.102	148007
	150.00 - 205.00	5.906 - 8.071	148009



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

	Boring Range (A)	Cassette*	Part No.	Clamping Piece	Insert Holder	
					Insert Form	Part No.
m	100.00 - 205.00	0.60	537052	137026	20	210020
					101	210063
					103	210064

Imperial (in)

	Boring Range (A)	Cassette*	Part No.	Clamping Piece	Insert Holder	
					Insert Form	Part No.
i	3.937 - 8.071	1.323	538052	137026	20	210020
					101	210063
					103	210064

*Required serrated tool body sold separately.

NOTE: Cassette and insert holder can be used on large diameter serrated slides.

NOTE: 3E^{TECH+} digital readout module, charging unit, insert holders, inserts, and clamping pieces sold separately.

3E^{TECH+} Digital Readout Module

Part No.	Charging Unit*
536015	536016

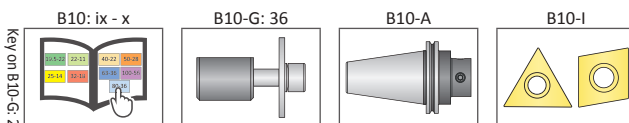
NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.



NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



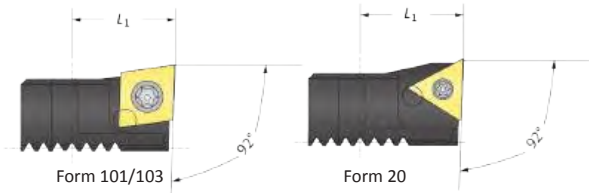
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



Insert Holders for Abrasive Materials

Diameter Range: 100.00 mm - 205.000 mm (3.937" - 8.071")



Metric (mm)

m	Boring Range	Insert Holder			
		L ₁	Weight (kg)	Insert Form	Part No.
		18.00	0.03	20	211061
				101	211063
				103	211065

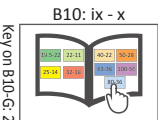
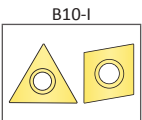
Imperial (in)

i	Boring Range	Insert Holder			
		L ₁	Weight (lbs)	Insert Form	Part No.
		0.709	0.066	20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.
NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



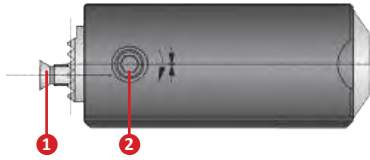
G



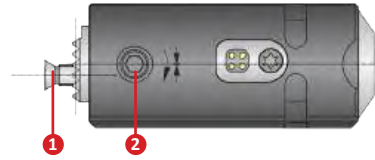
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Accessories



537 (538) Analog Cassette



537 (538) 3E^{TECH} Cassette

Screws

Cassette Part No.		1 Countersunk Screw		2 Clamping Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key
537051	538051	215462	T20 / H	115249	s4 / F
537052	538052	215462	T20 / H	315789	s4 / F

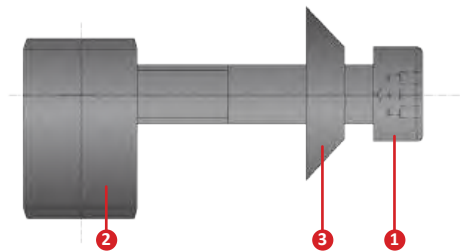
3E^{TECH} Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

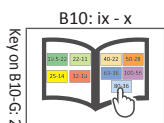
NOTE: 3E^{TECH} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



537 (538) Clamping Pieces

Slide Type	Complete Part No.	Service Key		Replacement Components		
				1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	137026	115578	s6 / B	215101	140118	337105
Basic and Eco Slides	137027			215102	215105	337105
Flex Slides	137019			415900	215105	337105

NOTE: Clamping pieces sold separately.



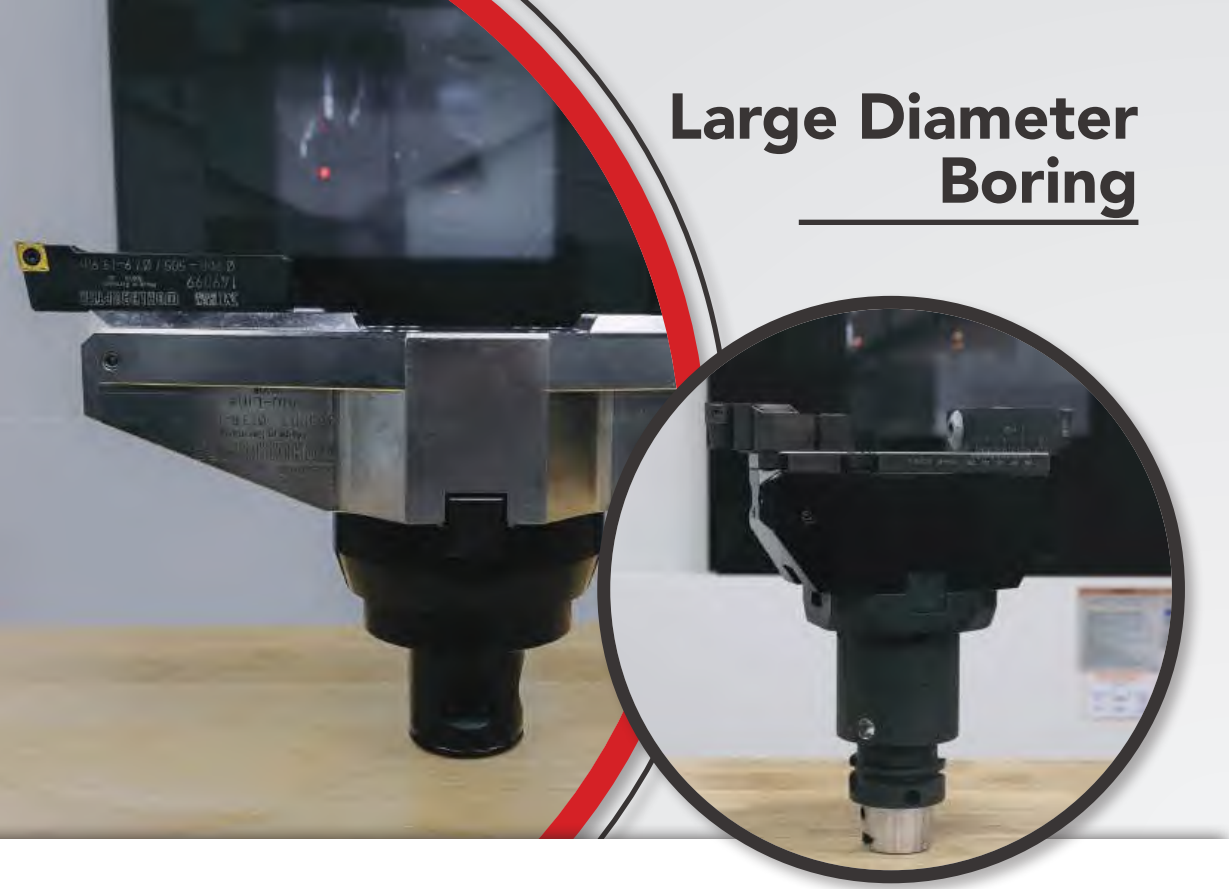
m = Metric (mm)
i = Imperial (in)

SECTION

B10-H

Large Diameter Boring

Large Diameter Boring



Boring Big

Wohlhaupter has continued to expand our large diameter boring capabilities with Alu-Line. Our Alu-Line serrated slides and tool bodies are made of lightweight aluminum alloy to minimize the weight while still getting the heavy boring job done. The versatile serrated slides and serrated tool bodies allow for boring 200.00 mm (7.874") up to 3255.00 mm (128.150"), offering the most powerful and versatile tool ranges to our customers.

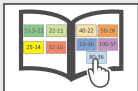
- ▶ Basic D 40 Slides
 - ▶ 200.00 mm - 520.00 mm (7.874" - 20.472")
- ▶ Basic D 60 Slides
 - ▶ 200.00 mm - 505.00 mm (7.874" - 19.882")
- ▶ Eco D 60 Slides
 - ▶ 465.00 mm - 1020.00 mm (18.307" - 40.157")
- ▶ Flex D 60 Slides
 - ▶ 500.00 mm - 3255.00 mm (19.685" - 128.150")

Applicable Industries

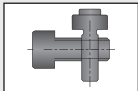
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

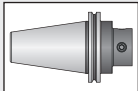
The following icons will appear throughout the catalog to help you navigate between products.



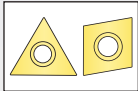
MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Clamping Elements
For use with insert holders and boring heads.



Shanks
A variety of shanks for different machines.



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Large Diameter Boring Product Overview



Large Diameter BORING

Boring big? We've got you covered.

Our versatile tooling system can provide the power and precision your large diameter boring jobs demand. The large diameter boring system offers four different Alu-Line serrated slides, a wide range of rough and finish boring insert holders, vernier and digital cassettes, and combined rough and finish insert holders.

- ▶ Diameter range: 200.00 mm - 3255.00 mm (7.874" - 128.150").
- ▶ Basic, Eco, and Flex serrated slides.
- ▶ Roughing, finishing, or combined roughing and finishing can be achieved in one pass.
- ▶ Digital readout cassettes available for quick and easy adjustments.
- ▶ Alu-Line serrated slides and tool bodies are made of lightweight aluminum.

Large Diameter Boring Product Overview

► Basic D 40 Serrated Slides for Finish Boring



349021 (350021)
 Ø 200.00 mm - 280.00 mm
 (Ø 7.874" - 11.023")



349022 (350022)
 Ø 280.00 mm - 360.00 mm
 (Ø 11.023" - 14.173")



349023 (350023)
 Ø 360.00 mm - 440.00 mm
 (Ø 14.173" - 17.322")



349024 (350024)
 Ø 440.00 mm - 520.00 mm
 (Ø 17.322" - 20.472")

► Basic D 60 Serrated Slides for Rough and Finish Boring



349051 (350051)
 Ø 200.00 mm - 280.00 mm
 (Ø 7.874" - 11.023")



349052 (350052)
 Ø 275.00 mm - 355.00 mm
 (Ø 10.826" - 13.976")



349053 (350053)
 Ø 350.00 mm - 430.00 mm
 (Ø 13.779" - 16.929")



349054 (350054)
 Ø 425.00 mm - 505.00 mm
 (Ø 16.732" - 19.881")

► Eco D 60 Serrated Slides for Rough and Finish Boring



349005 (350005)
 Ø 465.00 mm - 745.00 mm
 (Ø 18.307" - 29.330")



349006 (350006)
 Ø 740.00 mm - 1020.00 mm
 (Ø 29.133" - 40.157")



349014 (350014) | 349014 (350014)
 Serrated slide for base slides
 349005 (350005) / 349006 (350006)



► Flex D 60 Serrated Slides for Rough and Finish Boring

BASE SLIDES



349031 (350031)
 Ø 500.00 mm - 1055.00 mm
 (Ø 19.685" - 41.535")



349032 (350032)
 Ø 755.00 mm - 1605.00 mm
 (Ø 29.724" - 63.188")



349033 (350033)
 Ø 1325.00 mm - 2430.00 mm
 (Ø 52.165" - 95.669")



349034 (350034)
 Ø 2150.00 mm - 3255.00 mm
 (Ø 84.645" - 128.149")

SERRATED SLIDES



349035 (350035)
 For base slides: 349031, 349032,
 349033, 349034, 350031,
 350032, 350033, 350034



349036 (350036)
 For base slides: 349031, 349032,
 349033, 349034, 350031,
 350032, 350033, 350034



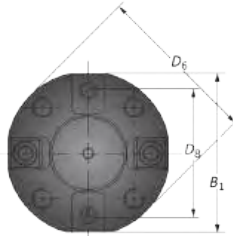
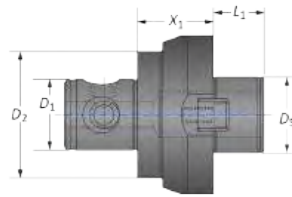
349037 (350037)
 For base slides: 349032,
 349033, 349034, 350032,
 350033, 350034



349038 (350038)
 For base slides: 349033,
 349034, 350033, 350034



MVS Holding Arbors



Metric (mm)

MVS Connection $D_2 D_1$	Holding Arbor Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
80 - 36	D 40 Alu-Line	19.00	30.00	40.00	89.00	66.70	80.00	0.50	309001 ⁽¹⁾⁽²⁾
	D 60	60.00	40.00	60.00	129.10	101.60	125.00	4.10	209060 ⁽¹⁾
100 - 56	D 40 Alu-Line	30.00	30.00	40.00	89.00	66.70	80.00	1.00	309041 ⁽²⁾
	D 60	60.00	40.00	60.00	129.10	101.60	125.00	6.30	209043
	D 60 Alu-Line	60.00	40.00	60.00	129.10	101.60	125.00	2.20	309043 ⁽²⁾

Imperial (in)

MVS Connection $D_2 D_1$	Holding Arbor Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
80 - 36	D 40 Alu-Line	0.748	1.181	1.575	3.503	2.625	3.150	1.102	309001 ⁽¹⁾⁽²⁾
	D 60	2.362	1.574	2.362	5.082	4.000	4.921	9.038	209060 ⁽¹⁾
100 - 56	D 40 Alu-Line	1.181	1.181	1.575	3.503	2.625	3.149	2.204	309041 ⁽²⁾
	D 60	2.362	1.575	2.362	5.082	4.000	4.921	13.880	209043
	D 60 Alu-Line	2.362	1.575	2.362	5.082	4.000	4.921	4.850	309043 ⁽²⁾

(1) For light machining only.

(2) Lightweight aluminum construction only in connection with our serrated slides:

Basic D 40 Serrated Slides: $\varnothing$ 200.00 mm - 520.00 mm (7.874" - 20.472").

Basic D 60 Serrated Slides: 200.00 mm - 505.00 mm ($\varnothing$ 7.874" - 19.882").



H

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

-Do not exceed the **allowable weight** for your machine tool.

-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

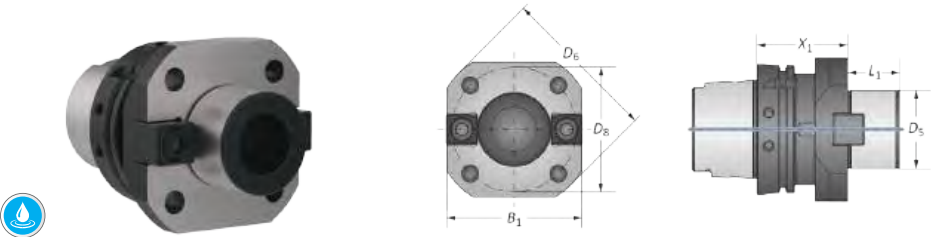
B10: ix - x





Master Shanks

HSK-A (DIN 69 893) Shanks



Metric (mm)

		Shank								
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
m	63	D 40	60.00	30.00	40.00	89.00	66.70	80.00	1.90	358015
	100	D 40	60.00	30.00	40.00	89.00	66.70	80.00	3.60	258021
		D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.20	258061
			D 60	70.00	40.00	60.00	129.10	101.60	110.00	5.00

Imperial (in)

		Shank								
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
i	63	D 40	2.362	1.181	1.575	3.504	2.626	3.150	4.200	358015
	100	D 40	2.362	1.181	1.575	3.504	2.626	3.150	7.900	258021
		D 60	2.756	1.575	2.362	5.083	4.000	4.921	11.500	258061
			2.756	1.575	2.362	5.083	4.000	4.331	11.000	258098



⚠

WARNING

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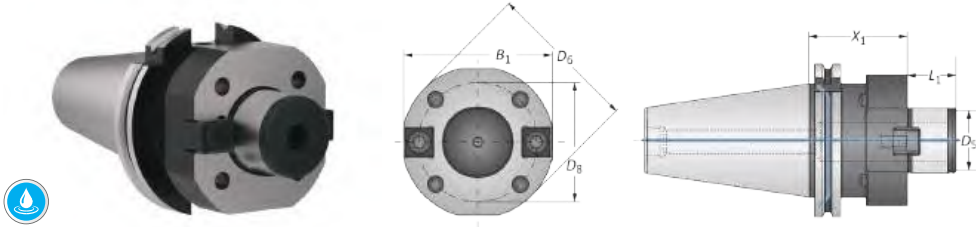
key on B10-H: 2

m = Metric (mm)
i = Imperial (in)



Master Shanks

CAT 40 / 50 Shanks



Metric Threads (mm)

			Shank							
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.
	50	D 40	60.00	30.00	40.00	89.00	66.70	80.00	4.60	326083

Imperial Threads (in)

		Shank							Weight (lbs)	Part No.
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1		
i	40	D 40	1.970	1.181	1.575	3.504	2.626	3.150	4.000	357004
		D 40	1.970	1.181	1.575	3.504	2.626	3.150	8.400	357001
	50	D 60	2.756	1.575	2.362	5.083	4.000	4.331	11.700	357002
		D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.100	357003



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

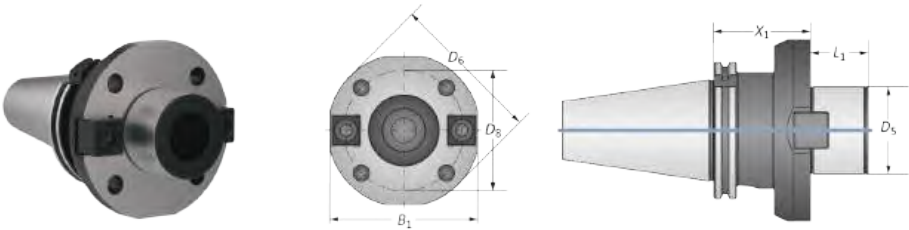


m = Metric (mm)
i = Imperial (in)



Master Shanks

SK (DIN 69 871-AD/B) Shanks



Metric (mm)

Taper Size		Connection	Shank						Weight (kg)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
m	40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.90	326080*
		D 40	50.00	30.00	40.00	89.00	66.70	80.00	4.10	326024
	50	D 60	70.00	40.00	60.00	129.10	101.60	125.00	5.80	326087
			70.00	40.00	60.00	129.10	101.60	110.00	5.50	326088

Imperial (in)

		Shank								
Taper Size		Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (lbs)	Part No.
i	40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.190	326080*
		D 40	1.969	1.181	1.575	3.504	2.626	3.150	9.040	326024
	50	D 60	2.756	1.575	2.362	5.083	4.000	4.921	12.790	326087
			2.756	1.575	2.362	5.083	4.000	4.331	12.130	326088

*For light machining only.



⚠

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlschaeferBoringGuidelines.

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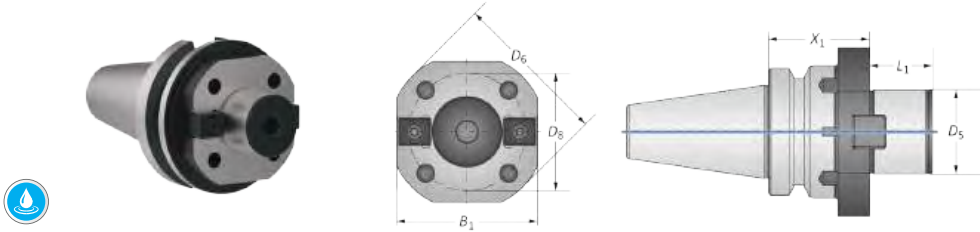
key on B10-H: 2

B10: ix - x



Master Shanks

BT / JIS B 6339 Shanks



Metric (mm)

	Taper Size	Connection	Shank						Weight (kg)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
	40	D 40	50.00	30.00	40.00	89.00	66.70	80.00	1.80	326084
	50	D 40	55.00	30.00	40.00	89.00	66.70	80.00	4.50	326082
		D 60	80.00	40.00	60.00	128.00	101.60	—	7.80	326062

Imperial (in)

	Taper Size	Connection	Shank						Weight (lbs)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
	40	D 40	1.969	1.181	1.575	3.504	2.626	3.150	4.000	326084
	50	D 40	2.165	1.181	1.575	3.504	2.626	3.150	9.900	326082
		D 60	3.150	1.575	2.362	5.039	4.000	—	17.196	326062



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x



B10-H: 9

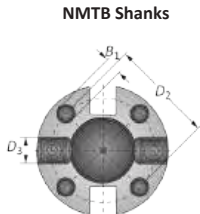
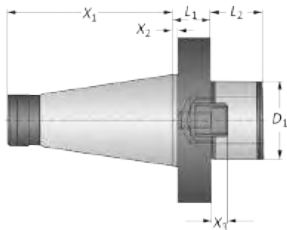
www.alliedmachine.com | 1.330.343.4283

= Metric (mm)
 = Imperial (in)



Master Shanks

NMTB Shanks | DIN 2080 Shanks



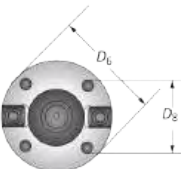
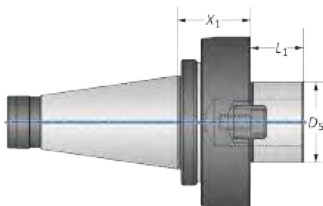
Metric (mm)

		Shank											
Taper Size	Connection	X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1	Weight (kg)	Part No.	
 50	D 60	126.80	3.20	29.00	40.00	60.00	12.50	101.60	25.40	M16	8.00	198051T004480	

Imperial (in)

			Shank										
Taper Size	Connection	X_1	X_2	L_1	L_2	D_1	X_3	D_2	D_3	B_1	Weight (lbs)	Part No.	
① 50	D 60	4.992	0.126	1.142	1.575	2.362	0.492	4.000	1.000	M16	17.637	198051T004480	

DIN 2080 Shanks



Metric (mm)

		Shank								
Taper Size	Connection	X_1	L_1	D_5	D_6	D_8	B_1	Weight (kg)	Part No.	
 50	D 60	55.00	40.00	60.00	128.00	101.60	—	6.80	326035	

Imperial (in)

Taper Size		Connection	Shank						Weight (lbs)	Part No.
			X_1	L_1	D_5	D_6	D_8	B_1		
①	50	D 60	2.165	1.575	2.362	5.039	4.000	—	14.991	326035



⚠ WARNING

-Do not exceed the allowable weight for your machine tool.
-Do not exceed the recommended length-to-diameter ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlschlagBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

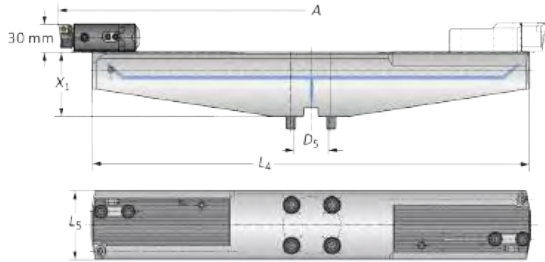
key on B10-H: 2

B10: ix - x



Alu-Line Basic D 40 Serrated Slides

Diameter Range: 200.00 mm - 520.00 mm (7.874" - 20.472")



Metric (mm)

	Connection D_s	Boring Range A	Serrated Slide			Weight (kg)	Part No.
			X_1	L_4	L_5		
	D 40	200.00 - 280.00	75.00	190.00	80.00	2.80	349021
		280.00 - 360.00	75.00	270.00	80.00	3.80	349022
		360.00 - 440.00	75.00	350.00	80.00	5.00	349023
		440.00 - 520.00	75.00	430.00	80.00	6.00	349024

Imperial (in)

	Connection D_s	Boring Range A	Serrated Slide			Weight (lbs)	Part No.
			X_1	L_4	L_5		
	D 40	7.874 - 11.024	2.953	7.480	3.149	6.173	350021
		11.024 - 14.173	2.953	10.620	3.149	8.377	350022
		14.173 - 17.323	2.953	13.770	3.149	11.023	350023
		17.323 - 20.472	2.953	16.320	3.149	13.228	350024

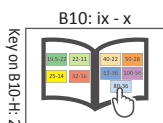


WARNING

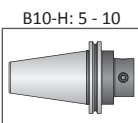
Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

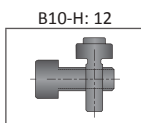
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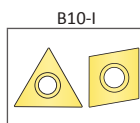
B10: ix - x



B10-H: 5 - 10



B10-H: 12



B10-I

Inserts sold separately.

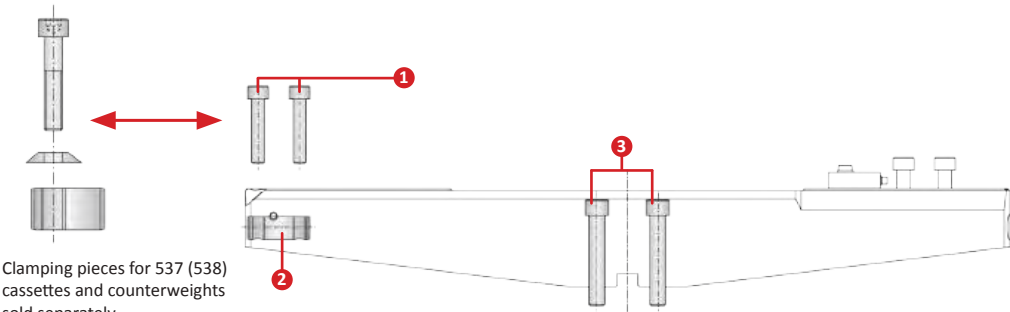
= Metric (mm)

= Imperial (in)



Alu-Line Basic D 40 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Clamping Pieces

	Serrated Slide	1 Cap Screw		2 Clamping Nut	3 Thread Pin		Cap Screw	
Connection	Part No.	Part No.	Service Key	Part No.	Part No.	Service Key	Part No.	Service Key
D 40	349021/350021	115118	s8 / B	115669	349010	s4 / F	315186	s10 / C
	349022/350022	115118	s8 / B	115669	349011	s4 / F	315186	s10 / C
	349023/350023	115118	s8 / B	115669	349012	s4 / F	315186	s10 / C
	349024/350024	115118	s8 / B	115669	349013	s4 / F	315186	s10 / C

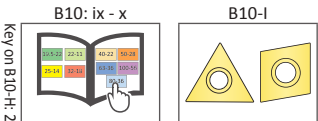


⚠

WARNING

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-Do not exceed the **allowable weight** for your machine tool.
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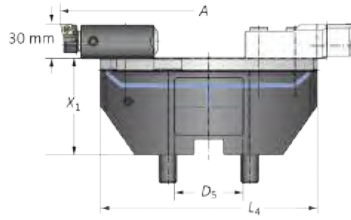
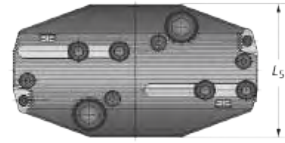


Inserts sold separately.



Alu-Line Basic D 60 Serrated Slides

Diameter Range: 200.00 mm - 505.00 mm (7.874" - 19.882")



Metric (mm)

Connection	Boring Range	Serrated Slide			Weight (kg)	Part No.
		D_s	A	X_1		
m	D 60	200.00 - 280.00	85.00	191.00	4.10	349051
		275.00 - 355.00	85.00	264.00	5.20	349052
		350.00 - 430.00	85.00	339.00	6.90	349053
		425.00 - 505.00	85.00	414.00	8.00	349054

Imperial (in)

Connection	Boring Range	Serrated Slide			Weight (lbs)	Part No.
		D_s	A	X_1		
i	D 60	7.874 - 11.024	3.346	7.520	9.038	350051
		10.827 - 13.976	3.346	10.394	11.464	350052
		13.780 - 16.929	3.346	13.346	15.211	350053
		16.732 - 19.882	3.346	16.299	17.637	350054



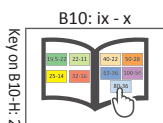
H

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



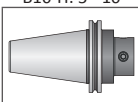
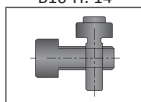
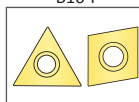
key on B10-H: 2

B10: ix - x

B10-H: 5 - 10

B10-H: 14

B10-I



Inserts sold separately.

m = Metric (mm)

i = Imperial (in)

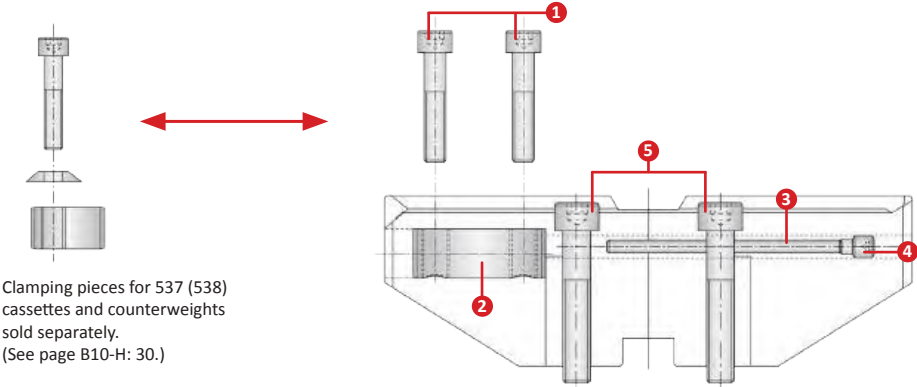
B10-H: 13

www.alliedmachine.com | 1.330.343.4283



Alu-Line Basic D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Clamping Pieces

Connection	Serrated Slide	1 Cap Screw		2 Clamping	3 Adjustment	4 Thread Pin		5 Cap Screw	
	Part No.	Part No.	Service Key	Nut	Pin	Part No.	Service Key	Part No.	Service Key
D 60	349051/350051	115118	s8 / B	115669	141112	115196	s4 / F	115170	s14 / C
	349052/350052	115118	s8 / B	115669	141113	115196	s4 / F	115170	s14 / C
	349053/350053	115118	s8 / B	115669	141114	115196	s4 / F	115170	s14 / C
	349054/350054	115118	s8 / B	115669	141115	115196	s4 / F	115170	s14 / C

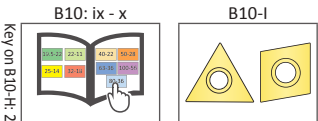


WARNING

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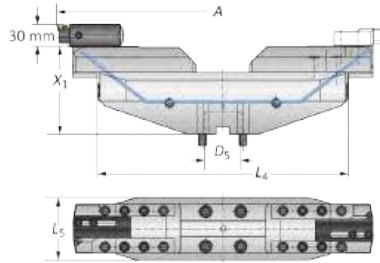


Inserts sold separately.



Alu-Line Eco D 60 Serrated Slides

Diameter Range: 465.00 mm - 1020.00 mm (18.307" - 40.157")



Metric (mm)

	Connection D_5	Boring Range A	Serrated Slide			1 Base Slide		2 Serrated Slide		
			X_1	L_4	L_5	Weight (kg)	Part No.	Weight (kg)	Style*	Part No.
	D60	465.00 - 745.00	155.00	447.00	129.00	11.80	349005	2.20	Alu-Line	349015
								5.70	Steel	349014
		740.00 - 1020.00	155.00	722.00	129.00	18.00	349006	2.20	Alu-Line	349015
								5.70	Steel	349014

Imperial (in)

	Connection D_5	Boring Range A	Serrated Slide			1 Base Slide		2 Serrated Slide		
			X_1	L_4	L_5	Weight (lbs)	Part No.	Weight (lbs)	Style*	Part No.
	D60	18.307 - 29.331	6.102	17.590	5.078	26.010	350005	4.850	Alu-Line	350015
								12.560	Steel	350014
		29.134 - 40.157	6.102	28.420	5.078	39.680	350006	4.850	Alu-Line	350015
								12.560	Steel	350014

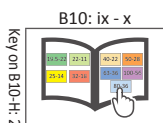
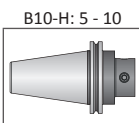
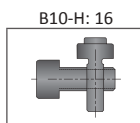
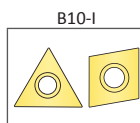
*Alu-Line serrated slides are for finish boring applications and steel serrated slides are for rough boring applications.



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
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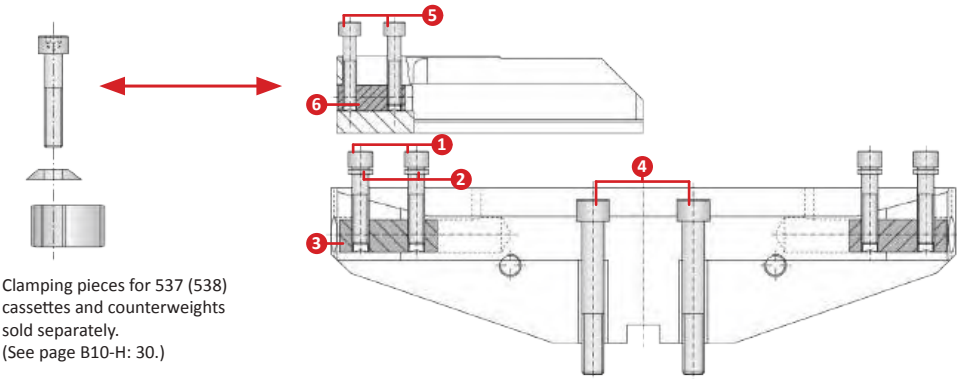
Inserts sold separately.

= Metric (mm)
 = Imperial (in)



Alu-Line Eco D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Base Slide Clamping Pieces

Connection	Base Slide	1 Cap Screw		2 Disc	3 Clamping Nut	4 Cap Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
D 60	349005/350005	115771	s10 / C	115737	415181	077128	s14 / C
	349006/350006						

Serrated Slide Clamping Pieces

Serrated Slide	5 Cap Screw		6 Clamping Nut
Part No.	Part No.	Service Key	Part No.
349014/350014	115118	s8 / B	115669
349015/350015			

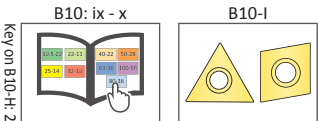


WARNING

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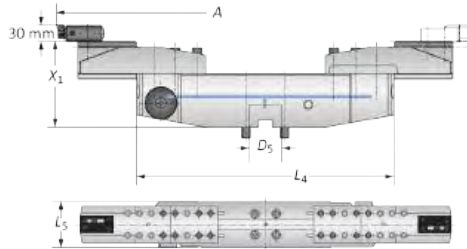


Inserts sold separately.



Alu-Line Flex D 60 Serrated Slides

Diameter Range: 500.00 mm - 3255.00 mm (19.685" - 128.150")



Metric (mm)

Connection		Boring Range	Serrated Slide			Weight	Part No.	
D_s		A	X_1	L_4	L_5	(1 + 2) (kg)	1 Base Slide	2 Serrated Slide
m	D 60	500.00 - 780.00	160.00	480.00	130.00	24.20	349031	349035
		950.00 - 1055.00	185.00	480.00	130.00	41.30	349031	349036
		775.00 - 1055.00	185.00	755.00	155.00	42.50	349032	349035
		1050.00 - 1330.00	210.00	755.00	155.00	59.60	349032	349036
		1442.00 - 1605.00	225.00	755.00	155.00	86.30	349032	349037
		1325.00 - 1605.00	210.00	1305.00	185.00	88.20	349033	349035
		1325.00 - 1880.00	235.00	1305.00	185.00	105.30	349033	349036
		1600.00 - 2155.00	250.00	1305.00	185.00	132.00	349033	349037
		1990.00 - 2430.00	255.00	1305.00	185.00	169.80	349033	349038
		2150.00 - 2430.00	235.00	2130.00	225.00	192.50	349034	349035
		2150.00 - 2705.00	260.00	2130.00	225.00	209.60	349034	349036
		2150.00 - 2980.00	275.00	2130.00	225.00	236.00	349034	349037
2150.00 - 3255.00	280.00	2130.00	225.00	274.00	349034	349038		

Imperial (in)

Connection		Boring Range	Serrated Slide			Weight	Part No.	
D_5		A	X_1	L_4	L_5	(1 + 2) (lbs)	1 Base Slide	2 Serrated Slide
i	D 60	19.685 - 30.709	6.299	18.898	5.118	53.360	350031	350035
		37.402 - 41.535	7.283	18.898	5.118	91.060	350031	350036
		30.512 - 41.535	7.283	29.724	6.102	93.710	350032	350035
		41.339 - 52.362	8.268	29.724	6.102	131.400	350032	350036
		56.772 - 63.189	8.858	29.724	6.102	190.200	350032	350037
		52.165 - 63.189	8.268	51.378	7.283	194.400	350033	350035
		52.165 - 74.016	9.252	51.378	7.283	232.100	350033	350036
		62.992 - 84.843	9.843	51.378	7.283	291.000	350033	350037
		78.346 - 95.669	10.039	51.378	7.283	374.400	350033	350038
		84.646 - 95.669	9.252	83.858	8.858	424.400	350034	350035
		84.646 - 106.496	10.236	83.858	8.858	462.100	350034	350036
		84.646 - 117.323	10.827	83.858	8.858	520.300	350034	350037
84.646 - 128.150	11.024	83.858	8.858	604.100	350034	350038		

WARNING

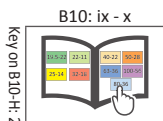
Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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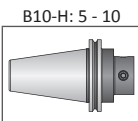
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlhaupterBoringGuidelines.

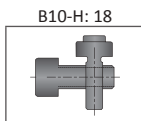
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



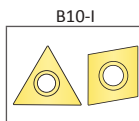
B10: ix - x



B10-H: 5 - 10



B10-H: 18



B10-I

Inserts sold separately.

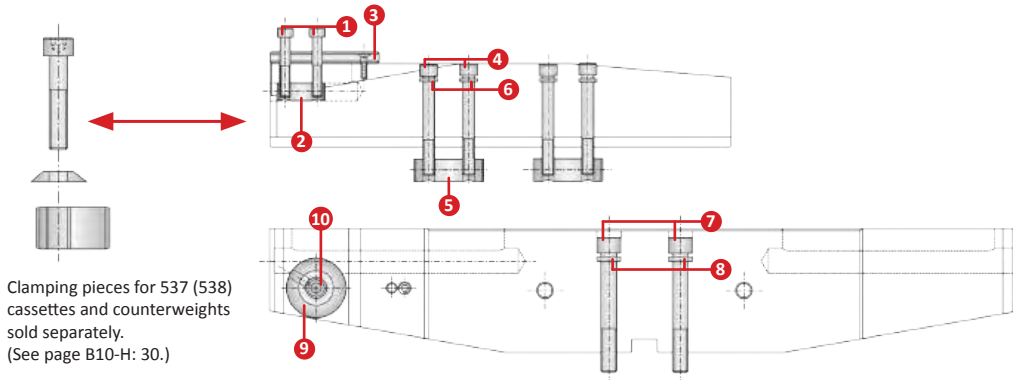
m = Metric (mm)

i = Imperial (in)



Alu-Line Flex D 60 Serrated Slides

Clamping Pieces



Clamping pieces for 537 (538) cassettes and counterweights sold separately.
(See page B10-H: 30.)

Serrated Slide Clamping Pieces

Serrated Slide	1 Cap Screw		2 Clamping Nut		3 Adapter		4 Cap Screw		5 Clamping Nut	6 Disk
Part No.	Part No.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	Service Key	Part No.	Part No.
349035/350035	115307	s8 / B	115669	s4 / B	349043	s4 / B	315186	s10 / C	349202	115737
349036/350036	115307	s8 / B	115669	s4 / B	349043	s4 / B	077110	s10 / C	415181	115737
349037/350037	115307	s8 / B	115669	s4 / B	349043	s4 / B	315403	s10 / C	415181	115737
349038/350038	115307	s8 / B	115669	s4 / B	349043	s4 / B	315415	s10 / C	415181	115737

Base Slide Clamping Pieces

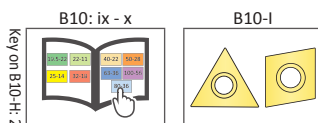
Connection	Base Slide	7 Cap Screw		8 Disk	9 Injector	10 Countersunk Screw	
	Part No.	Part No.	Service Key	Part No.	Part No.	Part No.	Service Key
D 60	349031/350031	115736	s14 / C	068168	349201	415898	s6 / B
	349032/350032	415913	s14 / C	068168	349201	415898	s6 / B
	349033/350033	215509	s14 / C	068168	349201	415898	s6 / B
	349034/350034	415636	s14 / C	068168	349201	415898	s6 / B



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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www.alliedmachine.com/WohlschlagBoringGuidelines.

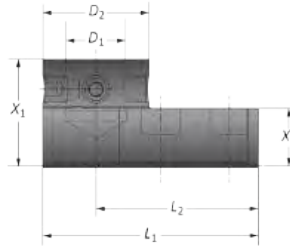
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.



Serrated Adapter with MVS Connection



Metric (mm)

MVS Connection	Mounting Adapters				Weight (kg)	Part No.
	$D_2 \mid D_1$	X_1	X_2	L_1		
 50 - 28	50.00	27.00	101.00	76.00	1.30	349046

Imperial (in)

MVS Connection	Mounting Adapters				Weight (lbs)	Part No.
	$D_2 \mid D_1$	X_1	X_2	L_1		
 50 - 28	1.969	1.063	3.976	2.992	2.866	349046



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

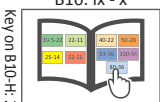
- Do not exceed the **allowable weight** for your machine tool.
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www.alliedmachine.com/WohlhaupterBoringGuidelines.

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B10: ix - x



 = Metric (mm)

 = Imperial (in)



Serrated Adapter with MVS Connection

Applications

Style		Boring Heads	Slide	Bore Range	
				mm	inch
Inside Boring		320005 465006 565045	349051/350051	215.00 - 313.00	8.465 - 12.323
			349052/350052	290.00 - 388.00	11.417 - 15.276
			349053/350053	365.00 - 463.00	14.370 - 18.228
			349054/350054	440.00 - 538.00	17.323 - 21.181
			349005 with 349015/ 350005 with 350015	480.00 - 778.00	18.898 - 30.630
		320005 465006 565045	349051/350051	65.00 - 128.00	2.559 - 5.039
			349052/350052	105.00 - 203.00	4.134 - 7.992
			349053/350053	180.00 - 278.00	7.087 - 10.945
			349054/350054	255.00 - 353.00	10.039 - 13.898
			349005 with 349015/ 350005 with 350015	295.00 - 593.00	11.614 - 23.346
Outside Boring		320005 465006 565045	349051/350051	67.00 - 165.00	2.638 - 6.496
			349052/350052	142.00 - 240.00	5.591 - 9.449
			349053/350053	217.00 - 315.00	8.543 - 12.402
			349054/350054	292.00 - 390.00	11.496 - 15.354
			349/350005 with 349/350015	332.00 - 630.00	13.071 - 24.803
		320005 465006 565045	349051/350051	—	—
			349052/350052	0.00 - 55.00	0.000 - 2.165
			349053/350053	32.00 - 130.00	1.260 - 5.118
			349054/350054	107.00 - 205.00	4.213 - 8.071
			349005 with 349015/ 350005 with 350015	147.00 - 445.00	5.787 - 17.520



NOTE: Left-hand only spindle rotation for outside boring operations.

⚠

WARNING

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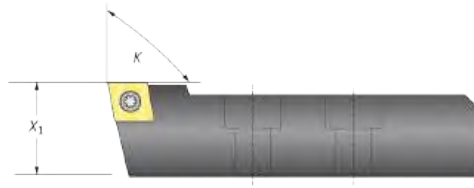
NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x

key on B10-H: 2



Insert Holders for Rough Machining



Insert Holder					Weight		Part No.
K	Form	ISO Code	mm	in	kg	lbs	
90°	103	CC..09T3..	30.00	1.180	0.60	1.322	149090
	104	CC..1204..	30.00	1.180	0.60	1.322	149099
			29.30	1.150	0.60	1.322	149083
	105	CC..1605..	30.00	1.180	0.60	1.322	149093



90° Tangential

Insert Holder					Weight		Part No.
K	Form	ISO Code	mm	in	kg	lbs	
90°	05	Tangential	30.00	1.180	0.60	1.322	149010
			29.30	1.150	0.60	1.322	149020



Insert Holder					Weight		Part No.
K	Form	ISO Code	mm	in	kg	lbs	
80°	113	SC..1204..	30.00	1.180	0.60	1.322	149089
	114	SC..150512	30.00	1.180	0.60	1.322	149094
	134	SN..1506..	30.00	1.180	0.60	1.322	149096

WARNING

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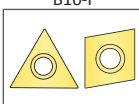
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlschlaegerBoringGuidelines.

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B10: ix - x

B10-I



Inserts sold separately.

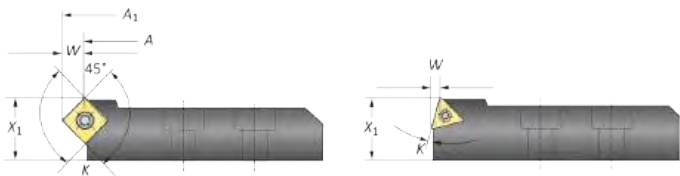
m = Metric (mm)

i = Imperial (in)



Insert Holders for Rough Machining

Chamfering



Metric (mm)

Insert Holder							Weight (kg)	Part No.
	K	Form	ISO Code	X ₁	A / A ₁	W		
m	15°	163	TC..16T3..	30.00	+7.00	4.00	0.60	201065
	20°	163	TC..16T3..	30.00	+9.00	5.30	0.60	201025
	30°	163	TC..16T3..	30.00	+14.00	7.70	0.60	201075
	45°	114	SC..1505..	30.00	+20.00	9.90	0.60	201015

Imperial (in)

Insert Holder							Weight (lbs)	Part No.
	K	Form	ISO Code	X ₁	A / A ₁	W		
i	15°	163	TC..16T3..	1.180	+0.275	0.157	1.322	201065
	20°	163	TC..16T3..	1.180	+0.354	0.208	1.322	201025
	30°	163	TC..16T3..	1.180	+0.551	0.303	1.322	201075
	45°	114	SC..1505..	1.180	+0.787	0.389	1.322	201015

Boring Range Example

Metric (mm)

Serrated Slide		Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
m 349051	200.00 - 280.00	201065	+7.00	207.00 - 287.00

Imperial (in)

Serrated Slide		Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
i 350051	7.874 - 11.023	201065	+0.280	8.150 - 11.300

NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.

NOTE: Additional insert holders available upon request.



⚠ WARNING

-Do not exceed the allowable weight for your machine tool.
-Do not exceed the recommended length-to-diameter ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, please refer to pages B10-M: 9 - 12 or visit www.alliedmachine.com/WohlschaeferBoringGuidelines.

key on B10-H: 2

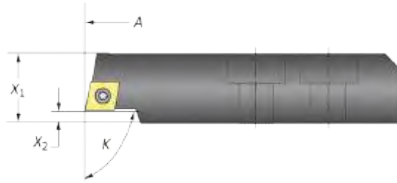
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



Insert Holders for Rough Machining

Back-Boring



Metric (mm)

Insert Holder							Weight (kg)	Part No.
K	Form	ISO Code	X ₁	X ₂	A			
m	90°	104	CC..1204..	30.00	5.00	+40.00	0.80	251010
						+75.00	0.90	251011

Imperial (in)

Insert Holder							Weight (lbs)	Part No.
K	Form	ISO Code	X ₁	X ₂	A			
i	90°	104	CC..1204..	1.181	0.196	+1.574	1.763	251010
						+2.952	1.984	251011

Boring Range Example

Metric (mm)

Serrated Slide		Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
m 349051	200.00 - 280.00	251010	+40.00	240.00 - 320.00

Imperial (in)

Serrated Slide		Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range	
i 350051	7.874 - 11.023	251010	+1.600	9.450 - 12.600

NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.

NOTE: Additional insert holders available upon request.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

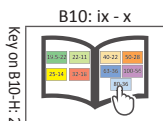
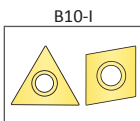
-Do not exceed the **allowable weight** for your machine tool.

-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

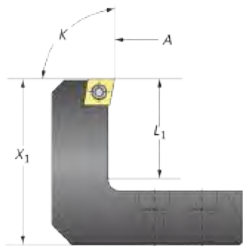
m = Metric (mm)

i = Imperial (in)



Insert Holders for Rough Machining

OD Turning



Metric (mm)

Insert Holder							Weight (kg)	Part No.
	K	Form	ISO Code	X ₁	L ₁	A		
	90°	104	CC..1204..	90.00	62.00	-50.00	1.00	149040

Imperial (in)

Insert Holder							Weight (lbs)	Part No.
	K	Form	ISO Code	X ₁	L ₁	A		
	90°	104	CC..1204..	3.543	2.440	-1.968	2.204	149040

Boring Range Example

Metric (mm)

Serrated Slide			Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range		
	349051	200.00 - 280.00	149040	-50.00	150.00 - 230.00

Imperial (in)

Serrated Slide			Insert Holder		Total Bore Range
Part No.	Bore Range	Part No.	Modified Bore Range		
	350051	7.874 - 11.023	149040	-2.000	5.900 - 9.055

NOTE: Boring range for serrated slides or base slides is found on pg. B10-H: 1.

NOTE: Additional insert holders available upon request.



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

key on B10-H: 2

B10: ix - x

B10-I

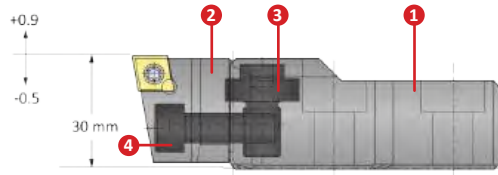
Inserts sold separately.

= Metric (mm)
 = Imperial (in)



Insert Holders for Rough Machining

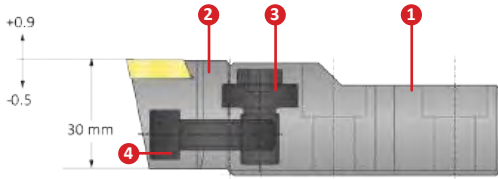
Height Adjustments



80° Rhomboid Insert Holder

Boring Range		1 Support	2 Insert Holder		3 Adjusting Screw		4 Fixing Screw	
mm	in	Part No.	Insert Form	Part No.	Part No.	Service Key	Part No.	Service Key
200.00 - 3255.00	7.874 - 128.150	149055	103	149058	315355	s6 / B	070369	s6 / B
			104	149056	315355	s6 / B	070369	s6 / B

NOTE: Adjusting and fixing screws will be received with support block.



Tangential Insert Holder

Boring Range		1 Support	2 Insert Holder		3 Adjusting Screw		4 Fixing Screw	
mm	in	Part No.	Insert Form	Part No.	Part No.	Service Key	Part No.	Service Key
200.00 - 3255.00	7.874 - 128.150	149055	05	149085	315355	s6 / B	070369	s6 / B

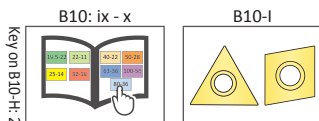
NOTE: Adjusting and fixing screws will be received with support block.



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

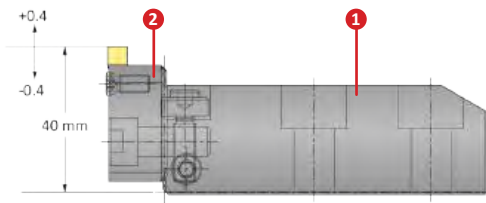


Inserts sold separately.

m = Metric (mm)
i = Imperial (in)

Insert Holders for Rough Machining

Axial Grooving



Insert Form 304

Insert Holder		1 Support	2 Insert Holder	Weight	
mm	in	Part No.	Part No.	kg	lbs
40.00	1.574	226014	226031	0.30	0.661





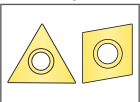
WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



B10-I



Inserts sold separately.

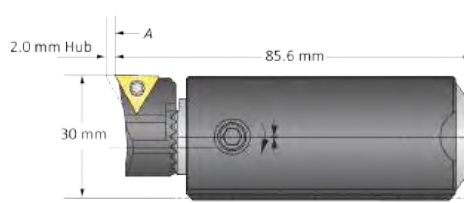
 = Metric (mm)

 = Imperial (in)

B10-H: 26

**537 (538) Analog Fine Boring Cassettes**

Diameter Range: 100.00 mm - 3255.00 mm (3.937" - 128.150")

**NOTE:** Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

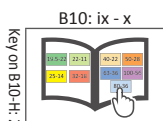
Metric (mm)

Cassette Part No.	Slide		Weight (kg)	Insert Holder		
	Type	Boring Range (A)		Form	Part No.	Clamping Piece
m	Serrated Tool Bodies	100.00 - 205.00	0.60	20	210020	137026
		100.00 - 205.00	0.60	101	210063	137026
		100.00 - 205.00	0.60	103	210064	137026
	Basic / Eco Slides	200.00 - 1020.00	0.60	20	210020	137027
		200.00 - 1020.00	0.60	101	210063	137027
		200.00 - 1020.00	0.60	103	210064	137027
	Flex Slides	500.00 - 3255.00	0.60	20	210020	137019
		500.00 - 3255.00	0.60	101	210063	137019
		500.00 - 3255.00	0.60	103	210064	137019

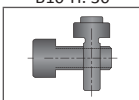
Imperial (in)

Cassette Part No.	Slide		Weight (lbs)	Insert Holder		
	Type	Boring Range (A)		Form	Part No.	Clamping Piece
i	Serrated Tool Bodies	3.937 - 8.071	1.323	20	210020	137026
		3.937 - 8.071	1.323	101	210063	137026
		3.937 - 8.071	1.323	103	210064	137026
	Basic / Eco Slides	7.874 - 40.157	1.323	20	210020	137027
		7.874 - 40.157	1.323	101	210063	137027
		7.874 - 40.157	1.323	103	210064	137027
	Flex Slides	19.685 - 128.150	1.323	20	210020	137019
		19.685 - 128.150	1.323	101	210063	137019
		19.685 - 128.150	1.323	103	210064	137019

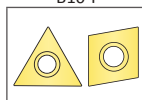
*Required serrated tool body sold separately.

NOTE: Cassette and insert holder can be used on large diameter serrated slides.**NOTE:** Insert holders, inserts, and clamping pieces sold separately.**WARNING** Assembly of modular components may cause machine damage and/or serious injury. To prevent:-Do not exceed the **allowable weight** for your machine tool.-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visitwww.alliedmachine.com/WohlhaupterBoringGuidelines.**NOTE:** Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B10: ix - x



B10-H: 30



B10-I

Inserts sold separately.

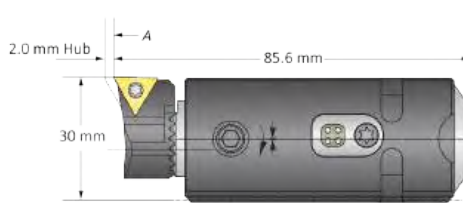
m = Metric (mm)

i = Imperial (in)



537 (538) Digital Fine Boring Cassettes with 3E^{TECH}+

Diameter Range: 100.00 mm - 3255.00 mm (3.937" - 128.150")



NOTE: Vernier adjustment accuracy of 0.002 mm (0.0001") on diameter.

Metric (mm)

Cassette Part No.	Slide Type	Boring Range (A)	Weight (kg)	Insert Holder		
				Form	Part No.	Clamping Piece
m	Serrated Tool Bodies	100.00 - 205.00	0.60	20	210020	137026
		100.00 - 205.00	0.60	101	210063	137026
		100.00 - 205.00	0.60	103	210064	137026
	Basic / Eco Slides	200.00 - 1020.00	0.60	20	210020	137027
		200.00 - 1020.00	0.60	101	210063	137027
		200.00 - 1020.00	0.60	103	210064	137027
	Flex Slides	500.00 - 3255.00	0.60	20	210020	137019
		500.00 - 3255.00	0.60	101	210063	137019
		500.00 - 3255.00	0.60	103	210064	137019

Imperial (in)

Cassette Part No.	Slide Type	Boring Range (A)	Weight (lbs)	Insert Holder		
				Form	Part No.	Clamping Piece
i	Serrated Tool Bodies	3.937 - 8.071	1.323	20	210020	137026
		3.937 - 8.071	1.323	101	210063	137026
		3.937 - 8.071	1.323	103	210064	137026
	Basic / Eco Slides	7.874 - 40.157	1.323	20	210020	137027
		7.874 - 40.157	1.323	101	210063	137027
		7.874 - 40.157	1.323	103	210064	137027
	Flex Slides	19.685 - 128.150	1.323	20	210020	137019
		19.685 - 128.150	1.323	101	210063	137019
		19.685 - 128.150	1.323	103	210064	137019

*Required serrated tool body sold separately.

NOTE: Cassette and insert holder can be used on large diameter serrated slides.

NOTE: 3E^{TECH} digital readout module, charging unit, insert holders, inserts, and clamping pieces sold separately.

3E^{TECH} Digital Readout Module

Part No.	Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

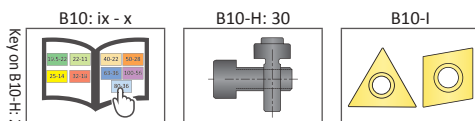


NOTE: 3E^{TECH} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.

J. WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlschlagBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

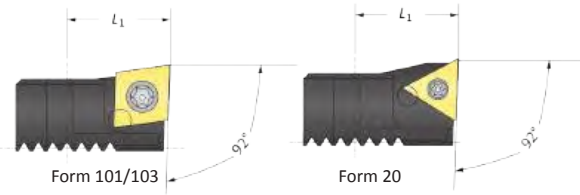
m = Metric (mm)

i = Imperial (in)



537 (538) Cassettes

Accessories



Metric (mm)

	Boring Range	L_1	Weight (kg)	Insert Holder	
				Insert Form	Part No.
m	100.00 - 3255.00	18.00	0.03	20	211061
				101	211063
				103	211065

Imperial (in)

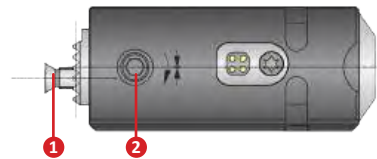
	Boring Range	L_1	Weight (lbs)	Insert Holder	
				Insert Form	Part No.
i	3.937 - 128.150	0.709	0.066	20	211061
				101	211063
				103	211065

NOTE: Insert holders used for abrasive materials to protect boring head against chip wash.

NOTE: When machining grey cast iron, we recommend using insert holders for abrasive materials with CBN inserts for optimized chip removal.



537 (538) Analog Cassette



537 (538) 3ETECH+ Cassette

Screws

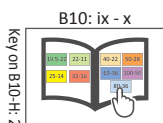
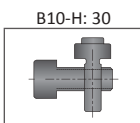
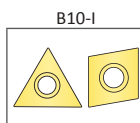
Cassette Part No.		1 Countersunk Screw		2 Clamping Screw	
Metric	Imperial	Part No.	Service Key	Part No.	Service Key
537051	538051	215462	T20 / H	115249	s4 / F
537052	538052	215462	T20 / H	315789	s4 / F

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlschlaegerBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



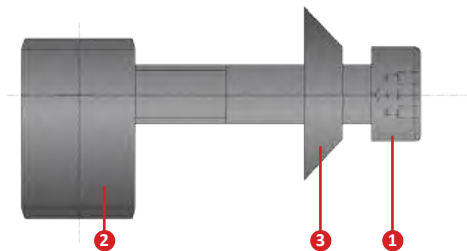
Inserts sold separately.

m = Metric (mm)
i = Imperial (in)



537 (538) Cassettes

Accessories



537 (538) Clamping Pieces

Slide Type	Complete Part No.	Service Key		Replacement Components		
				1 Cap Screw	2 Clamping Nut	3 Disk Spring
Serrated Tool Bodies	137026	115578	s6 / B	215101	140118	337105
Basic and Eco Slides	137027			215102	215105	337105
Flex Slides	137019			415900	215105	337105

NOTE: Clamping pieces sold separately.

537 (538) Counterweights

Metric (mm)

Boring Range	Part No.
100.00 - 3255.00	537055

Imperial (in)

Boring Range	Part No.
3.937 - 128.15	538055



NOTE: Clamping pieces sold separately.

3E^{TECH} Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3E^{TECH} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

key on B10-H: 2

Inserts sold separately.

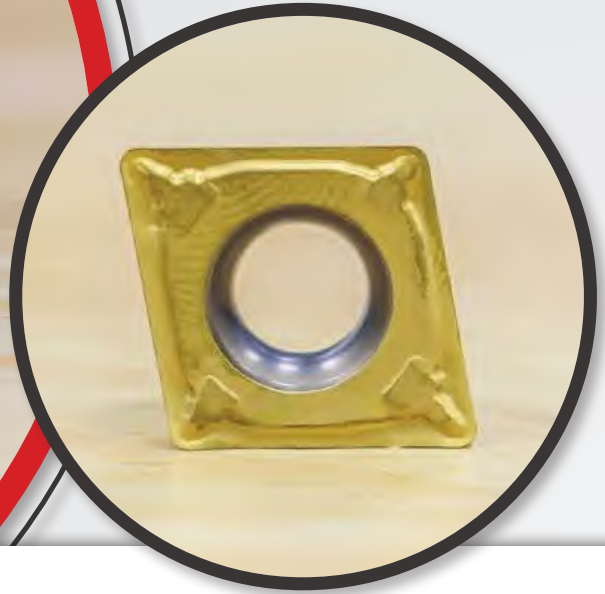
= Metric (mm)
 = Imperial (in)

SECTION

B10-I

Inserts

Replaceable Boring Inserts



Cutting-Edge Technology

Wohlhaupter has the cutting-edge technology to achieve all of your boring applications. With precision in mind, our inserts are available in multiple insert geometries, coatings, and nose radii. Wohlhaupter inserts are offered in uncoated and coated carbide, cermet, and CBN and PCD materials.

Try our easy-to-use boring insert selector available online or to download from the app store to find the perfect inserts for your boring applications.

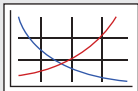
www.alliedmachine.com/bis

Applicable Industries

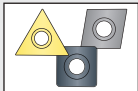
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Recommended Cutting Data
Speed and feed recommendations for optimum and safe boring.



Boring Insert Geometries
Individual insert geometry overviews for easier selection based on application.



Boring Insert Grades
Insert grade overviews combined with ISO application recommendations for simplified selection.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Wohlhaupter Insert Product Nomenclature

Wohlhaupter Inserts

F211	01	G	L	650	W	T	WHC05
Insert Form	Corner Radius	Tolerance	Machining Direction	Geometry	Extra Options		Grade
F211 = 211 Trigon	005	G	N = Neutral	See the full list of geometries on pg. 39 - 42	W = Wiper Geo. D = Double Tipped T = Triple Tipped		See the full list of insert grades on pg. 43 - 46
F020 = 20	01	M	L = Left				
F161 = 161 Triangle	02	F	R = Right				
F163 = 163	03	C	X = Nonstandard				
F101 = 101	04						
F103 = 103 80° Rhomboid	06						
F104 = 104	08						
F105 = 105	12						
F004 = 04 Tangential	16						
F005 = 05	20						
F112 = 112	24						
F113 = 113 Square							
F114 = 114							
F037 = 37 55° Rhomboid							
F039 = 39							
F089 = 89							
F090 = 90 Radial Grooving							
F091 = 91							
F304 = 304 Axial Grooving							
F325 = 325 248 (249) Bars							

DIN ISO 1832

C	C	M	T	09	T3	02
Insert Form	Clearance Angle	Tolerance	Mounting Style	Insert Size	Insert Thickness	Corner Radius
C = Rhomboid 80°	B = 5°	G	T	See table on next page for code.	01	005
D = Rhomboid 55°	C = 7°	M	H		02	01
L = Rectangular	N = 0°	F	W		T2	02
R = Round	P = 11°	C	X		03	03
S = Square	O = 10°		A		T3	04
T = Triangular					04	06
V = Rhomboid 35°					05	08
W = Trigon					06	12
					07	16
						20
						24

ISO Insert Nomenclature

Reference Keys

Mounting Style

Code	Description	Options
T	One-sided countersunk	Cylindrical fixing hole
		Countersunk 40° - 60°
H	One-sided chipbreaker	Cylindrical fixing hole
		Countersunk 70° - 90°
W	Without chipbreaker	Cylindrical fixing hole
		Countersunk 40° - 60°
X	Special design	Special insert design
A	Without chipbreaker	Cylindrical fixing hole
		Without countersunk

Insert Thickness

Code	Metric (mm)	Imperial (in)
01	1.59	0.063
02	2.38	0.094
T2	2.78	0.109
03	3.18	0.125
T3	3.97	0.156
04	4.76	0.187
05	5.56	0.219
06	6.35	0.250
07	7.94	0.313

Corner Radius

Radius Code	Metric (mm)	Imperial (in)
005	0.05	0.002
01	0.10	0.004
02	0.20	0.008
03	0.30	0.012
04	0.40	0.016
06	0.60	0.024
08	0.80	0.031
12	1.20	0.047
16	1.60	0.063
20	2.00	0.079
24	2.40	0.094

Insert Size / Cutting Edge

Metric (mm)	Imperial (in)	C	D	R	S	T	V	W
3.97	0.156							02
5.00	0.197					F20		
6.00	0.236					F21		
6.35	0.250	06				11	11	
7.94	0.313				07			
9.52	0.375	09	11		09	16	16	
10.00	0.394		10					
12.00	0.472	12	12					
12.70	0.500	16	15		12			
15.87	0.625			15	15			
16.00	0.630			16				
19.05	0.750		19		19			
20.00	0.787			20				
25.00	0.984			25				
25.40	1.000				25			

Tolerance Group

Code	Attribute	Metric (mm)	Imperial (in)
G	Length of edge	± 0.025	± 0.001
	IC	± 0.025	± 0.001
M	Thickness	± 0.13	± 0.005
	Length of edge	± 0.08 - 0.15*	± 0.003 - 0.006*
F	IC	± 0.05 - 0.10*	± 0.002 - 0.004*
	Thickness	± 0.13	± 0.005
C	Length of edge	± 0.013	± 0.001
	IC	± 0.005	± 0.0002
C	Thickness	± 0.025	± 0.001
	Length of edge	± 0.13	± 0.005
C	IC	± 0.025	± 0.001
	Thickness	± 0.025	± 0.001

*Varies upon insert size.

Wohlschlag Insert Grades

Code	Wohlschlag Insert Grades
WHW	Uncoated carbide (HW)
WHC	Coated carbide (HC)
WHT	Uncoated cermet (HT)
WTC	Coated cermet (HC)
WCN	Ceramic cutting material (CN)
WBN	Cubic boron nitride CBN (BN)
WBC	Coated CBN (BC)
PCD	Polycrystalline diamond PCD (DP)

Application Types

Symbol	Insert Type
▼	Roughing - Main Application
▽	Roughing - Extended Application
▼▼	Universal - Main Application
▽▽	Universal - Extended Application
▼▼▼	Finishing - Main Application
▽▽▽	Finishing - Extended Application

Machining Conditions

Symbol	Machining Conditions
●	Good - Main Application
○	Good - Extended Application
●	Average - Main Application
○	Average - Extended Application
✚	Difficult - Main Application
✚	Difficult - Extended Application

 **WOHLHAUPTER** BORING | Inserts

Notes



Trigon Replaceable Inserts

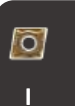
Recommended Insert Application

FINISH MACHINING | FORM 211

ISO Material		Machining Conditions	Insert			Cutting Speed*	
			Substrate	Geometry	Grade	m/min	SFM
P	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.		Carbide	121	WHC111	70 - 220	230 - 722
			Carbide	121	WHC19		
			Cermet	650	WHT12		
	Alloy Steel 4140, 5140, 8640, etc.		Carbide	121	WHC111	70 - 200	230 - 656
			Carbide	650	WHC136		
			Carbide	121	WHC19		
	High-Strength Alloy 4340, 4330V, 300M, etc.		Carbide	121	WHC111	70 - 180	230 - 591
			Carbide	650	WHC136		
			Carbide	121	WHC19		
M	Stainless Steel		Carbide	121	WHC111	60 - 140	197 - 459
			Carbide	121	WHC19		
K	SG / Nodular Cast Iron		Carbide	121	WHC111	100 - 250	328 - 820
			Carbide	650	WHC05		
	Grey / White Iron		Carbide	121	WHC111	100 - 250	328 - 820
			Carbide	650	WHC05		
			CBN	748	WBN450	400 - 1000	1312 - 3281
N	Aluminum Alloys		Carbide	650	WHW01	300 - 600	984 - 1969
			PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals		Carbide	650	WHW01	300 - 600	984 - 1969
			PCD	730	PKDD30	500 - 2000	1640 - 6562
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.		Carbide	121	WHC111	30 - 70	98 - 230
			Carbide	121	WHC19		
	Titanium Alloy		Carbide	121	WHC111	40 - 90	131 - 295
			Carbide	650	WHC05		
			Carbide	121	WHC19		
H	Hardened Steel		Carbide	121	WHC111	30 - 60	98 - 197
			CBN	748	WBN200	50 - 100	164 - 328

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003



Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI ^{TECH} Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module.

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 120 m/min, then the speed for a 10xD finish boring assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).	
5xD = 120 m/min	10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

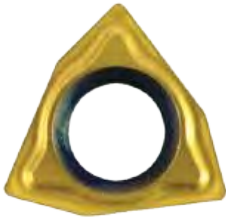
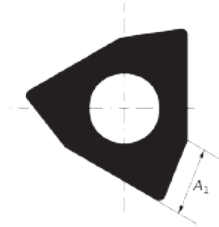
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Trigon Replaceable Inserts

Form 211



Insert Form	A ₁
211	2.2 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 121	WHC111	211	WBGX0201	0.10	0.004	F211 01GN121 WHC111	397675WHC111	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC111	211	WBGX0201	0.20	0.008	F211 02GN121 WHC111	397676WHC111	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC19	211	WBGX0201	0.10	0.004	F211 01GN121 WHC19	397675WHC19	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC19	211	WBGX0201	0.20	0.008	F211 02GN121 WHC19	397676WHC19	●	▼▼	▼▼	▼	▼▼▼	▼▼
 650	WHC05	211	WBGX0201	0.10	0.004	F211 01GL650 WHC05	097755WHC05	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC05	211	WBGX0201	0.20	0.008	F211 02GL650 WHC05	097454WHC05	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC136	211	WBGX0201	0.10	0.004	F211 01GL650 WHC136	097755WHC136	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC136	211	WBGX0201	0.20	0.008	F211 02GL650 WHC136	097454WHC136	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC18	211	WBGX0201	0.10	0.004	F211 01GL650 WHC18	097755WHC18	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHC18	211	WBGX0201	0.20	0.008	F211 02GL650 WHC18	097454WHC18	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHW01	211	WBGX0201	0.10	0.004	F211 01GL650 WHW01	097755WHW01	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHW01	211	WBGX0201	0.20	0.008	F211 02GL650 WHW01	097454WHW01	●	▼▼	▼▼	▼	▼▼▼	▼▼

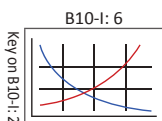
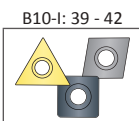
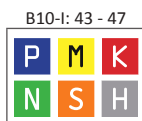
Cermet

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 650	WHT12	211	WBGX0201	0.10	0.004	F211 01GL650 WHT12	097755WHT12	●	▼▼	▼▼	▼	▼▼▼	▼▼
	WHT12	211	WBGX0201	0.20	0.008	F211 02GL650 WHT12	097454WHT12	●	▼▼	▼▼	▼	▼▼▼	▼▼



I

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
211	215377	M2 x 0.4 x 4	415507	115537	0.6 N·m	T6

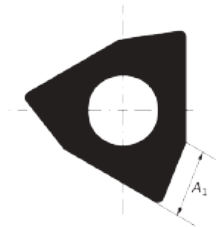


B10-I: 7

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Trigon Replaceable Inserts

Form 211



Insert Form	A ₁
211	6.9 mm

CBN - Cubic Boron Nitride

Insert			ISO	Radius		Description	Part No.	Application							
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H		
 748	WBN200	211	WBGX0201	0.10	0.004	F211 01GN748 WBN200	097486WBN200								
				0.20	0.008	F211 02GN748 WBN200	097552WBN200								
	WBN450	211	WBGX0201		0.10	0.004	F211 01GN748 WBN450	097486WBN450							
					0.20	0.008	F211 02GN748 WBN450	097552WBN450							

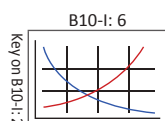
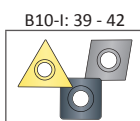
PCD - Polycrystalline Diamond

Insert			ISO Description	Radius		Description	Part No.	Application						
Geometry	Grade	Form		mm	in			P	M	K	N	S	H	
 730	PKDD30	211	WBGX0201	0.10	0.004	F211 01GN730 PKDD30	397763PKDD30							
				0.20	0.008	F211 02GN730 PKDD30	097557PKDD30							
		PKDD50	211	WBGX0201	0.20	0.008	F211 02GN730 PKDD50	097557PKDD50						
 735	PKDD30	211	WBGX0201	0.20	0.008	F211 02GN735 PKDD30	397237PKDD30							



I

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
211	215377	M2 x 0.4 x 4	415507	115537	0.6 N·m	T6



 **WOHLHAUPTER** BORING | Inserts

Notes



Triangle Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORM 20

ISO Material	Machining Conditions	Insert			Cutting Speed	
		Substrate	Geometry	Grade	m/min	SFM
P	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	 Carbide	121	WHC19	160 - 300	525 - 984
		 Cermet	650	WHT12		
		 Cermet	155	WTC15		
	Alloy Steel 4140, 5140, 8640, etc.	 Carbide	650	WHC136	150 - 220	492 - 722
		 Carbide	121	WHC19		
		 Cermet	155	WTC15		
	High-Strength Alloy 4340, 4330V, 300M, etc.	 Carbide	121	WHC111	100 - 180	328 - 591
		 Carbide	121	WHC19		
		 Cermet	155	WTC15		
M	Stainless Steel	 Carbide	121	WHC111	90 - 160	295 - 525
		 Carbide	121	WHC19		
K	SG / Nodular Cast Iron	 Carbide	121	WHC111	150 - 250	492 - 820
		 Carbide	650	WHC05		
	Grey / White Iron	 Carbide	121	WHC111	180 - 320	591 - 1050
		 Carbide	650	WHC05		
		 CBN	748	WBN450	400 - 1000	1312 - 3281
N	Aluminum Alloys	 Carbide	128	WHW16	250 - 800	820 - 2625
		 PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals	 Carbide	128	WHW16	200 - 600	656 - 1969
		 PCD	730	PKDD30	500 - 2000	1640 - 6562
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	 Carbide	121	WHC111	30 - 70	98 - 230
		 Carbide	121	WHC19		
	Titanium Alloy	 Carbide	121	WHC111	40 - 90	131 - 295
		 Carbide	650	WHC05		
		 Carbide	121	WHC19		
H	Hardened Steel	 Carbide	121	WHC111	40 - 80	131 - 262
		 CBN	741	WBN200	70 - 180	230 - 591
		 CBN	742T	WBC300		

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003
0.3	0.07 - 0.12	0.012	0.003 - 0.005
0.4	0.10 - 0.16	0.016	0.004 - 0.006

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI ^{TECH} Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module.

Recommended Speed Example

If the recommended speed for a **finish** boring assembly under 5xD is 120 m/min, then the speed for a **10xD finish boring** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min 10xD = 60 m/min

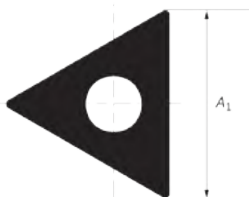
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

Form 20

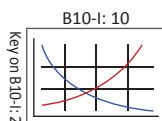
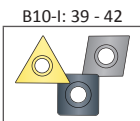


Insert Form	A_1
20	8.5 mm

Carbide

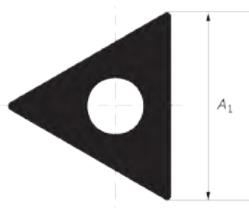
Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	P	M	K	N	S	H
 121	WHC111	20	TOGX0802	0.10	0.004	F020 01GN121 WHC111	397672WHC111							
				0.20	0.008	F020 02GN121 WHC111	397673WHC111							
				0.40	0.016	F020 04GN121 WHC111	397674WHC111							
	WHC19	20	TOGX0802	0.10	0.004	F020 01GN121 WHC19	397672WHC19							
				0.20	0.008	F020 02GN121 WHC19	397673WHC19							
				0.40	0.016	F020 04GN121 WHC19	397674WHC19							
 128	WHC05	20	TOGX0802	0.10	0.004	F020 01GN128 WHC05	297473WHC05							
				0.20	0.008	F020 02GN128 WHC05	297541WHC05							
				0.40	0.016	F020 04GN128 WHC05	297542WHC05							
	WHC18	20	TOGX0802	0.20	0.008	F020 02GN128 WHC18	297541WHC18							
				0.40	0.016	F020 04GN128 WHC18	297542WHC18							
				WHW16	20	TOGX0802	0.10							
	0.20	0.008	F020 02GN128 WHW16				297541WHW16							
	0.40	0.016	F020 04GN128 WHW16				297542WHW16							
	 650	WHC05	20	TOGX0802	0.10	0.004	F020 01GL650 WHC05	097153WHC05						
0.20					0.008	F020 02GL650 WHC05	097546WHC05							
0.30					0.012	F020 03GL650 WHC05	097154WHC05							
0.40					0.016	F020 04GL650 WHC05	097599WHC05							
WHC136		20	TOGX0802	0.10	0.004	F020 01GL650 WHC136	097153WHC136							
				0.20	0.008	F020 02GL650 WHC136	097546WHC136							
				0.30	0.012	F020 03GL650 WHC136	097154WHC136							
				0.40	0.016	F020 04GL650 WHC136	097599WHC136							
WHW01		20	TOGX0802	0.10	0.004	F020 01GL650 WHW01	097153WHW01							
				0.20	0.008	F020 02GL650 WHW01	097546WHW01							
				0.30	0.012	F020 03GL650 WHW01	097154WHW01							
				0.40	0.016	F020 04GL650 WHW01	097599WHW01							
				0.80	0.031	F020 08GL650 WHW01	397764WHW01							
 840	WHC05	20	TOGX0802	0.20	0.008	F020 02GR840 WHC05	097701WHC05							
 121W	WHC111	20	TOGX0802	0.20	0.008	F020 02GX121W WHC111	397916WHC111							
				0.40	0.016	F020 04GX121W WHC111	397917WHC111							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	115535	M2 x 0.4 x 5	415508	115591	0.9 N·m	T7



Triangle Replaceable Inserts

Form 20



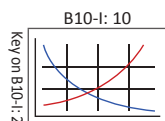
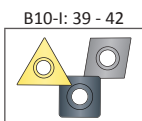
Insert Form	A ₁
20	8.5 mm

Cermet

Insert			ISO Description	Radius		Description	Part No.	Application						
Geometry	Grade	Form		mm	in			P	M	K	N	S	H	
 155	WTC15	20	TOMX0802	0.20	0.008	F020 02MN155 WTC15	397688WTC15							
				0.40	0.016	F020 04MN155 WTC15	397689WTC15							
 650	WHT12	20	TOGX0802	0.10	0.004	F020 01GL650 WHT12	097153WHT12							
				0.20	0.008	F020 02GL650 WHT12	097546WHT12							
				0.40	0.016	F020 04GL650 WHT12	097599WHT12							
	WTC121	20	TOGX0802	0.10	0.004	F020 01GL650 WTC121	097153WTC121							
				0.20	0.008	F020 02GL650 WTC121	097546WTC121							
				0.40	0.016	F020 04GL650 WTC121	097599WTC121							
 840	WHT12	20	TOGX0802	0.20	0.008	F020 02GR840 WHT12	097701WHT12							



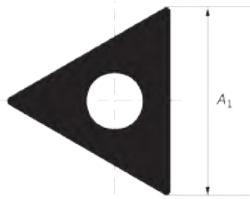
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	115535	M2 x 0.4 x 5	415508	115591	0.9 N·m	T7





Triangle Replaceable Inserts

Form 20



Insert Form	A ₁
20	8.5 mm

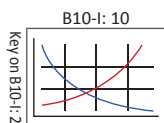
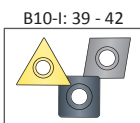
CBN - Cubic Boron Nitride

Insert			ISO Description	Radius		Description	Part No.	Application						
Geometry	Grade	Form		mm	in			P	M	K	N	S	H	
 741	WBN200	20	TOGX0802	0.20	0.008	F020 02GN741 WBN200	297260WBN200							
				0.40	0.016	F020 04GN741 WBN200	297262WBN200							
 745	WBN200	20	TOGX0802	0.10	0.004	F020 01GN745 WBN200	297259WBN200							
 748	WBN450	20	TOGX0802	0.20	0.008	F020 02GN748 WBN450	297780WBN450							
				0.40	0.016	F020 04GN748 WBN450	297782WBN450							
 768	WBN450	20	TOGX0802	0.20	0.008	F020 02GN768 WBN450	397146WBN450							
				0.40	0.016	F020 04GN768 WBN450	397192WBN450							
 742T	WBC300	20	TOGX0802	0.20	0.008	F020 02GN742T WBC300	397961WBC300							
				0.40	0.016	F020 04GN742T WBC300	397551WBC300							
	WBN448	20	TOGX0802	0.20	0.008	F020 02GN742T WBN448	397961WBN448							
				0.40	0.016	F020 04GN742T WBN448	397551WBN448							

PCD - Polycrystalline Diamond

Insert			ISO Description	Radius		Description	Part No.	Application						
Geometry	Grade	Form		mm	in			P	M	K	N	S	H	
 720	PKDD30	20	TOGX0802	0.20	0.008	F020 02GN720 PKDD30	297692PKDD30							
				0.40	0.016	F020 04GN720 PKDD30	297845PKDD30							
 730	PKDD30	20	TOGX0802	0.20	0.008	F020 02GN730 PKDD30	097487PKDD30							
				0.40	0.016	F020 04GN730 PKDD30	097686PKDD30							
	PKDD50	20	TOGX0802	0.80	0.031	F020 08GN730 PKDD30	097877PKDD30							
				0.20	0.008	F020 02GN730 PKDD50	097487PKDD50							
 735	PKDD30	20	TOGX0802	0.40	0.016	F020 04GN730 PKDD50	097686PKDD50							
				0.20	0.008	F020 02GN735 PKDD30	397133PKDD30							
 735	PKDD30	20	TOGX0802	0.40	0.016	F020 04GN735 PKDD30	397301PKDD30							
				0.20	0.008	F020 02GN735 PKDD30	397133PKDD30							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
20	115535	M2 x 0.4 x 5	415508	115591	0.9 N·m	T7



B10-I: 13

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Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

**80° Rhomboid Replaceable Inserts**

Recommended Insert Application

ROUGH MACHINING | FORMS 101, 103, 104 AND 105

ISO Material	Machining Conditions	Insert			Cutting Speed*	
		Substrate	Geometry	Grade	m/min	SFM
P	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.		Carbide	109	150 - 250	492 - 820
			Carbide	192		
			Carbide	199		
	Alloy Steel 4140, 5140, 8640, etc.		Carbide	109	150 - 200	492 - 656
			Carbide	192		
			Carbide	199		
	High-Strength Alloy 4340, 4330V, 300M, etc.		Carbide	199	100 - 160	328 - 525
			Carbide	158		
			Carbide	192		
M	Stainless Steel		Carbide	199	80 - 140	262 - 459
			Carbide	146		
			Carbide	192		
K	SG / Nodular Cast Iron		Carbide	146	150 - 230	492 - 755
			Carbide	192		
			Ceramic	711	200 - 400	656 - 1312
	Grey / White Iron		Carbide	192	160 - 280	525 - 919
			Carbide	146		
N	Aluminum Alloys		Carbide	129	250 - 800	820 - 2625
			Carbide	860		
	Nonferrous Metals		Carbide	129	200 - 600	656 - 1969
			Carbide	127		
			Carbide	860		
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.		Carbide	199	30 - 60	98 - 197
			Carbide	192		
	Titanium Alloy		Carbide	200	40 - 70	131 - 230
			Carbide	860		
			Carbide	199		
H	Hardened Steel		Carbide	158	40 - 60	131 - 197

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.10 - 0.35	0.004	0.004 - 0.014
0.2		0.008	
0.4		0.016	

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI ^{TECH} Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module.**Recommended Speed Example**

If the recommended speed for a **finish** boring assembly under 5xD is 120 m/min, then the speed for a **10xD finish boring** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min

10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

-Do not exceed the **allowable weight** for your machine tool.

-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12** or visit

www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

80° Rhomboid Replaceable Inserts

Recommended Insert Application

FINISH MACHINING | FORMS 101, AND 103

ISO Material	Machining Conditions	Insert			Cutting Speed*	
		Substrate	Geometry	Grade	m/min	SFM
P	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	 Carbide	109	WHC136	160 - 300	525 - 984
		 Cermet	112	WHT32		
		 Cermet	155	WTC15		
	Alloy Steel 4140, 5140, 8640, etc.	 Carbide	109	WHC136	150 - 220	492 - 722
		 Cermet	112	WHT32		
	High-Strength Alloy 4340, 4330V, 300M, etc.	 Carbide	199	WHC114	100 - 180	328 - 591
		 Carbide	145	WHC111		
		 Carbide	192	WHC19		
M	Stainless Steel	 Carbide	199	WHC114	80 - 160	262 - 525
		 Carbide	145	WHC111		
		 Carbide	192	WHC19		
K	SG / Nodular Cast Iron	 Carbide	146	WHC81	150 - 250	492 - 820
		 Carbide	192	WHC164		
	Grey / White Iron	 Carbide	146	WHC81	180 - 320	591 - 1050
		 Carbide	192	WHC164		
		 CBN	748	WBN450	400 - 1000	1312 - 3281
N	Aluminum Alloys	 Carbide	129	WHW16	250 - 800	820 - 2625
		 PCD	735	PKDD30	500 - 2000	1640 - 6562
	Nonferrous Metals	 Carbide	127	WHW16	250 - 600	820 - 1969
		 PCD	730	PKDD30	500 - 2000	1640 - 6562
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	 Carbide	145	WHC111	30 - 70	98 - 230
		 Carbide	199	WHC114		
	Titanium Alloy	 Carbide	200	WHC111	40 - 90	131 - 295
		 Carbide	199	WHC114		
H	Hardened Steel	 Carbide	158	WHC111	40 - 80	131 - 262
		 CBN	742	WBN300	60 - 180	197 - 591
		 CBN	742D	WBN300		
		 CBN	741	WBN200		

*Not to exceed max recommended RPM for boring head found in corresponding Wohlhaupter Operation Manual.

Metric Feed Rate		Imperial Feed Rate	
Nose Radius (mm)	mm/rev	Nose Radius (in)	IPR
0.1	0.02 - 0.05	0.004	0.001 - 0.002
0.2	0.04 - 0.08	0.008	0.002 - 0.003
0.4	0.10 - 0.16	0.016	0.004 - 0.006

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI ^{TECH} Length			
Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module.

Recommended Speed Example

If the recommended speed for a **finish** boring assembly under 5xD is 120 m/min, then the speed for a **10xD finish boring** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min

10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

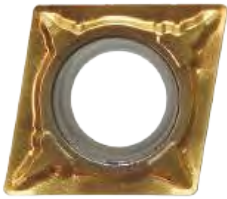
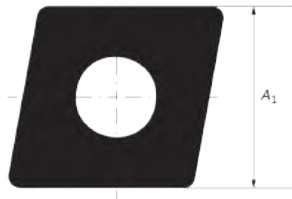
⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

**80° Rhomboid Replaceable Inserts**

Forms 101, 103, 104 and 105

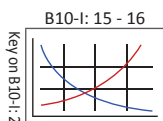
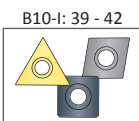


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

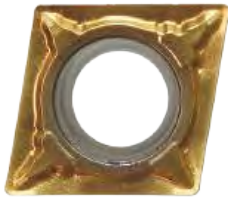
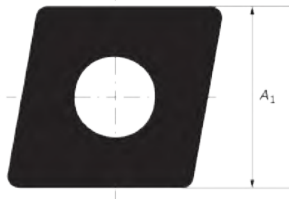
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
	WHC98	101	CCMT0602	0.20	0.008	F101 02MN108 WHC98	297833WHC98						
				0.40	0.016	F101 04MN108 WHC98	297537WHC98						
		103	CCMT09T3	0.40	0.016	F103 04MN108 WHC98	297891WHC98						
				0.80	0.031	F103 08MN108 WHC98	397118WHC98						
		104	CCMT1204	0.40	0.016	F104 04MN108 WHC98	297725WHC98						
	WHC136	101	CCMT0602	0.20	0.008	F101 02MN109 WHC136	397352WHC136						
				0.40	0.016	F101 04MN109 WHC136	397765WHC136						
		103	CCMT09T3	0.40	0.016	F103 04MN109 WHC136	397354WHC136						
				0.80	0.031	F103 08MN109 WHC136	397355WHC136						
		104	CCMT1204	0.40	0.016	F104 04MN109 WHC136	397356WHC136						
	WHC136	105	CCMT1605	0.80	0.031	F105 08MN126 WHC136	297557WHC136						
				1.20	0.047	F105 12MN126 WHC136	297558WHC136						
	WHC18	101	CCGT0602	0.20	0.008	F101 02GN127 WHC18	097529WHC18						
				0.40	0.016	F101 04GN127 WHC18	097445WHC18						
		103	CCGT09T3	0.20	0.008	F103 02GN127 WHC18	297550WHC18						
				0.40	0.016	F103 04GN127 WHC18	097497WHC18						
	WHW16	104	CCGT1204	0.40	0.016	F104 04GN127 WHC18	097496WHC18						
		101	CCGT0602	0.20	0.008	F101 02GN127 WHW16	097529WHW16						
				0.40	0.016	F101 04GN127 WHW16	097445WHW16						
		103	CCGT09T3	0.20	0.008	F103 02GN127 WHW16	297550WHW16						
				0.40	0.016	F103 04GN127 WHW16	097497WHW16						
		104	CCGT1204	0.40	0.016	F104 04GN127 WHW16	097496WHW16						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<Ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

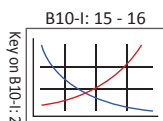
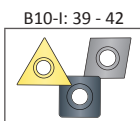
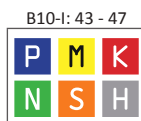


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 129	WHC05	101	CCGT0602	0.05	0.002	F101 005GN129 WHC05	397738WHC05						
				0.10	0.004	F101 01GN129 WHC05	397737WHC05						
				0.20	0.008	F101 02GN129 WHC05	297545WHC05						
				0.40	0.016	F101 04GN129 WHC05	297546WHC05						
	WHC18	101	CCGT0602	0.20	0.008	F103 02GN129 WHC05	297547WHC05						
				0.40	0.016	F103 04GN129 WHC05	297548WHC05						
		103	CCGT09T3	0.20	0.008	F101 02GN129 WHC18	297545WHC18						
				0.40	0.016	F101 04GN129 WHC18	297546WHC18						
	WHW16	101	CCGT0602	0.20	0.008	F103 02GN129 WHC18	297547WHC18						
				0.40	0.016	F103 04GN129 WHC18	297548WHC18						
		103	CCGT09T3	0.20	0.008	F101 005GN129 WHW16	397738WHW16						
				0.40	0.016	F101 01GN129 WHW16	397737WHW16						
 145	WHC111	101	CCGT0602	0.20	0.008	F101 02GN129 WHW16	297545WHW16						
				0.40	0.016	F101 04GN129 WHW16	297546WHW16						
		103	CCGT09T3	0.20	0.008	F103 02GN129 WHW16	297547WHW16						
				0.40	0.016	F103 04GN129 WHW16	297548WHW16						
	WHC81	101	CCGT0602	0.40	0.016	F101 04GN145 WHC111	297980WHC111						
				0.80	0.031	F101 08GN145 WHC111	397742WHC111						
		103	CCGT09T3	0.40	0.016	F103 04GN145 WHC111	297994WHC111						
				0.80	0.031	F103 08GN145 WHC111	297995WHC111						
	WHC88	101	CCMT0602	0.40	0.016	F101 04MN146 WHC81	397953WHC81						
				0.80	0.031	F103 04MN146 WHC81	397142WHC81						
		103	CCMT09T3	0.40	0.016	F103 08MN146 WHC81	397946WHC81						
				0.80	0.031	F104 08MN146 WHC81	397143WHC81						
 146	WHC88	101	CCMT0602	0.40	0.016	F101 04MN146 WHC88	397953WHC88						
				0.80	0.031	F103 04MN146 WHC88	397142WHC88						
		103	CCMT09T3	0.40	0.016	F103 08MN146 WHC88	397946WHC88						
				0.80	0.031	F104 08MN146 WHC88	397143WHC88						
	WHC88	103	CCMT09T3	0.40	0.016	F101 04MN146 WHC88	397953WHC88						
				0.80	0.031	F103 04MN146 WHC88	397142WHC88						
		104	CCMT1204	0.40	0.016	F104 04MN146 WHC88	397469WHC88						
				0.80	0.031	F104 08MN146 WHC88	397143WHC88						
	WHC88	104	CCMT1204	0.80	0.031	F104 08MN146 WHC88	397143WHC88						
				1.20	0.047	F104 12MN146 WHC88	397939WHC88						
		105	CCMT1204	0.80	0.031	F104 08MN146 WHC88	397143WHC88						
				1.20	0.047	F104 12MN146 WHC88	397939WHC88						

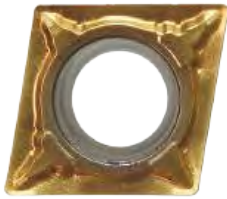
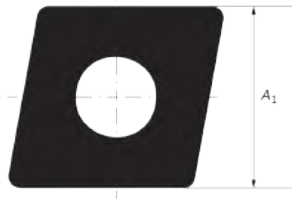
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20





80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

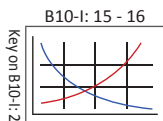
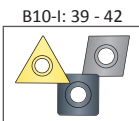


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

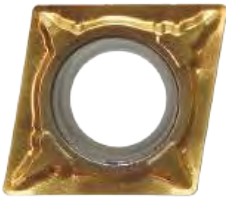
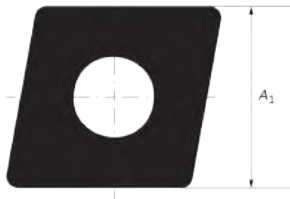
Insert			ISO	Radius				Application													
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H							
 158	WHC05	105	CCMT1605	0.80	0.031	F105 08MN158 WHC05	297559WHC05	●	▽	▽	▽		▽								
	WHC111	101	CCMT0602	0.20	0.008	F101 02MN158 WHC111	297248WHC111	●	▽	▽	▽	▽	▽	▽							
				0.40	0.016	F101 04MN158 WHC111	297377WHC111														
				0.40	0.016	F103 04MN158 WHC111	297239WHC111														
				0.80	0.031	F103 08MN158 WHC111	297240WHC111														
				0.40	0.016	F104 04MN158 WHC111	297242WHC111														
	WHC79	101	CCMT0602	0.80	0.031	F104 08MN158 WHC111	297241WHC111	●	▽	▽	▽	▽	▽	▽							
				0.20	0.008	F101 02MN158 WHC79	297248WHC79														
				0.40	0.016	F101 04MN158 WHC79	297377WHC79														
				0.40	0.016	F103 04MN158 WHC79	297239WHC79														
				0.80	0.031	F103 08MN158 WHC79	297240WHC79														
	WHC79	103	CCMT09T3	0.40	0.016	F104 04MN158 WHC79	297242WHC79	●	▽	▽	▽	▽	▽	▽							
				0.80	0.031	F104 08MN158 WHC79	297241WHC79														
				0.80	0.031	F105 08MN158 WHC79	297559WHC79														
				1.20	0.047	F105 12MN158 WHC79	297560WHC79														
 174W	WHC19	101	CCMT0602	0.40	0.016	F101 04MN174W WHC19	397766WHC19	⚙	▽	▽	▽	▽	▽	▽							
	103	CCMT09T3	0.40	0.016	F103 04MN174W WHC19	397767WHC19															
	WHC164	101	CCMT0602	0.40	0.016	F101 04MN174W WHC164	397766WHC164														
				0.40	0.016	F103 04MN174W WHC164	397767WHC164														
				0.80	0.031	F103 08MN174W WHC164	397768WHC164														
 192	WHC19	101	CCMT0602	0.20	0.008	F101 02MN192 WHC19	297531WHC19	⚙	▽	▽	▽	▽	▽	▽							
				0.40	0.016	F101 04MN192 WHC19	297658WHC19														
				0.80	0.031	F101 08MN192 WHC19	297588WHC19														
				0.20	0.008	F103 02MN192 WHC19	297958WHC19														
				0.40	0.016	F103 04MN192 WHC19	297653WHC19														
	WHC19	103	CCMT09T3	0.80	0.031	F103 08MN192 WHC19	397614WHC19	⚙	▽	▽	▽	▽	▽	▽							
				0.40	0.016	F104 04MN192 WHC19	397666WHC19														
				0.80	0.031	F104 08MN192 WHC19	297878WHC19														
				0.20	0.008	F101 02MN192 WHC164	297531WHC164														
				0.40	0.016	F101 04MN192 WHC164	297658WHC164														
	WHC164	101	CCMT0602	0.80	0.031	F101 08MN192 WHC164	297588WHC164	●	▽	▽	▽	▽	▽	▽							
				0.40	0.016	F103 04MN192 WHC164	297653WHC164														
0.80				0.031	F103 08MN192 WHC164	397614WHC164															
0.40				0.016	F104 04MN192 WHC164	397666WHC164															
0.80				0.031	F104 08MN192 WHC164	297878WHC164															
WHC164	103	CCMT09T3	1.20	0.047	F104 12MN192 WHC164	397632WHC164	●	▽	▽	▽	▽	▽	▽								

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

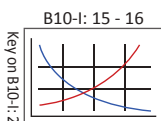
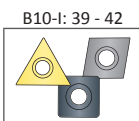
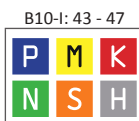


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

Carbide

Insert			ISO	Radius				Application														
Geometry	Grade	Form	Description	mm	in	Description	Part No.		P	M	K	N	S	H								
 199	WHC114	101	CCMT0602	0.20	0.008	F101 02MN199 WHC114	397164WHC114															
				0.40	0.016	F101 04MN199 WHC114	397165WHC114															
		103	CCMT09T3	0.20	0.008	F103 02MN199 WHC114	397702WHC114															
				0.40	0.016	F103 04MN199 WHC114	397166WHC114															
		104	CCMT1204	0.80	0.031	F103 08MN199 WHC114	397167WHC114															
				0.40	0.016	F104 04MN199 WHC114	397191WHC114															
 200	WHC111	101	CCGT0602	0.20	0.008	F101 02GN200 WHC111	397585WHC111															
				0.40	0.016	F101 04GN200 WHC111	397586WHC111															
		103	CCGT09T3	0.20	0.008	F103 02GN200 WHC111	397587WHC111															
				0.40	0.016	F103 04GN200 WHC111	397588WHC111															
		104	CCGT1204	0.40	0.016	F104 04GN200 WHC111	397589WHC111															
				0.80	0.031	F104 08MN199 WHC114	397168WHC114															
 711	WHC77	101	CCMW0602	0.40	0.016	F101 04MN711 WHC77	097637WHC77															
				0.80	0.031	F103 08MN711 WHC77	297910WHC77															
		103	CCMW09T3	0.80	0.031	F103 08MN711 WHC77	297910WHC77															
				0.40	0.016	F104 04MN711 WHC77	097692WHC77															
		104	CCMW1204	0.40	0.016	F104 04MN711 WHC77	097692WHC77															
				0.80	0.031	F104 08MN711 WHC77	297911WHC77															
 860	WHC05	101	CCGT0602	0.10	0.004	F101 01GL860 WHC05	097324WHC05															
				0.20	0.008	F101 02GL860 WHC05	097241WHC05															
				0.40	0.016	F101 04GL860 WHC05	097242WHC05															
		103	CCGT09T3	0.20	0.008	F103 02GL860 WHC05	097245WHC05															
				0.40	0.016	F103 04GL860 WHC05	097244WHC05															
				0.80	0.031	F104 08GL860 WHC05	097247WHC05															
		105	CCMT1605	0.80	0.031	F105 08ML860 WHC05	097249WHC05															
		WHC136	101	CCGT0602	0.10	0.004	F101 01GL860 WHC136								097324WHC136							
					0.20	0.008	F101 02GL860 WHC136								097241WHC136							
	0.40				0.016	F101 04GL860 WHC136	097242WHC136															
	103		CCGT09T3	0.20	0.008	F103 02GL860 WHC136	097245WHC136															
				0.40	0.016	F103 04GL860 WHC136	097244WHC136															
				0.80	0.031	F104 08GL860 WHC136	097247WHC136															
	104		CCGT1204	0.40	0.016	F104 04GL860 WHC136	097738WHC136															
	105		CCMT1605	0.80	0.031	F105 08ML860 WHC136	097249WHC136															
	WHW01		101	CCGT0602	0.10	0.004	F101 01GL860 WHW01	097324WHW01														
		0.20			0.008	F101 02GL860 WHW01	097241WHW01															
		0.40			0.016	F101 04GL860 WHW01	097242WHW01															
		103	CCGT09T3	0.20	0.008	F103 02GL860 WHW01	097245WHW01															
				0.40	0.016	F103 04GL860 WHW01	097244WHW01															
				0.80	0.031	F104 08GL860 WHW01	097247WHW01															
		104	CCGT1204	0.40	0.016	F104 04GL860 WHW01	097738WHW01															
		105	CCMT1605	0.80	0.031	F105 08ML860 WHW01	097249WHW01															

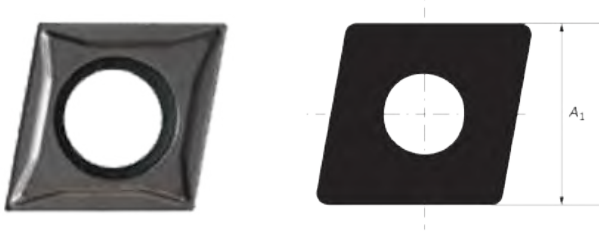
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20





80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105



Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

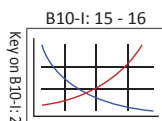
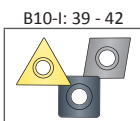
Cermet

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 112	WHT32	101	CCGT0602	0.20	0.008	F101 02GN112 WHT32	297485WHT32						
			CCMT0602	0.40	0.016	F101 04MN112 WHT32	297434WHT32						
		103	CCGT09T3	0.20	0.008	F103 02GN112 WHT32	297534WHT32						
			CCMT09T3	0.40	0.016	F103 04MN112 WHT32	297387WHT32						
 122	WHT10	101	CCMT0602	0.20	0.008	F101 02MN122 WHT10	097899WHT10						
			CCMT0602	0.40	0.016	F101 04MN122 WHT10	097926WHT10						
		103	CCMT09T3	0.20	0.008	F103 02MN122 WHT10	097862WHT10						
			CCMT09T3	0.40	0.016	F103 04MN122 WHT10	097957WHT10						
 155	WTC15	101	CCMT0602	0.20	0.008	F101 02MN155 WTC15	397662WTC15						
			CCMT0602	0.40	0.016	F101 04MN155 WTC15	397739WTC15						
		103	CCMT09T3	0.40	0.016	F103 04MN155 WTC15	397740WTC15						
			CCMT09T3	0.40	0.016	F103 04MN155 WTC15	397740WTC15						
 860	WTC121	101	CCGT0602	0.10	0.004	F101 01GL860 WTC121	097324WTC121						
				0.20	0.008	F101 02GL860 WTC121	097241WTC121						
		103	CCGT0602	0.10	0.004	F103 01GL860 WTC121	097324WTC121						
				0.20	0.008	F103 02GL860 WTC121	097241WTC121						

Ceramic

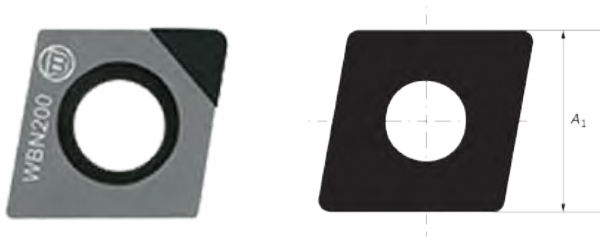
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 711	WCN40	103	CCGW09T3	0.40	0.016	F103 04GN711 WCN40	297561WCN40						
				0.80	0.031	F103 08GN711 WCN40	297192WCN40						
		104	CCGW1204	0.80	0.031	F104 08GN711 WCN40	297249WCN40						
				1.20	0.047	F104 12GN711 WCN40	297234WCN40						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20



80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

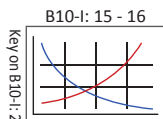
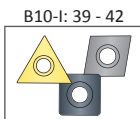


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

CBN - Cubic Boron Nitride

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	P	M	K	N	S	H
 741	WBN200	101	CCGW0602	0.20	0.008	F101 02GN741 WBN200	297290WBN200							
		103	CCGW09T3	0.40	0.016	F103 04GN741 WBN200	297303WBN200							
 742	WBN300	101	CCGW0602	0.20	0.008	F101 02GN742 WBN300	297293WBN300							
		103	CCGW09T3	0.40	0.016	F103 04GN742 WBN300	297306WBN300							
 747	WBN150	104	CCGW1204	0.40	0.016	F104 04GN747 WBN150	397260WBN150							
	WBN450	104	CCGW1204	0.40	0.016	F104 04GN747 WBN450	397260WBN450							
 748	WBN450	101	CCGW0602	0.20	0.008	F101 02GN748 WBN450	297787WBN450							
		103	CCGW09T3	0.40	0.008	F103 02GN748 WBN450	297790WBN450							
 749	WBN150	104	CCGW1204	0.80	0.031	F104 08GN749 WBN150	397261WBN150							
	WBN450	104	CCGW1204	0.80	0.031	F104 08GN749 WBN450	397261WBN450							
 768	WBN450	101	CCGT0602	0.20	0.008	F101 02GN768 WBN450	297486WBN450							
		103	CCGT09T3	0.40	0.016	F101 04GN768 WBN450	297659WBN450							
 742D	WBC300	101	CCGW0602	0.20	0.008	F101 02GN742D WBC300	397949WBC300							
				0.40	0.016	F101 04GN742D WBC300	397999WBC300							
		103	CCGW0902	0.40	0.016	F103 04GN742D WBC300	397931WBC300							
	WBN448	101	CCGW0602	0.20	0.008	F101 02GN742D WBN448	397949WBN448							
				0.40	0.016	F101 04GN742D WBN448	397999WBN448							
		103	CCGW0902	0.40	0.016	F103 04GN742D WBN448	397931WBN448							
				0.80	0.031	F103 08GN742D WBN448	397958WBN448							

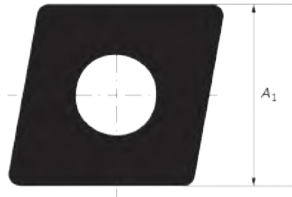
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
103	115672 (<ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20





80° Rhomboid Replaceable Inserts

Forms 101, 103, 104 and 105

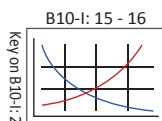
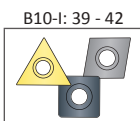
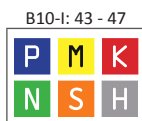


Insert Form	A ₁
101	6.3 mm
103	9.5 mm
104	12.7 mm
105	15.8 mm

PCD - Polycrystalline Diamond

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form		Description	mm			in	P	M	K	N	S	H
 720	PKDD30	101	CCGT0602	0.20	0.008	F101 02GN720 PKDD30	297501PKDD30							
				0.40	0.016	F101 04GN720 PKDD30	297502PKDD30							
		103	CCGT09T3	0.20	0.008	F103 02GN720 PKDD30	297578PKDD30							
				0.40	0.016	F103 04GN720 PKDD30	297483PKDD30							
 730	PKDD30	101	CCGW0602	0.20	0.008	F101 02GN730 PKDD30	097462PKDD30							
				0.40	0.016	F101 04GN730 PKDD30	297164PKDD30							
		103	CCGW09T3	0.80	0.031	F101 08GN730 PKDD30	297165PKDD30							
				0.20	0.008	F103 02GN730 PKDD30	397251PKDD30							
	PKDD50	103	CCGW09T3	0.40	0.016	F103 04GN730 PKDD30	297533PKDD30							
				0.40	0.016	F104 04GN730 PKDD30	397257PKDD30							
		104	CCGW1204	0.80	0.031	F104 08GN730 PKDD30	297871PKDD30							
				0.20	0.008	F101 02GN730 PKDD50	097462PKDD50							
 735	PKDD30	101	CCGT0602	0.40	0.016	F101 04GN730 PKDD50	297164PKDD50							
				0.20	0.008	F103 02GN730 PKDD50	397251PKDD50							
		103	CCGT09T3	0.40	0.016	F103 04GN730 PKDD50	297533PKDD50							
				0.40	0.016	F104 04GN730 PKDD50	397257PKDD50							
	PKDD50	101	CCGW0602	0.80	0.031	F104 08GN730 PKDD50	297871PKDD50							
				0.20	0.008	F101 02GN735 PKDD30	297872PKDD30							
		103	CCGT09T3	0.40	0.016	F101 04GN735 PKDD30	397244PKDD30							
				0.20	0.008	F103 02GN735 PKDD30	397252PKDD30							

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
101	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N-m	T8
103	115672 (<Ø37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N-m	T15
	115673 (>Ø36 mm)	M3.5 x 0.6 x 9				
104	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N-m	T20
105	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N-m	T20



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The grid covers the entire area of the page, leaving no margins or other markings.



Tangential Replaceable Inserts

Recommended Insert Application

ROUGH MACHINING | FORMS 04 AND 05

ISO Material		Metric Cutting Recommendations			Imperial Cutting Recommendations		
		m/min	mm/rev		SFM	IPR	
		F04, F05	F04	F05	F04, F05	F04	F05
P	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
	Alloy Steel 4140, 5140, 8640, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
	High-Strength Alloy 4340, 4330V, 300M, etc.	120 - 250	0.10 - 0.25	0.10 - 0.35	394 - 820	0.004 - 0.010	0.004 - 0.014
M	Stainless Steel	80 - 160	0.10 - 0.20	0.10 - 0.30	262 - 525	0.004 - 0.008	0.004 - 0.012
	SG / Nodular Cast Iron	140 - 250	0.10 - 0.25	0.10 - 0.35	459 - 820	0.004 - 0.010	0.004 - 0.014
K	Grey / White Iron	140 - 250	0.10 - 0.25	0.10 - 0.35	459 - 820	0.004 - 0.010	0.004 - 0.014
	Aluminum Alloys	300 - 600	0.10 - 0.25	0.10 - 0.40	984 - 1969	0.004 - 0.010	0.004 - 0.016
N	Nonferrous Metals	300 - 600	0.10 - 0.25	0.10 - 0.40	984 - 1969	0.004 - 0.010	0.004 - 0.016



I

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool NOVI^{TECH} Length

Boring Type	8xD	9xD	10xD
Roughing	0.80	0.60	0.40
Finishing	0.90	0.70	0.50

*Not to exceed recommended RPM printed on NOVI^{TECH} module.

Recommended Speed Example

If the recommended speed for a **finish** boring assembly under 5xD is 120 m/min, then the speed for a **10xD finish boring** assembly in the same application would be 60 m/min (120 m/min x 0.50 = 60 m/min).

5xD = 120 m/min

10xD = 60 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter.

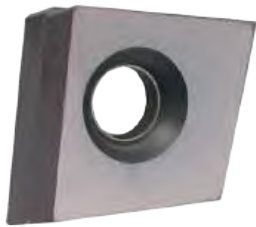
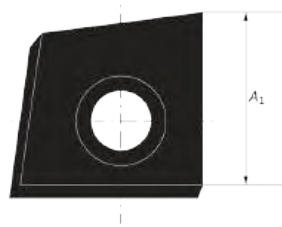
⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B10-M: 9 - 12 or visit**
www.alliedmachine.com/WohlhaupterBoringGuidelines.

NOTE: Factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

Tangential Replaceable Inserts

Forms 04 and 05



Insert Form	A ₁
04	10.5 mm
05	14.5 mm

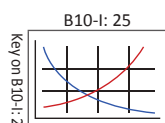
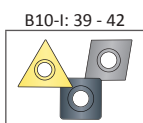
Carbide

Insert			ISO Description	Radius		Description	Part No.		Application					
Geometry	Grade	Form		mm	in				P	M	K	N	S	H
 811	WHC168	05	—	0.80	0.031	F005 08ML811 WHC168	397844WHC168							
 880	WHC168	05	—	0.40 0.80	0.016 0.031	F005 04ML880 WHC168 F005 08ML880 WHC168	397593WHC168 397594WHC168							
	WHC170	05	—	0.80	0.031	F005 08ML880 WHC170	397594WHC170							
	WHC198	04	—	0.40	0.016	F004 04ML880 WHC198	397595WHC198							
		05	—	0.40	0.016	F005 04ML880 WHC198	397593WHC198							
				0.80	0.031	F005 08ML880 WHC198	397594WHC198							



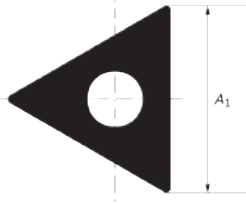
I

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
04	415977	M4 x 0.7 x 7.9	415510	115664	3.0 N·m	T15
05	415949	M4 x 0.7 x 11	415543	215150	5.0 N·m	T20





Forms 161 and 163



Insert Form	A ₁
161	11.0 mm
163	16.5 mm

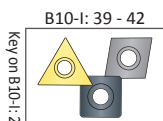
Carbide

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H	
 129	WHC05	161	TCGT1102	0.20	0.008	F161 02GN129 WHC05	397769WHC05	●	▼	▼	▼		▼	
		163	TCGT16T3	0.40	0.016	F161 04GN129 WHC05	397770WHC05							
	WHW16	161	TCGT1102	0.20	0.008	F161 02GN129 WHW16	397769WHW16	●				▼	▼	▼
		163	TCGT16T3	0.40	0.016	F161 04GN129 WHW16	397770WHW16					▼	▼	▼
					0.40	0.016	F163 04GN129 WHW16	397771WHW16						
 145	WHC111	161	TCGT1102	0.40	0.016	F161 04GN145 WHC111	297993WHC111	●	▼	▼	▼	▼		▼
 146	WHC88	161	TCMT1102	0.40	0.016	F161 04MN146 WHC88	397977WHC88	⚙	▼	▼	▼		▼	
				0.80	0.031	F161 08MN146 WHC88	397026WHC88							
		163	TCMT16T3	0.40	0.016	F163 04MN146 WHC88	397990WHC88							
				0.80	0.031	F163 08MN146 WHC88	397974WHC88							
 158	WHC79	163	TCMT16T3	0.40	0.016	F163 04MN158 WHC79	297604WHC79	●	▼	▼	▼	▼		
 192	WHC164	161	TCMT1102	0.40	0.016	F161 04MN192 WHC164	397663WHC164	●	▼			▼		▼
		163	TCMT16T3	0.40	0.016	F163 04MN192 WHC164	397654WHC164					▼		
	WHC19	161	TCMT1102	0.40	0.016	F161 04MN192 WHC19	397663WHC19	⚙	▼	▼	▼	▼		▼
		163	TCMT16T3	0.40	0.016	F163 04MN192 WHC19	397654WHC19							
				0.80	0.031	F163 08MN192 WHC19	397772WHC19							

Cermet

Insert			ISO	Radius		Description	Part No.	Application						
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H	
 122	WHT10	161	TCMT1102	0.40	0.016	F161 04MN122 WHT10	097953WHT10	●						
 850	WHT12	161	TCGT11202	0.20	0.008	F161 02GL850 WHT12	097512WHT12	●						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
161	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
163	115673	M3.5 x 0.6 x 9	415510	115664	3.0 N·m	T15



B10-I: 39 - 42



B10-I: 43 - 47

Forms 112, 113 and 114



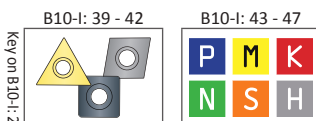
Insert Form	A ₁
112	9.5 mm
113	12.7 mm
114	15.8 mm

Carbide

Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 108	WHC98	112	SCMT09T3	0.40	0.016	F112 04MN108 WHC98	297535WHC98	●	▽	▽	▽		
		113	SCMT1204	0.80	0.031	F113 08MN108 WHC98	397110WHC98						
 127	WHW16	112	SCGT09T3	0.40	0.016	F112 04GN127 WHW16	097539WHW16				▽	▽	▽
		113	SCGT1204	0.40	0.016	F113 04GN127 WHW16	397590WHW16	●			▽	▽	▽
				0.80	0.031	F113 08GN127 WHW16	097566WHW16						
 145	WHC111	112	SCGT09T3	0.80	0.031	F112 08GN145 WHC111	297996WHC111	●	▽	▽			▽
		113	SCGT1204	0.80	0.031	F113 08GN145 WHC111	297997WHC111						▽
 146	WHC81	112	SCMT09T3	0.40	0.016	F112 04MN146 WHC81	397940WHC81	●	▽				▽
		113	SCMT1204	0.80	0.031	F113 08MN146 WHC81	397992WHC81						▽
	WHC88	112	SCMT09T3	0.40	0.016	F112 04MN146 WHC88	397940WHC88						
				0.80	0.031	F112 08MN146 WHC88	397992WHC88	✱	▽	▽			
				0.40	0.016	F113 04MN146 WHC88	397049WHC88						
		113	SCMT1204	0.80	0.031	F113 08MN146 WHC88	397969WHC88						
 158	WHC30	114	SCMT1505	1.20	0.047	F114 12MN158 WHC30	097252WHC30	✱	▽	▽	▽		
	WHC79	113	SCMT1204	0.80	0.031	F113 08MN158 WHC79	297497WHC79	●	▽	▽	▽		
 192	WHC164	112	SCMT09T3	0.40	0.016	F112 04MN192 WHC164	397741WHC164	●	▽				▽
		113	SCMT1204	0.80	0.031	F113 08MN192 WHC164	397640WHC164						
	WHC19	112	SCMT09T3	0.40	0.016	F112 04MN192 WHC19	397741WHC19						
				0.80	0.031	F112 08MN192 WHC19	397640WHC19	✱	▽	▽	▽		▽
				0.80	0.031	F113 08MN192 WHC19	397709WHC19						
		113	SCMT1204	1.20	0.047	F113 12MN192 WHC19	397710WHC19						
 199	WHC114	112	SCMT09T3	0.40	0.016	F112 04MN199 WHC114	397703WHC114	●	▽	▽	▽		
		113	SCMT1204	0.80	0.031	F113 08MN199 WHC114	397705WHC114						▽
 711	WHC77	113	SCMT1204	0.80	0.031	F113 08MN711 WHC77	297212WHC77	●	▽		▽		▽

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
112	115672 (<∅37 mm)	M3.5 x 0.6 x 7.5	415510	115664	3.0 N·m	T15
	115673 (>∅36 mm)	M3.5 x 0.6 x 9				
113	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20
114	215149	M4.5 x 0.75 x 11.5	415543	215150	5.0 N·m	T20

NOTE: For insert recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.





Forms 37 and 39



Insert Form	A ₁
37	7.7 mm
39	11.6 mm

Carbide

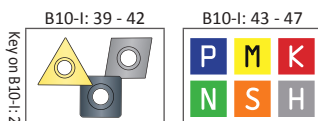
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 121	WHC19	39	DCMT11T3	0.20	0.008	F039 02MN121 WHC19	397787WHC19	✖	▼	▼	▼	▼	
				0.40	0.016	F039 04MN121 WHC19	397788WHC19						
 127	WHW16	37	DCGT0702	0.20	0.008	F037 02GN127 WHW16	397234WHW16				▼	▼	
		39	DCGT11T3	0.20	0.008	F039 02GN127 WHW16	397235WHW16	●			▼	▼	
 129	WHC05	39	DCGT11T3	0.20	0.008	F039 02GN129 WHC05	397816WHC05	●	▼	▼	▼	▼	
		37	DCGT0702	0.20	0.008	F037 02GN129 WHW16	397708WHW16				▼	▼	
 146	WHC81	39	DCMT11T3	0.20	0.008	F039 02GN129 WHW16	397816WHW16	●			▼	▼	
		39	DCGT11T3	0.40	0.016	F039 04GN129 WHW16	397817WHW16						
 192	WHC88	37	DCMT0702	0.40	0.016	F037 04MN146 WHC88	397968WHC88	✖	▼	▼		▼	
		39	DCMT11T3	0.40	0.016	F039 04MN146 WHC88	397591WHC88						
 200	WHC111	39	DCGT11T3	0.20	0.008	F039 02GN200 WHC111	397785WHC111	●	▼	▼	▼	▼	▼
		39	DCMT11T3	0.40	0.016	F039 04GN200 WHC111	397786WHC111						

Cermet

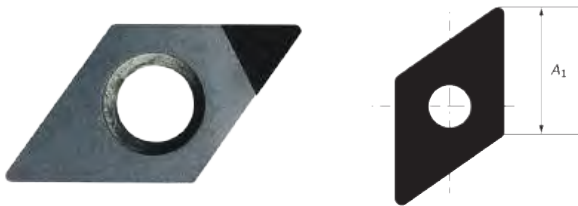
Geometry	Insert		ISO Description	Radius		Description	Part No.	Application					
	Grade	Form		mm	in			P	M	K	N	S	H
 155	WTC15	39	DCMT11T3	0.20	0.008	F039 02MN155 WTC15	397809WTC15	●	▼	▼	▼	▼	
				0.40	0.016	F039 04MN155 WTC15	397810WTC15						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
39	115673	M3.5 x 0.6 x 9	414510	115664	3.0 N·m	T15
37	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8

NOTE: For insert recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.



Forms 37 and 39



Insert Form	A ₁
37	7.7 mm
39	11.6 mm

CBN - Cubic Boron Nitride

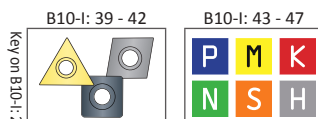
	Insert		ISO	Radius		Description	Part No.	Application					
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H
 747	WBN150	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN150	397273WBN150						
				0.40	0.016	F039 04GN747 WBN150	397274WBN150						
	WBN450	39	DCGW11T3	0.20	0.008	F039 02GN747 WBN450	397273WBN450						
				0.40	0.016	F039 04GN747 WBN450	397274WBN450						

PCD - Polycrystalline Diamond

Insert			ISO	Radius		Description	Part No.	Application					
Geometry	Grade	Form	Description	mm	in			P	M	K	N	S	H
 730	PKDD30	39	DCGW11T3	0.20	0.008	F039 02GN730 PKDD30	397269PKDD30						
				0.40	0.016	F039 04GN730 PKDD30	397270PKDD30						
 735	PKDD30	39	DCGT11T3	0.20	0.008	F039 02GN735 PKDD30	397271PKDD30						
				0.40	0.016	F039 04GN735 PKDD30	397272PKDD30						

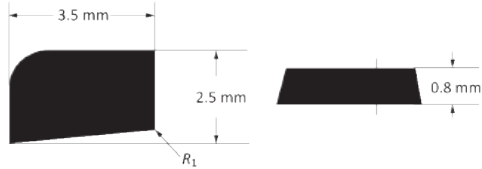
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
39	115673	M3.5 x 0.6 x 9	414510	115664	3.0 N·m	T15
37	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8

NOTE: For insert recommendations and technical assistance reference the geometry and insert guides (B10-I: 39 - 47) or contact our Application Engineering department: appeng@alliedmachine.com.



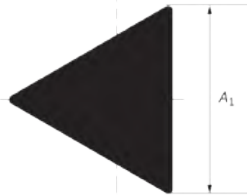


Forms 47 & 325: 248 (249) Boring Bar Inserts



Carbide

Geometry	Insert		Radius (R_1)		Description	Part No.	Application					
	Grade	Form	mm	in			P	M	K	N	S	H
 860	WHW20	325	0.10	0.004	F325 01CN860 WHW20	097831WHW20	●			▼▼▼		
	WHC136	325	0.10	0.004	F325 01CN860 WHC136	097831WHC136	●	▼▼▼	▼▼▼	▼▼▼	▼▼▼	

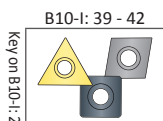


Insert Form	A_1
47	4.2 mm

Carbide

Geometry	Insert		Radius		Description	Part No.	Application					
	Grade	Form	mm	in			P	M	K	N	S	H
 650	WHW01	47	0.10	0.004	F047 01FL650 WHW01	097832WHW01	●			▼▼▼	▼▼▼	
			0.20	0.008	F047 02FL650 WHW01	097833WHW01				▼▼▼	▼▼▼	
	WHC20	47	0.10	0.004	F047 01FL650 WHC20	097832WHC20	●	▼▼▼	▼▼▼	▼▼▼		
			0.20	0.008	F047 02FL650 WHC20	097833WHC20		▼▼▼	▼▼▼	▼▼▼		

Insert Form	Countersunk Screw		Clamping Jaw	Service Key	Torque	Key Size
325	315321	M1.6 x 0.35 x 3	315320	315322	0.3 N·m	0.5x3
47	315324	M1.8 x 0.35 x 4	315323	115537	0.5 N·m	T6

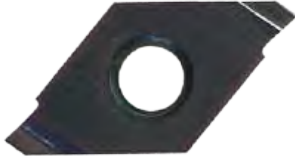


Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The grid covers the entire area of the page, leaving no margins or other markings.



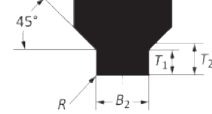
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



Circular Grooving | Metric (mm)

Insert		B ₂	T ₁	Ring Width	Part No.	Application					
Grade	Form					P	M	K	N	S	H
m	89	1.24	1.30	1.00	097257WHC136	m	m	m	m	m	m
		1.44	1.30	1.20	097258WHC136						
		1.74	1.50	1.50	097259WHC136						
	90	1.99	2.40	1.75	097256WHC136						
		2.29	2.40	2.00	097253WHC136						
		2.79	2.40	2.50	097254WHC136						
	91	3.29	2.40	3.00	097255WHC136						
		2.79	2.40	2.50	097260WHC136						
		3.29	2.40	3.00	097261WHC136						
		4.29	3.30	4.00	097262WHC136						
		5.29	4.50	5.00	097294WHC136						
	WHW20	1.24	1.30	1.00	097257WHW20						
		1.44	1.30	1.20	097258WHW20						
		1.74	1.50	1.50	097259WHW20						
		1.99	2.40	1.75	097256WHW20						
		2.29	2.40	2.00	097253WHW20						
		2.79	2.40	2.50	097254WHW20						
		3.29	2.40	3.00	097255WHW20						
		2.79	2.40	2.50	097260WHW20						
		3.29	2.40	3.00	097261WHW20						
		4.29	3.30	4.00	097262WHW20						
		5.29	4.50	5.00	097294WHW20						

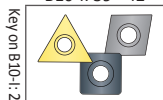
Snap Ring Grooving | Metric (mm)

Insert		R	Boring Ø	B ₂	T ₂	T ₁	Ring Width	Part No.	Application					
Grade	Form								P	M	K	N	S	H
m	89	0.10	24.00 - 26.00	1.44	0.65	0.54	1.20	297937WHC136	m	m	m	m	m	m
			28.00 - 30.00	1.44	0.75	0.64	1.20	297938WHC136						
			31.00 - 32.00	1.44	0.91	0.78	1.20	297939WHC136						
			34.00	1.74	0.91	0.78	1.50	297940WHC136						
			35.00 - 38.00	1.74	1.06	0.93	1.50	297941WHC136						
	90	0.15	40.00 - 48.00	1.99	1.31	1.18	1.75	297942WHC136						
			50.00 - 63.00	2.29	1.58	1.43	2.00	297943WHC136						
			65.00 - 78.00	2.79	1.58	1.43	2.50	297944WHC136						
	91	0.20	80.00 - 82.00	2.79	1.84	1.68	2.50	297945WHC136						
			85.00 - 100.00	3.29	1.84	1.68	3.00	297946WHC136						
			102.00 - 145.00	4.29	2.14	1.94	4.00	297947WHC136						

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
89	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
90	115531	M3 x 0.5 x 7.5	415514	115590	1.2 N·m	T8
91	115802	M3 x 0.5 x 12	415514	115590	1.2 N·m	T8

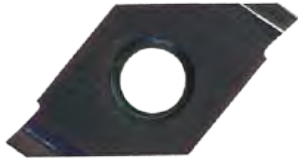
B10-I: 39 - 42

B10-I: 43 - 47



m = Metric (mm)
i = Imperial (in)

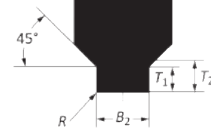
Radial Grooving: Forms 89, 90 and 91



Circular Grooving



Snap Ring Grooving



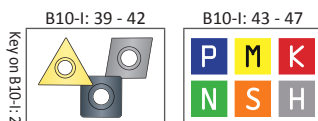
Circular Grooving | Imperial (in)

Insert						Application						
Grade	Form	B ₂	T ₁	Ring Width	Part No.		P	M	K	N	S	H
i	WHC136	89	0.048	0.051	0.039	097257WHC136						
			0.056	0.051	0.047	097258WHC136						
			0.068	0.059	0.059	097259WHC136						
		90	0.078	0.094	0.068	097256WHC136						
			0.090	0.094	0.078	097253WHC136						
			0.109	0.094	0.098	097254WHC136						
			0.129	0.094	0.118	097255WHC136						
			91	0.109	0.094	0.098						
		0.129		0.094	0.118	097261WHC136						
		0.168		0.129	0.157	097262WHC136						
		0.208		0.177	0.196	097294WHC136						
		WHW20	89	0.048	0.051	0.039						
0.056	0.051			0.047	097258WHW20							
0.068	0.059			0.059	097259WHW20							
90	0.078		0.094	0.068	097256WHW20							
	0.090		0.094	0.078	097253WHW20							
	0.109		0.094	0.098	097254WHW20							
	0.129		0.094	0.118	097255WHW20							
	91		0.109	0.094	0.098	097260WHW20						
0.129			0.094	0.118	097261WHW20							
0.168			0.129	0.157	097262WHW20							
0.208			0.177	0.196	097294WHW20							

Snap Ring Grooving

Insert		R	Boring Ø	B ₂	T ₂	T ₁	Ring Width	Part No.	Application					
Grade	Form								P	M	K	N	S	H
i	WHC136	89	0.004	0.944 - 1.023	0.056	0.025	0.021	0.047	297937WHC136					
				1.102 - 1.181	0.056	0.029	0.025	0.047	297938WHC136					
				1.220 - 1.259	0.056	0.035	0.03	0.047	297939WHC136					
				1.338	0.068	0.035	0.03	0.059	297940WHC136					
		90	0.006	1.377 - 1.496	0.068	0.041	0.036	0.059	297941WHC136					
				1.574 - 1.889	0.078	0.051	0.046	0.068	297942WHC136					
				1.968 - 2.480	0.09	0.062	0.056	0.078	297943WHC136					
				2.559 - 3.070	0.109	0.062	0.056	0.098	297944WHC136					
		91	0.008	3.149 - 3.228	0.109	0.072	0.066	0.098	297945WHC136					
				3.346 - 3.937	0.129	0.072	0.066	0.118	297946WHC136					
				4.015 - 5.708	0.168	0.084	0.076	0.157	297947WHC136					

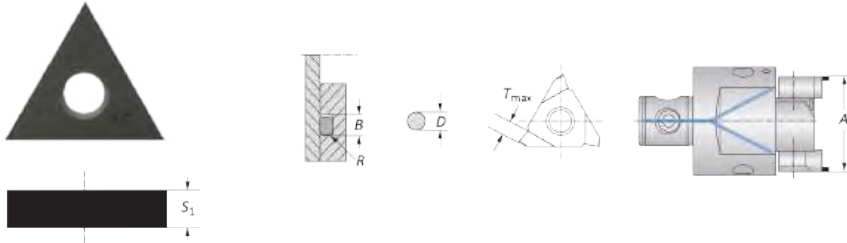
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
89	115676	M2.5 x 0.45 x 5	415514	115590	1.2 N·m	T8
90	115531	M3 x 0.5 x 7.5	415514	115590	1.2 N·m	T8
91	115802	M3 x 0.5 x 12	415514	115590	1.2 N·m	T8



m = Metric (mm)
i = Imperial (in)



Axial Grooving: Form 304



Inserts for Single Cutter Tools | Metric (mm)

Geometry		Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B _{max}	T _{max}	R ± 0.05	Part No.	Application					
										P	M	K	N	S	H
		WHC136	20.00 - 54.00	1.00	1.50	1.50	1.65	0.20	297969WHC136						
				1.50	2.20	2.20	2.35	0.30	297970WHC136						
				2.00	2.90	2.90	3.15	0.40	297971WHC136						
				2.50	3.50	3.50	3.85	0.50	297972WHC136						
				3.00	4.10	4.10	4.45	0.60	297973WHC136						
				4.00	5.40	5.40	4.95	0.80	297974WHC136						
				5.00	6.80	6.80	4.95	0.80	297975WHC136						

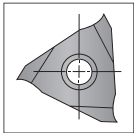
Inserts for Twin Cutter Tools | Metric (mm)

Geometry		Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B _{max}	T _{max}	R ± 0.05	Part No.	Application					
										P	M	K	N	S	H
		WHC136	53.00 - 1000.00	1.00 - 1.50	1.50	2.50	1.65	0.20	297976WHC136						
				1.50 - 2.40	2.20	3.70	2.35	0.30	297977WHC136						
				2.40 - 4.00	3.40	5.70	3.65	0.50	297978WHC136						
				4.00 - 5.50	5.40	9.10	4.95	0.80	297979WHC136						

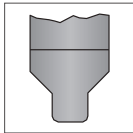
Form 304 Blanks | Metric (mm)

Geometry	Grade	S ₁	Part No.	Application					
				P	M	K	N	S	H
		WHW20	3.50						
			4.30						
			5.30						
			6.50						
			7.50						
		WHW20	3.50						
			4.30						
			5.30						
			6.50						
			7.50						

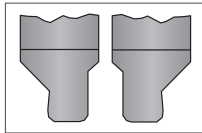
Examples of recessing replaceable inserts include:



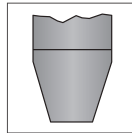
Other insert types available upon request.



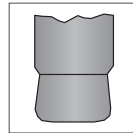
Two-sided cutting form.



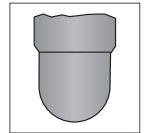
Single-sided cutting form (right / left).



Two-sided angle cutting.

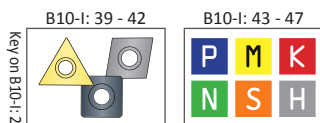


With corner radius.



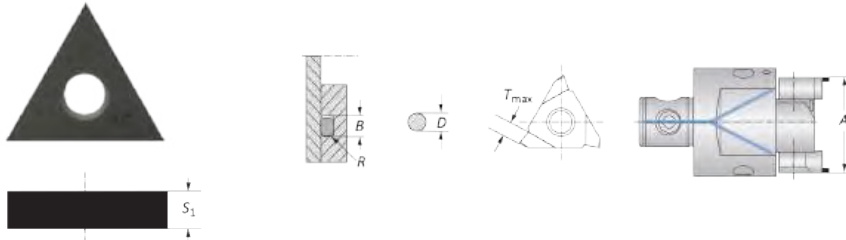
Full radius.

Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	215392	M5 x 0.8 x 12.9	415543	215150	5.0 N·m	T20



B10-I: 35

Axial Grooving: Form 304



Inserts for Single Cutter Tools | Imperial (in)

Geometry	Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B _{max}	T _{max}	R ± 0.05	Part No.	Application					
									P	M	K	N	S	H
	WHC136	0.787 - 2.125	0.039	0.059	0.059	0.064	0.008	297969WHC136						
			0.059	0.086	0.086	0.092	0.012	297970WHC136						
			0.078	0.114	0.114	0.124	0.016	297971WHC136						
			0.098	0.137	0.137	0.151	0.020	297972WHC136						
			0.118	0.161	0.161	0.175	0.024	297973WHC136						
			0.157	0.212	0.212	0.194	0.031	297974WHC136						
			0.196	0.267	0.267	0.194	0.031	297975WHC136						

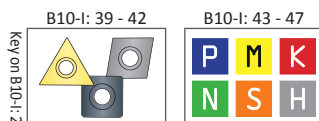
Inserts for Twin Cutter Tools | Imperial (in)

Geometry	Grade	A Boring Range	O-Ring Cross Section	B + 0.05	B _{max}	T _{max}	R ± 0.05	Part No.	Application					
									P	M	K	N	S	H
	WHC136	2.086 - 39.37	0.039 - 0.059	0.059	0.098	0.064	0.008	297976WHC136						
			0.059 - 0.094	0.086	0.145	0.092	0.012	297977WHC136						
			0.094 - 0.157	0.133	0.224	0.143	0.020	297978WHC136						
			0.157 - 0.217	0.212	0.358	0.194	0.031	297979WHC136						

Form 304 Blanks | Imperial (in)

Geometry	Grade	S ₁	Part No.	Application					
				P	M	K	N	S	H
	WHW20	0.137	297150WHW20						
		0.169	297151WHW20						
		0.208	297152WHW20						
		0.255	297154WHW20						
		0.295	297493WHW20						
	WHW20	0.137	397850WHW20						
		0.169	397851WHW20						
		0.208	397852WHW20						
		0.255	397853WHW20						
		0.295	397854WHW20						

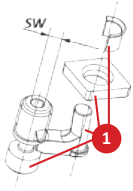
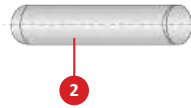
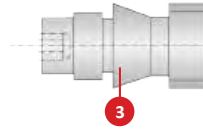
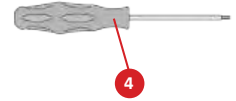
Insert Form	Countersunk Screw		Torque Driver	Service Key	Torque	Key Size
304	215392	M5 x 0.8 x 12.9	415543	215150	5.0 N·m	T20



 = Metric (mm)
 = Imperial (in)



Insert Accessories

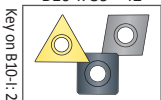


Insert Form	1. Clamping Set		2. Mounting Arbor for Sleeve	3. Clamping Bolt		4. Service Key	
	Part No.	Key Size		Part No.	Key Size	Part No.	Key Size
75	315004	s3	415642	—	—	415578	s3
123	315003	s3	415642	115775	s2.5	415578	s3
						115575	s2.5
124	315054	s3	415644	115776	s3	415578	s3
						115630	s3

Type	Form	Countersunk Screw		Clamping Jaw	Torque Driver	Service Key	Torque	Key Size
Trigon	211	215377	M2 x 0.4 x 4	—	415507	115537	0.6 N·m	T6
	20	115535	M2 x 0.4 x 5	—	415508	115591	0.9 N·m	T7
Triangle	161	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
	163	115673	M3.5 x 0.6 x 9	—	415510	115664	3.0 N·m	T15
	101	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
80° Rhomboid	103	115672 (<Ø37 mm)	M3.5 x 0.6 x 7.5	—	415510	115664	3.0 N·m	T15
	103	115673 (>Ø36 mm)	M3.5 x 0.6 x 9	—	415510	115664	3.0 N·m	T15
	104	215149	M4.5 x 0.75 x 11.5	—	415543	215150	5.0 N·m	T20
	105	215149	M4.5 x 0.75 x 11.5	—	415543	215150	5.0 N·m	T20
	04	415977	M4 x 0.7 x 7.9	—	415510	115664	3.0 N·m	T15
Tangential	05	415949	M4 x 0.7 x 11	—	415543	215150	5.0 N·m	T20
	112	115672 (<Ø37 mm)	M3.5 x 0.6 x 7.5	—	415510	115664	3.0 N·m	T15
Square	112	115673 (>Ø36 mm)	M3.5 x 0.6 x 9	—	415510	115664	3.0 N·m	T15
	113	215149	M4.5 x 0.75 x 11.5	—	415543	215150	5.0 N·m	T20
	114	215149	M4.5 x 0.75 x 11.5	—	415543	215150	5.0 N·m	T20
55° Rhomboid	37	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
	39	115673	M3.5 x 0.6 x 9	—	414510	115664	3.0 N·m	T15
Grooving	89	115676	M2.5 x 0.45 x 5	—	415514	115590	1.2 N·m	T8
	90	115531	M3 x 0.5 x 7.5	—	415514	115590	1.2 N·m	T8
	91	115802	M3 x 0.5 x 12	—	415514	115590	1.2 N·m	T8
	304	215392	M5 x 0.8 x 12.9	—	415543	215150	5.0 N·m	T20
248 (249) Bars	325	315321	M1.6 x 0.35 x 3	315320	—	315322	0.3 N·m	0.5x3

B10-I: 39 - 42

B10-I: 43 - 47



Notes



I



Wohlhaupter Insert Geometries

Carbide

Carbide

Geometry	Application	Forms	Description
 108		101 103 104 112 113	<ul style="list-style-type: none"> Sintered chipbreaker for higher feeds. Suitable for highly discontinuous cuts.
 109		101 103 104	<ul style="list-style-type: none"> Sintered geometry with V-shaped chipbreaker for roughing and finishing. Good chip control even for shallow depth of cut.
 121		211 20 39	<ul style="list-style-type: none"> Positive geometry with stable cutting edge . Finishing in different material groups. Good chip control.
 126		105	<ul style="list-style-type: none"> Sintered version with a wide range of applications.
 127		101 103 104 37 39 112 113	<ul style="list-style-type: none"> Highly positive sintered geometry. For nonferrous metals and cast iron.
 128		20	<ul style="list-style-type: none"> Highly positive sintered geometry. Polished for finishing nonferrous metals, cast iron, and steel.
 129		161 163 101 103 37 39	<ul style="list-style-type: none"> Highly positive chip breaking geometry. Polished for nonferrous metals, cast iron, and steel. Ideal for structural steel applications.
 145		161 101 103 112 113	<ul style="list-style-type: none"> Geometry for finishing in smooth and discontinuous cut. Good chip control - even with long-chipping materials.
 146		161 163 101 103 104 37 39 112 113	<ul style="list-style-type: none"> Positive geometry with stable cutting edge. Universal usage for roughing, finishing and chamfering.
 158		101 103 104 105 113 114	<ul style="list-style-type: none"> Sintered chipbreaker for higher feeds. Suitable for highly discontinuous cuts.
 192		161 163 101 103 104 39 112 113	<ul style="list-style-type: none"> Sintered geometry with V-shaped chipbreaker for roughing and finishing. Good chip control even for shallow depth of cut.
 199		101 103 104 112 113	<ul style="list-style-type: none"> Positive geometry with stable cutting edge. Finishing in different material groups. Good chip control.

Wohlhaupter Insert Geometries

Carbide

Carbide

Geometry	Application	Forms	Description
 200	▼	101 103 104 39	<ul style="list-style-type: none"> Sintered version with a wide range of applications.
 650	▼▼	211 20	<ul style="list-style-type: none"> Highly positive sintered geometry. For nonferrous metals and cast iron.
 711	▼▼	101 103 104 113	<ul style="list-style-type: none"> Highly positive sintered geometry. Polished for finishing nonferrous metals, cast iron, and steel.
 840	▼▼	20	<ul style="list-style-type: none"> Highly positive chip breaking geometry. Polished for nonferrous metals, cast iron, and steel. Ideal for structural steel applications.
 860	▼▼	101 103 104 105	<ul style="list-style-type: none"> Geometry for finishing in smooth and discontinuous cut. Good chip control - even with long-chipping materials.

Carbide - Tangential

Geometry	Application	Forms	Description
 880	▼	04 05	<ul style="list-style-type: none"> Large parallel ground chipbreaker with 10° rake angle for reduced cutting force.
 811	▼	05	<ul style="list-style-type: none"> Smooth geometry without additional ground chipbreaker. Reinforced cutting edges provide stability. Excellent for cast materials.



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Wohlhaupter Insert Geometries

Cermet

Cermet

Geometry	Application	Forms	Description
 112		101 103	<ul style="list-style-type: none">• Sintered chipbreaker.• Finishing and light roughing.
 122		161 101 103	<ul style="list-style-type: none">• Sintered chipbreaker.• Good chip control - even with long-chipping materials.
 155		20 101 103 39	<ul style="list-style-type: none">• Positive sintered geometry.• Special cutting edge design in combination with the chipbreaker design enables exceptional chip control even at shallow cutting depths and light feeds.
 650		211 20	<ul style="list-style-type: none">• Obliquely ground chipbreaker reduces cutting forces.• Finishing and smooth interrupted cuts.
 840		20	<ul style="list-style-type: none">• Parallel ground chipbreaker.• For finish operations with stable cutting edge.
 850		101	<ul style="list-style-type: none">• Parallel ground chipbreaker.• Good chip control with short to medium feeds.
 860		101	<ul style="list-style-type: none">• Parallel ground chipbreaker reduces cutting forces.• Stable for a wide range of applications.



I

Wohlschlag Insert Geometries

CBN | PCD | Ceramic

CBN

Geometry	Application	Forms	Description
 741	▼▼▼	20 101 103	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge with 30° chamfer.
 742	▼▼▼	20 101 103	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge with 15° chamfer.
 745	▼▼▼	20	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge with 30° chamfer.
 747	▼▼▼	104 39	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge with a small 20° chamfer.
 748	▼▼▼	211 20 101 103	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge. No chamfer.
 749	▼▼▼	104	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for CBN. Rounded cutting edge with a large 20° chamfer.
 768	▼▼▼	20 101 103	<ul style="list-style-type: none"> Smooth geometry with 7° rake angle for CBN. Rounded cutting edge.

PCD

Geometry	Application	Forms	Description
 720	▼▼▼	20 101 103	<ul style="list-style-type: none"> Smooth geometry in positive version with 7° rake angle for PCD. Sharp cutting edge.
 730	▼▼▼	211 20 101 103 104 39	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle for PCD. Sharp cutting edge.
 735	▼▼▼	211 20 101 103 39	<ul style="list-style-type: none"> Smooth geometry. Laser-cut chipbreaker for PCD. Suitable for long-chipping aluminum wrought alloys.

Ceramic

Geometry	Application	Forms	Description
 711	▼	103 104	<ul style="list-style-type: none"> Smooth geometry with 0° rake angle. High cutting edge stability particularly in discontinuous cuts.



Wohlhaupter Insert Grades

Carbide

Uncoated Carbide

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WHW01 (HW)	<ul style="list-style-type: none">Fine-grain carbide.Finishing and light roughing.Nonferrous metals, cast materials, and difficult-to-machine alloys.	P								
		M								
		K								
		N								
		S								
		H								
WHW16 (HW)	<ul style="list-style-type: none">Fine-grain carbide.Finishing and light roughing.Nonferrous metals, cast materials, and difficult-to-machine alloys.	P								
		M								
		K								
		N								
		S								
		H								
WHW20 (HW)	<ul style="list-style-type: none">Tough fine-grain carbide.Finishing, roughing and grooving.Steel and cast materials, cast steel.Nonferrous materials and difficult-to-machine alloys.	P								
		M								
		K								
		N								
		S								
		H								

Coated Carbide

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WHC05 (HC)	<ul style="list-style-type: none">PVD coating with nano-composite structure.Finishing and roughing.Steels, stainless steels, cast materials, and difficult-to-machine alloys.	P								
		M								
		K								
		N								
		S								
		H								
WHC18 (HC)	<ul style="list-style-type: none">PVD-TiB2 coating.Finishing and light roughing.Nonferrous metals.	P								
		M								
		K								
		N								
		S								
		H								
WHC19 (HC)	<ul style="list-style-type: none">Newest generation multilayer PVD coating.Finishing and roughing.Extremely universal and the first choice for poor machining conditions.Excellent in cast steels, stainless steels, and super alloys.	P								
		M								
		K								
		N								
		S								
		H								
WHC20 (HC)	<ul style="list-style-type: none">Multilayer CVD coating.Finishing.Steels and stainless steels.	P								
		M								
		K								
		N								
		S								
		H								
WHC30 (HC)	<ul style="list-style-type: none">CVD coating.Roughing.Steel and cast steel.	P								
		M								
		K								
		N								
		S								
		H								



Wohlhaupter Insert Grades

Carbide

Coated Carbide

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WHC77 (HC)	<ul style="list-style-type: none"> Fine-grained substrate with modified cobalt to increase strength. MT-CVD coating combines advantages of TiCN and Al₂O₃. Versatile material designed for turning grey and ductile iron. Rough and finish machining. Medium to high cutting speeds. Continuous and light to medium interrupted cuts. 	P								
		M								
		K								
		N								
		S								
		H								
WHC79 (HC)	<ul style="list-style-type: none"> Multilayer MT CVD coating. Roughing and finishing. Steels, stainless steels, and cast materials. 	P								
		M								
		K								
		N								
		S								
		H								
WHC81 (HC)	<ul style="list-style-type: none"> Thick MT CVD coating with adominal AL203. High cutting speeds possible. Excellent choice for cast materials. 	P								
		M								
		K								
		N								
		S								
		H								
WHC88 (HC)	<ul style="list-style-type: none"> Multilayer PVD coating. Finishing and roughing. Universal usage. 	P								
		M								
		K								
		N								
		S								
		H								
WHC98 (HC)	<ul style="list-style-type: none"> PVD TiAlN coating. Roughing and finishing. Steels, stainless steels, and difficult-to-machine materials. 	P								
		M								
		K								
		N								
		S								
		H								
WHC111 (HC)	<ul style="list-style-type: none"> PVD TiAlN coating. Finishing. Machining of steels after heat treating with high Cr content up to 60 HRC. Hard - soft transitions, difficult-to-machine alloys, and stainless steels. 	P								
		M								
		K								
		N								
		S								
		H								
WHC114 (HC)	<ul style="list-style-type: none"> Multilayer PVD coating. Finishing and roughing. Steels, stainless steels, and difficult-to-machine materials. 	P								
		M								
		K								
		N								
		S								
		H								
WHC136 (HC)	<ul style="list-style-type: none"> Stronger PVD coating with improved coating adhesion. High oxidation resistance allows a wide range of applications. 	P								
		M								
		K								
		N								
		S								
		H								

Carbide continued →



Wohlhaupter Insert Grades

Carbide | Cermet

Coated Carbide

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WHC164 (HC)	<ul style="list-style-type: none">Thick MT-CVD coating with a dominant Al_2O_3 layer.Primarily developed for the material groups P, K, and H.Full and discontinuous cut.High cutting speeds and feeds possible.	P								
		M								
		K								
		N								
		S								
		H								
WHC168 (HC)	<ul style="list-style-type: none">Multilayer MT CVD coating.Excellent combination of toughness and reliability.Steels, cast materials, and alternatively for stainless steel.Roughing.	P								
		M								
		K								
		N								
		S								
		H								
WHC170 (HC)	<ul style="list-style-type: none">Multilayer MT CVD coating.Excellent toughness.First choice for strong interruptions.Cast materials and steel.	P								
		M								
		K								
		N								
		S								
		H								
WHC198 (HC)	<ul style="list-style-type: none">Upgraded PVD grade with hard AlTiN coating.Optimized cutting edge stability.General machining of steel, stainless steel, high-temperature resistant alloys, titanium, iron, cast iron, and nonferrous materials.	P								
		M								
		K								
		N								
		S								
		H								

Uncoated Cermet

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WHT10 (HT)	<ul style="list-style-type: none">Uncoated cermet.Finishing.Steels, stainless steels, and cast materials.	P								
		M								
		K								
		N								
		S								
		H								
WHT12 (HT)	<ul style="list-style-type: none">Uncoated cermet.Finishing.Steels, cast materials, sintered metals, and nonferrous metals.	P								
		M								
		K								
		N								
		S								
		H								
WHT32 (HT)	<ul style="list-style-type: none">Uncoated cermet.Finishing.Steels and cast materials.	P								
		M								
		K								
		N								
		S								
		H								



I

Wohlhaupter Insert Grades

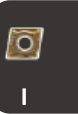
Cermet | CBN

Coated Cermet

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WTC15 (TC)	<ul style="list-style-type: none"> PVD brilliant coating. Reduce friction coefficient in boring applications. Coated cermet general purpose grade for material group P. Achieves excellent surface finish with excellent wear resistance. Usable in stainless steels. 	P								
		M								
		K								
		N								
		S								
		H								
WTC121 (TC)	<ul style="list-style-type: none"> PVD coated cermet. Finishing of steels and stainless steels. 	P								
		M								
		K								
		N								
		S								
		H								

Uncoated CBN

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WBN150 (BN)	<ul style="list-style-type: none"> Uncoated CBN grade. Roughing and finishing smooth and slightly discontinuous cuts. Hardened steels 52 - 64 HRC. Grain size 2 µm. CBN content: 50%. 	P								
		M								
		K								
		N								
		S								
		H								
WBN200 (BN)	<ul style="list-style-type: none"> Uncoated CBN grade. Roughing and finishing highly discontinuous cuts. Hardened steels 52 - 64 HRC. Grain size 3 µm. CBN content: 65%. 	P								
		M								
		K								
		N								
		S								
		H								
WBN300 (BN)	<ul style="list-style-type: none"> Uncoated CBN grade. Roughing and finishing smooth cuts. Hardened steels 52 - 64 HRC. Grain size 0.5 - 1.0 µm. CBN content: approximately 50%. 	P								
		M								
		K								
		N								
		S								
		H								
WBN450 (BN)	<ul style="list-style-type: none"> Uncoated CBN grade. Roughing and finishing smooth and discontinuous cuts. Pearlite grey cast iron and sintered metals. Grain size 2 µm. CBN content: 90%. 	P								
		M								
		K								
		N								
		S								
		H								
WBN448 (BN)	<ul style="list-style-type: none"> Uncoated CBN grade. Roughing and finishing smooth and discontinuous cuts. Pearlite grey cast iron and sintered metals and ductile iron. CBN content: 90%. 	P								
		M								
		K								
		N								
		S								
		H								





Wohlhaupter Insert Grades

CBN | PCD | Ceramic

Coated CBN

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WBC300 (BC)	<ul style="list-style-type: none">Coated CBN.Roughing and finishing smooth cuts.Hardened steels 52 - 64 HRC.Grain size 1 µm.CBN content: 50%.	P								
		M								
		K								
		N								
		S								
		H								

PCD

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
PKDD30 (DP)	<ul style="list-style-type: none">PCD medium grain grade.Finishing.Al alloys and Mg alloys up to 12% Si.Grain size 10 µm.	P								
		M								
		K								
		N								
		S								
		H								
PKDD50 (DP)	<ul style="list-style-type: none">PCD mixed-grain grade.Finishing.CFRP, GRP, MMC, Al alloys over 12% Si.Grain size 2 - 30 µm.	P								
		M								
		K								
		N								
		S								
		H								

Ceramic

Cutting Material	Description	Material	ISO Application							
			05	10	15	20	25	30	35	40
WCN40 (CN)	<ul style="list-style-type: none">Uncoated silicon-nitride ceramic.Roughing.Pearlite grey cast iron.	P								
		M								
		K								
		N								
		S								
		H								



I

Boring Insert Wear Patterns

Built-up Edge

Potential Problem

- Machined material adheres to the cutting edge of insert. When it breaks, the edge becomes brittle and cracks. This can negatively affect machined surface.



Possible Solution

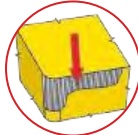
- Increase temperature by increasing speed or feed.
- Use an insert with higher lubricity coating.
- Choose a freer cutting insert geometry.



Flank Wear

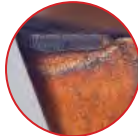
Potential Problem

- Caused by friction between the insert and machined material. It cannot be fully eliminated, but it can be reduced.



Possible Solution

- Use a more wear-resistant grade.
- Reduce cutting speed.
- Use coolant or increase coolant flow to the cutting edge.



Cratering

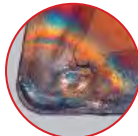
Potential Problem

- Appears when the geometry is too neutral or material is too hard for the substrate.



Possible Solution

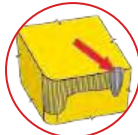
- Use a more wear-resistant grade.
- Reduce cutting speed or feed.
- Use coolant or increase coolant flow to the cutting edge.



Notch Wear

Potential Problem

- Occurs when cutting edge of insert comes in contact with surface of machined material.
- Caused by hardening of surface layer of material and burrs.
- Often appears on stainless austenitic steels and other high-temperature alloy steels.



Possible Solution

- Use a more wear-resistant grade (Al_2O_3).
- Select a tool with a smaller approach angle.
- Vary the radial depth of cut.
- Use coolant or increase coolant flow to the cutting edge.



Comb Cracks

Potential Problem

- Caused by high stress on the cutting edge during interrupted cuts.



Possible Solution

- Switch off coolant or increase coolant flow to obtain an even temperature level.
- Reduce cutting speed.
- Use tougher insert grade.



Plastic Deformation

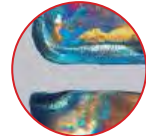
Potential Problem

- Caused by high thermal stress on the cutting edge from excessive feed rate and cutting speed.



Possible Solution

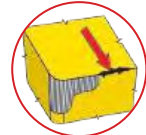
- Use a more wear-resistant grade.
- Reduce cutting speed.
- Reduce feed rate.
- Use coolant or increase coolant flow to the cutting edge.



Chipping of Cutting Edge (Out of Cut)

Potential Problem

- Caused by poor chip control.
- Can damage the portion of the cutting edge that might not be engaged in the cut.



Possible Solution

- Change feed rate to gain chip control.
- Select a tool with a different approach angle.
- Use an insert with a different geometry.
- Use a tougher grade of carbide.



Insert Fracture

Potential Problem

- Caused by workpiece material, grade, condition, the rigidity of the machine-tool workpiece, extent of wear, and cutting conditions.



Possible Solution

- Use a tougher grade of carbide.
- Reduce the feed and depth of cut.
- Use an insert with a stronger chip-breaker.
- Use an insert with a bigger corner radius.



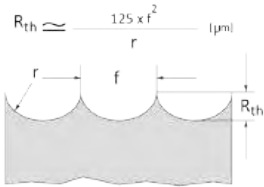
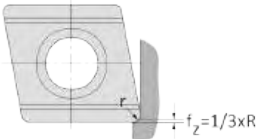


Corner Radius

Surface Finish

The corner radius of replaceable inserts is very important in finish machining. Large corner radii (0.8 mm (0.031")) or higher allow for high feed rates with good surface quality.

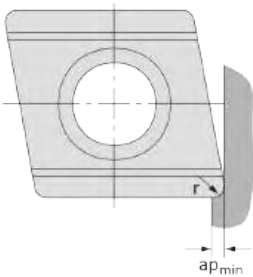
The expected surface quality can be estimated by using the function of corner radius and feed rate formula.

	<ol style="list-style-type: none"> 1. The larger the corner radius and the lighter the feed rate is, the better the surface quality.
	<ol style="list-style-type: none"> 2. If the feed is approximately 1/3 of the corner radius, the better the machining time and surface finish will be in finish machining applications.
	<ol style="list-style-type: none"> 3. A larger corner radius increases radial forces, which can negatively affect dimensional accuracy. Large corner radii also require increased depth of cut.

Depth of Cut (a_p)



Minimum depth of cut (a_p) should at least match the corner radius. This minimizes the radial forces.



Formulas

General Formulas	
Cutting Speed (m/min)	$V_c = \frac{D \times \pi \times n}{1000}$
RPM (min^{-1})	$n = \frac{V_c \times 1000}{D \times \pi}$
Feed Speed (mm/min)	$V_f = f \times n$
Key	
Machining $\varnothing$ (mm)	D
Feed (mm/rev)	f
Cutting Speed (m/min)	V_c
RPM (min^{-1})	n

Wiper Geometry

Replaceable Inserts with Wiper Geometry

Replaceable inserts with wiper geometry achieve significantly better surface finish than those produced by normal replaceable inserts with standard corner radii. Feed lines created by standard inserts are minimized. They also permit considerably higher feed rates without any significant trade-offs with regard to the workpiece surfaces produced.

Other advantages include:

- Higher stability, resulting in high process reliability even for highly interrupted cuts.
- Vibrations are reduced.

Insert with conventional corner radius with feed (f)



Insert with wiper geometry radius with same feed (f)



Insert with wiper geometry with increased feed (f)

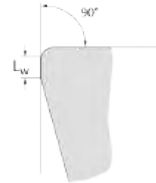


Wiper Geometry for 90° Approach Angle

Replaceable inserts produce a right-angled step at the bottom of the hole. When used in a Wohlhaupter standard insert holder that has a 90° approach angle, the secondary wiper cutting edge is nearly parallel with the wall of the hole.

Wiper geometry for 90° approach angle

L_w = length of the wiper secondary cutting edge

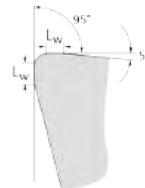


Wiper Geometry for 95° Approach Angle

Wiper inserts can also be used with 95° insert holders, which are included in the Wohlhaupter standard insert range.

Wiper geometry for 95° approach angle (left and right cutting)

L_w = length of the secondary wiper cutting edge



SECTION

B10-J

Modular Tool Holders

Modular Tool Holders



Clamping Tools with MVS Connection

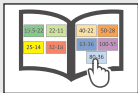
Wohlhaupter offers a complete range of tool holders that incorporates the MVS connection. Our clamping tools allow for smaller MVS tools to connect and provide a quick and inexpensive alternative to special tooling. The clamping tools also feature coolant-through capabilities.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

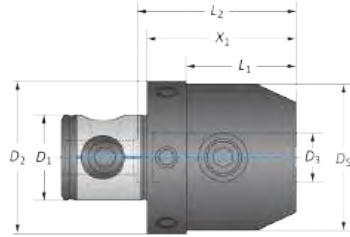
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Adapter Sleeves for Cylindrical Shanks

DIN 1835B



Metric (mm)

MVS Connection $D_2 D_1$	Clamping Range D_3	Adapter Sleeve				Weight (kg)	Balancing Screw	Part No.
		X_1	L_1	L_2	D_5			
32 - 18	6.00	36.00	23.00	40.00	25.00	0.20	M5 x 0.8 x 6	228022
	8.00	36.00	23.00	40.00	28.00	0.20	M5 x 0.8 x 6	228023
	10.00	48.00	—	44.00	35.00	0.30	M5 x 0.8 x 6	228024
40 - 22	12.00	52.00	—	49.00	42.00	0.50	M5 x 0.8 x 8	228025
	14.00	54.00	—	49.00	44.00	0.60	M5 x 0.8 x 8	228026
50 - 28	6.00	36.00	23.00	40.00	25.00	0.40	M6 x 1 x 10	162015
	8.00	36.00	23.00	40.00	28.00	0.40	M6 x 1 x 10	162016
	10.00	44.00	31.00	44.00	35.00	0.50	M6 x 1 x 10	162017
	12.00	44.00	31.00	49.00	42.00	0.50	M6 x 1 x 10	162018
	16.00	49.00	36.00	52.00	48.00	1.00	M6 x 1 x 10	162019
	18.00	49.00	36.00	52.00	48.00	1.00	M6 x 1 x 10	228014
	20.00	60.00	—	54.00	52.00	1.20	M6 x 1 x 10	162020
63 - 36	20.00	49.00	36.00	54.00	52.00	1.10	M6 x 1 x 10	161024
	25.00	75.00	—	59.00	63.00	1.90	M6 x 1 x 15	161026
	32.00	75.00	—	63.00	72.00	2.20	M6 x 1 x 15	161027
80 - 36	40.00	85.00	—	73.00	80.00	2.50	M6 x 1 x 15	161028

Imperial (in)

MVS Connection $D_2 D_1$	Clamping Range D_3	Adapter Sleeve				Weight (lbs)	Balancing Screw	Part No.
		X_1	L_1	L_2	D_5			
32 - 18	0.236	1.417	0.906	1.575	0.984	0.441	M5 x 0.8 x 6	228022
	0.315	1.417	0.906	1.575	1.102	0.441	M5 x 0.8 x 6	228023
	0.394	1.890	—	1.732	1.378	0.661	M5 x 0.8 x 6	228024
40 - 22	0.472	2.047	—	1.929	1.654	1.102	M5 x 0.8 x 8	228025
	0.551	2.126	—	1.929	1.732	1.323	M5 x 0.8 x 8	228026
50 - 28	0.236	1.417	0.906	1.575	0.984	0.882	M6 x 1 x 10	162015
	0.315	1.417	0.906	1.575	1.102	0.882	M6 x 1 x 10	162016
	0.394	1.732	1.220	1.732	1.378	1.102	M6 x 1 x 10	162017
	0.472	1.732	1.220	1.929	1.654	1.102	M6 x 1 x 10	162018
	0.630	1.929	1.417	2.047	1.890	2.205	M6 x 1 x 10	162019
	0.709	1.929	1.417	2.047	1.890	2.205	M6 x 1 x 10	228014
	0.787	2.362	—	2.126	2.047	2.646	M6 x 1 x 10	162020
63 - 36	0.787	1.929	1.417	2.126	2.047	2.425	M6 x 1 x 10	161024
	0.984	2.953	—	2.323	2.480	4.189	M6 x 1 x 15	161026
	1.260	2.953	—	2.480	2.835	4.851	M6 x 1 x 15	161027
80 - 36	1.575	3.346	—	2.874	3.150	5.512	M6 x 1 x 15	161028

NOTE: Balanced 10 gmm/kg.

NOTE: When using a ball pressure screw instead of a thread pin, it's similar to DIN 1835E, without axial adjustment.
See ball pressure screws on page B10-J: 12.

B10: ix - x



B10-J: 3

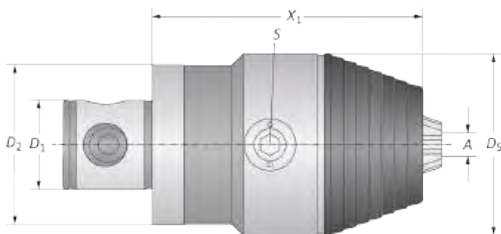
www.alliedmachine.com | 1.330.343.4283

m = Metric (mm)
i = Imperial (in)



Drill Chucks

Clamping Diameter Range: 0.50 mm - 16.00 mm (0.019" - 0.629")



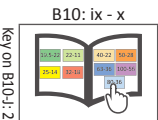
Metric (mm)

MVS Connection	Clamping Range	Drill Chuck			Weight (kg)	Part No.
$D_2 \mid D_1$	A	X_1	D_5	S		
m 50 - 28	0.50 - 13.00	80.00	50.00	s6 / B	1.10	209088
	2.50 - 16.00	85.00	57.00	s6 / B	1.30	209089
63 - 36	0.50 - 13.00	80.00	50.00	s6 / B	1.30	209090
	2.50 - 16.00	85.00	57.00	s6 / B	1.50	209091

Imperial (in)

MVS Connection	Clamping Range	Drill Chuck			Weight (lbs)	Part No.
$D_2 \mid D_1$	A	X_1	D_5	S		
i 50 - 28	0.019 - 0.511	3.150	1.969	s6 / B	2.425	209088
	0.098 - 0.629	3.346	2.244	s6 / B	2.866	209089
63 - 36	0.019 - 0.511	3.150	1.969	s6 / B	2.866	209090
	0.098 - 0.629	3.346	2.244	s6 / B	3.307	209091

NOTE: Balanced 6.3 gmm/kg.



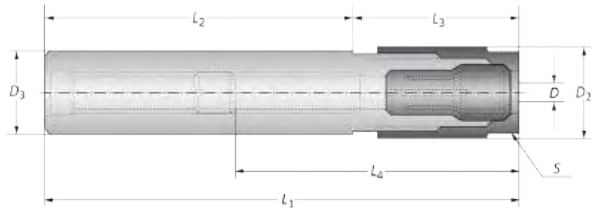
m = Metric (mm)
i = Imperial (in)



Collet Chucks

Erickson System | Cylindrical (ISO 15488 (DIN 6499))

Collet Chucks for Erickson System



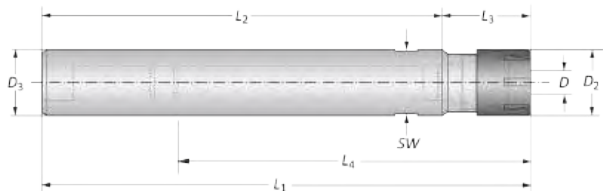
Metric (mm)

	Nominal Size	Clamping Range <i>D</i>	Collet Chuck							Service Key <i>S</i>	Weight (kg)	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
m	6	0.50 - 6.00	14.00	12.50	112.00	76.00	36.00	42.00	101.00	13	0.08	162080
			14.00	12.50	176.00	140.00	36.00	42.00	102.00	13	0.10	162081
	10	0.50 - 10.00	21.00	20.00	120.00	76.00	44.00	39.00	107.00	19	0.20	162082
			21.00	20.00	184.00	140.00	44.00	39.00	119.00	19	0.30	162083

Imperial (in)

	Nominal Size	Clamping Range <i>D</i>	Collet Chuck							Service Key <i>S</i>	Weight (lbs)	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
i	6	0.020 - 0.236	0.551	0.492	4.410	2.992	1.417	1.654	3.976	13	0.176	162080
			0.551	0.492	6.929	5.512	1.417	1.654	1.016	13	0.220	162081
	10	0.020 - 0.394	0.827	0.787	4.724	2.992	1.732	1.535	4.213	19	0.441	162082
			0.827	0.787	7.244	5.512	1.732	1.535	4.686	19	0.661	162083

Cylindrical Collet Chucks for ISO 15488 (DIN 6499) Collets



Metric (mm)

	Nominal Size	<i>D</i>	Collet Chuck							Weight (kg)	Hex Size <i>SW</i>	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
m	ER 8	1.00 - 5.00	12.00	8.00	126.00	100.00	26.00	36.00	36.00	0.05	09	209054
			12.00	12.00	166.00	140.00	26.00	36.00	36.00	0.14	09	209055
	ER 11	1.00 - 7.00	16.00	16.00	106.50	80.00	26.50	24.00	65.00	0.12	11	209056
			16.00	16.00	166.50	140.00	26.50	24.00	65.00	0.20	11	209057
	ER 16	1.00 - 10.00	22.00	20.00	118.50	80.00	38.50	34.00	103.00	0.20	17	209058
			22.00	20.00	178.50	140.00	38.50	34.00	123.00	0.32	17	209059

Imperial (in)

	Nominal Size	<i>D</i>	Collet Chuck							Weight (lbs)	Hex Size <i>SW</i>	Part No.
			<i>D</i> ₂	<i>D</i> ₃	<i>L</i> ₁	<i>L</i> ₂	<i>L</i> ₃	<i>L</i> ₄ Min	<i>L</i> ₄ Max			
i	ER 8	0.039 - 0.196	0.472	0.315	4.961	3.937	1.024	1.417	1.417	0.110	09	209054
			0.472	0.472	6.535	5.512	1.024	1.417	1.417	0.309	09	209055
	ER 11	0.039 - 0.275	0.630	0.630	4.193	3.150	1.043	0.945	2.559	0.265	11	209056
			0.630	0.630	6.555	5.512	1.043	0.945	2.559	0.441	11	209057
	ER 16	0.039 - 0.393	0.866	0.787	4.665	3.150	1.516	1.339	4.055	0.441	17	209058
			0.866	0.787	7.028	5.512	1.516	1.339	4.843	0.705	17	209059

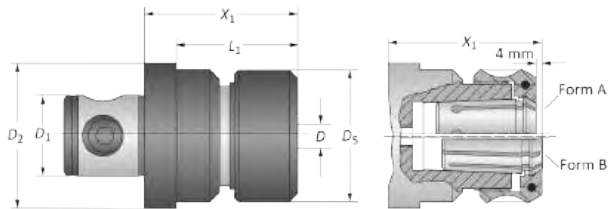
m = Metric (mm)

i = Imperial (in)



Collet Chucks

ISO 10897 (DIN 6388)



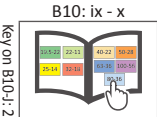
Metric (mm)

MVS Connection	Clamping Range	Nominal Size	Collet Chuck			Weight (kg)	Part No.
			X_1^*	L_1	D_5		
m	40 - 22	2.00 - 16.00	16	64.00	—	43.00	209082
	50 - 28	2.00 - 16.00	16	63.00	50.00	43.00	162011
		2.00 - 25.00	25	74.00	—	60.00	209083
	63 - 36	2.00 - 25.00	25	74.00	—	60.00	161016
		4.00 - 32.00	32	89.00	—	72.00	161098

Imperial (in)

MVS Connection	Clamping Range	Nominal Size	Collet Chuck			Weight (lbs)	Part No.
			X_1^*	L_1	D_5		
i	40 - 22	0.078 - 0.629	16	2.520	—	1.693	209082
	50 - 28	0.078 - 0.629	16	2.480	1.968	1.693	162011
		0.078 - 0.984	25	2.913	—	2.362	209083
	63 - 36	0.078 - 0.984	25	2.913	—	2.362	161016
		0.157 - 1.259	32	3.504	—	2.835	161098

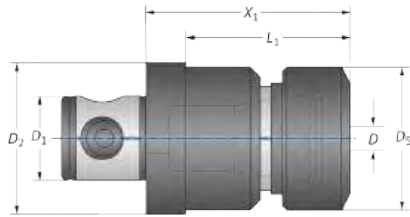
* X_1 Clamping nut with ball-bearing.





Collet Chucks

ISO 15488 (DIN 6499)

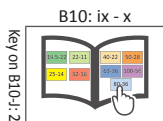


Metric (mm)

MVS Connection	Clamping Range D	Nominal Size	Collet Chuck			Weight (kg)	Part No.
			X_1^*	L_1	D_5		
$D_2 D_1$							
32 - 18	1.00 - 10.00	ER 16	54.00	41.00	28.00	0.20	228020
40 - 22	2.00 - 16.00	ER 25	75.00	—	42.00	0.60	228021
m	50 - 28	ER 25	75.00	62.00	42.00	0.80	228003
	2.00 - 20.00	ER 32	76.00	—	50.00	0.80	228004
	2.00 - 20.00	ER 32	76.00	63.00	50.00	1.20	228007
	4.00 - 26.00	ER 40	88.00	—	63.00	1.60	228006

Imperial (in)

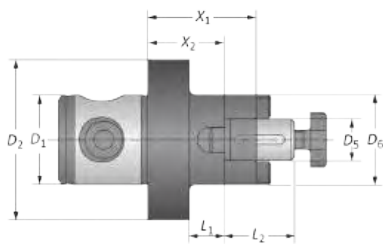
MVS Connection	Clamping Range D	Nominal Size	Collet Chuck			Weight (lbs)	Part No.
			X_1^*	L_1	D_5		
$D_2 D_1$							
32 - 18	0.039 - 0.393	ER 16	2.125	1.614	1.102	0.441	228020
40 - 22	0.078 - 0.629	ER 25	2.953	—	1.654	1.323	228021
i	50 - 28	ER 25	2.953	2.441	1.654	1.764	228003
	0.078 - 0.787	ER 32	2.992	—	1.969	1.764	228004
	0.078 - 0.787	ER 32	2.992	2.480	1.969	2.646	228007
	0.157 - 1.023	ER 40	3.465	—	2.480	3.527	228006

* X_1 Clamping nut with sliding ring.

Milling Machine Arbors

Adapter Range: 13.00 mm - 40.00 mm (0.512" - 1.575")

For Milling Cutters with Longitudinal or Transverse Drive



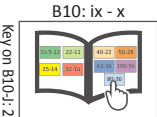
Metric (mm)

MVS Connection	Adapter Range	Milling Arbor					Weight (kg)	Part No.
$D_2 \mid D_1$	D_5	X_1	X_2	L_1	L_2	D_6		
 50 - 28	13.00	34.00	24.00	11.00	22.00	28.00	0.40	162002
	16.00	40.00	30.00	17.00	27.00	32.00	0.50	162003
	22.00	40.00	28.00	15.00	31.00	40.00	0.60	162004
 63 - 36	16.00	40.00	30.00	17.00	27.00	32.00	0.80	161002
	22.00	40.00	28.00	15.00	31.00	40.00	0.90	161003
	27.00	40.00	28.00	15.00	33.00	48.00	1.10	161004
 80 - 36	32.00	40.00	26.00	13.00	38.00	58.00	1.30	161005
	40.00	53.00	39.00	—	41.00	70.00*	2.60	161006

Imperial (in)

MVS Connection	Adapter Range	Milling Arbor					Weight (lbs)	Part No.
$D_2 \mid D_1$	D_5	X_1	X_2	L_1	L_2	D_6		
 50 - 28	0.512	1.339	0.945	0.433	0.866	1.102	0.882	162002
	0.630	1.575	1.181	0.669	1.063	1.260	1.102	162003
	0.866	1.575	1.102	0.591	1.220	1.575	1.323	162004
 63 - 36	0.630	1.575	1.181	0.669	1.063	1.260	1.764	161002
	0.866	1.575	1.102	0.591	1.220	1.575	1.984	161003
	1.063	1.575	1.102	0.591	1.299	1.890	2.425	161004
 80 - 36	1.260	1.575	1.024	0.512	1.496	2.283	2.866	161005
	1.575	2.087	1.535	—	1.614	2.756*	5.733	161006

*Ø 70.00 mm (2.756") with clutch drive ring.



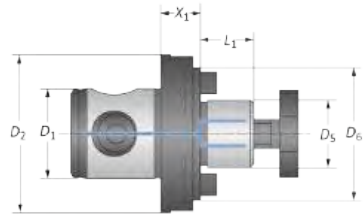
 = Metric (mm)
 = Imperial (in)



Holding Arbors for Milling Cutters

Adapter Range: 16.00 mm - 40.00 mm (0.630" - 1.575")

Central Coolant Feed

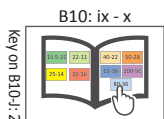


Metric (mm)

MVS Connection		Adapter Range	Holding Arbor					
$D_2 \mid D_1$		D_5	X_1	L_1	D_4	D_6	Weight (kg)	Part No.
m	50 - 28	16.00	16.00	17.00	—	40.00	0.40	162032
		22.00	16.00	19.00	—	50.00	0.50	162033
	63 - 36	27.00	16.00	21.00	—	60.00	0.80	161082
	80 - 36	32.00	16.00	24.00	—	78.00	1.10	209080
		40.00	19.00	27.00	66.70	89.00	1.50	209081

Imperial (in)

MVS Connection		Adapter Range	Holding Arbor					
$D_2 \mid D_1$		D_5	X_1	L_1	D_4	D_6	Weight (lbs)	Part No.
i	50 - 28	0.630	0.630	0.669	—	1.575	0.882	162032
		0.866	0.630	0.748	—	1.969	1.102	162033
	63 - 36	1.063	0.630	0.827	—	2.362	1.764	161082
	80 - 36	1.260	0.630	0.945	—	3.071	2.425	209080
		1.575	0.748	1.063	2.626	3.504	3.307	209081

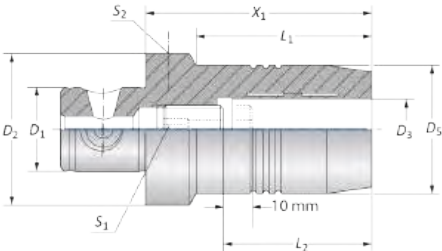
NOTE: See page B10-H: 5 for holding arbor with MVS 100 - 56 connection.

B10: ix - x



Clamping Chucks | Tapping Chucks

Coolant-Through Hydraulic Clamping Chucks



Metric (mm)

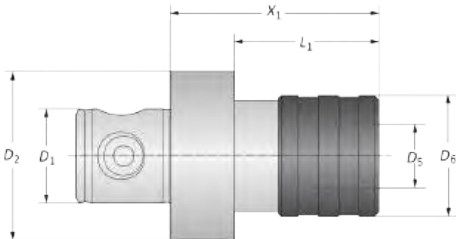
MVS Connection	Clamping Range	Clamping Chuck							Weight (kg)	Part No.
$D_2 D_1$	D_3	X_1	D_5	L_1	L_2	S_1	S_2			
50 - 28	20.00	75.00	42.00	58.00	51.00	s6	s5	0.80	209044	
63 - 36	20.00	75.00	42.00	53.00	51.00	s5	s5	1.10	209045	

Imperial (in)

MVS Connection	Clamping Range	Clamping Chuck							Weight (lbs)	Part No.
$D_2 D_1$	D_3	X_1	D_5	L_1	L_2	S_1	S_2			
50 - 28	0.787	2.953	1.654	2.283	2.008	s6	s5	1.764	209044	
63 - 36	0.787	2.953	1.654	2.087	2.008	s5	s5	2.425	209045	

NOTE: Balanced 10 gmm/kg.

Tapping Chucks (Noncoolant)

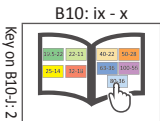


Metric (mm)

MVS Connection	Quick-Change Adapters		Tapping Chucks				Length Compensation		Weight (kg)	Part No.
$D_2 D_1$	For Taps	Nominal Size	X_1	L_1	D_5	D_6	Pressure	Tension		
50 - 28	M 3 - M 12	1	62.00	49.00	19.00	41.50	7.50	7.50	0.70	209098
	M 6 - M 20	2	94.00	—	31.00	60.30	10.00	10.00	1.10	209099
63 - 36	M 3 - M 12	1	56.00	43.00	19.00	41.50	7.50	7.50	0.80	231005
	M 6 - M 20	2	80.00	67.00	31.00	60.30	10.00	10.00	1.30	231006
	M 14 - M 33	3	152.00	—	48.00	86.00	17.50	17.50	4.10	231007

Imperial (in)

MVS Connection	Quick-Change Adapters		Tapping Chucks				Length Compensation		Weight (lbs)	Part No.
$D_2 D_1$	For Taps	Nominal Size	X_1	L_1	D_5	D_6	Pressure	Tension		
50 - 28	M 3 - M 12	1	2.441	1.929	0.748	1.634	0.295	0.295	1.543	209098
	M 6 - M 20	2	3.701	—	1.220	2.374	0.394	0.394	2.425	209099
63 - 36	M 3 - M 12	1	2.205	1.693	0.748	1.634	0.295	0.295	1.764	231005
	M 6 - M 20	2	3.150	2.638	1.220	2.374	0.394	0.394	2.866	231006
	M 14 - M 33	3	5.984	—	1.890	3.386	0.689	0.689	9.040	231007

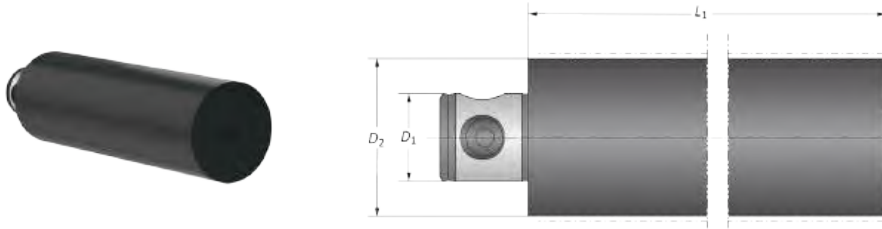


Key on B10-J: 2

m = Metric (mm)
i = Imperial (in)



Boring Bar Blanks



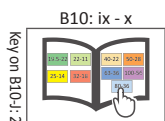
Metric (mm)

	MVS Connection	Boring Bar Blanks	Weight (kg)	Part No.
	$D_2 \mid D_1$	L_1		
m	50 - 28	160.00	2.60	166103
	63 - 36	160.00	4.20	166104
	80 - 36	160.00	6.60	166105

Imperial (in)

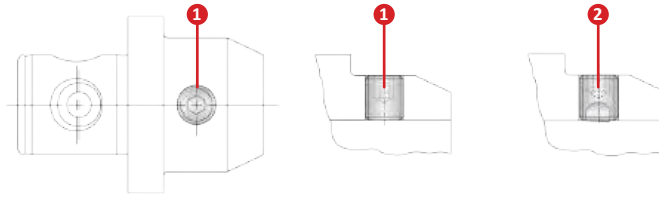
	MVS Connection	Boring Bar Blanks	Weight (lbs)	Part No.
	$D_2 \mid D_1$	L_1		
i	50 - 28	6.299	5.733	166103
	63 - 36	6.299	9.261	166104
	80 - 36	6.299	14.550	166105

NOTE: The blanks are unhardened and unground in areas marked.





Accessories for Adapter Sleeves



Metric (mm)

Clamping Diameter	1. Thread Pin		2. Ball Pressure Screw		
	Part No.	Service Key	Part No.	Service Key	Thread
6.00	115680	s3 / B	315788	s3 / B	M6 x 1
8.00	115681	s4 / B	315789	s4 / B	M8 x 1.25
10.00	115682	s5 / B	515535	s5 / B	M10 x 1.5
12.00	115683	s6 / B	315790	s6 / B	M12 x 1.75
14.00	115683	s6 / B	315790	s6 / B	M12 x 1.75
16.00	115684	s6 / B	515675	s6 / B	M14 x 2
18.00	115684	s6 / B	515675	s6 / B	M14 x 2
20.00	115685	s8 / B	515676	s8 / B	M16 x 2
25.00	115686	s10 / B	515677	s10 / B	M18 x 2 (2x)
32.00	115687	s10 / B	515678	s10 / B	M20 x 2 (2x)
40.00	115687	s10 / B	515678	s10 / B	M20 x 2 (2x)

Imperial (in)

Clamping Diameter	1. Thread Pin		2. Ball Pressure Screw		
	Part No.	Service Key	Part No.	Service Key	Thread
0.236	115680	s3 / B	315788	s3 / B	M6 x 1
0.315	115681	s4 / B	315789	s4 / B	M8 x 1.25
0.394	115682	s5 / B	515535	s5 / B	M10 x 1.5
0.472	115683	s6 / B	315790	s6 / B	M12 x 1.75
0.551	115683	s6 / B	315790	s6 / B	M12 x 1.75
0.630	115684	s6 / B	515675	s6 / B	M14 x 2
0.709	115684	s6 / B	515675	s6 / B	M14 x 2
0.787	115685	s8 / B	515676	s8 / B	M16 x 2
0.984	115686	s10 / B	515677	s10 / B	M18 x 2 (2x)
1.260	115687	s10 / B	515678	s10 / B	M20 x 2 (2x)
1.575	115687	s10 / B	515678	s10 / B	M20 x 2 (2x)

*Without axial adjustment.



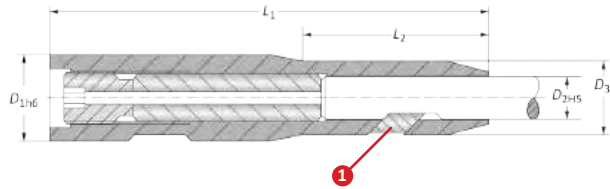
m = Metric (mm)

i = Imperial (in)



Accessories for Adapter Sleeves

Micro Clamping Chucks Suitable for Reduction Sleeves with Shanks to DIN 1835-B



Metric (mm)

Micro Clamping Chuck					1. Clamping Wedge	
D_{1h6}	D_{2H5}	D_3	L_1	L_2	Part No.	Part No.
16.00	6.00	12.00	100.00	40.00	219170	219070
	8.00	14.00	100.00	45.00	219171	219071
20.00	10.00	17.00	100.00	43.00	219172	219072
	12.00	20.00	110.00	39.00	219173	219073
25.00	14.00	22.00	110.00	46.00	219174	219074
	16.00	25.00	125.00	45.00	219174	219075
32.00	18.00	27.00	130.00	54.00	219174	219076
	20.00	30.00	130.00	62.00	219175	219077

Imperial (in)

Micro Clamping Chuck					1. Clamping Wedge	
D_{1h6}	D_{2H5}	D_3	L_1	L_2	Part No.	Part No.
0.630	0.236	0.472	3.937	1.575	219170	219070
	0.315	0.551	3.937	1.772	219171	219071
0.787	0.394	0.669	3.937	1.693	219172	219072
	0.472	0.787	4.331	1.535	219173	219073
0.984	0.551	0.866	4.331	1.811	219174	219074
	0.630	0.984	4.921	1.772	219174	219075
1.260	0.709	1.063	5.118	2.126	219174	219076
	0.787	1.181	5.118	2.441	219175	219077

NOTE: Clamping chucks are used in reduction sleeves for clamping tools with cylindrical shanks to DIN 1835-B (Fig. 1). The chucks' design allows the use of standard tools versus ordering special tools (Fig. 2).

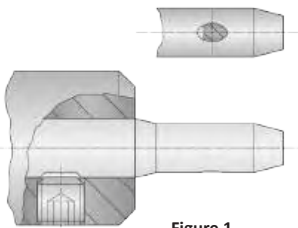


Figure 1

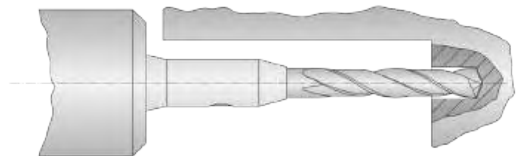


Figure 2



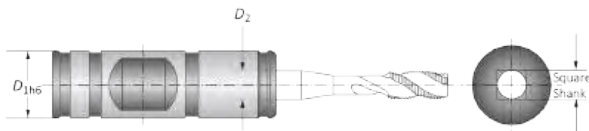
m = Metric (mm)

i = Imperial (in)



Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves with Shanks to DIN 1835-B



Metric (mm)

Adapter Sleeves		
D_{1h6}	D_2 x Square Shank	Part No.
8.00	2.50 x 2.10	271190
	2.80 x 2.10	271191
10.00	3.50 x 2.70	271192
	4.00 x 3.00	271193
	4.50 x 3.40	271194
12.00	6.00 x 4.90	271195
14.00	7.00 x 5.50	271196
	8.00 x 6.20	271197
16.00	9.00 x 7.00	271198
	10.00 x 8.00	271199
18.00	11.00 x 9.00	271200
20.00	12.00 x 9.00	271201
	14.00 x 11.00	271202
25.00	16.00 x 12.00	271203
	18.00 x 14.50	271204
32.00	20.00 x 16.00	271205
	22.00 x 18.00	271206
	25.00 x 20.00	271207
40.00	28.00 x 22.00	271208
	32.00 x 24.00	271209
50.00	36.00 x 29.00	271210
	40.00 x 32.00	271211

m

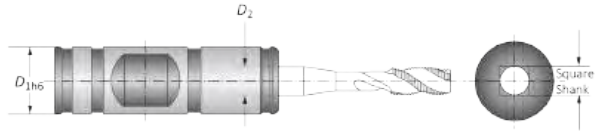


m = Metric (mm)
i = Imperial (in)



Accessories for Adapter Sleeves

Adapter Sleeve for Tap Shanks Suitable for Reduction Sleeves with Shanks to DIN 1835-B



Imperial (in)

Adapter Sleeves		
D_{1h6}	D_2 x Square Shank	Part No.
0.315	0.098 x 0.082	271190
	0.110 x 0.082	271191
0.394	0.137 x 0.106	271192
	0.157 x 0.118	271193
	0.177 x 0.133	271194
0.472	0.236 x 0.192	271195
0.551	0.275 x 0.216	271196
	0.314 x 0.244	271197
0.630	0.354 x 0.275	271198
	0.393 x 0.314	271199
0.709	0.433 x 0.354	271200
	0.472 x 0.354	271201
	0.551 x 0.433	271202
0.787	0.629 x 0.472	271203
	0.708 x 0.570	271204
1.260	0.787 x 0.629	271205
	0.866 x 0.708	271206
	0.984 x 0.866	271207
1.575	1.102 x 0.866	271208
	1.259 x 0.944	271209
1.969	1.417 x 1.141	271210
	1.574 x 1.259	271211

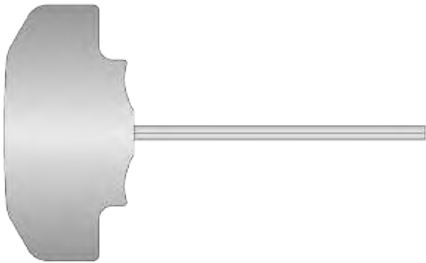
i



Accessories for Drill Chucks

Service Keys for Drill Chucks

Service Key		Tightening Torque N·m	Part No.
Service Key	Type		
2.50	B	15	415577
6.00	B	15	115578



Gaskets for Drill Chucks

Metric (mm)

m	Gasket		Part No.
	Gasket Diameter	Clamping Diameter	
	3.00 - 6.00	0.50 - 13.00	
	6.00 - 13.00	0.50 - 13.00	
	3.00 - 6.00	2.50 - 16.00	
	6.00 - 16.00	2.50 - 16.00	



Imperial (in)

i	Gasket		Part No.
	Gasket Diameter	Clamping Diameter	
	0.118 - 0.236	0.019 - 0.511	
	0.236 - 0.511	0.019 - 0.511	
	0.118 - 0.236	0.098 - 0.629	
	0.236 - 0.629	0.098 - 0.629	

Assembly Tool for Gasket

Part No.
387112

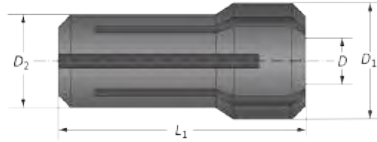




Accessories for Collet Chucks

Erickson System

Collet Sets for Erickson System



Metric (mm)

	Nominal Size	Standard-No.	Set				Part No.
			D_1	D_2	L_1	D	
	6	416 E	9.50	7.62	25.50	0.50 - 6.00	071016
	10	417 E	13.50	11.43	30.40	0.50 - 10.00	071017

Imperial (in)

	Nominal Size	Standard-No.	Set				Part No.
			D_1	D_2	L_1	D	
	6	416 E	0.374	0.300	1.004	0.020 - 0.236	071016
	10	417 E	0.531	0.450	1.197	0.020 - 0.394	071017

Collets for Erickson System

Metric (mm)

Collet Nominal Size	Diameter Range D	Part No.
6	0.50 - 1.00	071355
	1.00 - 1.50	071356
	1.50 - 2.00	071357
	2.00 - 2.50	071358
	2.50 - 3.00	071359
	3.00 - 3.50	071360
	3.50 - 4.00	071361
	4.00 - 4.50	071362
	4.50 - 5.00	071363
	5.00 - 5.50	071364
10	5.50 - 6.00	071365
	0.50 - 1.00	071368
	1.00 - 1.50	071369
	1.50 - 2.00	071370
	2.00 - 2.50	071371
	2.50 - 3.00	071372
	3.00 - 3.50	071373
	3.50 - 4.00	071374
	4.00 - 4.50	071375
	4.50 - 5.00	071376
	5.00 - 5.50	071377
	5.50 - 6.00	071378
	6.00 - 6.50	071379
	6.50 - 7.00	071380
	7.00 - 7.50	071381
	7.50 - 8.00	071382
	8.00 - 8.50	071383
	8.50 - 9.00	071384
	9.00 - 9.50	071385
	9.50 - 10.00	071681

Imperial (in)

Collet Nominal Size	Diameter Range D	Part No.
6	0.020 - 0.039	071355
	0.039 - 0.059	071356
	0.059 - 0.079	071357
	0.079 - 0.098	071358
	0.098 - 0.118	071359
	0.118 - 0.138	071360
	0.138 - 0.157	071361
	0.157 - 0.177	071362
	0.177 - 0.197	071363
	0.197 - 0.217	071364
10	0.217 - 0.236	071365
	0.020 - 0.039	071368
	0.039 - 0.059	071369
	0.059 - 0.079	071370
	0.079 - 0.098	071371
	0.098 - 0.118	071372
	0.118 - 0.138	071373
	0.139 - 0.157	071374
	0.157 - 0.177	071375
	0.177 - 0.197	071376
	0.197 - 0.217	071377
	0.217 - 0.236	071378
	0.236 - 0.256	071379
	0.256 - 0.276	071380
	0.276 - 0.295	071381
	0.295 - 0.315	071382
	0.315 - 0.335	071383
	0.335 - 0.354	071384
	0.354 - 0.374	071385
	0.374 - 0.394	071681



 = Metric (mm)

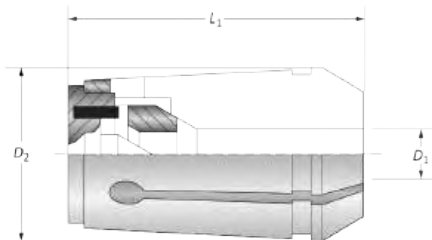
 = Imperial (in)



Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collet Sets for Clarkson System



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
m	A 16	421 E	22.65	42.00	6.00 - 12.00	071013
	A 25	459 E	32.90	52.00	6.00 - 25.00	071014
	A 32	460 E	41.30	63.00	6.00 - 32.00	071020

Imperial (in)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
i	A 16	421 E	0.892	1.654	0.236 - 0.472	071013
	A 25	459 E	1.295	2.047	0.236 - 0.984	071014
	A 32	460 E	1.626	2.480	0.236 - 1.260	071020

NOTE: Recommended to use clamping nuts with ball bearings to lock collets.

Collets for Clarkson System

Metric (mm)

	Collet	Diameter Range	Part No.
	Nominal Size	D	
m	A 16	6.00	071304
		8.00	071305
		10.00	071306
		12.00	071307
	A 25	6.00	071308
		8.00	071309
		10.00	071310
		12.00	071311
		16.00	071312
		20.00	071313
		25.00	071684
	A 32	6.00	071427
		8.00	071428
		10.00	071429
		12.00	071430
		16.00	071431
		20.00	071432
		25.00	071433
		32.00	071685

Imperial (in)

	Collet	Diameter Range	Part No.
	Nominal Size	D	
i	A 16	0.236	071304
		0.315	071305
		0.394	071306
		0.472	071307
	A 25	0.236	071308
		0.315	071309
		0.394	071310
		0.472	071311
		0.630	071312
		0.787	071313
		0.984	071684
	A 32	0.236	071427
		0.315	071428
		0.394	071429
		0.472	071430
		0.630	071431
		0.787	071432
		0.984	071433
		1.260	071685



m = Metric (mm)
i = Imperial (in)

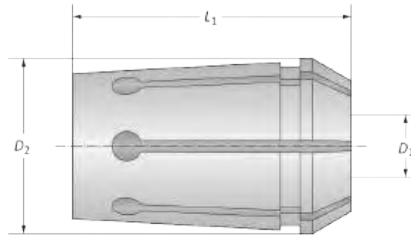


Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)



Collet Sets



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
m	A 16	410 E	22.65	40.00	2.00 - 16.00	071003
	A 25	444 E	32.90	52.00	2.00 - 25.00	071004
	A 32	450 E	41.30	60.00	4.00 - 32.00	071019

Imperial (in)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
i	A 16	410 E	0.891	1.574	0.079 - 0.630	071003
	A 25	444 E	1.295	2.047	0.079 - 0.984	071004
	A 32	450 E	1.625	2.362	0.157 - 1.259	071019

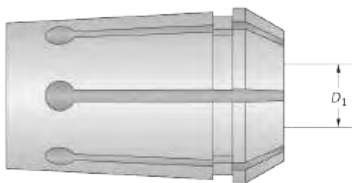




Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
A 16	2.00	071140
	2.50	071141
	3.00	071142
	3.50	071143
	4.00	071144
	4.50	071145
	5.00	071146
	5.50	071147
	6.00	071148
	6.50	071149
	7.00	071150
	7.50	071151
	8.00	071152
	8.50	071153
	9.00	071154
	9.50	071155
	10.00	071156
	10.50	071157
	11.00	071158
	11.50	071159
	12.00	071160
	12.50	071161
	13.00	071162
	13.50	071163
A 25	14.00	071164
	14.50	071165
	15.00	071166
	15.50	071167
	16.00	071168
	2.00	071169
	3.00	071170
	4.00	071171
	5.00	071172
	6.00	071173
	7.00	071174
	8.00	071175
	9.00	071176
	10.00	071177
	11.00	071178
	12.00	071179
	13.00	071180

Metric (mm)

Nominal Size	Diameter D_1	Part No.
A 25	14.00	071181
	15.00	071182
	16.00	071183
	17.00	071184
	18.00	071185
	19.00	071186
	20.00	071187
	21.00	071188
	22.00	071189
	23.00	071190
	24.00	071191
	25.00	071192
	4.00	071612
A 32	5.00	071419
	6.00	071420
	7.00	071613
	8.00	071421
	9.00	071614
	10.00	071422
	11.00	071666
	12.00	071423
	13.00	071667
	14.00	071668
	15.00	071669
	16.00	071424
	17.00	071670
	18.00	071665
	19.00	071671
	20.00	071416
	21.00	071672
	22.00	071673
	23.00	071674
	24.00	071675
	25.00	071417
	26.00	071676
	27.00	071677
	28.00	071678
	29.00	071679
	30.00	071633
	31.00	071680
	32.00	071418



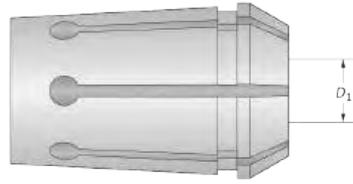
= Metric (mm)
 = Imperial (in)



Accessories for Collet Chucks

ISO 10897-A (DIN 6388-A)

Collets



Imperial (in)

Nominal Size	Diameter D_1	Part No.
A 16	0.079	071140
	0.098	071141
	0.118	071142
	0.138	071143
	0.157	071144
	0.177	071145
	0.197	071146
	0.217	071147
	0.236	071148
	0.256	071149
	0.276	071150
	0.295	071151
	0.315	071152
	0.335	071153
	0.354	071154
	0.374	071155
	0.394	071156
	0.413	071157
	0.433	071158
	0.453	071159
	0.472	071160
	0.492	071161
	0.512	071162
A 25	0.531	071163
	0.551	071164
	0.571	071165
	0.591	071166
	0.610	071167
	0.630	071168
	0.078	071169
	0.118	071170
	0.157	071171
	0.196	071172
	0.236	071173
	0.275	071174
	0.315	071175
	0.354	071176
	0.393	071177
	0.433	071178
	0.472	071179
	0.511	071180

Imperial (in)

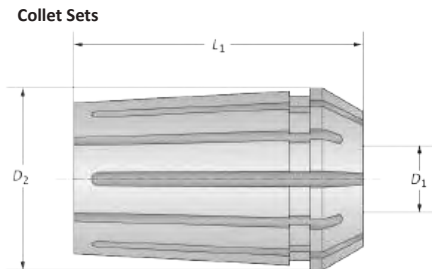
Nominal Size	Diameter D_1	Part No.
A 25	0.551	071181
	0.590	071182
	0.629	071183
	0.669	071184
	0.708	071185
	0.748	071186
	0.787	071187
	0.826	071188
	0.866	071189
	0.905	071190
	0.944	071191
	0.984	071192
	0.157	071612
	0.196	071419
A 32	0.236	071420
	0.275	071613
	0.315	071421
	0.354	071614
	0.393	071422
	0.433	071666
	0.472	071423
	0.511	071667
	0.551	071668
	0.590	071669
	0.629	071424
	0.669	071670
	0.708	071665
	0.748	071671
	0.787	071416
	0.826	071672
	0.866	071673
	0.905	071674
	0.944	071675
	0.984	071417
	1.023	071676
	1.063	071677
	1.102	071678
	1.141	071679
	1.181	071633
	1.220	071680
	1.259	071418





Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)



Metric (mm)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
m	B 16	415 E	22.65	40.00	1.50 - 16.00	071005
	B 25	462 E	32.90	52.00	3.50 - 25.00	071006
	B 32	467 E	41.30	60.00	5.50 - 32.00	071022

Imperial (in)

	Nominal Size	Standard-No.	Set			Part No.
			D_2	L_1	D_1	
i	B 16	415 E	0.892	1.575	0.059 - 0.630	071005
	B 25	462 E	1.295	2.047	0.138 - 0.984	071006
	B 32	467 E	1.626	2.362	0.217 - 1.260	071022

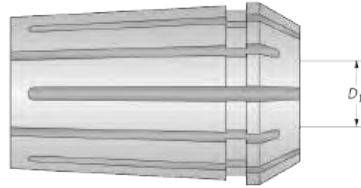




Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
B 16	1.50 - 2.00	071625
	2.00 - 2.50	071626
	2.50 - 3.00	071621
	3.00 - 3.50	071622
	3.50 - 4.00	071193
	4.00 - 4.50	071194
	4.50 - 5.00	071195
	5.00 - 5.50	071196
	5.50 - 6.00	071197
	6.00 - 6.50	071198
	6.50 - 7.00	071199
	7.00 - 7.50	071200
	7.50 - 8.00	071201
	8.00 - 8.50	071202
	8.50 - 9.00	071203
	9.00 - 9.50	071204
	9.50 - 10.00	071205
	10.00 - 10.50	071206
	10.50 - 11.00	071207
	11.00 - 11.50	071208
B 25	11.50 - 12.00	071209
	12.00 - 12.50	071210
	12.50 - 13.00	071211
	13.00 - 13.50	071212
	13.50 - 14.00	071213
	14.00 - 14.50	071214
	14.50 - 15.00	071215
	15.00 - 15.50	071216
	15.50 - 16.00	071217
	3.50 - 4.00	071627
	4.00 - 4.50	071628
	4.50 - 5.00	071218
	5.00 - 5.50	071219
	5.50 - 6.00	071220
	6.00 - 6.50	071221
	6.50 - 7.00	071222
	7.00 - 7.50	071223
	7.50 - 8.00	071224
B 25	8.00 - 8.50	071225
	8.50 - 9.00	071226
	9.00 - 9.50	071227
	9.50 - 10.00	071228
	10.00 - 10.50	071229
	10.50 - 11.00	071230
	11.00 - 11.50	071231

Metric (mm)

Nominal Size	Diameter D_1	Part No.
B 25	11.50 - 12.00	071232
	12.00 - 12.50	071233
	12.50 - 13.00	071234
	13.00 - 13.50	071235
	13.50 - 14.00	071236
	14.00 - 14.50	071237
	14.50 - 15.00	071238
	15.00 - 15.50	071239
	15.50 - 16.00	071240
	16.00 - 16.50	071241
	16.50 - 17.00	071242
	17.00 - 17.50	071243
	17.50 - 18.00	071244
	18.00 - 18.50	071245
	18.50 - 19.00	071246
	19.00 - 19.50	071247
	19.50 - 20.00	071248
	20.00 - 20.50	071249
	20.50 - 21.00	071250
	21.00 - 21.50	071251
B 32	21.50 - 22.00	071252
	22.00 - 22.50	071253
	22.50 - 23.00	071254
	23.00 - 23.50	071255
	23.50 - 24.00	071256
	24.00 - 24.50	071257
	24.50 - 25.00	071258
	5.50 - 6.00	071686
	6.00 - 6.50	071687
	6.50 - 7.00	071688
	7.00 - 7.50	071689
	7.50 - 8.00	071690
	8.00 - 8.50	071691
	8.50 - 9.00	071692
	9.00 - 9.50	071693
	9.50 - 10.00	071542
	10.00 - 10.50	071543
	10.50 - 11.00	071544
	11.00 - 11.50	071545
	11.50 - 12.00	071546
B 32	12.00 - 12.50	071547
	12.50 - 13.00	071548
	13.00 - 13.50	071549
	13.50 - 14.00	071550
	14.00 - 14.50	071551

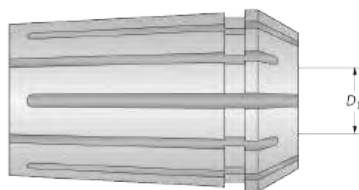




Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
m B 32	14.50 - 15.00	071552
	15.00 - 15.50	071553
	15.50 - 16.00	071554
	16.00 - 16.50	071555
	16.50 - 17.00	071556
	17.00 - 17.50	071557
	17.50 - 18.00	071558
	18.00 - 18.50	071559
	18.50 - 19.00	071560
	19.00 - 19.50	071561
	19.50 - 20.00	071562
	20.00 - 20.50	071563
	20.50 - 21.00	071564
	21.00 - 21.50	071565
	21.50 - 22.00	071566
	22.00 - 22.50	071567
	22.50 - 23.00	071568
	23.00 - 23.50	071569
	23.50 - 24.00	071570
	24.00 - 24.50	071571
	24.50 - 25.00	071572
	25.00 - 25.50	071573
	25.50 - 26.00	071574
	26.00 - 26.50	071575
	26.50 - 27.00	071576
	27.00 - 27.50	071577
	27.50 - 28.00	071578
	28.00 - 28.50	071579
	28.50 - 29.00	071580
	29.00 - 29.50	071581
	29.50 - 30.00	071582
	30.00 - 30.50	071583
	30.50 - 31.00	071584
	31.00 - 31.50	071585
	31.50 - 32.00	071586

Imperial (in)

Nominal Size	Diameter D_1	Part No.
i B 16	0.059 - 0.079	071625
	0.079 - 0.098	071626
	0.098 - 0.118	071621
	0.118 - 0.138	071622
	0.138 - 0.157	071193
	0.157 - 0.177	071194
	0.177 - 0.197	071195
	0.197 - 0.217	071196
	0.217 - 0.236	071197
	0.236 - 0.256	071198
	0.256 - 0.276	071199
	0.276 - 0.295	071200
	0.295 - 0.315	071201
	0.315 - 0.335	071202
	0.335 - 0.354	071203
	0.354 - 0.374	071204
	0.374 - 0.394	071205
	0.394 - 0.413	071206
	0.413 - 0.433	071207
	0.433 - 0.453	071208
	0.453 - 0.472	071209
	0.472 - 0.492	071210
	0.492 - 0.512	071211
	0.512 - 0.531	071212
	0.531 - 0.551	071213
	0.551 - 0.571	071214
	0.571 - 0.591	071215
	0.591 - 0.610	071216
	0.610 - 0.630	071217
i B 25	0.138 - 0.157	071627
	0.157 - 0.177	071628
	0.177 - 0.197	071218
	0.197 - 0.217	071219
	0.217 - 0.236	071220
	0.236 - 0.256	071221
	0.256 - 0.276	071222
	0.276 - 0.295	071223
	0.295 - 0.315	071224
	0.315 - 0.335	071225
	0.335 - 0.354	071226
	0.354 - 0.374	071227
	0.374 - 0.394	071228
	0.394 - 0.413	071229
	0.413 - 0.433	071230
	0.433 - 0.453	071231



m = Metric (mm)

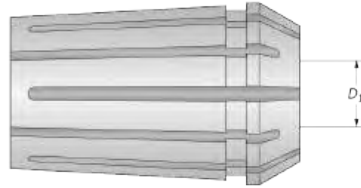
i = Imperial (in)



Accessories for Collet Chucks

ISO 10897-B (DIN 6388-B)

Collets



Imperial (in)

Nominal Size	Diameter D_1	Part No.
B 25	0.453 - 0.472	071232
	0.472 - 0.492	071233
	0.492 - 0.512	071234
	0.512 - 0.531	071235
	0.531 - 0.551	071236
	0.551 - 0.571	071237
	0.571 - 0.591	071238
	0.591 - 0.610	071239
	0.610 - 0.630	071240
	0.630 - 0.650	071241
	0.650 - 0.669	071242
	0.669 - 0.689	071243
	0.689 - 0.709	071244
	0.709 - 0.728	071245
	0.728 - 0.748	071246
	0.748 - 0.768	071247
	0.768 - 0.787	071248
	0.787 - 0.807	071249
	0.807 - 0.827	071250
	0.827 - 0.846	071251
B 32	0.846 - 0.866	071252
	0.866 - 0.866	071253
	0.866 - 0.906	071254
	0.906 - 0.925	071255
	0.925 - 0.945	071256
	0.945 - 0.965	071257
	0.965 - 0.984	071258
	0.217 - 0.236	071686
	0.236 - 0.256	071687
	0.256 - 0.276	071688
	0.276 - 0.295	071689
	0.295 - 0.315	071690
	0.315 - 0.335	071691
	0.335 - 0.354	071692
	0.354 - 0.374	071693
	0.374 - 0.394	071542
	0.394 - 0.413	071543
	0.413 - 0.433	071544
	0.433 - 0.453	071545
	0.453 - 0.472	071546
	0.472 - 0.492	071547
	0.492 - 0.512	071548
	0.512 - 0.531	071549
	0.531 - 0.551	071550
	0.551 - 0.571	071551

Imperial (in)

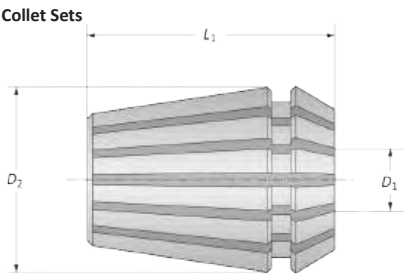
Nominal Size	Diameter D_1	Part No.
B 32	0.571 - 0.591	071552
	0.591 - 0.610	071553
	0.610 - 0.630	071554
	0.630 - 0.650	071555
	0.650 - 0.669	071556
	0.669 - 0.689	071557
	0.689 - 0.709	071558
	0.709 - 0.728	071559
	0.728 - 0.748	071560
	0.748 - 0.768	071561
	0.768 - 0.787	071562
	0.787 - 0.807	071563
	0.807 - 0.827	071564
	0.827 - 0.846	071565
	0.846 - 0.866	071566
	0.866 - 0.866	071567
	0.866 - 0.906	071568
	0.906 - 0.925	071569
	0.925 - 0.945	071570
	0.945 - 0.965	071571
	0.965 - 0.984	071572
	0.984 - 1.004	071573
	1.004 - 1.024	071574
	1.024 - 1.043	071575
	1.043 - 1.063	071576
	1.063 - 1.083	071577
	1.083 - 1.102	071578
	1.102 - 1.122	071579
	1.122 - 1.142	071580
	1.142 - 1.161	071581
	1.161 - 1.181	071582
	1.181 - 1.201	071583
	1.201 - 1.220	071584
	1.220 - 1.240	071585
	1.240 - 1.260	071586





Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)



Metric (mm)

	Nominal Size	Standard-No.	Diameter D_1	Set		Part No.
				D_2	L_1	
m	ER 8	4004 E	1.00 - 5.00	8.50	13.50	071034
	ER 11	4008 E	1.00 - 7.00	11.00	18.00	071028
	ER 16	426 E	0.50 - 10.00	16.00	27.50	071029
	ER 25	430 E	1.50 - 16.00	25.00	34.00	071031
	ER 32	470 E	2.00 - 20.00	32.00	40.00	071032
	ER 40	472 E	3.00 - 26.00	40.00	46.00	071033

Imperial (in)

	Nominal Size	Standard-No.	Diameter D_1	Set		Part No.
				D_2	L_1	
i	ER 8	4004 E	0.039 - 0.197	0.335	0.531	071034
	ER 11	4008 E	0.039 - 0.276	0.433	0.709	071028
	ER 16	426 E	0.020 - 0.394	0.630	1.083	071029
	ER 25	430 E	0.059 - 0.630	0.984	1.339	071031
	ER 32	470 E	0.079 - 0.787	1.260	1.575	071032
	ER 40	472 E	0.118 - 1.024	1.575	1.811	071033

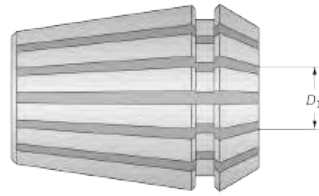




Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
ER 8	1.00	071986
	1.50	071987
	2.00	071988
	2.50	071989
	2.60 - 3.00	071990
	3.10 - 3.50	071991
	3.60 - 4.00	071992
	4.10 - 4.50	071993
ER 11	4.60 - 5.00	071994
	1.00	071700
	1.50	071701
	2.00	071702
	2.50	071703
	2.60 - 3.00	071704
	3.10 - 3.50	071705
	3.60 - 4.00	071706
	4.10 - 4.50	071707
	4.60 - 5.00	071708
	5.10 - 5.50	071709
	5.60 - 6.00	071710
	6.10 - 6.50	071711
	6.60 - 7.00	071712
	0.50 - 1.00	071713
	1.00 - 1.50	071714*
ER 16	1.00 - 2.00	071715
	2.00 - 2.50	071716*
	2.50 - 3.00	071717
	3.00 - 3.50	071718*
	3.50 - 4.00	071719
	4.00 - 4.50	271132*
	4.00 - 5.00	071720
	5.00 - 5.50	271133*
	5.50 - 6.00	071721
	6.00 - 6.50	271134*
	6.00 - 7.00	071722
	7.00 - 7.50	271135*
	7.50 - 8.00	071723
	8.00 - 8.50	271136*
	8.50 - 9.00	071724
	9.00 - 9.50	271137*
	9.00 - 10.00	071725
ER 25	1.50 - 2.00	071743
	2.00 - 2.50	071744*
	2.50 - 3.00	071745

Metric (mm)

Nominal Size	Diameter D_1	Part No.
ER 25	3.00 - 3.50	271128*
	3.50 - 4.00	071746
	4.00 - 4.50	271129*
	4.50 - 5.00	071747
	5.00 - 5.50	271130*
	5.50 - 6.00	071748
	6.00 - 6.50	271131*
	6.50 - 7.00	071749
	7.00 - 8.00	071750
	8.00 - 9.00	071751
	9.00 - 10.00	071752
	10.00 - 11.00	071753
	11.00 - 12.00	071754
	12.00 - 13.00	071755
	13.00 - 14.00	071756
ER 32	14.00 - 15.00	071757
	15.00 - 16.00	071758
	2.00 - 3.00	071761
	3.00 - 4.00	071762
	4.00 - 5.00	071763
	5.00 - 6.00	071764
	6.00 - 7.00	071765
	7.00 - 8.00	071766
	8.00 - 9.00	071767
	9.00 - 10.00	071768
	10.00 - 11.00	071769
	11.00 - 12.00	071770
	12.00 - 13.00	071771
	13.00 - 14.00	071772
	14.00 - 15.00	071773
	15.00 - 16.00	071774
	16.00 - 17.00	071775
ER 40	17.00 - 18.00	071776
	18.00 - 19.00	071777
	19.00 - 20.00	071778
	17.00 - 18.00	071776
	18.00 - 19.00	071777
	19.00 - 20.00	071778
	3.00 - 4.00	071779
	4.00 - 5.00	071780
ER 40	5.00 - 6.00	071781
	6.00 - 7.00	071782
	7.00 - 8.00	071783
	8.00 - 9.00	071784

*Items not contained in set.

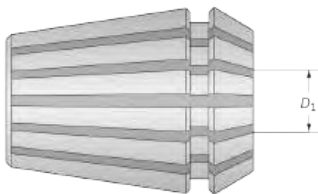
= Metric (mm)
 = Imperial (in)



Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets



Metric (mm)

Nominal Size	Diameter D_1	Part No.
m ER 40	9.00 - 10.00	071785
	10.00 - 11.00	071786
	11.00 - 12.00	071787
	12.00 - 13.00	071788
	13.00 - 14.00	071789
	14.00 - 15.00	071790
	15.00 - 16.00	071791
	16.00 - 17.00	071792
	17.00 - 18.00	071793
	18.00 - 19.00	071794
	19.00 - 20.00	071795
	20.00 - 21.00	071796
	21.00 - 22.00	071797
	22.00 - 23.00	071798
	23.00 - 24.00	071799
	24.00 - 25.00	071800
	25.00 - 26.00	071801

Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 8	0.039	071986
	0.059	071987
	0.079	071988
	0.098	071989
	0.102 - 0.118	071990
	0.122 - 0.138	071991
	0.142 - 0.157	071992
	0.161 - 0.177	071993
	0.181 - 0.197	071994
ER 11	0.039	071700
	0.059	071701
	0.079	071702
	0.098	071703
	0.102 - 0.118	071704
	0.122 - 0.138	071705
	0.142 - 0.157	071706
	0.161 - 0.177	071707
	0.181 - 0.197	071708
	0.201 - 0.217	071709
	0.220 - 0.354	071710
	0.240 - 0.256	071711
	0.260 - 0.276	071712
	0.020 - 0.039	071713
	0.039 - 0.059	071714*
	0.039 - 0.079	071715
ER 16	0.079 - 0.098	071716*
	0.098 - 0.118	071717
	0.118 - 0.138	071718*
	0.138 - 0.157	071719
	0.157 - 0.177	271132*
	0.157 - 0.197	071720
	0.197 - 0.217	271133*
	0.217 - 0.236	071721
	0.236 - 0.256	271134*
	0.236 - 0.276	071722
	0.276 - 0.295	271135*
	0.295 - 0.315	071723
	0.315 - 0.335	271136*
	0.335 - 0.354	071724
	0.354 - 0.374	271137*
	0.354 - 0.394	071725
ER 25	0.059 - 0.079	071743
	0.079 - 0.098	071744*
	0.098 - 0.118	071745

*Items not contained in set.



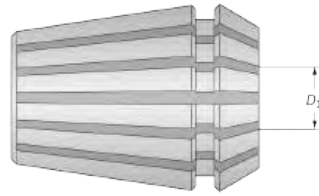
m = Metric (mm)
i = Imperial (in)



Accessories for Collet Chucks

ISO 15488-B (DIN 6499-B)

Collets



Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 25	0.118 - 0.138	271128*
	0.138 - 0.157	071746
	0.157 - 0.177	271129*
	0.177 - 0.197	071747
	0.197 - 0.217	271130*
	0.217 - 0.236	071748
	0.236 - 0.256	271131*
	0.256 - 0.276	071749
	0.276 - 0.315	071750
	0.315 - 0.354	071751
	0.354 - 0.394	071752
	0.394 - 0.433	071753
	0.433 - 0.472	071754
	0.472 - 0.512	071755
	0.512 - 0.551	071756
ER 32	0.551 - 0.591	071757
	0.591 - 0.630	071758
	0.079 - 0.118	071761
	0.118 - 0.157	071762
	0.157 - 0.197	071763
	0.197 - 0.236	071764
	0.236 - 0.276	071765
	0.276 - 0.315	071766
	0.315 - 0.354	071767
	0.354 - 0.394	071768
	0.394 - 0.433	071769
	0.433 - 0.472	071770
	0.472 - 0.512	071771
	0.512 - 0.551	071772
	0.551 - 0.591	071773
	0.591 - 0.630	071774
	0.630 - 0.669	071775
	0.669 - 0.709	071776
	0.709 - 0.748	071777
	0.748 - 0.787	071778
ER 40	0.669 - 0.709	071776
	0.709 - 0.748	071777
	0.748 - 0.787	071778
	0.118 - 0.157	071779
	0.157 - 0.197	071780
	0.197 - 0.236	071781
ER 40	0.236 - 0.276	071782
	0.276 - 0.315	071783
	0.315 - 0.354	071784

Imperial (in)

Nominal Size	Diameter D_1	Part No.
ER 40	0.354 - 0.394	071785
	0.394 - 0.433	071786
	0.433 - 0.472	071787
	0.472 - 0.512	071788
	0.512 - 0.551	071789
	0.551 - 0.591	071790
	0.591 - 0.630	071791
	0.630 - 0.669	071792
	0.669 - 0.709	071793
	0.709 - 0.748	071794
	0.748 - 0.787	071795
	0.787 - 0.827	071796
	0.827 - 0.866	071797
	0.866 - 0.906	071798
	0.906 - 0.945	071799
	0.945 - 0.984	071800
	0.984 - 1.024	071801

i

i



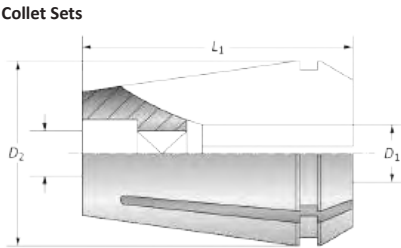
*Items not contained in set.

m = Metric (mm)

i = Imperial (in)

Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Metric (mm)

	Nominal Size	Standard-No.	Clamping Range	Collet Set		Part No.
			D ₁	D ₂	L ₁	
m	ER 16	426 EGB	4.50 - 7.00	16.00	27.50	071045
	ER 25	430 EGB	4.50 - 12.00	25.00	34.00	071047
	ER 32	470 EGB	4.50 - 16.00	32.00	40.00	071048
	ER 40	472 EGB	7.00 - 20.00	40.00	46.00	071049

Imperial (in)

	Nominal Size	Standard-No.	Clamping Range	Collet Set		Part No.
			D ₁	D ₂	L ₁	
i	ER 16	426 EGB	0.177 - 0.276	0.630	1.083	071045
	ER 25	430 EGB	0.177 - 0.472	0.984	1.339	071047
	ER 32	470 EGB	0.177 - 0.630	1.260	1.575	071048
	ER 40	472 EGB	0.276 - 0.787	1.575	1.811	071049

NOTE: To lock these collets, we recommend using the clamping nuts with sliding ring for higher clamping forces.

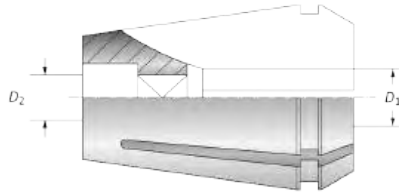




Collet Sets for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)

Taps



Metric (mm)

	Shank		Tap		
	D_1	Square Shank	DIN 371	DIN 374	DIN 376
m	4.50	3.40	M 4	M 6 x...	M 6
	5.50	4.30	–	M 7 x...	M 7
	6.00	4.90	M 4,5/5/6	M 8 x...	M 8
	7.00	5.50	M 7	M 9/10 x...	M 9/10
	8.00	6.20	M 8	M 6 x...	M 11
	9.00	7.00	M 9	M 6 x...	M 12
	10.00	8.00	M 10	–	–
	11.00	9.00	–	M 14 x...	M 14
	12.00	9.00	M 12	M 16 x...	M 16
	14.00	11.00	–	M 18 x...	M 18
	16.00	12.00	–	M 20 x...	M 20
	18.00	14.00	–	M 22/24 x...	M 22/24
	20.00	16.00	–	M 27 x...	M 27

Imperial (in)

	Shank		Tap		
	D_1	Square Shank	DIN 371	DIN 374	DIN 376
i	0.177	0.134	M 4	M 6 x...	M 6
	0.217	0.169	–	M 7 x...	M 7
	0.236	0.193	M 4,5/5/6	M 8 x...	M 8
	0.276	0.217	M 7	M 9/10 x...	M 9/10
	0.315	0.244	M 8	M 6 x...	M 11
	0.354	0.276	M 9	M 6 x...	M 12
	0.394	0.315	M 10	–	–
	0.433	0.354	–	M 14 x...	M 14
	0.472	0.354	M 12	M 16 x...	M 16
	0.551	0.433	–	M 18 x...	M 18
	0.630	0.472	–	M 20 x...	M 20
	0.709	0.551	–	M 22/24 x...	M 22/24
	0.787	0.630	–	M 27 x...	M 27



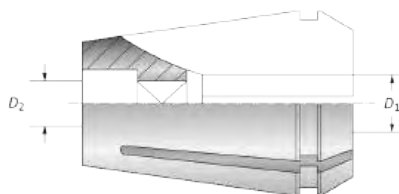
J

m = Metric (mm)

i = Imperial (in)

Collet Set Accessories for Taps DIN 371/374/376

ISO 15488-B (DIN 6499-B)



Metric (mm)

Nominal Size	Suitable Taps		Part No.
	D_1	Square Shank	
ER 16	4.50	3.40	071901
	5.50	4.30	071902
	6.00	4.90	071903
	7.00	5.50	071904
ER 25	4.50	3.40	071912
	5.50	4.30	071913
	6.00	4.90	071914
	7.00	5.50	071915
	8.00	6.20	071916
	9.00	7.00	071917
	10.00	8.00	071918
	11.00	9.00	071919
ER 32	12.00	9.00	071920
	4.50	3.40	071921
	5.50	4.30	071922
	6.00	4.90	071923
	7.00	5.50	071924
	8.00	6.20	071925
	9.00	7.00	071926
	10.00	8.00	071927
ER 40	11.00	9.00	071928
	12.00	9.00	071929
	14.00	11.00	071930
	16.00	12.00	071931
	7.00	5.50	071932
	8.00	6.20	071933
	9.00	7.00	071934
	10.00	8.00	071935
	11.00	9.00	071936
	12.00	9.00	071937
	14.00	11.00	071938
	16.00	12.00	071939
	18.00	14.50	071940
	20.00	16.00	071941

Imperial (in)

Nominal Size	Suitable Taps		Part No.
	D_1	Square Shank	
ER 16	0.177	0.134	071901
	0.217	0.169	071902
	0.236	0.193	071903
	0.276	0.217	071904
ER 25	0.177	0.134	071912
	0.217	0.169	071913
	0.236	0.193	071914
	0.276	0.217	071915
	0.315	0.244	071916
	0.354	0.276	071917
	0.394	0.315	071918
	0.433	0.354	071919
ER 32	0.472	0.354	071920
	0.177	0.134	071921
	0.217	0.169	071922
	0.236	0.193	071923
	0.276	0.217	071924
	0.315	0.244	071925
	0.354	0.276	071926
	0.394	0.315	071927
ER 40	0.433	0.354	071928
	0.472	0.354	071929
	0.551	0.433	071930
	0.630	0.472	071931
	0.276	0.217	071932
	0.315	0.244	071933
	0.354	0.276	071934
	0.394	0.315	071935
	0.433	0.354	071936
	0.472	0.354	071937
	0.551	0.433	071938
	0.630	0.472	071939
	0.709	0.571	071940
	0.787	0.630	071941

m

i



J

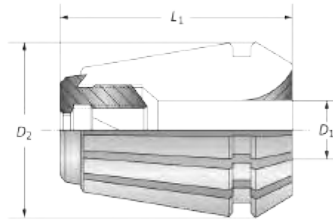
m = Metric (mm)
i = Imperial (in)



Collets for Mill Cutters with Pull Thread System

ISO 15488-B (DIN 6499-B)

Collet Sets



Metric (mm)

	Collet		Clamping Range D_2	Collet		Part No.
	Nominal Size	Standard-No.		L_1	D_1	
m	ER 32	470 ECL	32.00	46.00	6.00 - 16.00	071052
	ER 40	472 ECL	40.00	52.00	6.00 - 25.00	071053

Imperial (in)

	Collet		Clamping Range D_2	Collet		Part No.
	Nominal Size	Standard-No.		L_1	D_1	
i	ER 32	470 ECL	1.260	1.811	0.236 - 0.630	071052
	ER 40	472 ECL	1.575	2.047	0.236 - 0.984	071053

Collets

Metric (mm)

	Collet		Part No.
	Nominal Size	D_1	
m	ER 32	6.00	071826
		8.00	071827
		10.00	071828
		12.00	071829
		16.00	071830
	ER 40	6.00	071831
		8.00	071832
		10.00	071833
		12.00	071834
		16.00	071835
		20.00	071836
		25.00	071837

Imperial (in)

	Collet		Part No.
	Nominal Size	D_1	
i	ER 32	0.236	071826
		0.315	071827
		0.394	071828
		0.472	071829
		0.630	071830
	ER 40	0.236	071831
		0.315	071832
		0.394	071833
		0.472	071834
		0.630	071835
		0.787	071836
		0.984	071837

NOTE: To lock these collets, we recommend using the clamping nuts with sliding ring for higher clamping forces.



J

m = Metric (mm)

i = Imperial (in)

Accessories for Collet Chucks

ISO 10897 (DIN 6388)

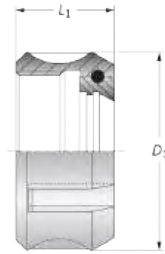
Clamping Nuts: DIN 6388 / ISO 10897 - 1:10

Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	16	43.00	24.00	2.00 - 16.00	100 N·m	068048
	25	60.00	30.00	2.00 - 25.00	180 N·m	068052
	32	72.00	33.50	4.00 - 32.00	220 N·m	161099

Imperial (in)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
i	16	1.693	0.945	0.079 - 0.630	73.8 lb-ft	068048
	25	2.362	1.181	0.079 - 0.984	123.8 lb-ft	068052
	32	2.835	1.319	0.157 - 1.260	162.3 lb-ft	161099



Clamping Nuts for Sealing Discs: DIN 6388 / ISO 10897 - 1:10

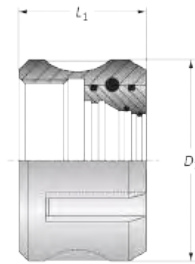
Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	16	43.00	31.50	2.00 - 16.00	100 N·m	275001
	25	60.00	38.00	2.00 - 25.00	180 N·m	275003
	32	72.00	42.00	4.00 - 32.00	220 N·m	276001

Imperial (in)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
i	16	1.693	1.240	0.079 - 0.591	73.8 lb-ft	275001
	25	2.362	1.496	0.079 - 0.984	123.8 lb-ft	275003
	32	2.835	1.654	0.157 - 1.260	162.3 lb-ft	276001

NOTE: With ball bearing, for use with sealing discs.



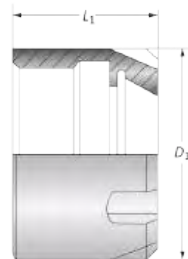
Mini Clamping Nuts

Metric (mm)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
m	ER 08	12.00	10.80	1.00 - 4.00	8 N·m	415357
	ER 11	16.00	12.00	1.00 - 7.00	16 N·m	415358
	ER 16	22.00	18.00	1.00 - 10.00	25 N·m	415359

Imperial (in)

	Nominal Size	Clamping Nut			Torque	Part No.
		D_1	L_1	Clamping Range		
i	ER 08	0.472	0.425	0.039 - 0.157	5.9 lb-ft	415357
	ER 11	0.630	0.472	0.039 - 0.276	11.8 lb-ft	415358
	ER 16	0.866	0.709	0.039 - 0.394	18.4 lb-ft	415359



Clamping Nuts for Erickson Collet Chuck System

Metric (mm)

	Nominal Size	Clamping Nut			Part No.
		D_1	L_1	Clamping Range	
m	6	14.00	28.00	1.00 - 6.50	162095
	10	21.00	36.00	1.00 - 10.00	162093

Imperial (in)

	Nominal Size	Clamping Nut			Part No.
		D_1	L_1	Clamping Range	
i	6	0.551	1.102	0.039 - 0.256	162095
	10	0.827	1.417	0.039 - 0.394	162093

**m** = Metric (mm)**i** = Imperial (in)



Accessories for Collet Chucks

ISO 15488 (DIN 6499)

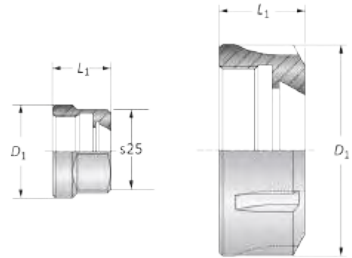
One Piece Clamping Nuts: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
m	ER 16	28.00	17.50	1.00 - 10.00	60 N·m	215922
	ER 25	42.00	20.00	2.00 - 16.00	100 N·m	215924
	ER 32	50.00	22.50	2.00 - 20.00	140 N·m	215925
	ER 40	63.00	25.50	3.00 - 26.00	180 N·m	215926

Imperial (in)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
i	ER 16	1.102	0.689	0.039 - 0.394	44.3 lb-ft	215922
	ER 25	1.654	0.787	0.079 - 0.630	73.8 lb-ft	215924
	ER 32	1.969	0.886	0.079 - 0.787	103.3 lb-ft	215925
	ER 40	2.480	1.004	0.118 - 1.024	132.8 lb-ft	215926



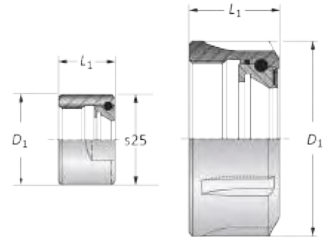
Clamping Nuts with Sliding Ring: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
m	ER 16	28.00	20.30	1.00 - 10.00	60 N·m	315015
	ER 25	42.00	22.40	2.00 - 16.00	100 N·m	315016
	ER 32	50.00	25.00	2.00 - 20.00	140 N·m	315017
	ER 40	63.00	28.30	3.00 - 26.00	180 N·m	315018

Imperial (in)

	Nominal Size	D_1	L_1	Clamping Nut		Part No.
				Clamping Range	Torque	
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb-ft	315015
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb-ft	315016
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb-ft	315017
	ER 40	2.480	1.339	0.118 - 1.024	132.8 lb-ft	315018





Accessories for Collet Chucks

ISO 15488 (DIN 6499)

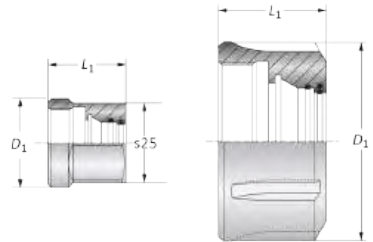
One Piece Clamping Nuts for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut		Clamping Range	Torque	Part No.
		D_1	L_1			
m	ER 16	28.00	25.00	1.00 - 10.00	60 N·m	277001
	ER 25	42.00	27.50	2.00 - 16.00	100 N·m	277005
	ER 32	50.00	30.50	2.00 - 20.00	140 N·m	277007
	ER 40	63.00	34.00	3.00 - 26.00	180 N·m	278001

Imperial (in)

	Nominal Size	Clamping Nut		Clamping Range	Torque	Part No.
		D_1	L_1			
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb·ft	277001
	ER 25	1.654	1.083	0.079 - 0.630	73.8 lb·ft	277005
	ER 32	1.969	1.201	0.079 - 0.787	103.3 lb·ft	277007
	ER 40	2.480	1.339	0.118 - 1.024	132.8 lb·ft	278001



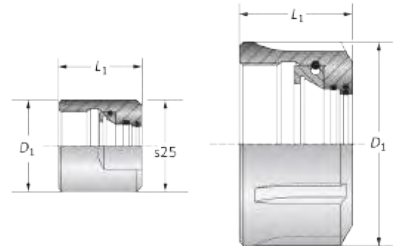
Clamping Nuts with Sliding Ring for use with Sealing Disks: DIN 6499 / ISO 15488 - 8°

Metric (mm)

	Nominal Size	Clamping Nut		Clamping Range	Torque	Part No.
		D_1	L_1			
m	ER 16	28.00	25.00	1.00 - 10.00	60 N·m	277002
	ER 25	42.00	28.50	2.00 - 16.00	100 N·m	277006
	ER 32	50.00	31.50	2.00 - 20.00	140 N·m	277008
	ER 40	63.00	35.00	3.00 - 26.00	180 N·m	278002

Imperial (in)

	Nominal Size	Clamping Nut		Clamping Range	Torque	Part No.
		D_1	L_1			
i	ER 16	1.102	0.984	0.039 - 0.394	44.3 lb·ft	277002
	ER 25	1.654	1.122	0.079 - 0.630	73.8 lb·ft	277006
	ER 32	1.969	1.240	0.079 - 0.787	103.3 lb·ft	277008
	ER 40	2.480	1.378	0.118 - 1.024	132.8 lb·ft	278002

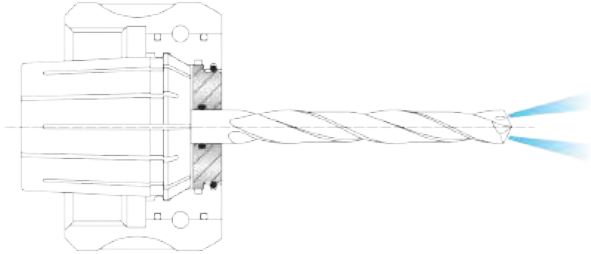


m = Metric (mm)
i = Imperial (in)



Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)



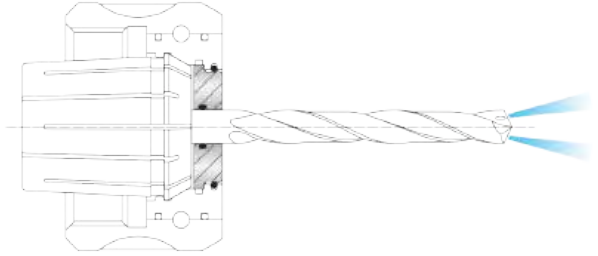
Metric (mm)

Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
16	2.50 - 3.00	275010	25	11.50 - 12.00	275058	32	12.50 - 13.00	276023
	3.00 - 3.50	275011		12.00 - 12.50	275059		13.00 - 13.50	276024
	3.50 - 4.00	275012		12.50 - 13.00	275060		13.50 - 14.00	276025
	4.00 - 4.50	275013		13.00 - 13.50	275061		14.00 - 14.50	276026
	4.50 - 5.00	275014		13.50 - 14.00	275062		14.50 - 15.00	276027
	5.00 - 5.50	275015		14.00 - 14.50	275063		15.00 - 15.50	276028
	5.50 - 6.00	275016		14.50 - 15.00	275064		15.50 - 16.00	276029
	6.00 - 6.50	275017		15.00 - 15.50	275065		16.00 - 16.50	276030
	6.50 - 7.00	275018		15.50 - 16.00	275066		16.50 - 17.00	276031
	7.00 - 7.50	275019		16.00 - 16.50	275067		17.00 - 17.50	276032
	7.50 - 8.00	275020		16.50 - 17.00	275068		17.50 - 18.00	276033
	8.00 - 8.50	275021		17.00 - 17.50	275069		18.00 - 18.50	276034
	8.50 - 9.00	275022		17.50 - 18.00	275070		18.50 - 19.00	276035
	9.00 - 9.50	275023		18.00 - 18.50	275071		19.00 - 19.50	276036
	9.50 - 10.00	275024		18.50 - 19.00	275072		19.50 - 20.00	276037
	10.00 - 10.50	275025		19.00 - 19.50	275073		20.00 - 20.50	276038
	10.50 - 11.00	275026		19.50 - 20.00	275074		20.50 - 21.00	276039
	11.00 - 11.50	275027		20.00 - 20.50	275075		21.00 - 21.50	276040
	11.50 - 12.00	275028		20.50 - 21.00	275076		21.50 - 22.00	276041
	12.00 - 12.50	275029		21.00 - 21.50	275077		22.00 - 22.50	276042
25	12.50 - 13.00	275030		21.50 - 22.00	275078		22.50 - 23.00	276043
	13.00 - 13.50	275031		22.00 - 22.50	275079		23.00 - 23.50	276044
	13.50 - 14.00	275032		22.50 - 23.00	275080		23.50 - 24.00	276045
	14.00 - 14.50	275033		23.00 - 23.50	275081		24.00 - 24.50	276046
	14.50 - 15.00	275034		23.50 - 24.00	275082		24.50 - 25.00	276047
	15.00 - 15.50	275035		24.00 - 24.50	275083		25.00 - 25.50	276048
	15.50 - 16.00	275036		24.50 - 25.00	275084		25.50 - 26.00	276049
	2.50 - 3.00	275040		3.50 - 4.00	276005		26.00 - 26.50	276050
	3.00 - 3.50	275041		4.00 - 4.50	276006		26.50 - 27.00	276051
	3.50 - 4.00	275042		4.50 - 5.00	276007		27.50 - 28.00	276052
	4.00 - 4.50	275043		5.00 - 5.50	276008		27.50 - 28.00	276053
	4.50 - 5.00	275044		5.50 - 6.00	276009		28.00 - 28.50	276054
	5.00 - 5.50	275045		6.00 - 6.50	276010		28.50 - 29.00	276055
	5.50 - 6.00	275046		6.50 - 7.00	276011		29.00 - 29.50	276056
	6.00 - 6.50	275047		7.00 - 7.50	276012		29.50 - 30.00	276057
	6.50 - 7.00	275048		7.50 - 8.00	276013		30.00 - 30.50	276058
	7.00 - 7.50	275049		8.00 - 8.50	276014		30.50 - 31.00	276059
	7.50 - 8.00	275050		8.50 - 9.00	276015		31.00 - 31.50	276060
	8.00 - 8.50	275051		9.00 - 9.50	276016		31.50 - 32.00	276061
	8.50 - 9.00	275052		9.50 - 10.00	276017			
25	9.00 - 9.50	275053		10.00 - 10.50	276018			
	9.50 - 10.00	275054		10.50 - 11.00	276019			
	10.00 - 10.50	275055		11.00 - 11.50	276020			
	10.50 - 11.00	275056		11.50 - 12.00	276021			
	11.00 - 11.50	275057		12.00 - 12.50	276022			



Sealing Disks for Collet Chucks

ISO 10897 (DIN 6388)



Imperial (in)

Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
16	0.098 - 0.118	275010	25	0.453 - 0.472	275058	32	0.492 - 0.512	276023
	0.118 - 0.138	275011		0.472 - 0.492	275059		0.512 - 0.531	276024
	0.138 - 0.157	275012		0.492 - 0.512	275060		0.531 - 0.551	276025
	0.157 - 0.177	275013		0.512 - 0.531	275061		0.551 - 0.571	276026
	0.177 - 0.197	275014		0.531 - 0.551	275062		0.571 - 0.591	276027
	0.197 - 0.217	275015		0.551 - 0.571	275063		0.591 - 0.610	276028
	0.217 - 0.236	275016		0.571 - 0.591	275064		0.610 - 0.630	276029
	0.236 - 0.256	275017		0.591 - 0.610	275065		0.630 - 0.650	276030
	0.256 - 0.276	275018		0.610 - 0.630	275066		0.650 - 0.669	276031
	0.276 - 0.295	275019		0.630 - 0.650	275067		0.669 - 0.689	276032
	0.295 - 0.315	275020		0.650 - 0.669	275068		0.669 - 0.709	276033
	0.315 - 0.335	275021		0.669 - 0.689	275069		0.709 - 0.728	276034
	0.335 - 0.354	275022		0.689 - 0.709	275070		0.728 - 0.748	276035
	0.354 - 0.374	275023		0.709 - 0.728	275071		0.748 - 0.768	276036
	0.374 - 0.394	275024		0.728 - 0.748	275072		0.768 - 0.787	276037
	0.394 - 0.413	275025		0.748 - 0.768	275073		0.787 - 0.807	276038
	0.413 - 0.433	275026		0.768 - 0.787	275074		0.807 - 0.827	276039
	0.433 - 0.453	275027		0.787 - 0.807	275075		0.827 - 0.846	276040
	0.453 - 0.472	275028		0.807 - 0.827	275076		0.846 - 0.866	276041
	0.472 - 0.492	275029		0.807 - 0.846	275077		0.866 - 0.886	276042
25	0.492 - 0.512	275030		0.846 - 0.866	275078		0.886 - 0.906	276043
	0.512 - 0.531	275031		0.866 - 0.886	275079		0.906 - 0.925	276044
	0.531 - 0.551	275032		0.886 - 0.906	275080		0.925 - 0.945	276045
	0.551 - 0.571	275033		0.906 - 0.925	275081		0.945 - 0.965	276046
	0.571 - 0.591	275034		0.925 - 0.945	275082		0.965 - 0.984	276047
	0.591 - 0.610	275035		0.945 - 0.965	275083		0.984 - 1.004	276048
	0.610 - 0.630	275036		0.965 - 0.984	275084		1.004 - 1.024	276049
	0.098 - 0.118	275040		0.138 - 0.157	276005		1.024 - 1.043	276050
	0.118 - 0.138	275041		0.157 - 0.177	276006		1.043 - 1.063	276051
	0.138 - 0.157	275042		0.177 - 0.197	276007		1.063 - 1.102	276052
	0.157 - 0.177	275043		0.197 - 0.217	276008		1.063 - 1.102	276053
	0.177 - 0.197	275044		0.217 - 0.236	276009		1.102 - 1.102	276054
	0.197 - 0.217	275045		0.236 - 0.256	276010		1.122 - 1.142	276055
	0.217 - 0.236	275046		0.256 - 0.276	276011		1.142 - 1.161	276056
	0.236 - 0.256	275047		0.276 - 0.295	276012		1.161 - 1.181	276057
	0.256 - 0.276	275048		0.295 - 0.315	276013		1.181 - 1.201	276058
	0.276 - 0.295	275049		0.315 - 0.335	276014		1.201 - 1.220	276059
	0.295 - 0.315	275050		0.335 - 0.354	276015		1.220 - 1.240	276060
	0.315 - 0.335	275051		0.354 - 0.374	276016		1.240 - 1.260	276061
	0.335 - 0.354	275052		0.374 - 0.394	276017			
	0.354 - 0.374	275053		0.394 - 0.413	276018			
	0.374 - 0.394	275054		0.413 - 0.433	276019			
	0.394 - 0.413	275055		0.433 - 0.453	276020			
	0.413 - 0.433	275056		0.453 - 0.472	276021			
	0.433 - 0.453	275057		0.472 - 0.492	276022			



m = Metric (mm)

i = Imperial (in)



Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)



Metric (mm)

Nominal Size		Sealing Disk		Nominal Size		Sealing Disk		Nominal Size		Sealing Disk	
		Diameter	Part No.			Diameter	Part No.			Diameter	Part No.
m	ER 16	2.50 - 3.00	277010	m	ER 32	m	ER 40	9.00 - 9.50	278018		
		3.00 - 3.50	277011					9.50 - 10.00	278019		
		3.50 - 4.00	277012					10.00 - 10.50	278020		
		4.00 - 4.50	277013					10.50 - 11.00	278021		
		4.50 - 5.00	277014					11.00 - 11.50	278022		
		5.00 - 5.50	277015					11.50 - 12.00	278023		
		5.50 - 6.00	277016					12.00 - 12.50	278024		
		6.00 - 6.50	277017					12.50 - 13.00	278025		
		6.50 - 7.00	277018					13.00 - 13.50	278026		
		7.00 - 7.50	277019					13.50 - 14.00	278027		
		7.50 - 8.00	277020					14.00 - 14.50	278028		
		8.00 - 8.50	277021					14.50 - 15.00	278029		
		8.50 - 9.00	277022					15.00 - 15.50	278030		
		9.00 - 9.50	277023					15.50 - 16.00	278031		
		9.50 - 10.00	277024					16.00 - 16.50	278032		
m	ER 25	2.50 - 3.00	277025		11.50 - 12.00			277073	16.50 - 17.00	278033	
		3.00 - 3.50	277026		12.00 - 12.50			277074	17.00 - 17.50	278034	
		3.50 - 4.00	277027		12.50 - 13.00			277075	17.50 - 18.00	278035	
		4.00 - 4.50	277028		13.00 - 13.50			277076	18.00 - 18.50	278036	
		4.50 - 5.00	277029		13.50 - 14.00			277077	18.50 - 19.00	278037	
		5.00 - 5.50	277030		14.00 - 14.50			277078	19.00 - 19.50	278038	
		5.50 - 6.00	277031		14.50 - 15.00			277079	19.50 - 20.00	278039	
		6.00 - 6.50	277032		15.00 - 15.50			277080	20.00 - 20.50	278040	
		6.50 - 7.00	277033		15.50 - 16.00			277081	20.50 - 21.00	278041	
		7.00 - 7.50	277034		16.00 - 16.50			277082	21.00 - 21.50	278042	
		7.50 - 8.00	277035		16.50 - 17.00			277083	21.50 - 22.00	278043	
		8.00 - 8.50	277036		17.00 - 17.50			277084	22.00 - 22.50	278044	
		8.50 - 9.00	277037		17.50 - 18.00			277085	22.50 - 23.00	278045	
		9.00 - 9.50	277038		18.00 - 18.50			277086	23.00 - 23.50	278046	
		9.50 - 10.00	277039		18.50 - 19.00			277087	23.50 - 24.00	278047	
	ER 32	10.00 - 10.50	277040		19.00 - 19.50			277088	24.00 - 24.50	278048	
		10.50 - 11.00	277041		19.50 - 20.00			277089	24.50 - 25.00	278049	
		11.00 - 11.50	277042		2.50 - 3.00			278005	25.00 - 25.50	278050	
		11.50 - 12.00	277043		3.00 - 3.50			278006	25.50 - 26.00	278051	
		12.00 - 12.50	277044		3.50 - 4.00			278007			
		12.50 - 13.00	277045		4.00 - 4.50			278008			
		13.00 - 13.50	277046		4.50 - 5.00			278009			
		13.50 - 14.00	277047		5.00 - 5.50			278010			
		14.00 - 14.50	277048		5.50 - 6.00			278011			
		14.50 - 15.00	277049		6.00 - 6.50			278012			
ER 32	15.00 - 15.50	277050	6.50 - 7.00		278013						
	15.50 - 16.00	277051	7.00 - 7.50		278014						
	2.50 - 3.00	277055	7.50 - 8.00		278015						
	3.00 - 3.50	277056	8.00 - 8.50		278016						
	3.50 - 4.00	277057	8.50 - 9.00		278017						

m = Metric (mm)

i = Imperial (in)



Sealing Disks for Collet Chucks

ISO 15488 (DIN 6499)



Imperial (in)

Nominal Size	Sealing Disk		Nominal Size	Sealing Disk		Nominal Size	Sealing Disk	
	Diameter	Part No.		Diameter	Part No.		Diameter	Part No.
ER 16	0.098 - 0.118	277010	ER 32	0.157 - 0.177	277058	ER 40	0.354 - 0.374	278018
	0.117 - 0.138	277011		0.177 - 0.197	277059		0.374 - 0.394	278019
	0.138 - 0.157	277012		0.197 - 0.217	277060		0.394 - 0.413	278020
	0.157 - 0.177	277013		0.217 - 0.236	277061		0.413 - 0.433	278021
	0.177 - 0.197	277014		0.236 - 0.256	277062		0.433 - 0.453	278022
	0.197 - 0.217	277015		0.256 - 0.276	277063		0.453 - 0.472	278023
	0.217 - 0.236	277016		0.276 - 0.295	277064		0.472 - 0.492	278024
	0.236 - 0.256	277017		0.295 - 0.315	277065		0.492 - 0.512	278025
	0.256 - 0.276	277018		0.315 - 0.335	277066		0.512 - 0.531	278026
	0.276 - 0.295	277019		0.335 - 0.354	277067		0.531 - 0.551	278027
	0.295 - 0.315	277020		0.354 - 0.374	277068		0.551 - 0.571	278028
	0.315 - 0.335	277021		0.374 - 0.394	277069		0.571 - 0.591	278029
	0.335 - 0.354	277022		0.394 - 0.413	277070		0.591 - 0.610	278030
	0.354 - 0.374	277023		0.413 - 0.433	277071		0.610 - 0.630	278031
	0.374 - 0.394	277024		0.433 - 0.453	277072		0.630 - 0.650	278032
ER 25	0.098 - 0.118	277025		0.453 - 0.472	277073		0.650 - 0.669	278033
	0.118 - 0.138	277026		0.472 - 0.492	277074		0.669 - 0.689	278034
	0.138 - 0.157	277027		0.492 - 0.512	277075		0.689 - 0.709	278035
	0.157 - 0.177	277028		0.512 - 0.531	277076		0.709 - 0.728	278036
	0.177 - 0.197	277029		0.531 - 0.551	277077		0.728 - 0.748	278037
	0.197 - 0.217	277030		0.551 - 0.571	277078		0.748 - 0.768	278038
	0.217 - 0.236	277031		0.571 - 0.591	277079		0.768 - 0.787	278039
	0.236 - 0.256	277032		0.591 - 0.610	277080		0.787 - 0.807	278040
	0.256 - 0.276	277033		0.610 - 0.630	277081		0.807 - 0.827	278041
	0.276 - 0.295	277034		0.630 - 0.650	277082		0.827 - 0.846	278042
	0.295 - 0.315	277035		0.650 - 0.669	277083		0.846 - 0.866	278043
	0.315 - 0.335	277036		0.669 - 0.689	277084		0.866 - 0.886	278044
	0.335 - 0.354	277037		0.689 - 0.709	277085		0.866 - 0.906	278045
	0.354 - 0.374	277038		0.709 - 0.728	277086		0.906 - 0.925	278046
	0.374 - 0.394	277039		0.728 - 0.748	277087		0.925 - 0.945	278047
	0.394 - 0.413	277040		0.748 - 0.768	277088		0.945 - 0.965	278048
	0.413 - 0.433	277041		0.768 - 0.787	277089		0.965 - 0.984	278049
	0.433 - 0.453	277042		0.098 - 0.118	278005		0.984 - 1.004	278050
	0.453 - 0.472	277043		0.118 - 0.138	278006		1.004 - 1.024	278051
	0.472 - 0.492	277044		0.138 - 0.157	278007			
	0.492 - 0.512	277045		0.157 - 0.177	278008			
	0.512 - 0.531	277046		0.177 - 0.197	278009			
	0.531 - 0.551	277047		0.197 - 0.217	278010			
	0.551 - 0.571	277048		0.217 - 0.236	278011			
	0.571 - 0.591	277049		0.236 - 0.256	278012			
	0.591 - 0.610	277050		0.256 - 0.276	278013			
	0.610 - 0.630	277051		0.276 - 0.295	278014			
ER 32	0.098 - 0.118	277055	ER 40	0.295 - 0.315	278015			
	0.118 - 0.138	277056		0.315 - 0.335	278016			
	0.138 - 0.157	277057		0.335 - 0.354	278017			



m = Metric (mm)

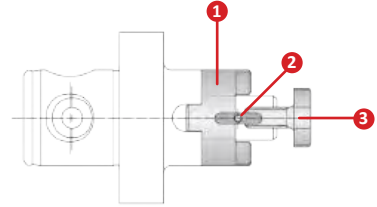
i = Imperial (in)



Accessories for Milling Machine Arbors

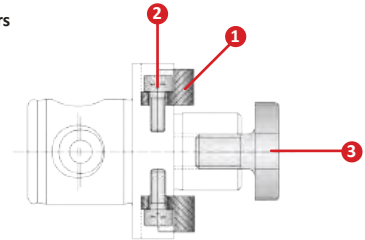
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No.		
	1. Clutch Drive Ring	2. Axial Drive Key	3. Retaining Screw
13	115708	115709	115707
16	115696	215608	115697
22	115341	215609	115345
27	115342	215610	115346
32	115343	215611	115347
40	115344	215612	115348



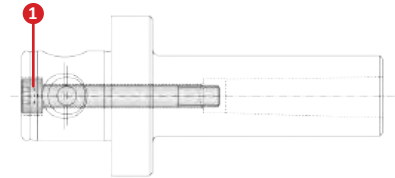
Accessories for Milling Machine Arbors

Shell-Mill Adapter	Part No.		
	1. Drive Key	2. Cap Screw	3. Retaining Screw
16	215701	115566	115697
22	215702	108109	115345
27	215703	108109	115346
32	215704	115147	115347
40	215705	116152	115348
60	115643	115237	—



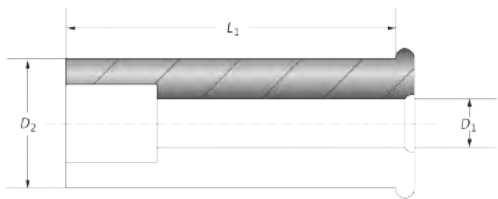
Accessories for Holding Arbors

Adapter Sleeves	Part No.	
	1. Cap Screw	Service Key
209022	115929	s5
209023	115930	s7
209024	115932	s8
209025	115933	s5
209026	115169	s8
209027	115934	s10
209028	115936	s12





Reducing Sleeves for Hydraulic Clamping Chucks



Metric (mm)				
Nominal Size		Reducing Sleeve		Part No.
D_2	L_1	D_1		
m	20.00	50.50	3.00	271045
			4.00	271046
			5.00	271047
			6.00	271003
			7.00	271049
			8.00	271004
			9.00	271050
			10.00	271005
			11.00	271051
			12.00	271006
			13.00	271052
			14.00	271007
			15.00	271018
			16.00	271008

Imperial (in)				
Nominal Size		Reducing Sleeve		Part No.
D_2	L_1	D_1		
i	0.787	1.988	0.118	271045
			0.157	271046
			0.197	271047
			0.236	271003
			0.276	271049
			0.315	271004
			0.354	271050
			0.394	271005
			0.433	271051
			0.472	271006
			0.512	271052
			0.551	271007
			0.591	271018
			0.630	271008

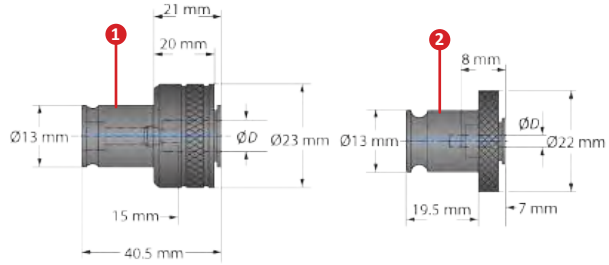
NOTE: For cylindrical shanks with shank tolerance h6 for clamping diameter 3 mm and 8 mm and with shank tolerance h7 for clamping diameter 10 mm - 32 mm.

NOTE: Reduction sleeve with adjustable stop.





Quick-Change Adapters



Metric (mm)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	Dx Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
<div>m</div>	0	2.50 x 2.10	M 1	—	M 1	—	M 3.5	1/16"	—	1.5 - 2	233070	K24358
		2.80 x 2.10	M 2	—	M 2	M 4	M 4	3/32"	5/32"	2 - 3	233071	K24276
		3.50 x 2.70	M 3	—	M 3	M 5	M 5	1/8"	—	4 - 6	233072	K24277
		4.00 x 3.00	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	233073	K24278
		4.50 x 3.40	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233074	K24279
		6.00 x 4.90	M 8	—	—	M 8	M 8	—	—	16 - 21	233075	K24280
		7.00 x 5.50	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	233076	K24281
		8.00 x 6.20	—	—	M 8	—	—	5/16"	7/16"	16 - 21	233077	K24391

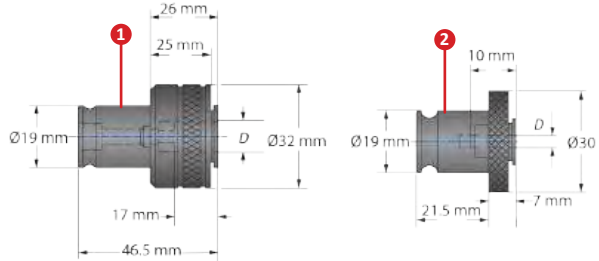
Imperial (in)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	Dx Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
i	0	0.098 x 0.083	M 1	—	M 1	—	M 3.5	1/16"	—	1.5 - 2	233070	K24358
		0.110 x 0.083	M 2	—	M 2	M 4	M 4	3/32"	5/32"	2 - 3	233071	K24276
		0.138 x 0.106	M 3	—	M 3	M 5	M 5	1/8"	—	4 - 6	233072	K24277
		0.157 x 0.118	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	233073	K24278
		0.177 x 0.138	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233074	K24279
		0.236 x 0.193	M 8	—	—	M 8	M 8	—	—	16 - 21	233075	K24280
		0.276 x 0.217	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	233076	K24281
		0.315 x 0.244	—	—	M 8	—	—	5/16"	7/16"	16 - 21	233077	K24391





Quick-Change Adapters

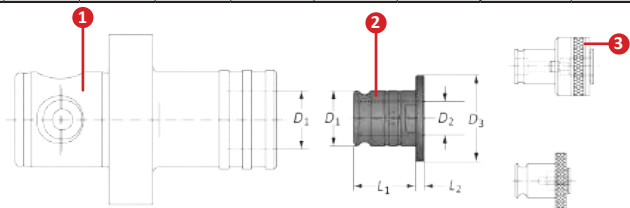


Metric (mm)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	D x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
m	1	2.80 x 2.10	M 2	—	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	K17847	K23259
		3.50 x 2.70	M 3	—	M 3.5	M 5	M 5	1/8"	—	4 - 6	233001	K18455
		4.00 x 3.00	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	233002	K22439
		4.50 x 3.40	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233003	K16414
		6.00 x 4.90	M 8	—	—	M 8	M 8	—	—	16 - 21	233004	K16415
		7.00 x 5.50	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	233005	K16418
		8.00 x 6.20	—	—	M 8	—	—	5/16"	7/16"	16 - 21	233006	K16416
		9.00 x 7.00	M 12	—	—	M 12	M 12	3/8"	1/2"	37 - 44	233007	K18454
		10.00 x 8.00	—	—	M 10	—	—	—	—	27 - 32	233008	K16417
		11.00 x 9.00	M 14	G 1/4"	—	M 14	M 14	—	9/16"	50 - 53	233009	K22440

Imperial (in)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	Dx Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
i	1	0.110 x 0.083	M 2	—	M 2.8	M 4	M 4	3/32"	5/32"	2 - 3	K17847	K23259
		0.138 x 0.106	M 3	—	M 3.5	M 5	M 5	1/8"	—	4 - 6	233001	K18455
		0.157 x 0.118	M 3.5	—	M 3.5	—	—	—	—	1.5 - 2	233002	K22439
		0.177 x 0.134	M 4	—	M 4	M 6	M 6	5/32"	1/4"	6 - 9	233003	K16414
		0.236 x 0.193	M 8	—	—	M 8	M 8	-	—	16 - 21	233004	K16415
		0.276 x 0.217	M 10	G 1/8"	—	M 10	M 10	1/4"	3/8"	27 - 32	233005	K16418
		0.315 x 0.244	—	—	M 8	—	—	5/16"	7/16"	16 - 21	233006	K16416
		0.354 x 0.276	M 12	—	—	M 12	M 12	3/8"	1/2"	37 - 44	233007	K18454
		0.394 x 0.315	—	—	M 10	—	—	—	—	27 - 32	233008	K16417
		0.433 x 0.354	M 14	G 1/4"	—	M 14	M 14	—	9/16"	50 - 53	233009	K22440



Reducers for Quick-Change Adapters

Metric (mm)

1. Tapping Chuck		2. Quick Change Adapter		3. Reducer					Weight (kg)	Part No.
Nominal Size	D ₁	Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
m	1	19.00	0	13.00	19.00	13.00	30.00	21.50	0.12	161038
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	0.48	162094

Imperial (in)

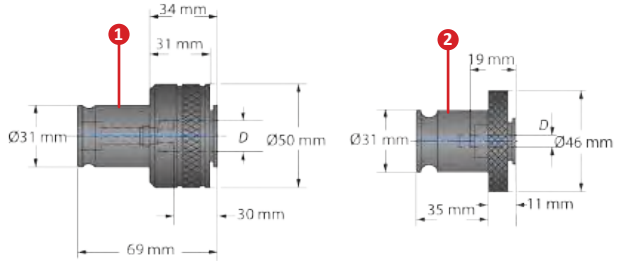
1. Tapping Chuck		2. Quick Change Adapter		3. Reducer					Weight (lbs)	Part No.
Nominal Size	D ₁	Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
i	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	161038
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	1.058	162094

m = Metric (mm)

i = Imperial (in)



Quick-Change Adapters

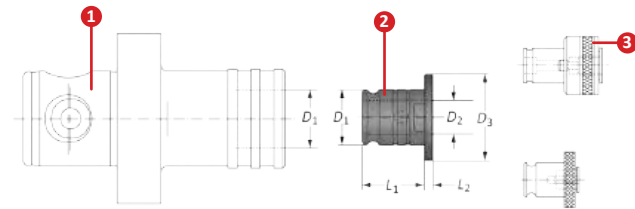


Metric (mm)

Shank Dimensions		Quick Change Adapter								Part No.	
Nominal Size	D x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
m	7.00 x 5.50	M 10	G 1/8"	-	M 10	M 10	1/4"	3/8"	27 - 32	233020	K15282
	8.00 x 6.20	-	-	M 8	-	-	5/16"	7/16"	16 - 21	233021	K15283
	9.00 x 7.00	M 12	-	-	M 12	M 12	3/8"	1/2"	37 - 44	233022	K15284
	10.00 x 8.00	-	-	M 10	-	-	-	-	27 - 32	233023	K18456
	11.00 x 9.00	M 14	G 1/4"	-	M 14	M 14	-	9/16"	50 - 53	233024	K16419
	12.00 x 9.00	M 16	G 3/8"	-	M 16	M 16	-	5/8"	55 - 58	233025	K15285
	14.00 x 11.00	M 18	-	-	M 18	M 18	-	11/16"	85 - 90	233026	K16420
	16.00 x 12.00	M 20	G 1/2"	-	M 20	M 20	-	13/16"	110 - 115	233027	K15286
	18.00 x 14.50	M 24	-	-	M 24	M 24	-	15/16"	110 - 115	233028	K18457

Imperial (in)

Shank Dimensions		Quick Change Adapter								Part No.	
Nominal Size	D x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.
i	0.276 x 0.217	M 10	G 1/8"	-	M 10	M 10	1/4"	3/8"	27 - 32	233020	K15282
	0.315 x 0.244	-	-	M 8	-	-	5/16"	7/16"	16 - 21	233021	K15283
	0.354 x 0.276	M 12	-	-	M 12	M 12	3/8"	1/2"	37 - 44	233022	K15284
	0.394 x 0.315	-	-	M 10	-	-	-	-	27 - 32	233023	K18456
	0.433 x 0.354	M 14	G 1/4"	-	M 14	M 14	-	9/16"	50 - 53	233024	K16419
	0.472 x 0.354	M 16	G 3/8"	-	M 16	M 16	-	5/8"	55 - 58	233025	K15285
	0.551 x 0.433	M 18	-	-	M 18	M 18	-	11/16"	85 - 90	233026	K16420
	0.630 x 0.472	M 20	G 1/2"	-	M 20	M 20	-	13/16"	110 - 115	233027	K15286
	0.709 x 0.571	M 24	-	-	M 24	M 24	-	15/16"	110 - 115	233028	K18457



Reducers for Quick-Change Adapters

Metric (mm)

1. Tapping Chuck			2. Quick Change Adapter		3. Reducer					Weight (kg)	Part No.
Nominal Size	D ₁		Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
m	1	19.00	0	13.00	19.00	13.00	30.00	21.50	4.00	0.12	161038
	2	31.00	1	19.00	31.00	19.00	48.00	35.00	5.00	0.48	162094

Imperial (in)

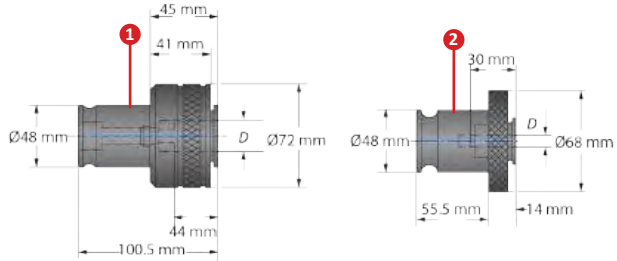
1. Tapping Chuck			2. Quick Change Adapter		3. Reducer					Weight (lbs)	Part No.
Nominal Size	D ₁		Nominal Size	D ₁	D ₁	D ₂	D ₃	L ₁	L ₂		
i	1	0.748	0	0.512	0.748	0.512	1.181	0.846	0.157	0.264	161038
	2	1.220	1	0.748	1.220	0.748	1.890	1.378	0.197	1.058	162094

m = Metric (mm)

i = Imperial (in)



Quick-Change Adapters



Metric (mm)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	D x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
M	3	11.00 x 9.00	M 14	G 1/4"	—	M 14	M 14	—	9/18"	50 - 53	233040	K22434
		12.00 x 9.00	M 16	G 3/8"	—	M 16	M 16	—	5/8"	55 - 58	233041	K22435
		14.00 x 11.00	M 18	—	—	M 18	M 18	—	11/16"	85 - 90	233042	K22436
		16.00 x 12.00	M 20	G 1/2"	—	M 20	M 20	—	13/18"	100 - 106	233043	K22437
		18.00 x 14.50	M 24	—	—	M 24	M 24	—	15/16"	140 - 150	233044	K16421
		20.00 x 16.50	M 27	G 3/4"	—	M 27	M 27	—	1"	150 - 160	233045	K16422
		22.00 x 18.00	M 30	G 7/8"	—	M 30	M 30	—	1 1/8"	240 - 250	233046	K16423
		25.00 x 22.00	M 33	G 1"	—	M 33	M 33	—	1 1/4"	260 - 270	233047	K16424
		28.00 x 22.00	M 36	G 1-1/8"	—	M 36	M 36	—	1 3/8"	260 - 270	233048	K22438

Imperial (in)

Shank Dimensions		Quick Change Adapter								Part No.		
Nominal Size	D x Square Shank	DIN 352	DIN 353	DIN 371	DIN 374	DIN 376	DIN 2182	DIN 2183	Torque Setting	1.	2.	
i	3	0.433 x 0.354	M 14	G 1/4"	—	M 14	M 14	—	9/18"	50 - 53	233040	K22434
		0.472 x 0.354	M 16	G 3/8"	—	M 16	M 16	—	5/8"	55 - 58	233041	K22435
		0.551 x 0.433	M 18	—	—	M 18	M 18	—	11/16"	85 - 90	233042	K22436
		0.630 x 0.472	M 20	G 1/2"	—	M 20	M 20	—	13/18"	100 - 106	233043	K22437
		0.709 x 0.571	M 24	—	—	M 24	M 24	—	15/16"	140 - 150	233044	K16421
		0.787 x 0.650	M 27	G 3/4"	—	M 27	M 27	—	1"	150 - 160	233045	K16422
		0.866 x 0.709	M 30	G 7/8"	—	M 30	M 30	—	1 1/8"	240 - 250	233046	K16423
		0.984 x 0.866	M 33	G 1"	—	M 33	M 33	—	1 1/4"	260 - 270	233047	K16424
		1.102 x 0.866	M 36	G 1-1/8"	—	M 36	M 36	—	1 3/8"	260 - 270	233048	K22438



m = Metric (mm)

i = Imperial (in)



Service Keys for Collet Systems

Service Keys for ISO 10897 (DIN 6388) Collet Chuck Systems

Service Key			
Nominal Size	Size	Type	Part No.
16	40 - 42	S	068179
25	58 - 62	S	068182
32	68 - 75	S	115867

Type S



Service Keys for ISO 15488 (DIN 6499) Collet Chuck Systems

Service Key				
Nominal Size	Size	Service Key	Type	Part No.
ER 08 Mini	9.0	–	X	415373
ER 11 Mini	12.0	–	X	415374
ER 16 Mini	17.5	–	X	415375
ER 16	–	25	P	215927
ER 25	42.0	–	T	215929
ER 32	50.0	–	T	215930
ER 40	63.0	–	T	215931

Type X for Mini Clamping Nut



Service Keys for Erickson Collet Chuck Systems

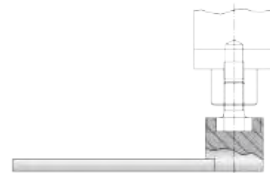
Service Keys		
Service Key	Type	Part No.
13	P	315689
19	P	315691

Type P



Service Keys for Milling Machine and Holding Arbors

Service Keys	
Service Key	Part No.
13	115785
16	115699
22	115660
27	115661
32	115662
40	115663
60	315637





Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

SECTION

B10-K

UPA Facing and Boring Heads

UPA Facing and Boring Heads



Operation Facing and Boring

In 1936, the first model of the Wohlhaupter Universal facing and boring head was developed to launch the start of Wohlhaupter boring products. It became a staple to the boring industry.

Universal Facing and Boring heads are used on universal milling and boring machines, boring mills, and jig boring machines for machining stationary workpieces in individual and batch productions.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	



UPA Boring Head FACING AND BORING

Universal Facing and Boring Heads.

The versatile Wohlhaupter UPA boring heads can be used for facing, boring, and taper turning. They are available in right- or left-handed types.

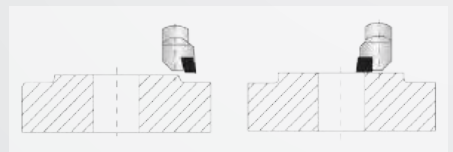
Precise and **versatile** boring heads.

- ▶ Diameter range: 0.00 mm - 620.00 mm (0.000" - 24.409").
- ▶ Slide adjustment up to 112.00 mm (4.410").
- ▶ Can be used in a variety of operations.

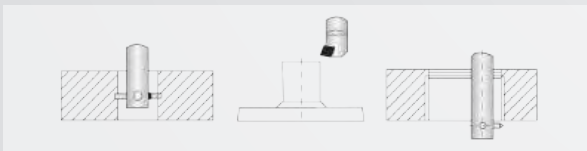
UNIVERSAL FACING and BORING Applications



Boring with different tools



Facing
From inside outward From outside inward



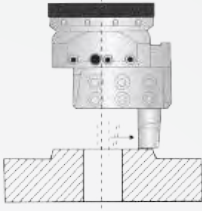
Recessing Outside turning Thread cutting



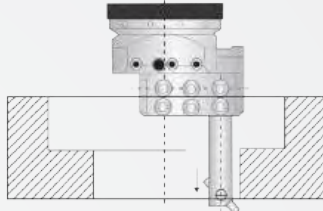
Taper turning

UNIVERSAL

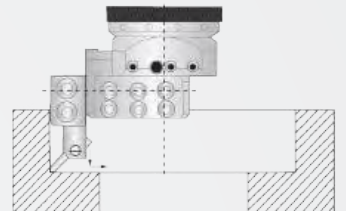
FACING and BORING Application Examples



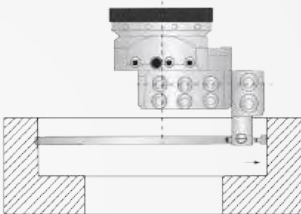
Facing with boring bar directly in slide.



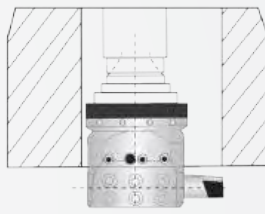
Boring with long boring bar.



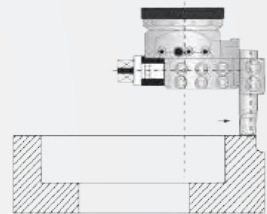
Boring and facing with short boring bar holder and a boring bar.



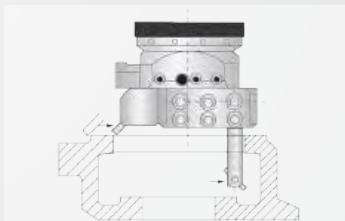
Recessing with short boring bar holder and a boring bar.



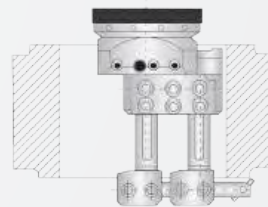
Deep hole boring with boring bar directly in slide.



Large diameter facing with a long boring bar holder.



Facing in two areas with one boring bar and a boring bar holder.



Facing the reverse side by using boring bar holders contained in attachment.

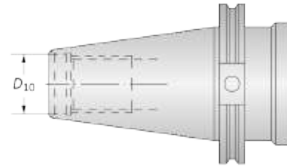


UPA 3

Master Shanks

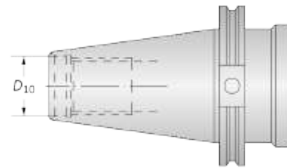
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	2.336	130001T013939
	CAT 50	1 - 8	7.054	130001T011624



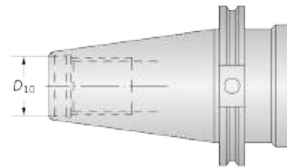
SK (DIN 69871)

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16	1.00	130001T013815



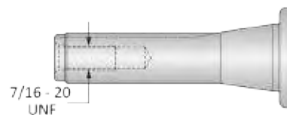
DIN 2080

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 30	M12	0.40	130001T003673
	ISO 40	M16 (chucking groove)	0.80	130001T010229
	ISO 40	M16 (cap screw clamping)	1.00	130001T003703
	ISO 50	M24	2.80	130001T003704
	ISO 50	M24 (chucking groove)	2.80	130001T010048



R-8 Shanks

Weight	Part No.
0.48 kg (1.058 lbs)	130001T007166

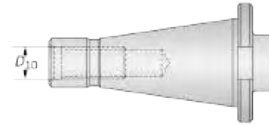


UPA 3

Master Shanks

NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	NMTB 40	5/8 - 11	1.984	130001T004498
	NMTB 50	1 - 8	5.798	130001T004480



Morse Taper Shanks (Metric (mm))

	Style	Type	D_{10}	Weight (kg)	Part No.
m	MT 3	DIN 1806	—	0.30	130001T004509
	MT 4	DIN 2207	M16	0.70	130001T004256
	MT 4	—	M14 SIP	1.00	130001T004255

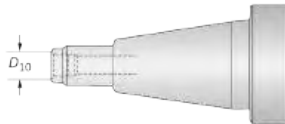


Morse Taper Shanks (Imperial (in))

	Style	Type	D_{10}	Weight (lbs)	Part No.
i	MT 3	DIN 1806	—	0.661	130001T004509
	MT 4	DIN 1806	5/8 - 11	1.212	130001T003590
	MT 5	DIN 1806	1 - 8	2.976	130001T003920

Norm Taper

	Style	D_{10}	Weight (kg)	Part No.
m	40xS 20x2 with bolts DECKEL	M12 x 1	1.00	130001T005070



Differential Screw

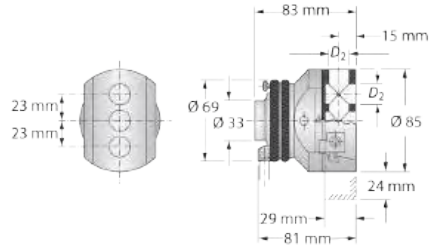
Thread	Weight	Part No.
M16 x 2	0.03 kg (0.066 lbs)	KW9208





UPA 3

Boring Heads



Metric (mm)

	Boring Range	Boring Head		Part No.
		D_2	Weight (kg)	
	0.00 - 260.00	18.00	2.10	005020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D_2	Weight (lbs)	
	0.000 - 10.234	0.750	4.629	006020

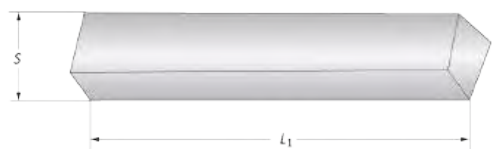
Metric (mm)

	Square Turning Bit		Weight (g)	Part No.
	S	L_1		
	6.00	40.00	11	089001

Imperial (in)

	Square Turning Bit		Weight (oz)	Part No.
	S	L_1		
	0.236	1.574	0.035	089001

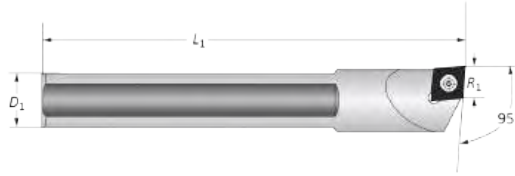
Square Turning Bit





UPA 3

Boring Bars

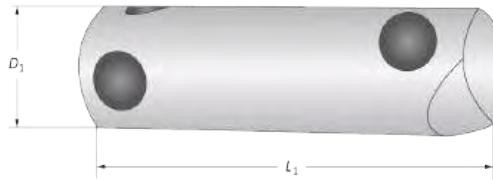


Metric (mm)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (kg)			
18.00	80.00	13.50	0.10	Right	103	081087
18.00	80.00	13.50	0.10	Left	103	218088

Imperial (in)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (lbs)			
0.750	3.149	0.531	0.220	Right	103	0750BFBR
0.750	3.149	0.531	0.220	Left	103	0750BFBL



Metric (mm)

Boring Bar		Boring Depth	Part No.
D_1	L_1		
18.00	60.00	30.00	073003
18.00	90.00	60.00	073004
18.00	120.00	90.00	073005

Imperial (in)

Boring Bar		Boring Depth	Part No.
D_1	L_1		
0.750	2.362	1.181	074003
0.750	3.543	2.362	074004
0.750	4.724	3.543	074005



K



UPA 3

Accessories

Reducing Sleeves



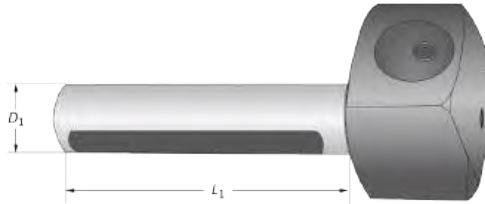
Metric (mm)

m	Reducing Sleeve		Weight (kg)	Part No.
	D_2	D_1		
	18.00	8.00		
	18.00	10.00		
	18.00	12.00		
	18.00	14.00		

Imperial (in)

i	Reducing Sleeve		Weight (lbs)	Part No.
	D_2	D_1		
	0.750	0.313		
	0.750	0.375		
	0.750	0.500		
	0.750	0.625		

Boring Bar Holder



Metric (mm)

m	Boring Bar Holder		Working Diameter Range	Part No.
	D_1	L_1		
	18.00	82.00		
	18.00	120.00	160.00 - 260.00	075002

Imperial (in)

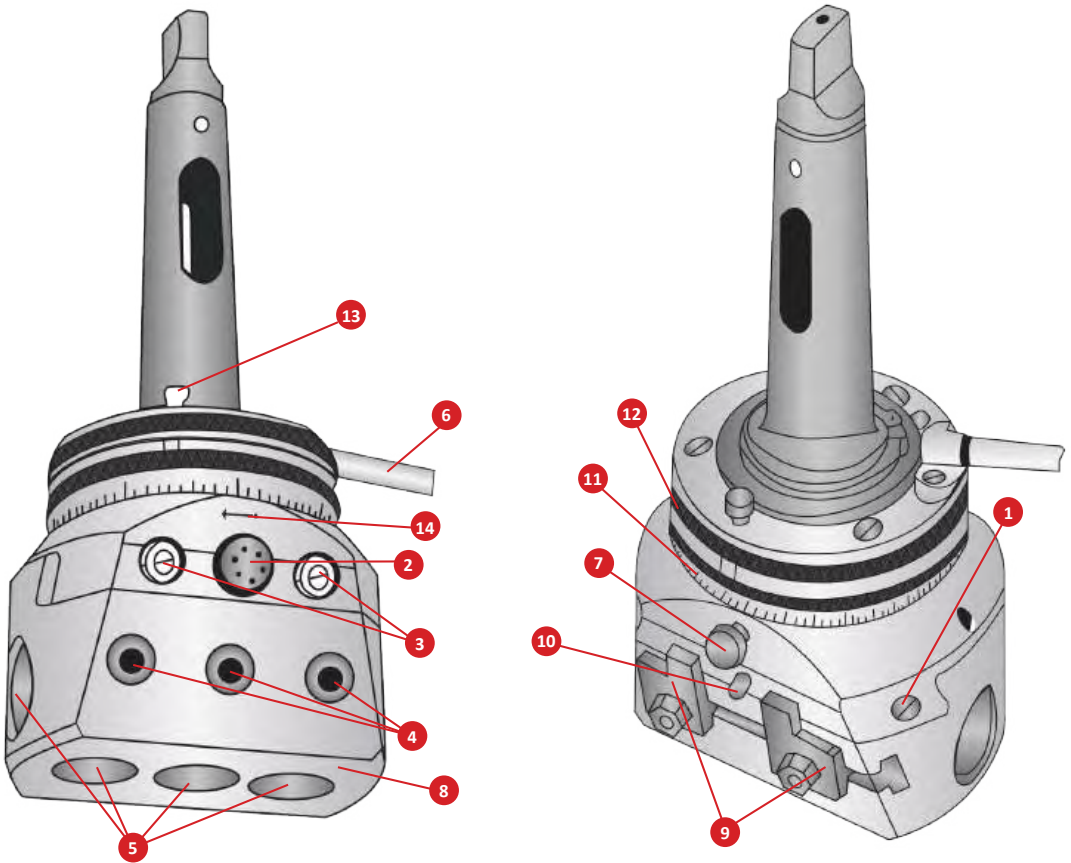
i	Boring Bar Holder		Working Diameter Range	Part No.
	D_1	L_1		
	0.750	3.228	3.346 - 7.480	
	0.750	4.724	6.299 - 10.236	076002





UPA 3

Boring Head Diagram



No.	Part	No.	Part
1	Regulating screw	8	Slide
2	Locking screw	9	Stop
3	Setting screws	10	Fixed pin
4	Fastening screw	11	Scale ring
5	Tool post holes	12	Holding ring
6	Holding rod	13	Button for return movement
7	Feed button	14	Arrow



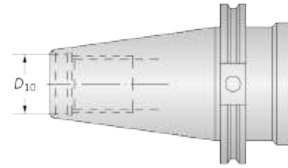


UPA 4 and 5-S 6

Master Shanks

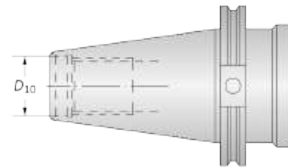
CAT Shanks

	Style	D_{10}	Weight (lbs)	Part No.
i	CAT 40	5/8 - 11	3.196	130005T013939
	CAT 50	1 - 8	7.054	130005T011624



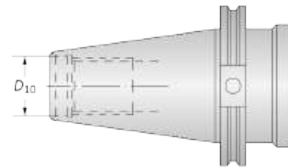
SK (DIN 69871)

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16	1.60	130005T013815
	ISO 50	M24	3.00	130005T013960



DIN 2080

	Style	D_{10}	Weight (kg)	Part No.
m	ISO 40	M16 (cap nut clamps)	1.20	130005T003703
	ISO 50	M24	2.90	130005T003704
	ISO 40	M16 (chucking groove)	1.20	130005T010229
	ISO 50	M24 (chucking groove)	3.00	130005T010048

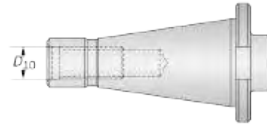


UPA 4 and 5-S 6

Master Shanks

NMTB Shanks

	Style	D_{10}	Weight (lbs)	Part No.
	NMTB 40	5/8 - 11	2.866	130005T004498
	NMTB 40	5/8 - 11	2.866	130005T010327
	NMTB 50	1 - 8	6.393	130005T004480



Morse Taper Shanks (Metric (mm))

	Style	Weight (kg)	Part No.
	MT 4	0.86	130005T003590*
	MT 5	1.65	130005T003920

Morse Taper Shanks (Imperial (in))

	Style	Weight (lbs)	Part No.
	MT 4	1.895	130005T003590*
	MT 5	3.639	130005T003920

*Shank can only be used with UPA 4 boring heads.



Norm Taper

	Style	D_{10}	Weight (kg)	Part No.
	40xS 20x2 with bolts DECKEL	M12 x 1	1.20	130005T005070



Differential Screw

Thread	Weight	Part No.
M20 x 2.5	0.07 kg (0.154 lbs)	KW9209

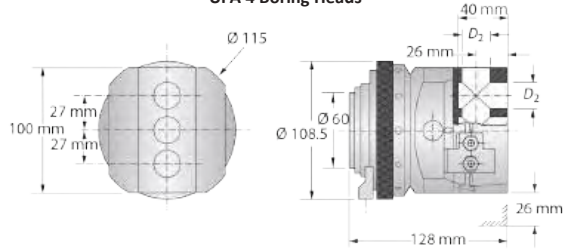




UPA 4 and 5-S 6

Boring Heads

UPA 4 Boring Heads



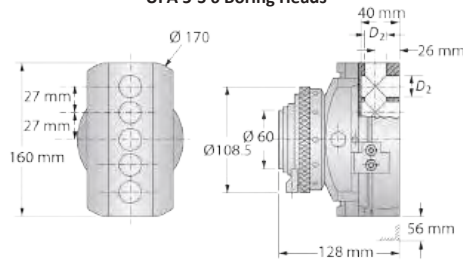
Metric (mm)

	Boring Range	Boring Head		Part No.
		D_2	Weight (kg)	
m	0.00 - 400.00	22.00	6.50	007020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D_2	Weight (lbs)	
i	0.000 - 15.748	0.875	14.330	008020

UPA 5-S 6 Boring Heads



Metric (mm)

	Boring Range	Boring Head		Part No.
		D_2	Weight (kg)	
m	0.00 - 620.00	22.00	7.90	013020

Imperial (in)

	Boring Range	Boring Head		Part No.
		D_2	Weight (lbs)	
i	0.000 - 24.409	0.875	17.416	014020

Metric (mm)

	Square Turning Bit		Weight (g)	Part No.
	S	L_1		
m	6.00	40.00	11	089001

Imperial (in)

	Square Turning Bit		Weight (oz)	Part No.
	S	L_1		
i	0.236	1.574	0.035	089001

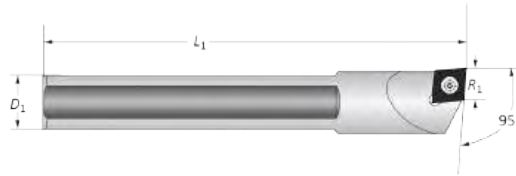
Square Turning Bit





UPA 4 and 5-S 6

Boring Bars

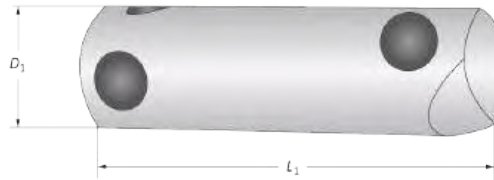


Metric (mm)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (kg)			
22.00	100.00	13.50	0.10	Right	103	081092
22.00	100.00	13.50	0.10	Left	103	218089

Imperial (in)

Boring Bar				Type	Insert Form	Part No.
D_1	L_1	R_1	Weight (lbs)			
0.875	3.937	0.531	0.220	Right	103	0875BFBR
0.875	3.937	0.531	0.220	Left	103	0875BFBL



Metric (mm)

Boring Bar		Boring Depth	Part No.
D_1	L_1		
22.00	85.00	45.00	073006
22.00	125.00	85.00	073007
22.00	165.00	125.00	073008

Imperial (in)

Boring Bar		Boring Depth	Part No.
D_1	L_1		
0.875	3.346	1.771	074006
0.875	4.921	3.346	074007
0.875	6.496	4.921	074008





UPA 4 and 5-S 6

Accessories

Reducing Sleeves



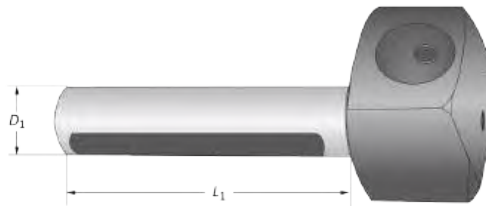
Metric (mm)

m	Reducing Sleeve		Weight (kg)	Part No.
	D_2	D_1		
	22.00	8.00	0.10	071107
	22.00	10.00	0.10	071108
	22.00	12.00	0.10	071109
	22.00	14.00	0.08	071110
	22.00	18.00	0.08	071111

Imperial (in)

i	Reducing Sleeve		Weight (lbs)	Part No.
	D_2	D_1		
	0.875	0.312	0.220	072108
	0.875	0.375	0.220	072109
	0.875	0.500	0.220	072110
	0.875	0.625	0.176	072111
	0.875	0.750	0.176	072112

Boring Bar Holder



Metric (mm)

m	Boring Bar Holder		Working Diameter Range		Part No.
	D_1	L_1	UPA 4	UPA 5-S 6	
	22.00	98.00	115.00 - 240.00	120.00 - 400.00	075003
	22.00	180.00	220.00 - 400.00	270.00 - 620.00	075004

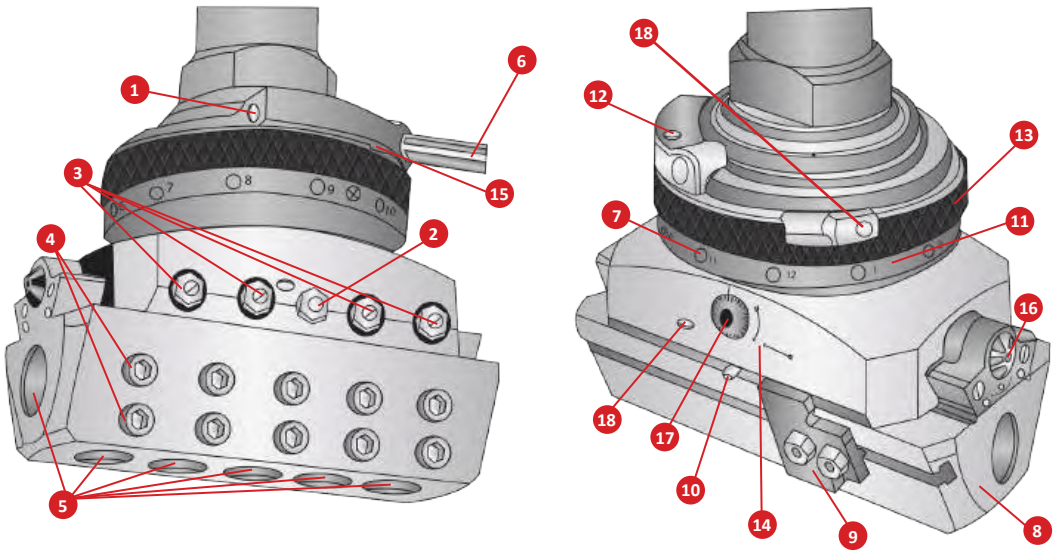
Imperial (in)

i	Boring Bar Holder		Working Diameter Range		Part No.
	D_1	L_1	UPA 4	UPA 5-S 6	
	0.875	3.858	4.527 - 9.448	4.724 - 15.748	076003
	0.875	7.087	8.661 - 15.748	10.630 - 24.408	076004



UPA 4 and 5-S 6

Boring Head Diagram



No.	Part	No.	Part
1	Regulating screw	10	Fixed pin
2	Locking screw	11	Scale ring
3	Setting screws	12	Retaining pin
4	Fastening screws	13	Feed ring
5	Tool post holes	14	Arrow
6	Holding rod	15	Recess
7	Feed buttons	16	Quick setting dial
8	Slide with rotation bores	17	Fine setting dial
9	Stop	18	Release ring

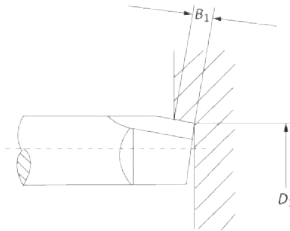




Technical Information

Technical Data

Type	UPA 3	UPA 4	UPA 5-S 6
Working accuracy	±0.005	±0.005	±0.005
Diameter range	25.00	35.00	45.00
MT shank	3.00	4.00	5.00
ISO shank	30.00	40.00	40.00
Facing and boring range	0.00 - 260.00	0.00 - 400.00	0.00 - 620.00
Adjustment of slide (max)	48.00	52.00	112.00
Self-activated feed of slide per revolution	0.05	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24	0.02, 0.04, 0.06, 0.08, 0.10, 0.12, 0.14, 0.16, 0.18, 0.20, 0.22, 0.24
m Fine adjustment of one division	0.01	0.01	0.01
Fine adjustment of one revolution	1.00	0.40	0.40
Rapid return per revolution	1.00	—	—
Rapid return setting per revolution	—	6.00	6.00
Largest diameter of slide	85.00	115.00	170.00
Height of boring head without shank	81.00	128.00	128.00
Tool locations in slide	18.00	22.00	22.00
Max permissible revolutions	1000	600	600
End cut off accuracy	±0.05	±0.05	±0.05
Weight of head (without shank) (kg)	2.1	6.5	7.9



Chip Production Values

Chip Cutting Guide	Type	UPA 3	UPA 4	UPA 5-S 6
Max load	KW	2.50	7.00	9.50
With slide feed	mm/rev.	0.05	0.08, 0.12, 0.24	0.08, 0.12, 0.24
For smaller working Ø	D_1	60.00	150.00	200.00
m Maximum width of chip	B_1	4.00	7.00, 6.00, 4.00	8.00, 7.00, 5.00
Maximum working Ø	D_1	260.00	400.00	500.00 / 620.00
Max width of chip without reinforcement rings	B_1	2.00	2.20, 2.00, 1.50	2.50, 2.00, 1.50
Max width of chip with reinforcement rings*	B_1	—	4.50, 4.00, 3.00	5.00, 4.00, 3.00

*By using the reinforcement rings contained in the normal attachment, chip cutting capacity is increased by 100%.



This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.



K

SECTION

B10-L

Lay Down Cartridges

Lay Down Cartridges



Powerful | Versatile | Engineered Solutions

ES-Bore lay down cartridges can be easily mounted onto the body of a custom tool, while the dimensions allow the cartridge to fit onto existing bodies. Wohlhaupter's fine boring ES-Bore cartridges are available in both digital 3E^{TECH+} and analog versions to make quick and accurate adjustments while at the machine.

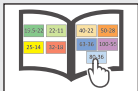
From premachining holes with heavy stock removal to finish machining with tight tolerances and excellent surface finish, Wohlhaupter's extensive range of lay down cartridges can help you achieve specific boring solutions. Wohlhaupter's lay down cartridges bring innovative concepts designed to improve productivity, reduce scrap, and reduce the cost per part.

Applicable Industries

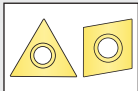
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).



Inserts
For use with insert holder boring heads and boring bars using indexable inserts.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

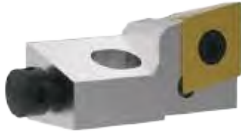
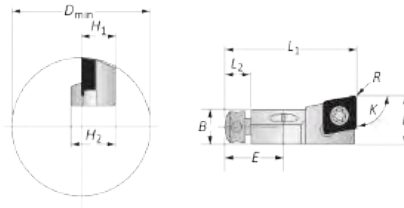
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Compact Lay Down Cartridges

80° Rhomboid



Metric (mm)

		Insert Form	ISO	D_{min} Boring Range	Designation	Insert Holder								Part No.
K						L_1	L_2	B	H_1	H_2	F	R Radius	E	
m	45°	101	CC..0602..	25.00	SCSCR08CK-06	24.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	345010
		103	CC..09T3..	40.00	SCSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.50	0.80	17.00	345005
	60°	101	CC..0602..	25.00	SCTCR08CK-06	28.00	6.00	6.50	8.00	10.00	7.00	0.40	13.00	345011
		103	CC..09T3..	40.00	SCTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	345006
	70°	101	CC..0602..	25.00	SCPCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.00	0.40	13.00	345012
		103	CC..09T3..	40.00	SCPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	345007
	75°	101	CC..0602..	25.00	SCRCR08CK-06	28.00	6.00	6.50	8.00	10.00	8.50	0.40	13.00	345013
		103	CC..09T3..	40.00	SCRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	345008
	80°	101	CC..0602..	25.00	SCOCR08CK-06	28.00	6.00	6.50	8.00	10.00	9.00	0.40	13.00	345014
		103	CC..09T3..	40.00	SCOCR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	345009
	90°	101	CC..0602..	25.00	SCFCR08CK-06	28.00	6.00	6.50	8.00	10.00	10.00	0.40	13.00	345001
		103	CC..09T3..	40.00	SCFCR10CK-09	38.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	345002
104		CC..1204..	50.00	SCFCR12CK-12	45.00	8.00	14.00	12.00	16.00	20.00	0.80	20.00	345003	
105		CC..1605..	55.00	SCFCR14CK-16	54.00	8.00	16.00	14.00	18.00	23.00	0.80	23.50	345004	

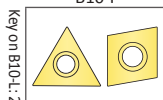
Imperial (in)

				Insert Holder										
K	Insert Form	ISO	D_{min} Boring Range	Designation	L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.	
45°	101	CC..0602..	0.984	SCSCR08CK-06	0.944	0.236	0.255	0.314	0.393	0.393	0.015	0.511	345010	
	103	CC..09T3..	1.574	SCSCR10CK-09	1.259	0.295	0.393	0.393	0.511	0.570	0.031	0.669	345005	
60°	101	CC..0602..	0.984	SCTCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.275	0.015	0.511	345011	
	103	CC..09T3..	1.574	SCTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	345006	
70°	101	CC..0602..	0.984	SCPCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.314	0.015	0.511	345012	
	103	CC..09T3..	1.574	SCPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	345007	
75°	101	CC..0602..	0.984	SCRCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.334	0.015	0.511	345013	
	103	CC..09T3..	1.574	SCRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	345008	
80°	101	CC..0602..	0.984	SCOCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.354	0.015	0.511	345014	
	103	CC..09T3..	1.574	SCOCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.492	0.031	0.669	345009	
90°	101	CC..0602..	0.984	SCFCR08CK-06	1.102	0.236	0.255	0.314	0.393	0.393	0.015	0.511	345001	
	103	CC..09T3..	1.574	SCFCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.551	0.031	0.669	345002	
	104	CC..1204..	1.968	SCFCR12CK-12	1.771	0.314	0.551	0.472	0.629	0.787	0.031	0.787	345003	
	105	CC..1605..	2.165	SCFCR14CK-16	2.125	0.314	0.629	0.551	0.708	0.905	0.031	0.925	345004	



L

B10-I



B10-L: 3

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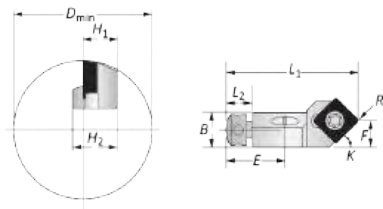
m = Metric (mm)

i = Imperial (in)



Compact Lay Down Cartridges

Square

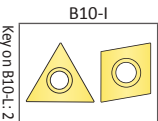


Metric (mm)

					Insert Holder									
	K	Insert Form	ISO	$D_{\min}$ Boring Range	Designation	L_1	L_2	B	H_1	H_2	F	R Radius	E	Part No.
m	45°	112	SC..09T3..	40.00	SSSCR10CK-09	32.00	7.50	10.00	10.00	13.00	14.00	0.80	17.00	345015
	60°	112	SC..09T3..	40.00	SSTCR10CK-09	38.00	7.50	10.00	10.00	13.00	9.70	0.80	17.00	345016
	70°	112	SC..09T3..	40.00	SSPCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.00	0.80	17.00	345017
	75°	112	SC..09T3..	40.00	SSRCR10CK-09	38.00	7.50	10.00	10.00	13.00	11.70	0.80	17.00	345018
	80°	112	SC..09T3..	40.00	SSOCR10CK-09	38.00	7.50	10.00	10.00	13.00	12.50	0.80	17.00	345019

Imperial (in)

	K	Insert Form	ISO	D _{min} Boring Range	Designation	Insert Holder									Part No.
						L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E		
i	45°	112	SC..09T3..	1.574	SSSCR10CK-09	1.260	0.295	0.393	0.393	0.511	0.551	0.031	0.669	345015	
	60°	112	SC..09T3..	1.574	SSTCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.381	0.031	0.669	345016	
	70°	112	SC..09T3..	1.574	SSPCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.433	0.031	0.669	345017	
	75°	112	SC..09T3..	1.574	SSRCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.460	0.031	0.669	345018	
	80°	112	SC..09T3..	1.574	SSOCR10CK-09	1.496	0.295	0.393	0.393	0.511	0.472	0.031	0.669	345019	



B10-I



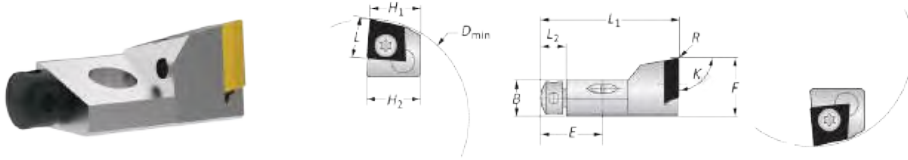
L

m = Metric (mm)
i = Imperial (in)



Compact Lay Down Cartridges

Tangential



Metric (mm)

K		Insert Form	Type	D _{min} Boring Range	Insert Holder									Part No.
					L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E	L	
m	90°	04	Right	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	345023
			Left	54.00	38.00	7.50	10.00	14.00	15.00	16.00	0.50	17.00	10.50	345025
		05	Right	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	14.50	345020
			Left	70.00	45.00	8.00	14.00	19.00	20.00	22.00	0.50	20.00	14.50	345022

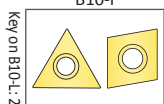
Imperial (in)

K		Insert Form	Type	D _{min} Boring Range	Insert Holder									L	Part No.
					L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E			
i	90°	04	Right	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	0.413	345023	
			Left	2.125	1.496	0.295	0.393	0.551	0.590	0.629	0.019	0.669	0.413	345025	
		05	Right	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	0.570	345020	
			Left	2.755	2.755	0.314	0.551	0.748	0.787	0.866	0.019	0.787	0.570	345022	



L

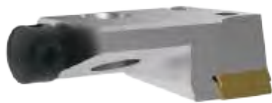
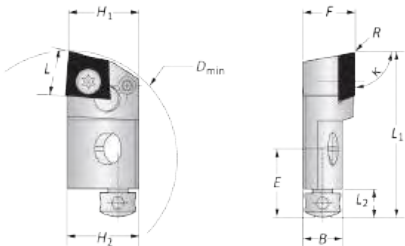
B10-I



B10-L: 5

Compact Lay Down Cartridges

Tangential - Radial Cutting

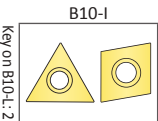


Metric (mm)

K	Insert Form	Type	D _{min} Boring Range	Insert Holder									L	Part No.
				L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E			
	90°	04	Right	54.00	41.00	7.50	10.00	17.00	18.00	13.00	0.50	17.00	10.50	345024
		05	Right	70.00	50.00	8.00	14.00	21.00	22.00	17.00	0.50	20.00	14.50	345021

Imperial (in)

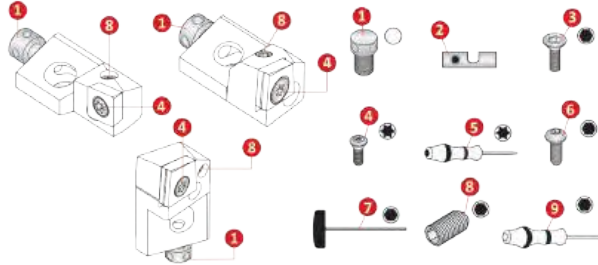
K	Insert Form	Type	D _{min} Boring Range	Insert Holder									L	Part No.
				L ₁	L ₂	B	H ₁	H ₂	F	R Radius	E			
	90°	04	Right	2.125	1.614	0.295	0.393	0.669	0.708	0.511	0.019	0.669	0.413	345024
		05	Right	2.755	1.968	0.314	0.551	0.826	0.866	0.669	0.019	0.787	0.570	345021





Compact Lay Down Cartridges

Accessories

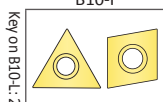


Insert Holder Part No.	1. Axial Barrel Screw	2. Shim	3. Insert Screw	4. Insert Screw	5. Torx® Driver	6. Holder Fixing Screw	7. Hex Driver	8. Radial Set Screw	9. Hex Driver
345001	215742	345201	215461	115676	115590	215343	415577	114224	215472
345002	415299	345202	116433	115673	115664	215634	415164	070161	215473
345003	215250	345203	116433	415298	215150	215431	415164	215467	115575
345004	215265	345204	116433	215149	215150	315476	415165	215467	115575
345005	415299	345216	116433	115673	115664	215634	415164	070161	215473
345006	415299	345218	116433	115673	115664	215634	415164	070161	215473
345007	415299	345208	116433	115673	115664	215634	415164	070161	215473
345008	415299	345208	116433	115673	115664	215634	415164	070161	215473
345009	415299	345202	116433	115673	115664	215634	415164	070161	215473
345010	215742	345211	215461	115676	115590	215343	415577	114224	215472
345011	215742	345211	215461	115676	115590	215343	415577	114224	215472
345012	215742	345213	215461	115676	115590	215343	415577	114224	215472
345013	215742	345213	215461	115676	115590	215343	415577	114224	215472
345014	215742	345201	215461	115676	115590	215343	415577	114224	215472
345015	415299	345215	116433	115673	115664	215634	415164	070161	215473
345016	415299	345216	116433	115673	115664	215634	415164	070161	215473
345017	415299	345218	116433	115673	115664	215634	415164	070161	215473
345018	415299	345218	116433	115673	115664	215634	415164	070161	215473
345019	415299	345208	116433	115673	115664	215634	415164	070161	215473
345020	215250	345220	116433	415949	215150	315476	415165	215467	115575
345021	215250	345221	116433	415949	215150	315476	415165	215104	115575
345022	215250	345222	116433	415949	215150	315476	415165	215467	115575
345023	415299	345223	116433	415977	115664	215634	415164	415280	215473
345024	415299	345224	116433	415977	115664	215634	415164	070161	215473
345025	415299	345225	116433	415977	115664	215634	415164	415280	215473



L

B10-I



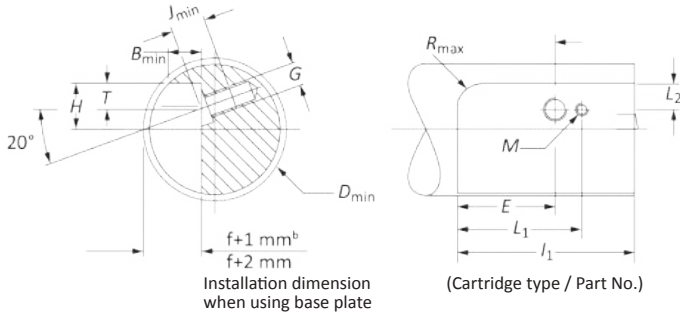
B10-L: 7



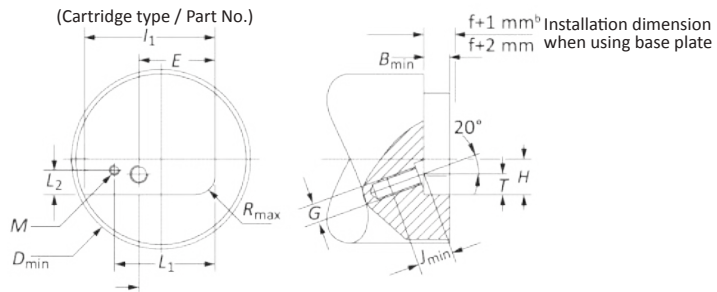
Compact Lay Down Cartridges

Mounting Dimensions

Axial



Radial



Metric (mm)

	Installation Dimensions				Mounting Thread and Base Plate							Cartridge Type
	D_{min}	H	R_{max}	B_{min}	E	L_1	T	L_2	G	M	J_{min}	
m	25.00	8.00	2.00	6.50	13.00	18.50	4.50	4.20	M4	M2	8.00	XXXXX 08CK ^{1,2}
	40.00	10.00	2.50	10.00	17.00	24.50	5.00	4.70	M6	M3	11.00	XXXXX 10CK
	50.00	12.00	5.50	14.00	20.00	28.00	6.00	5.70	M6	M3	12.00	XXXXX 12CK
	55.00	14.00	5.50	16.00	23.50	33.00	6.00	7.20	M8	M3	13.00	XXXXX 14CK
	70.00	20.00	6.50	14.00	20.00	27.50	6.00	11.20	M8	M3	15.00	345020
		22.00	6.50	14.00	20.00	28.00	6.00	11.20	M8	M3	15.00	345021*
		20.00	6.50	14.00	20.00	27.50	6.00	11.20	M8	M3	15.00	345022
	54.00	15.00	3.00	10.00	17.00	23.50	5.00	9.70	M6	M3	11.00	345023
		18.00	3.00	10.00	17.00	24.00	5.00	9.20	M6	M3	11.00	345024*
		15.00	3.00	10.00	17.00	23.50	5.00	9.70	M6	M3	11.00	345025

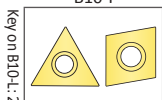
Imperial (in)

		Installation Dimensions				Mounting Thread and Base Plate						
	D_{min}	H	R_{max}	B_{min}	E	L_1	T	L_2	G	M	J_{min}	Cartridge Type
1	0.984	0.315	0.079	0.256	0.512	0.728	0.177	0.165	M4	M2	0.315	XXXXX 08CK ^{1,2}
	1.575	0.394	0.098	0.394	0.669	0.965	0.197	0.185	M6	M3	0.433	XXXXX 10CK
	1.969	0.472	0.217	0.551	0.787	1.102	0.236	0.224	M6	M3	0.472	XXXXX 12CK
	2.165	0.551	0.217	0.630	0.925	1.299	0.236	0.276	M8	M3	0.512	XXXXX 14CK
	2.756	0.787	0.256	0.551	0.787	1.083	0.236	0.441	M8	M3	0.591	345020
		0.866	0.256	0.551	0.787	1.102	0.236	0.441	M8	M3	0.591	345021*
		0.787	0.256	0.551	0.787	1.083	0.236	0.441	M8	M3	0.591	345022
	2.126	0.591	0.118	0.394	0.669	0.925	0.197	0.382	M6	M3	0.433	345023
		0.709	0.118	0.394	0.669	0.945	0.197	0.362	M6	M3	0.433	345024*
		0.591	0.118	0.394	0.669	0.925	0.197	0.382	M6	M3	0.433	345025

*Radial

- From D_{min} 25 mm - 32 mm, the short clamp holder is 0.5 mm from the middle.
- Installation with base plate.

B10-I



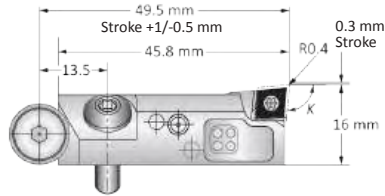
m = Metric (mm)

i = Imperial (in)



ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

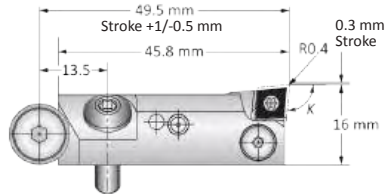
Fine Boring Cartridges



Digital 3E^{TECH} Cartridges

K	Insert Form	ISO	Type	Metric		Imperial		Part No.
				Minimum Boring Diameter (mm)	Weight (kg)	Minimum Boring Diameter (in)	Weight (lbs)	
90°	20	TOGX 0802..	Right	28.00	0.06	1.102	0.132	345042
			Left	28.00	0.06	1.102	0.132	345043
	101	CC.. 0602..	Right	28.00	0.06	1.102	0.132	345032
			Left	28.00	0.06	1.102	0.132	345033
95°	20	TOGX 0802..	Right	28.00	0.06	1.102	0.132	345040
			Left	28.00	0.06	1.102	0.132	345041
	101	CC.. 0602..	Right	28.00	0.06	1.102	0.132	345030
			Left	28.00	0.06	1.102	0.132	345031

NOTE: ES-Bore digital fine boring cartridges must be used with the new 3E^{TECH} and adapter plate. The ES-Bore cannot be used with 3E^{TECH}.
NOTE: 3E^{TECH} module, adapter, and charging unit sold separately.



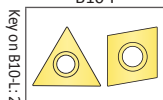
Analog Cartridges

K	Insert Form	ISO	Type	Metric			Imperial		
				Minimum Boring Diameter (mm)	Weight (kg)	Part No.	Minimum Boring Diameter (in)	Weight (lbs)	Part No.
90°	20	TOGX 0802..	Right	28.00	0.06	345046	1.102	0.132	346046
			Left	28.00	0.06	345047	1.102	0.132	346047
	101	CC.. 0602..	Right	28.00	0.06	345036	1.102	0.132	346036
			Left	28.00	0.06	345037	1.102	0.132	346037
95°	20	TOGX 0802..	Right	28.00	0.06	345044	1.102	0.132	346044
			Left	28.00	0.06	345045	1.102	0.132	346045
	101	CC.. 0602..	Right	28.00	0.06	345034	1.102	0.132	346034
			Left	28.00	0.06	345035	1.102	0.132	346035



L

B10-I



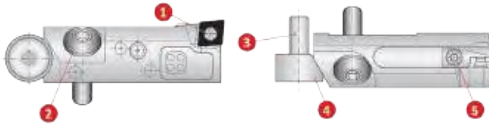
B10-L: 9



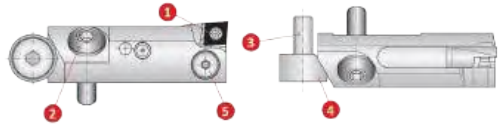
ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Accessories

ES-Bore Digital 3E^{TECH+}



ES-Bore Analog



Screws and Service Keys

	1 Insert Screw		2 Mounting Screw	3 Height Adjusting Screw	4 Height Adjusting Wedge	5 Diameter Adjusting Screw*
	Insert Form 101	Insert Form 20				
Screw	115676 (T8)	115535 (T7)	515553 (s3)	115466 (s3)	415721	—
Service Key	115590	115591	051110	051110	—	115590

*Diameter adjusting screw must not be removed from the fine boring cartridge.

3E^{TECH+} Digital Readout Module

1. Module	2. Charging Unit*
536015	536016

NOTE: WEEE-Reg.-Nr. DE 15820388

*Charging unit sold separately.

NOTE: 3E^{TECH+} digital adjustment accuracy of 0.001 mm (0.00005") on diameter.



Adapter Plate for 3E^{TECH+}

Type	Part No.
Right	536017
Left	536018

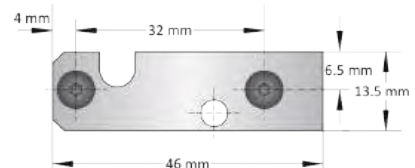
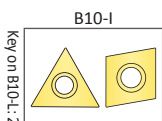
NOTE: Adapter sold separately.



ES-Bore Shim Assembly (Unfinished)

	Part No.
Shim Assembly (Shim with 2 Screws)	345048
Replacement Screw	116438

NOTE: Shim can be used for both right-hand and left-hand cutting to achieve desired diameter for insert with alternative nose radius. Face grinding and screw hole countersinking will be required.



B10-I

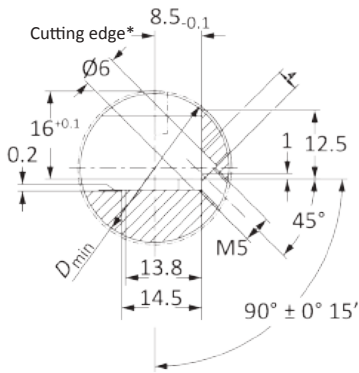
Key on B10-L: 2

m = Metric (mm)
i = Imperial (in)

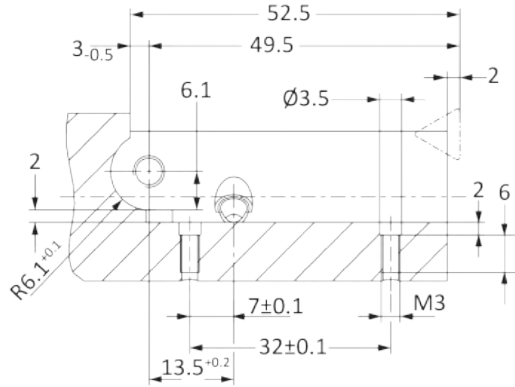
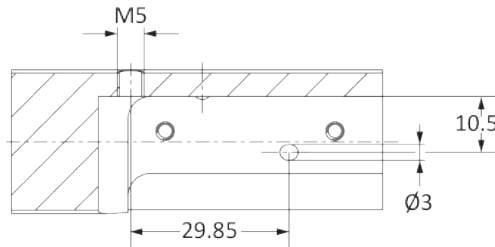


ES-Bore Fine Boring Cartridges: ≥ 28.00 mm (1.102")

Mounting Dimensions

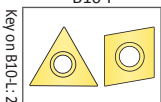


*For $D \leq 32$ mm cutting edge 1 mm before center.



L

B10-L



[illegible]

SECTION

B10-M

Accessories / Technical Information

Accessories/ Technical Information



WOHLHAUPTER®

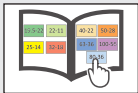
MultiBore® Boring Tools

Ø 0.40 mm - 3255.00 mm (0.016" - 128.150")



Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



MVS Connection Color Guide
Detailed instructions and information regarding the MVS connection(s).

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

Table of Contents

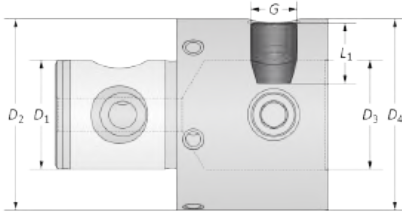
Accessories	
Threaded Taper Pins	3
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Heavy Metal Balancing Screws	5
Wrenches/Drivers	6
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Driver and Wrench Sets	8
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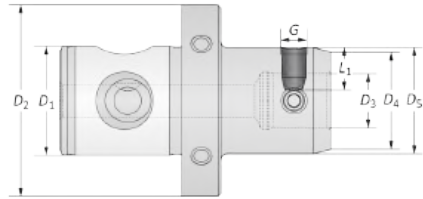
Accessories

Threaded Taper Pins

Extensions



Reducers



Threaded Taper Pins for Extensions

Connection		Taper Pin			Part No.		Service Key	
$D_2 D_1$	$D_4 D_3$	Metric (mm) <i>L</i>	Imperial (in) <i>L</i>	<i>G</i>	Steel	Titanium	Key	Torque
19.5 - 11	19.5 - 11	6.50	0.256	M5 x 0.5	115949	—	s2.5 / A	3.5 N·m
22 - 11	22 - 11	8.30	0.327	M5 x 0.5	215375	—	s2.5 / A	3.5 N·m
25 - 14	25 - 14	8.30	0.327	M8 x 1.0	132174	—	s4 / B	12.0 N·m
32 - 18	32 - 18	10.40	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
40 - 22	40 - 22	14.50	0.571	M10 x 1.0	133113	—	s5 / B	22.0 N·m
50 - 28	50 - 28	16.70	0.657	M12 x 1.0	132145	415334	s6 / B	25.0 N·m
63 - 36	63 - 36	19.80	0.780	M16 x 1.5	132146	415336	s8 / B	30.0 N·m
80 - 36	80 - 36	28.80	1.134	M16 x 1.5	132191	415335	s8 / B	30.0 N·m
100 - 56	100 - 56	34.00	1.339	M24 x 2.0	215470	415337	s12 / B	45.0 N·m

Threaded Taper Pins for Reducers

Connection		Taper Pin					Part No.		Service Key	
$D_2 \mid D_1$	$D_4 \mid D_3$	Metric (mm)		Imperial (in)						
		D_5	L	D_5	L	G	Steel	Titanium	Key	Torque
32 - 18	22 - 11	32.00	8.30	1.260	0.327	M5 x 0.5	215375	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
40 - 22	22 - 11	40.00	16.00	1.575	0.630	M5 x 0.5	215376	—	s2.5 / A	3.5 N·m
50 - 28	22 - 11	50.00	16.00	1.969	0.630	M5 x 0.5	215376	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
		36.00	10.40	1.417	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
	32 - 18	35.00	10.40	1.378	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
		37.00	14.50	1.457	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
		40.00	14.50	1.575	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
		46.00	14.50	1.811	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
	40 - 22	40.00	14.50	1.575	0.571	M10 x 1.0	133113	—	s5 / B	22.0 N·m
		47.00	17.80	1.850	0.701	M10 x 1.0	132144	—	s5 / B	22.0 N·m
63 - 36	22 - 11	63.00	16.00	2.480	0.630	M5 x 0.5	215376	—	s2.5 / A	3.5 N·m
	25 - 14	32.00	10.40	1.260	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
		36.00	10.40	1.417	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
	32 - 18	35.00	10.40	1.378	0.409	M8 x 1.0	132142	—	s4 / B	12.0 N·m
		40.00	14.50	1.575	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
		46.00	14.50	1.811	0.571	M8 x 1.0	132143	—	s4 / B	12.0 N·m
		40.00	14.50	1.575	0.571	M10 x 1.0	133113	—	s5 / B	22.0 N·m
	40 - 22	47.00	17.80	1.850	0.701	M10 x 1.0	132144	—	s5 / B	22.0 N·m
		50.00	17.80	1.969	0.701	M10 x 1.0	132144	—	s5 / B	22.0 N·m
	50 - 28	63.00	16.70	2.480	0.657	M12 x 1.0	132145	415334	s6 / B	25.0 N·m
80 - 36	63 - 36	80.00	19.80	3.150	0.780	M16 x 1.5	132146	415336	s8 / B	30.0 N·m

NOTE: Steel or titanium taper pins are used in balancing the Alu-Line tooling.

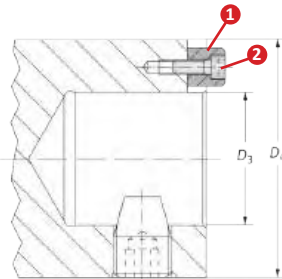
B10: ix - x





Accessories

Clamping Pieces



Clamping Pieces for MVS 100 - 56

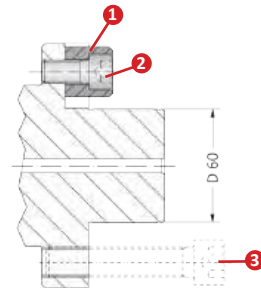
Connection	Service Key	1.Torque		Service Key	2.Cap Screw	
		D x L	Part No.		D x L	Part No.
100 - 56	–	–	115641	S5 / B	M6 x 1 x 16	115147

Clamping Pieces for D 60 / D 40

Connection	1. Torque Part No.
D 60	115643 (125 mm)
	KW31562 (110 mm)
D 40	117143

Clamping Pieces for D 60 / D 40

Connection	Service Key	2. Cap Screw D x L	Part No.
D 60	s10 / B	M12 x 1.75 x 25	115237
D 40	s5 / B	M6 x 1 x 16	115147



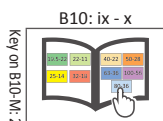
Clamping Pieces for D 60 / D 40

Connection	Service Key	3. Cap Screw D x L	Part No.
D 60	s14 / C	M16 x 2 x 80	115170 ⁽¹⁾
		M16 x 2 x 55	215189 ⁽²⁾
D 40	s10 / B	M12 x 1.75 x 75	315186 ⁽³⁾
		M12 x 1.75 x 50	077104 ⁽²⁾

⁽¹⁾ To mount boring tools above Ø 200.00 mm (7.874"), see section B10-H.

⁽²⁾ Cap screws used for mounting cutter heads to DIN 1830.

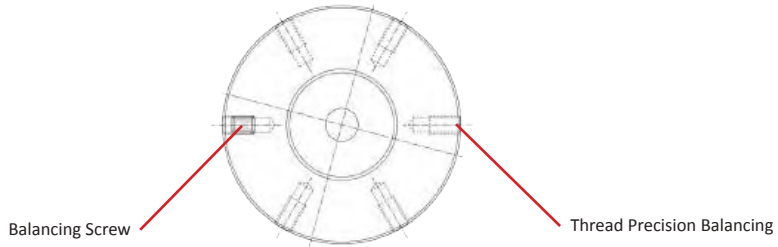
⁽³⁾ Ø 200.00 mm - 520.00 mm (7.874" - 20.472").





Accessories

Heavy Metal Balancing Screws



Balancing Screw		
Nominal Size	Service Key	Part No.
M5 x 0.8 x 6	0.8 x 4 / K	415573
M6 x 1 x 6	0.8 x 4 / K	415284
M6 x 1 x 8	0.8 x 4 / K	415341
M6 x 1 x 10	0.8 x 4 / K	415283
M8 x 1.25 x 8	1.2 x 6.5 / K	415285
M8 x 1.25 x 10	1.2 x 6.5 / K	415286
M8 x 1.25 x 12	1.2 x 6.5 / K	415287



Accessories

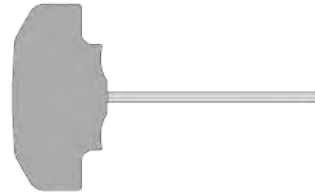
Wrenches/Drivers

Service Keys for Insert Holders and Fixing Screws (Type A, B, C, F)

Service Key	Part No.
s1.5 / A	215472
s2 / A	215473
s2 / B	415761
s2.5 / A	115575
s2.5 / B	415577
s3 / A	115630
s3 / B	415578
s4 / B	115576
s4 / F	315265
s4 / B	415164
s5 / B	115577
s5 / B	415165
s6 / B	115578
s8 / B	115579
s8 / C	415611
s10 / B	115580
s12 / B	215638
s14 / C	215639



Type A



Type B



Type C



Type F

Wrench (Type P)

Service Key	Part No.
13 / P	315689
15 / P	315690
19 / P	315691



Type P



Accessories

Drivers

Fixed Torque Driver (Type B, H)

Service Key	Part No.
T6 / H	115537
T7 / H	115591
T8 / H	115590
T15 / H	115664
T20 / H	215150
T25 / B	415121



Torque Driver (Type H)

Service Key	Part No.
T6 / H	415507
T7 / H	415508
T8 / H	415514
T15 / H	415510
T20 / H	415543



Torque Driver (Type K)

Service Key	Part No.
0.5 x 3 / K	315322
0.8 x 4 / K	415579
1.2 x 6.5 / K	415580



Accessories

Driver and Wrench Sets



Torque Driver Set: Torx® Bits, Hexagon Bits, Flat Blade Bits

Type	Size	Pieces	Set Part No.
Flat Blade Bit	0.3 - 1.2 (N·m)	1	103086
	1.2 - 3.0 (N·m)	1	
	4.0 - 8.0 (N·m)	1	
	0.5 x 3.0	1	
Torque Driver	T6	3	
	T7	3	
	T8	3	
	T16	1	
	T20	1	
	T25	1	
Hexagon Bit	s2	3	
	s2.5	3	
	s3	2	
	s4	2	
	s5	1	

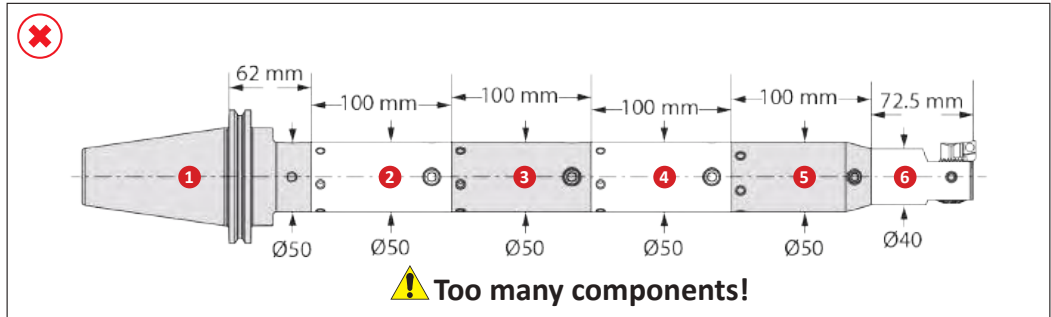
25 Piece Wrench Set

Type	Size	Set Part No.
A	s1.5 / s2 / s2.5 / s3 / s4	103025
B	s4 / s5 / s6 / s8 / s10 / s12 / s14	
C	s7	
F	s4	
H	T6 / T7 / T8 / T15 / T20 / T25	
K	0.5 x 3	
P	s13 / s15 / s19	



Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).

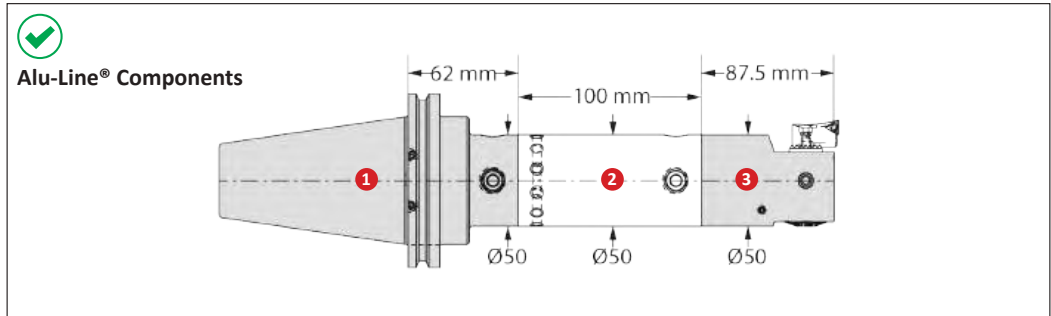
Step 1: Find L : D by component.

Step 2: Add each L : D average.

- | | | |
|-----------------|---|------|
| ① 1.2 = 62/50 | → | 1.2 |
| ② 2.0 = 100/50 | → | 2.0 |
| ③ 2.0 = 100/50 | → | 2.0 |
| ④ 2.0 = 100/50 | → | 2.0 |
| ⑤ 2.0 = 100/50 | → | 2.0 |
| ⑥ 1.8 = 72.5/40 | → | +1.8 |

⚠ 11.0 = L : D ratio

⚠ Too long with too many components!



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: Do not exceed recommended 5xD length-to-diameter ratio when using Alu-Line (Aluminum) components or exceed four total components (including shank).

Step 1: Find L : D by component.

Step 2: Add each L : D average.

- | | | |
|-----------------|---|------|
| ① 1.2 = 62/50 | → | 1.2 |
| ② 2.0 = 100/50 | → | 2.0 |
| ③ 1.8 = 72.5/40 | → | +1.8 |

✓ 5.0 = L : D ratio

⚠ WARNING Tool failure can cause serious injury. To prevent:

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
- When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
- When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
- When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio.

Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.

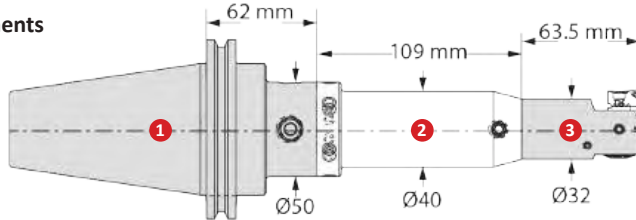


Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



Tool Steel Components



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: When using steel components, do not exceed recommended 6xD length-to-diameter ratio or exceed four total components (including shank).

Step 1: Find L : D by component.

$$1. 1.2 = 62/50$$

$$2. 2.7 = 109/40$$

$$3. 2.0 = 63.5/32$$

Step 2: Add each L : D average.

$$1.2$$

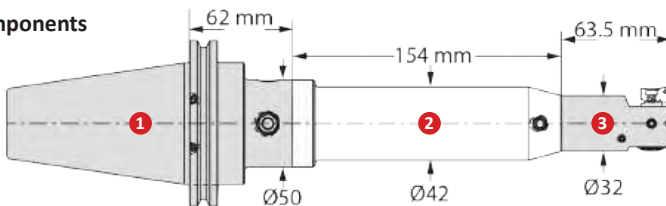
$$2.7$$

$$+2.0$$

$$5.9 = L : D \text{ ratio}$$



Heavy Metal Components



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: When using a heavy metal components, do not exceed recommended 8xD length-to-diameter ratio or exceed four total components (including shank).

Step 1: Find L : D by component.

$$1. 1.2 = 62/50$$

$$2. 3.6 = 154/42$$

$$3. 2.0 = 63.5/32$$

Step 2: Add each L : D average.

$$1.2$$

$$3.6$$

$$+2.0$$

$$6.8 = L : D \text{ ratio}$$

⚠ WARNING Tool failure can cause serious injury. To prevent:

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
- When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
- When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
- When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio.

Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.

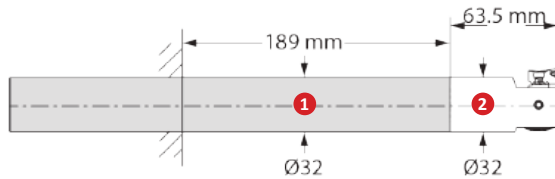


Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:



Carbide Shank



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: When using carbide shank components, do not exceed recommended 9xD length-to-diameter ratio or exceed four total components.

Step 1: Find L : D by component.

① $5.9 = 189/32$

② $2.0 = 63.5/32$

Step 2: Add each L : D average.

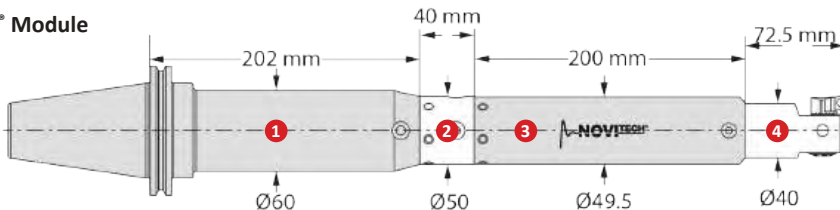
→ 5.9

→ +2.0

③ $7.9 = \text{L : D ratio}$



NOVI^{TECH}® Module



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

NOTE: Do not exceed recommended 10xD length-to-diameter ratio when using NOVI^{TECH}® intermediate modules or exceed four total components (including shank).

NOTE: The NOVI^{TECH}® intermediate module should always be assembled as close as possible to the cutting edge (i.e. the next component behind the boring head).

Step 1: Find L : D by component.

① $3.3 = 202/60$

② $0.8 = 40/50$

③ $4.0 = 200/49.5$

④ $1.8 = 72.5/40$

Step 2: Add each L : D average.

→ 3.3

→ 0.8

→ 4.0

→ +1.8

③ $9.9 = \text{L : D ratio}$

Component	Alu-Line®	Tool Steel	Heavy Metal	Carbide	NOVI ^{TECH} ®
Length-to-Diameter Ratio	5xD	6xD	8xD	9xD	10xD

⚠ WARNING Tool failure can cause serious injury. To prevent:

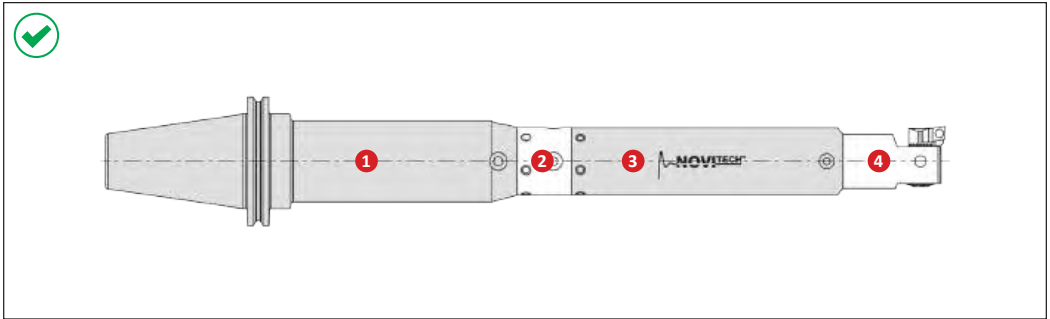
- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
- When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
- When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
- When using a NOVI^{TECH}® module, do not exceed recommended 10xD length-to-diameter ratio.

Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.



Calculating Tool Assembly Weight

To calculate, see graphics below:



Step 1: Find weight for each component circled in the example table below.

Example:

MVS Connection	Boring Range	4 Boring Head				Weight	Part No.
$D_1 D_2$	A	X_1	X_2	L_2	D_5		
40 - 22	53.01 - 65.98	75.00	39.00	72.50	—	0.70 (kg)	310004
40 - 22	2.087 - 2.598	2.953	1.535	2.854	—	1.543 (lbs)	320004

Step 2: Calculate total assembly weight.

- ① 6.6 kg
- ② 0.6 kg
- ③ 3.5 kg
- ④ + 0.7 kg
- 11.4 kg

Step 3: Consult machine tool builder to ensure tool assembly weight does not exceed machine capabilities.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- Do not exceed recommended 10xD length-to-diameter ratio or exceed four total components (including shank).
- When using Alu-Line® components, do not exceed recommended 5xD length-to-diameter ratio.
- When using tool steel components, do not exceed recommended 6xD length-to-diameter ratio.
- When using heavy metal components, do not exceed recommended 8xD length-to-diameter ratio.
- When using a carbide shank, do not exceed recommended 9xD length-to-diameter ratio.
- When using a NOVI^{TECH} module, do not exceed recommended 10xD length-to-diameter ratio.

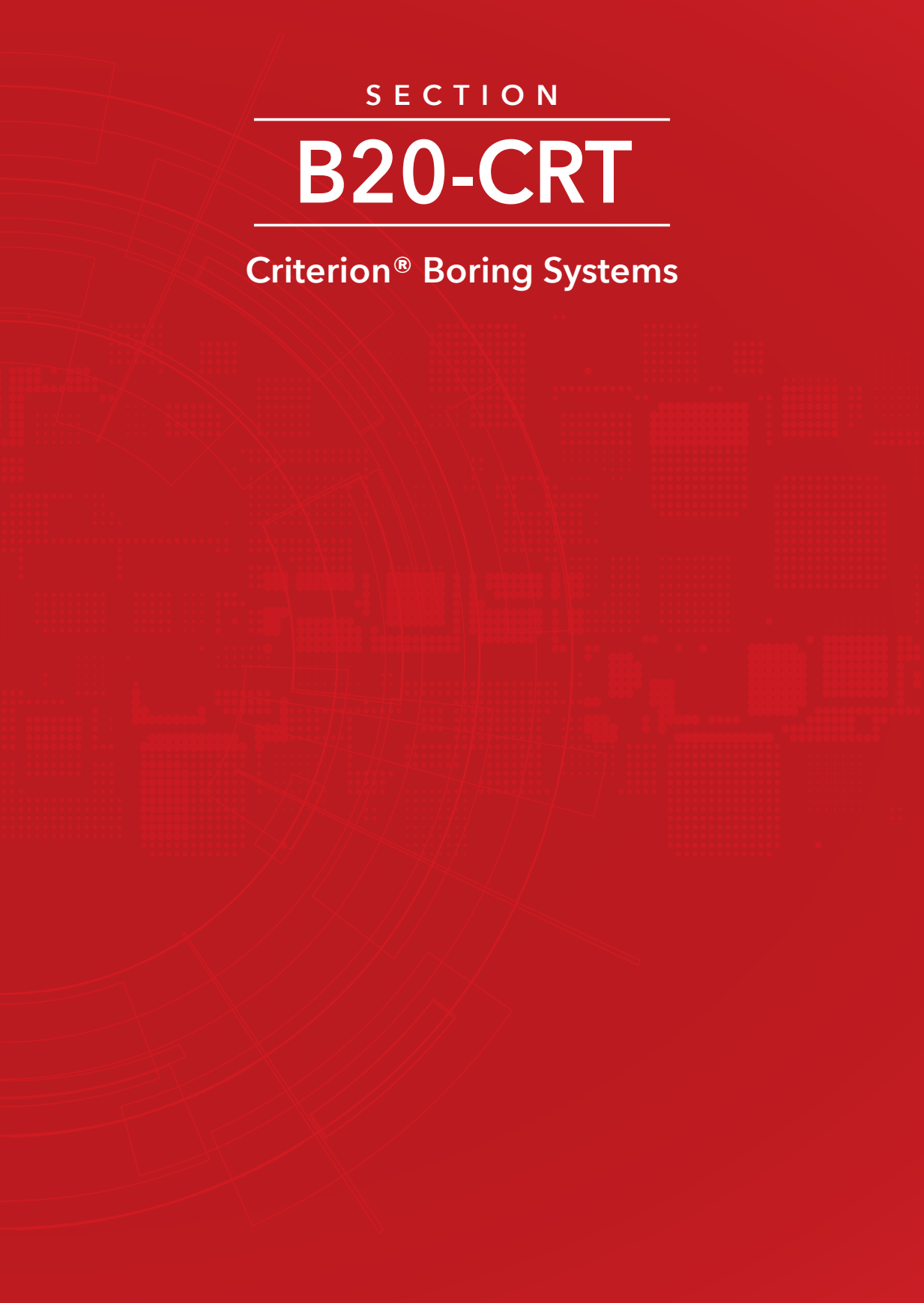
Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.

CRITERION[®] **BORING** PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

www.alliedmachine.com



SECTION

B20-CRT

Criterion® Boring Systems

Criterion® Modular Boring Systems



Boring holes doesn't have to be boring

Criterion modular boring systems bring speed, tolerance, toughness, and versatility to your boring applications.

- ▶ MBS Finish Boring Tools
 - ▶ 0.050" - 0.750"
- ▶ CBS Finish Boring Tools
 - ▶ 0.050" - 0.750"
- ▶ MDS Finish Boring Tools
 - ▶ 18.00 mm - 33.00 mm (0.710" - 1.280")
- ▶ Cri-Bore® Microadjusting Finish Boring Heads
 - ▶ 27.00 mm - 128.00 mm (1.050" - 5.065")
- ▶ Large Cri-Bore® Finish Boring / OD Turning System
 - ▶ 127.00 mm - 308.00 mm (5.000" - 12.125")
- ▶ CB Style Versatile Finish Boring Heads
 - ▶ 0.250" - 21.500"

Applicable Industries

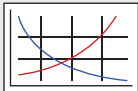
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

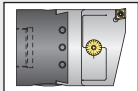
The following icons will appear throughout the catalog to help you navigate between products.



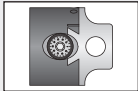
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



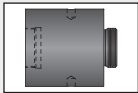
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



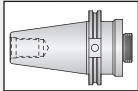
Boring Heads - Insert Holders
Microadjusting boring heads that use inserts for cutting.



Boring Heads - Boring Bar Holders
Standard and microadjusting boring heads that use boring bars for cutting.



Head-to-Shank Adapters
Extensions and reducers that attach the boring head to the shank.



Shanks
A variety of shanks for different machines.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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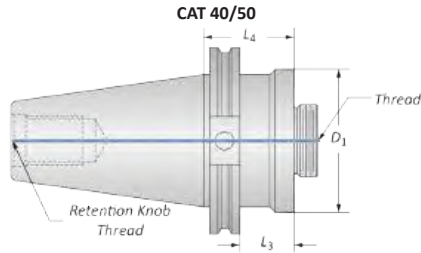
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Master Shanks

CAT 40/50 and BT Flange Shanks

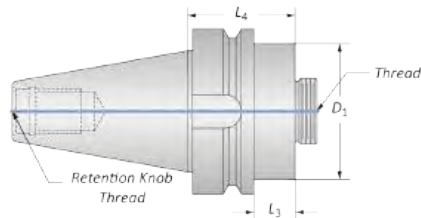
B20



Imperial (in)

Style	D_1	L_3	L_4	Shank			Part No.
				Weight (lbs)	Thread	Retention Knob Thread	
CAT40	1.500	0.370	1.770	2.490	7/8 - 20	5/8 - 11	CB1500-CV40
	2.000	1.130	1.880	2.700	7/8 - 20	5/8 - 11	CB2000-CV40
	2.500	1.130	1.880	3.120	1-1/2 - 18	5/8 - 11	CB2500-CV40
	3.000	1.180	1.880	3.410	1-1/2 - 18	5/8 - 11	CB3000-CV40
CAT50	1.500	0.370	1.770	7.120	7/8 - 20	1 - 8	CB1500-CV50
	2.000	1.130	1.880	7.330	7/8 - 20	1 - 8	CB2000-CV50
	2.500	1.130	1.880	7.740	1-1/2 - 18	1 - 8	CB2500-CV50
	3.000	1.130	1.880	8.030	1-1/2 - 18	1 - 8	CB3000-CV50
	3.380	1.380	2.130	9.440	2-1/4 - 10	1 - 8	CB6000-CV50

BT Flange Shanks



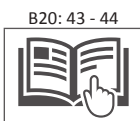
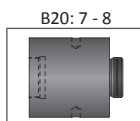
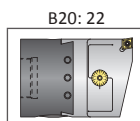
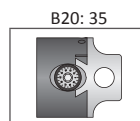
Imperial (in)

Style	D_1	L_3	L_4	Shank			Part No.
				Weight (lbs)	Thread	Retention Knob Thread	
BT30	1.500	0.900	1.770	1.360	7/8 - 20	M12 x 1.75	CB1500-BT30
BT40	1.500	0.710	1.770	2.540	7/8 - 20	M16 x 2	CB1500-BT40
	2.000	0.500	1.560	2.620	7/8 - 20	M16 x 2	CB2000-BT40
	2.500	0.870	2.060	3.690	1-1/2 - 18	M16 x 2	CB2500-BT40
	3.000	1.000	2.060	3.980	1-1/2 - 18	M16 x 2	CB3000-BT40
BT50	1.500	0.270	1.770	8.220	7/8 - 20	M24 x 3	CB1500-BT50
	2.000	0.060	1.560	8.250	7/8 - 20	M24 x 3	CB2000-BT50
	3.000	0.500	2.060	9.410	1-1/2 - 18	M24 x 3	CB3000-BT50
	3.380	0.630	2.130	10.500	2-1/4 - 10	M24 x 3	CB6000-BT50

NOTE: Taper ground to AT3 tolerance.**WARNING**

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit****www.alliedmachine.com/CriterionBoringGuidelines.**

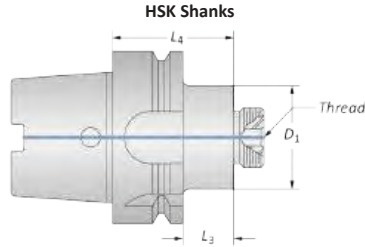
M = Metric (mm)
I = Imperial (in)



Master Shanks

HSK and Straight Shanks

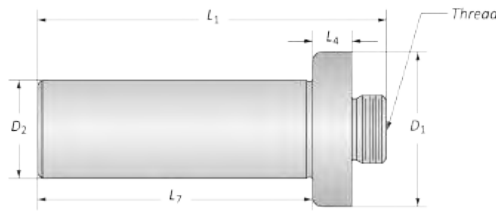
B20



Imperial (in)

		Shank					
Style		D_1	L_3	L_4	Weight (lbs)	Thread	Part No.
i	HSK63	1.500	0.730	1.750	1.820	7/8 - 20	CB1500-HSK63A
		2.000	0.730	1.750	2.090	7/8 - 20	CB2000-HSK63A
		3.000	0.500	2.150	3.200	1-1/2 - 18	CB3000-HSK63A
	HSK100	1.500	0.500	2.270	6.300	7/8 - 20	CB1500-HSK100A
		2.000	0.500	2.270	6.470	7/8 - 20	CB2000-HSK100A
		3.000	0.500	2.270	7.180	1-1/2 - 18	CB3000-HSK100A

Straight Shanks



Imperial (in)

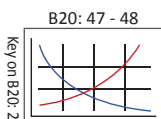
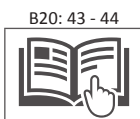
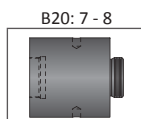
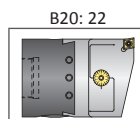
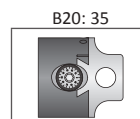
		Shank				Thread	Part No.
D_1	D_1	L_4	L_7	L_1	Weight (lbs)		
i 1.110	0.500	0.250	2.000	2.690	0.240	7/8 - 20	SS0500-087520
	0.625	0.250	2.370	3.060	0.340	7/8 - 20	SS0625-087520
	0.750	0.250	2.750	3.440	0.480	7/8 - 20	SS0750-087520
	1.000	0.250	3.120	3.810	0.820	7/8 - 20	SS1000-087520
i 1.860	0.750	0.250	3.120	3.870	0.810	1-1/2 - 18	SS0750-150018
	1.000	0.250	3.120	3.870	1.110	1-1/2 - 18	SS1000-150018
	1.250	0.250	3.880	4.630	1.760	1-1/2 - 18	SS1250-150018
	1.500	0.250	4.630	5.380	2.720	1-1/2 - 18	SS1500-150018
2.000	2.000	—	6.380	6.880	5.850	1-1/2 - 18	SS2000-150018

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visit www.alliedmachine.com/CriterionBoringGuidelines.



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i = Imperial (in)

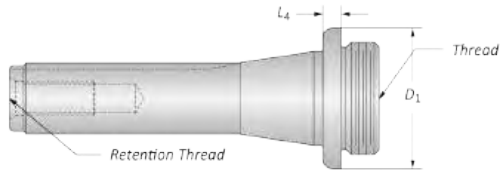


Master Shanks

R-8 and Morse Taper Shanks

B20

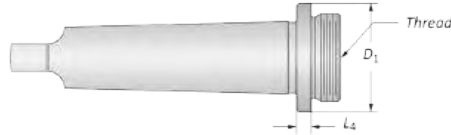
R-8 Shanks



Imperial (in)

i	Shank					Part No.
	D_1	L_4	Weight (lbs)	Thread	Retention Knob Thread	
	1.110	0.470	0.990	7/8 - 20	7/16 - 20	R8-087520
	1.860	0.370	1.270	1-1/2 - 18	7/16 - 20	R8-150018

Morse Taper Shanks



Imperial (in)

i	Style	Shank				Part No.
		D_1	L_4	Weight (lbs)	Thread	
	2 Taper	1.110	0.250	0.380	7/8 - 20	MT2-375THD87520*
		1.110	0.250	0.390	7/8 - 20	MT2-087520
	3 Taper	1.110	0.250	0.710	7/8 - 20	MT3-087520
		1.860	0.250	1.000	1-1/2 - 18	MT3-150018
	4 Taper	1.230	0.250	1.350	7/8 - 20	MT4-087520
		1.860	0.250	1.700	1-1/2 - 18	MT4-150018
	5 Taper	1.860	0.250	3.770	1-1/2 - 18	MT5-150018

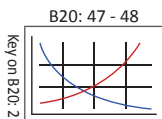
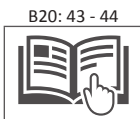
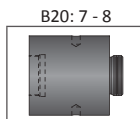
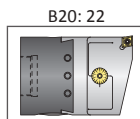
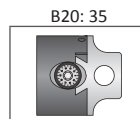
*Item features a 3/8 - 16 thread instead of tang.

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

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M = Metric (mm)
i = Imperial (in)

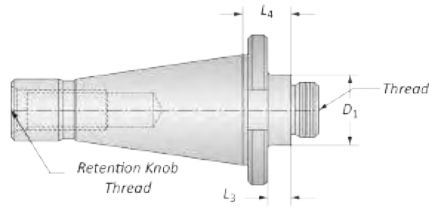


Master Shanks

NMTB and DIN 2080 Shanks

B20

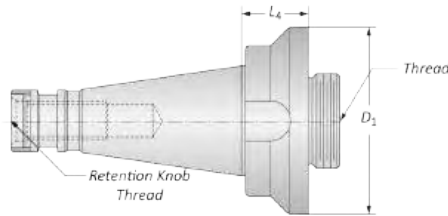
NMTB Taper Shanks



Imperial (in)

Style	D_1	L_3	L_4	Shank			Part No.
				Weight (lbs)	Thread	Retention Knob Thread	
NMTB 30	1.120	0.370	0.790	0.810	7/8 - 20	1/2 - 13	NMTB30-087520
	1.850	0.630	1.050	1.190	1-1/2 - 18	1/2 - 13	NMTB30-150018
NMTB 40	1.120	0.370	0.770	1.780	7/8 - 20	5/8 - 11	NMTB40-087520
	1.850	0.630	1.020	2.310	1-1/2 - 18	5/8 - 11	NMTB40-150018
NMTB 50	1.970	0.510	1.250	6.750	7/8 - 20	1 - 8	NMTB50-087520
	1.870	0.400	1.210	6.870	1-1/2 - 18	1 - 8	NMTB50-150018
	3.380	0.500	1.250	8.320	2-1/4 - 10	1 - 8	NMTB50-225010

DIN 2080



Metric (mm)

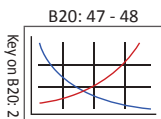
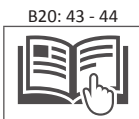
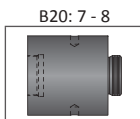
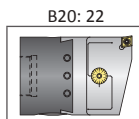
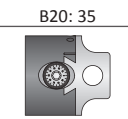
D_1	L_3	L_4	Shank			Part No.
			Weight (kg)	Thread	Retention Knob Thread	
50.00	17.00	25.70	0.45 (kg)	7/8 - 20	M12	CB050M-ISO30
	11.00	27.70	0.91 (kg)	7/8 - 20	M16	CB050M-ISO40
	11.00	39.40	2.88 (kg)	7/8 - 20	M24	CB038M-ISO50
76.00	22.00	27.70	1.32 (kg)	11/2 - 18	M16	CB076M-ISO40
	36.00	39.40	3.36 (kg)	11/2 - 18	M24	CB076M-ISO50

WARNING

Assembly of modular components may cause machine damage and/or serious injury. To prevent:

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For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visit www.alliedmachine.com/CriterionBoringGuidelines.



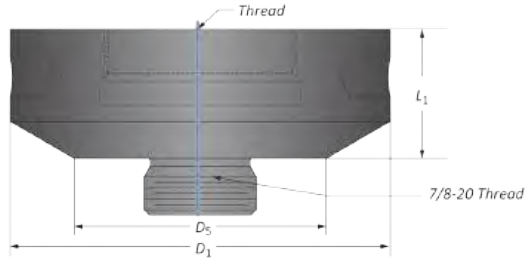
m = Metric (mm)
i = Imperial (in)



Intermediate Modules

Reducers

B20

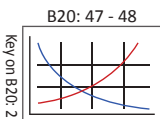
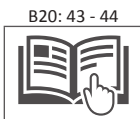
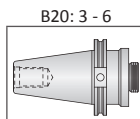
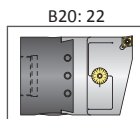
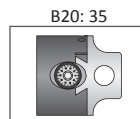


Imperial (in)

Reducer					
D_1	D_5	L_1	Weight (lbs)	Thread	Part No.
1.500	1.000	1.000	0.440	7/8 - 20	CB1500-IRCB1000
	1.250	1.000	0.450	7/8 - 20	CB1500-IRCB1250
2.000	1.000	1.000	0.720	7/8 - 20	CB2000-IRCB1000
	1.250	1.000	0.760	7/8 - 20	CB2000-IRCB1250
	1.500	1.000	0.800	7/8 - 20	CB2000-IRCB1500
	1.000	1.250	1.610	1-1/2 - 18	CB3000-IRCB1000
3.000	1.250	1.250	1.750	1-1/2 - 18	CB3000-IRCB1250
	1.500	1.250	1.840	1-1/2 - 18	CB3000-IRCB1500
	2.000	1.250	2.020	1-1/2 - 18	CB3000-IRCB2000

WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

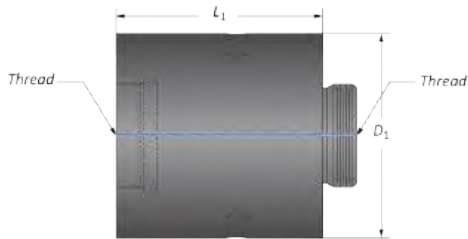
- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit**
www.alliedmachine.com/CriterionBoringGuidelines.



M = Metric (mm)
I = Imperial (in)

Intermediate Modules

Extensions



B20



Imperial (in)

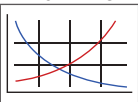
Reducer				
D_1	L_1	Weight (lbs)	Thread	Part No.
1.000	1.000	0.190	7/8 - 20	CB1000-IA1000
	2.000	0.390	7/8 - 20	CB1000-IA2000
1.250	1.250	0.390	7/8 - 20	CB1250-IA1250
	2.500	0.800	7/8 - 20	CB1250-IA2500
1.500	1.500	0.700	7/8 - 20	CB1500-IA1500
	3.000	1.410	7/8 - 20	CB1500-IA3000
2.000	2.000	1.660	7/8 - 20	CB2000-IA2000
	4.000	3.350	7/8 - 20	CB2000-IA4000
3.000	3.000	5.730	1-1/2 - 18	CB3000-IA3000
	6.000	11.500	1-1/2 - 18	CB3000-IA6000

i

 **WARNING**

Assembly of modular components may cause machine damage and/or serious injury. To prevent:
-Do not exceed the **allowable weight** for your machine tool.
-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visit www.alliedmachine.com/CriterionBoringGuidelines.

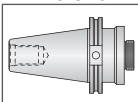
B20: 47 - 48



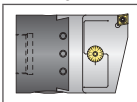
B20: 43 - 44



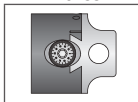
B20: 3 - 6



B20: 22



B20: 35



 = Metric (mm)
 = Imperial (in)

WE KNOW SPEED MATTERS.

MBS Finish Boring Tool

Ideal for small diameter bores and high spindle speeds.

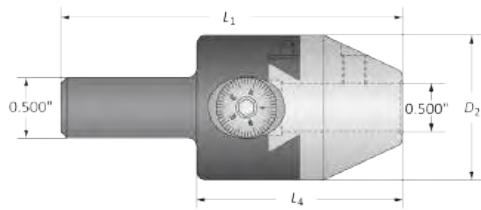
Compact design great for live tooling.

Cylindrical shank can be dropped into existing tool holders.



MBS Finish Boring Tool

Diameter Range: 0.050" - 0.750"



B20

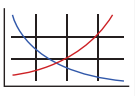
Imperial (in)

Boring Range		Boring Head			Weight (lbs)	Part No.
		L ₁	L ₄	D ₂		
	0.050 - 0.750	3.500	2.125	1.500	0.900	MBS0500B

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Imperial (in) = 0.001" adjustment on diameter.
NOTE: Max spindle speed: 7,000 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages B20: 47 - 48 for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B20: 47 - 48



B20: 43 - 44



 = Metric (mm)
 = Imperial (in)

B20: 10



Mini Coated Boring Bars

Diameter Range: 0.050" - 0.275"

B20

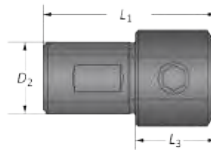
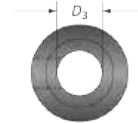


Imperial (in)

Boring Range	Boring Head			Weight (lbs)	Part No.
	L_3	L_1	D_2		
0.050	0.300	1.500	0.125	0.010	0050GA
0.060	0.300	1.500	0.125	0.010	0060GA
0.080	0.500	1.500	0.125	0.010	0080GA
0.100	0.600	1.500	0.125	0.010	0100GA
0.110	0.700	1.500	0.125	0.010	0110GA
0.120	0.750	2.500	0.250	0.020	0120HA
0.140	0.750	2.500	0.250	0.020	0140HA
0.160	0.875	2.500	0.250	0.020	0160HA
0.180	1.125	2.500	0.250	0.020	0180HA
0.200	1.250	2.500	0.250	0.020	0200HA

NOTE: Reducing sleeve required.

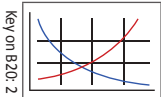
Reducing Sleeves



Imperial (in)

Reducing Sleeve					Weight (lbs)	Part No.
D_3	D_2	L_1	L_3			
i	0.125	0.500	2.000	0.220	0.100	BTH-01250500
	0.250	0.500	1.312	—	0.050	BTH-02500500

B20: 47 - 48



B20: 43 - 44

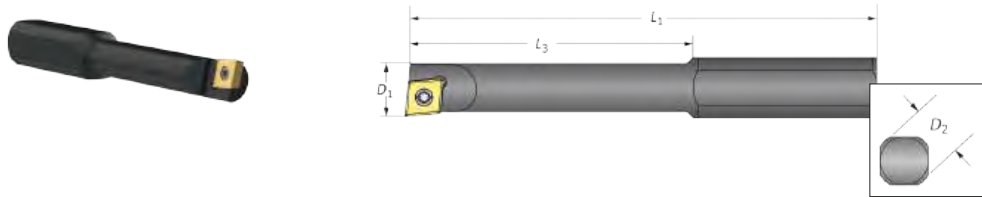


M = Metric (mm)

I = Imperial (in)

Boring Bars

Diameter Range: 0.050" - 0.750"



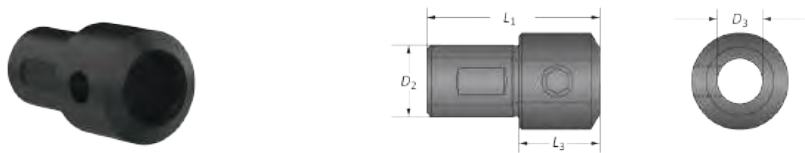
B20

Imperial (in)

		Min. Boring Diameter	Boring Bar			Weight (lbs)	Insert Form	Part No.
Style		D_1	L_3	L_1	D_2			
	Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	0250B
		0.312	1.437	2.750	0.500	0.080	WBGX0301..	0312B
		0.375	1.750	3.062	0.500	0.100	WBGX0301..	0375B
		0.437	2.062	3.375	0.500	0.110	CC..215..	0437B
		0.500	2.187	3.500	0.500	0.140	CC..215..	0500B
	Heavy Metal	0.365	2.250	4.000	0.312	0.080	CC..215..	0365HM*
		0.550	3.250	6.000	0.500	0.300	CC..215..	0550BHM
	Carbide	0.625	4.500	8.000	0.500	0.410	CC..215..	0625BCS

*Reducing sleeve required.

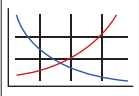
Reducing Sleeves



Imperial (in)

	Reducing Sleeve				Weight (lbs)	Part No.
	D_3	D_2	L_1	L_3		
	0.312	0.500	1.312	—	0.040	BTH-03120500
	0.375	0.500	1.312	—	0.030	BTH-03750500

B20: 47 - 48



B20: 43 - 44



Inserts sold separately.

 = Metric (mm)
 = Imperial (in)

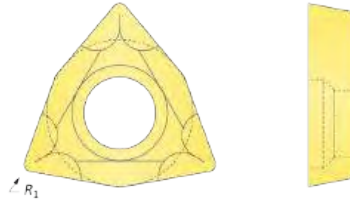


Boring Inserts

Trigon | 80° Diamond

B20

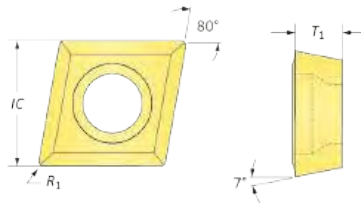
Coated Trigon Insert



Imperial (in)

Insert Form		Insert R_1	Part No.
i	WBGX0301..	0.004	WBGX030101

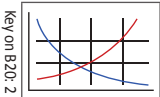
Coated 80° Diamond Insert



Imperial (in)

Insert Form		IC	Insert T_1	R_1	Part No.
i	CC..215..	0.250	0.094	0.008	CCMT060202

B20: 47 - 48



B20: 43 - 44



m = Metric (mm)
i = Imperial (in)

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin, dark gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The background is white, and the grid covers the entire area of the page without any margins or additional markings.

B20

WE KNOW REACH MATTERS.

CBS Finish Boring Tool

Ease the stress of reaching past fixturing.

Ideal for small diameter bores with long overhangs.

Cylindrical shank can be dropped into existing end mill (side-lock) holders.

CBS Finish Boring Tool

Diameter Range: 0.050" - 0.750"



B20

Imperial (in)						
Boring Range		Boring Head			Weight (lbs)	Part No.
		L_1	L_4	D_2		
i	0.050 - 0.750	10.600	8.320	1.250	3.100	CBS1250B

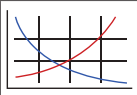
IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.

Imperial (in) = 0.001" adjustment on diameter.

NOTE: Max spindle speed: 3,500 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B20: 47 - 48



B20: 43 - 44



m = Metric (mm)

i = Imperial (in)



Mini Coated Boring Bars

Diameter Range: 0.050" - 0.275"

B20

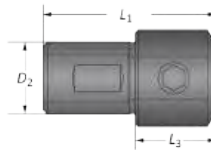
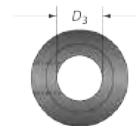


Imperial (in)

Boring Range	Boring Head			Weight (lbs)	Part No.
	L_3	L_1	D_2		
0.050	0.300	1.500	0.125	0.010	0050GA
0.060	0.300	1.500	0.125	0.010	0060GA
0.080	0.500	1.500	0.125	0.010	0080GA
0.100	0.600	1.500	0.125	0.010	0100GA
0.110	0.700	1.500	0.125	0.010	0110GA
0.120	0.750	2.500	0.250	0.020	0120HA
0.140	0.750	2.500	0.250	0.020	0140HA
0.160	0.875	2.500	0.250	0.020	0160HA
0.180	1.125	2.500	0.250	0.020	0180HA
0.200	1.250	2.500	0.250	0.020	0200HA

NOTE: Reducing sleeve required.

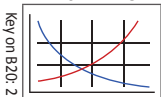
Reducing Sleeves



Imperial (in)

	Reducing Sleeve			Weight (lbs)	Part No.
	D_3	D_2	L_1		
0.125	0.500	2.000	0.220	0.100	BTH-01250500
0.250	0.500	1.312	—	0.050	BTH-02500500
0.375	0.500	1.312	—	0.030	BTH-03750500

B20: 47 - 48



B20: 43 - 44

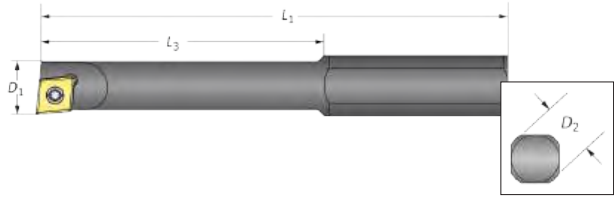


M = Metric (mm)

I = Imperial (in)

Boring Bars and Inserts

Diameter Range: 0.050" - 0.750"

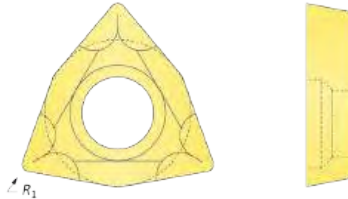


B20

Imperial (in)

Style	Min. Boring Diameter	Boring Bar			Weight (lbs)	Insert Form	Part No.
	D_1	L_3	L_1	D_2			
 Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	0250B
	0.312	1.437	2.750	0.500	0.080	WBGX0301..	0312B
	0.375	1.750	3.062	0.500	0.100	WBGX0301..	0375B
	0.437	2.062	3.375	0.500	0.110	CC..215..	0437B
	0.500	2.187	3.500	0.500	0.140	CC..215..	0500B

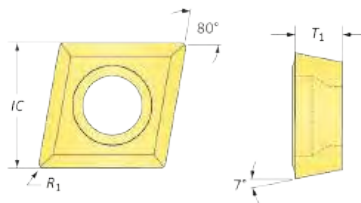
Coated Trigon Insert



Imperial (in)

Insert Form	Insert R_1	Part No.
 WBGX0301..	0.004	WBGX030101

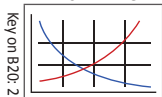
Coated 80° Diamond Insert



Imperial (in)

Insert Form	IC	Insert T_1	R_1	Part No.
 CC..215..	0.250	0.094	0.008	CCMT060202

B20: 47 - 48



B20: 43 - 44



Inserts sold separately.

 = Metric (mm)

 = Imperial (in)

WE KNOW

CONVENIENCE MATTERS.

MDS Finish Boring Tool

Compact design and rugged insert holder make it one of the toughest boring tools under 25.40 mm (1.000") diameter.

Cylindrical shank can be dropped into existing end mill (side-lock) holders.

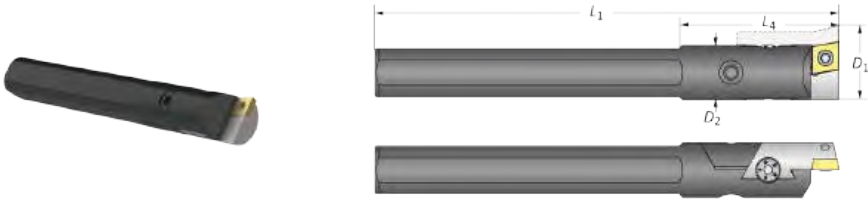
Available in both metric (mm) and imperial (in) versions.





MDS Finish Boring Tools and Inserts

Diameter Range: 18.00 mm - 33.00 mm (0.710" - 1.280")



B20

Metric (mm)

	Boring Range	Boring Head			Weight (kg)	Insert Form	Part No.
		L_1	Max L_4	D_2			
	18.00 - 24.25	133.00	85.37	16.00	0.18	CC..0602..	MDS16M
	22.00 - 33.00	160.00	112.37	20.00	0.32	CC..0602..	MDS20M

Imperial (in)

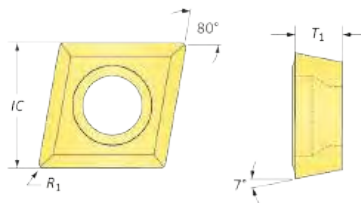
	Boring Range	Boring Head			Weight (lbs)	Insert Form	Part No.
		L_1	Max L_4	D_2			
	0.710 - 0.960	5.250	3.386	0.625	0.400 (lbs)	CC..215..	MDS0625
	0.890 - 1.280	6.310	4.435	0.750	0.700 (lbs)	CC..215..	MDS0750

Metric (mm) = 0.020 mm adjustment on diameter.

Imperial (in) = 0.001" adjustment on diameter.

NOTE: Max spindle speed: 305 m/min (1,000 SFM) at 0 radial offset.

Coated 80° Diamond Insert



Metric (mm)

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
	CC..0602..	6.35	2.38	0.20	CCMT060202

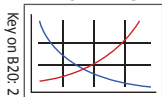
Imperial (in)

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
	CC..215..	0.250	0.094	0.008	CCMT060202

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

B20: 47 - 48

B20: 43 - 44



Inserts sold separately.

= Metric (mm)

= Imperial (in)

WE KNOW TOLERANCE MATTERS.

Cri-Bore® Microadjusting

Allows for 0.001 mm (0.00005") on diameter bore increments.

Modular system can be used on virtually any machine.

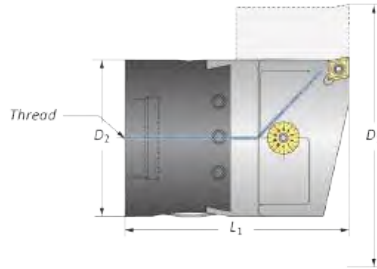
Available in both metric (mm) and imperial (in) versions.





Cri-Bore® Microadjusting Finish Boring Heads

Diameter Range: 27.00 mm - 128.00 mm (1.050" - 5.065")



B20

Metric (mm)

Boring Range D_1	Thread Connection	Boring Head		Weight (kg)	Insert Form	Part No.
		L_1	D_2			
27.00 - 33.00	7/8 - 20	68.35	25.00	0.23	CC..0602..	CB025MCC
					TC..1102..	CB025MTC
33.00 - 41.00	7/8 - 20	73.65	32.00	0.36	CC..0602..	CB032MCC
					TC..1102..	CB032MTC
41.00 - 68.00	7/8 - 20	81.25	38.00	0.59	CC..09T3..	CB038MCC
					TC..16T3..	CB038MTC
53.00 - 84.00	7/8 - 20	91.30	50.00	1.09	CC..09T3..	CB050MCC
					TC..16T3..	CB050MTC
78.00 - 128.00	1-1/2 - 18	104.25	76.00	2.36	CC..09T3..	CB076MCC
					TC..16T3..	CB076MTC

Imperial (in)

Boring Range D_1	Thread Connection	Boring Head		Weight (lbs)	Insert Form	Part No.
		L_1	D_2			
1.050 - 1.320	7/8 - 20	2.690	1.000	0.500	CC..215..	CB1000CC
					TC..215..	CB1000TC
1.300 - 1.600	7/8 - 20	2.900	1.250	0.800	CC..215..	CB1250CC
					TC..215..	CB1250TC
1.585 - 2.700	7/8 - 20	3.200	1.500	1.300	CC..325..	CB1500CC
					TC..325..	CB1500TC
2.060 - 3.320	7/8 - 20	3.590	2.000	2.400	CC..325..	CB2000CC
					TC..325..	CB2000TC
3.065 - 5.065	1-1/2 - 18	4.100	3.000	5.800	CC..325..	CB3000CC
					TC..325..	CB3000TC

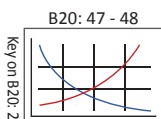
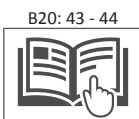
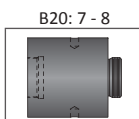
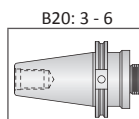
IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.

Metric (mm) = 0.001 mm adjustment on diameter.

Imperial (in) = 0.00005" adjustment on diameter.

NOTE: Max spindle speed: 305 m/min (1,000 SFM) at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages B20: 47 - 48 for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



Inserts sold separately.

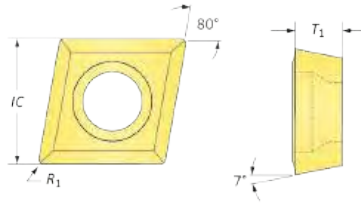
m = Metric (mm)

i = Imperial (in)

**Boring Inserts**

80° Diamond Insert | 60° Triangle Insert

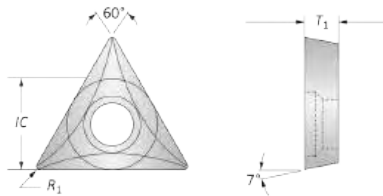
B20

Coated 80° Diamond Inserts**Metric (mm)**

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
m	CC..0602..	6.35	2.38	0.20	CCMT060202
				0.40	CCMT060204
	CC..09T3..	9.53	3.97	0.20	CCMT09T302
				0.40	CCMT09T304

Imperial (in)

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
i	CC..215..	0.250	0.094	0.008	CCMT060202
				0.016	CCMT060204
	CC..325..	0.375	0.156	0.008	CCMT09T302
				0.016	CCMT09T304

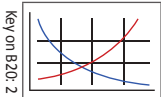
Coated 60° Triangle Inserts**Metric (mm)**

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
m	TC..1102..	6.35	2.38	0.20	TCGT110202
				0.40	TCGT110204
	TC..16T3..	9.53	3.97	0.40	TCGT16T304

Imperial (in)

	Insert Form	IC	Insert		Part No.
			T_1	R_1	
i	TC..215..	0.250	0.094	0.008	TCGT110202
				0.016	TCGT110204
	TC..325..	0.375	0.156	0.016	TCGT16T304

B20: 47 - 48



B20: 43 - 44

**m** = Metric (mm)**i** = Imperial (in)



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

B20

EXTEND YOUR BORING RANGE.

Large Cri-Bore® Finish Boring / OD Turning System

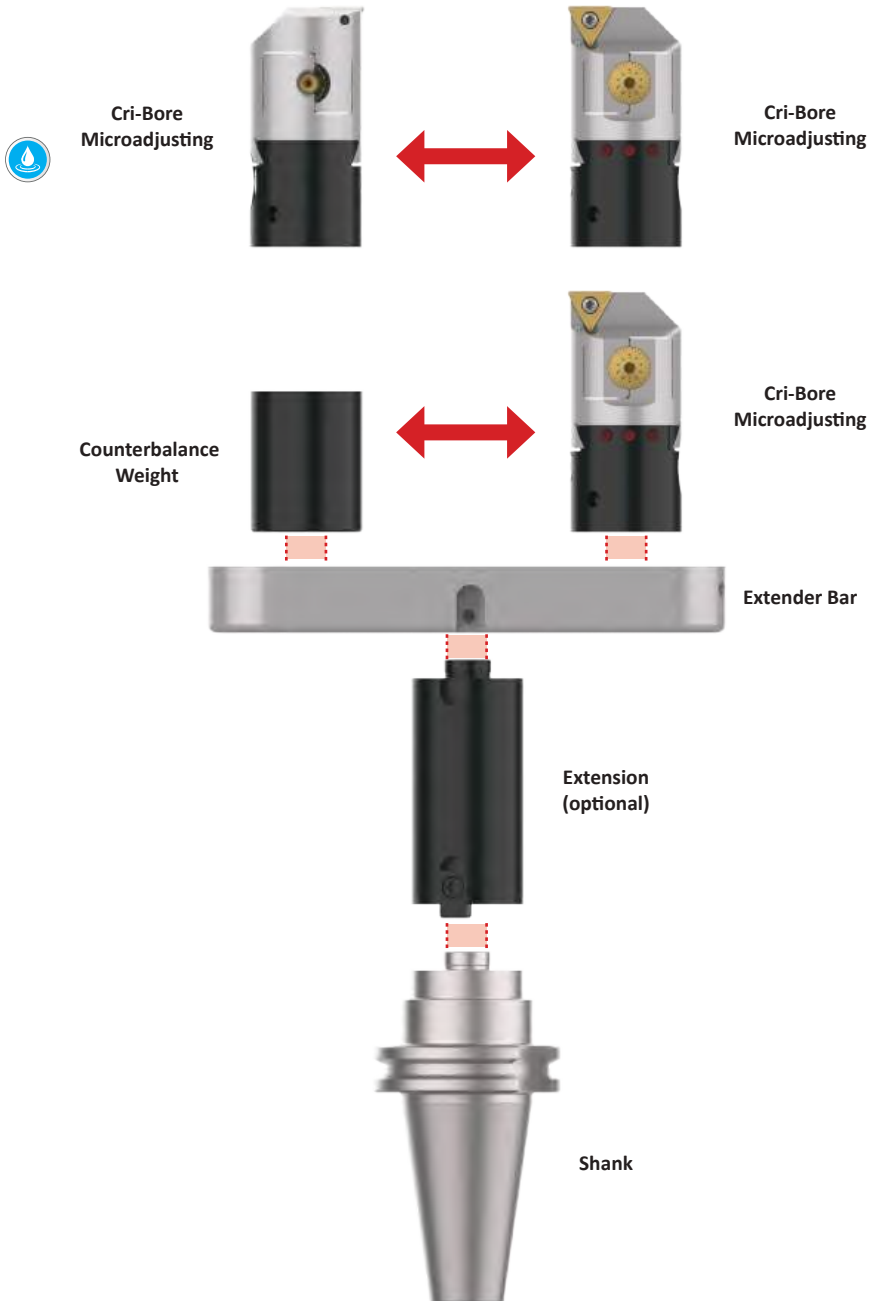
Extend the diameter range for internal and external boring.

Modular tooling system allows for CAT, BT, or HSK shanks.

Allows for 0.001 mm (0.00005") on diameter bore increments.

Large Cri-Bore System

Overview



B20

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
- Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.

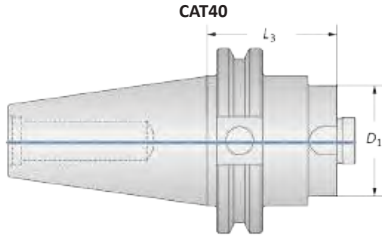
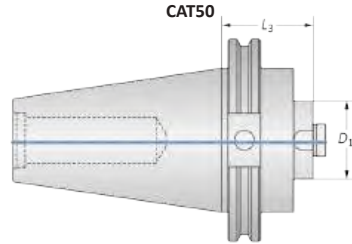
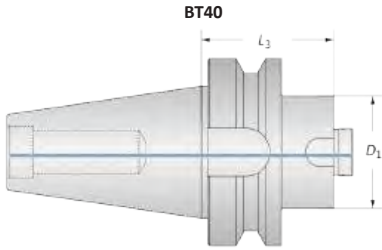
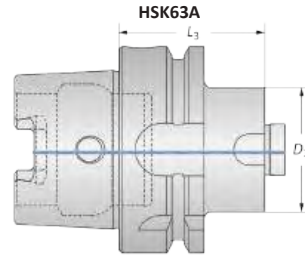
For detailed guidelines on safe configurations, please refer to pages B20: 45 - 46 or visit www.alliedmachine.com/CriterionBoringGuidelines.



Shanks

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")

B20



Metric (mm)

	L_3	Insert D_1	Taper	Weight (kg)	Part No.
m	44.45	38.10	CAT40	1.09	LCB1500-CV40
			CAT50	3.16	LCB1500-CV50
			BT40	1.12	LCB1500-BT40
			HSK63A	0.79	LCB1500-HSK63A

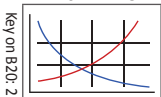
Imperial (in)

	L_3	Insert D_1	Taper	Weight (lbs)	Part No.
i	1.750	1.500	CAT40	2.410	LCB1500-CV40
			CAT50	6.960	LCB1500-CV50
			BT40	2.460	LCB1500-BT40
			HSK63A	1.750	LCB1500-HSK63A

WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit**
www.alliedmachine.com/CriterionBoringGuidelines.

B20: 47 - 48



B20: 43 - 44



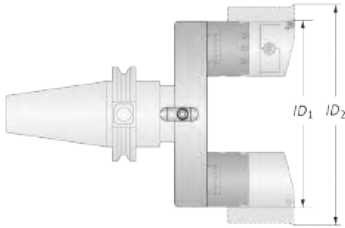
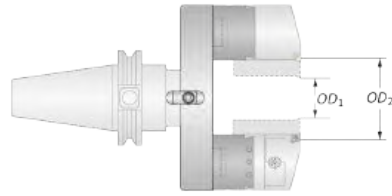
Inserts sold separately.

m = Metric (mm)**i** = Imperial (in)



Extender Bars and Extensions

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")



B20

Metric (mm)

Extender Bar				Weight (kg)	Part No.
ID ₁	ID ₂	OD ₁	OD ₂		
127.00	155.50	18.10	46.40	0.71	LCB1500-56EBK
152.40	180.90	43.50	71.80	0.87	LCB1500-67EBK
177.80	206.30	68.90	97.20	1.04	LCB1500-78EBK
203.20	231.70	94.30	122.60	1.20	LCB1500-89EBK
228.60	257.10	119.70	148.00	1.37	LCB1500-910EBK
254.00	282.50	145.10	173.40	1.53	LCB1500-1011EBK
279.40	307.90	170.50	198.80	1.69	LCB1500-1112EBK

Imperial (in)

Extender Bar				Weight (lbs)	Part No.
ID ₁	ID ₂	OD ₁	OD ₂		
5.000	6.125	0.710	1.830	1.560	LCB1500-56EBK
6.000	7.125	1.710	2.830	1.920	LCB1500-67EBK
7.000	8.125	2.710	3.830	2.290	LCB1500-78EBK
8.000	9.125	3.710	4.830	2.650	LCB1500-89EBK
9.000	10.125	4.710	5.830	3.010	LCB1500-910EBK
10.000	11.125	5.710	6.830	3.370	LCB1500-1011EBK
11.000	12.125	6.710	7.830	3.730	LCB1500-1112EBK

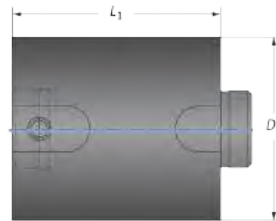
Large Cri-Bore Extensions

Metric (mm)

Counterweight		Weight (kg)	Part No.
D ₁	L ₁		
38.10	38.10	0.30	LCB1500-IA1500
38.10	76.20	0.60	LCB1500-IA3000
38.10	114.30	0.90	LCB1500-IA4500

Imperial (in)

Counterweight		Weight (lbs)	Part No.
D ₁	L ₁		
1.500	1.500	0.660	LCB1500-IA1500
1.500	3.000	1.330	LCB1500-IA3000
1.500	4.500	1.980	LCB1500-IA4500

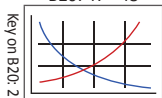


NOTE: Only one extension can be used per boring assembly. Extensions cannot be combined.

WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visit www.alliedmachine.com/CriterionBoringGuidelines.

B20: 47 - 48



B20: 43 - 44



Inserts sold separately.

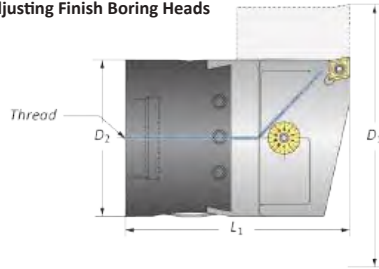
m = Metric (mm)

i = Imperial (in)

**Boring Heads and Counterweights**

ID: 127.00 mm - 307.90 mm (5.000" - 12.125") | OD: 18.10 mm - 198.80 mm (0.710" - 7.830")

Cri-Bore® Microadjusting Finish Boring Heads

B20**Metric (mm)**

	Thread Connection	Boring Head		Weight (kg)	Insert Form	Part No.
		L_1	D_2			
	7/8 - 20	81.25	38.00	0.59	CC...09T3..	CB038MCC
					TC...16T3..	CB038MTC

Imperial (in)

	Thread Connection	Boring Head		Weight (lbs)	Insert Form	Part No.
		L_1	D_2			
	7/8 - 20	3.200	1.500	1.300	CC...325..	CB1500CC
					TC...325..	CB1500TC

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.

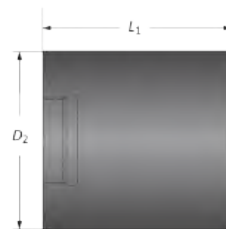
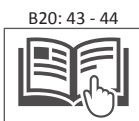
Metric (mm) = 0.001 mm adjustment on diameter. | Imperial (in) = 0.00005" adjustment on diameter.

NOTE: Max spindle speed ID boring: 305 m/min (1,000 SFM) at 0 radial offset and used with counterweight or additional boring head.**NOTE:** Max spindle speed OD boring: Contact our Application Engineering department.**Large Cri-Bore Counterweights****Metric (mm)**

	Counterweight		Weight (kg)	Part No.
	D_2	L_1		
	38.10	65.53	0.57	LCB1500-CBWT A

Imperial (in)

	Counterweight		Weight (lbs)	Part No.
	D_2	L_1		
	1.500	2.580	1.250	LCB1500-CBWT A

**IMPORTANT:** Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.**WARNING** Assembly of modular components may cause machine damage and/or serious injury. To prevent:-Do not exceed the **allowable weight** for your machine tool.-Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visitwww.alliedmachine.com/CriterionBoringGuidelines.

Inserts sold separately.

= Metric (mm)

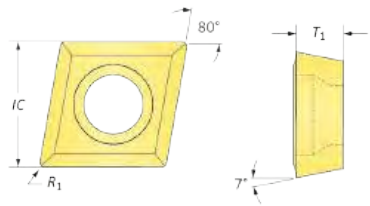
= Imperial (in)



Boring Inserts

80° Diamond Insert | 60° Triangle Insert

Coated 80° Diamond Inserts



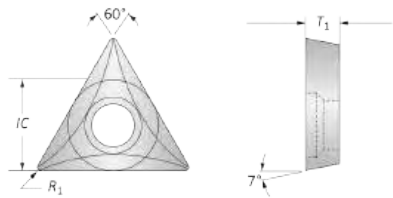
Metric (mm)

m	Insert Form	IC	Insert T ₁	R ₁	Part No.
				0.20	
				0.40	
				0.80	
	CC..09T3..	9.53	3.97		CCMT09T302 CCMT09T304 CCMT09T308

Imperial (in)

i	Insert Form	IC	Insert T ₁	R ₁	Part No.
				0.008	
				0.016	
				0.031	
	CC..325..	0.375	0.156		CCMT09T302 CCMT09T304 CCMT09T308

Coated 60° Triangle Inserts

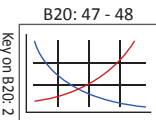
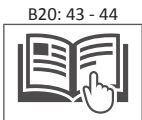


Metric (mm)

m	Insert Form	IC	Insert T ₁	R ₁	Part No.
				0.40	
	TC..16T3..	9.53	3.97		TCGT16T304

Imperial (in)

i	Insert Form	IC	Insert T ₁	R ₁	Part No.
				0.016	
	TC..325..	0.375	0.156		TCGT16T304



m = Metric (mm)
i = Imperial (in)



**NEED VERSATILITY?
NO PROBLEM.**

CB Style Versatile Boring

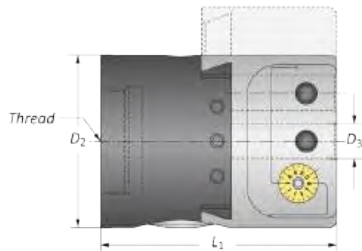
Wide range of diameters produced with a single boring head.

Allows for 0.001" adjustment on bore diameter and 0.000050" with CB2500BMA.

Maximum toughness and maximum versatility.

CB Microadjusting Versatile Boring Head

Diameter Range: 0.250" - 3.125"



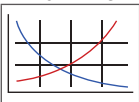
B20

Imperial (in)						
Boring Range D_1		Thread Connection	Boring Head			
			L_1	D_2	D_3	Weight (lbs)
	0.250 - 3.125	1-1/2 - 18	3.375	2.500	0.500	3.400
						Part No. CB2500BMA

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.
Imperial (in) = 0.00005" adjustment on diameter.
NOTE: Max spindle speed: 2,000 RPM at 0 radial offset.

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

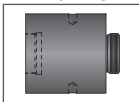
B20: 47 - 48



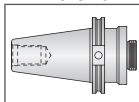
B20: 43 - 44



B20: 7 - 8



B20: 3 - 6



 = Metric (mm)
 = Imperial (in)

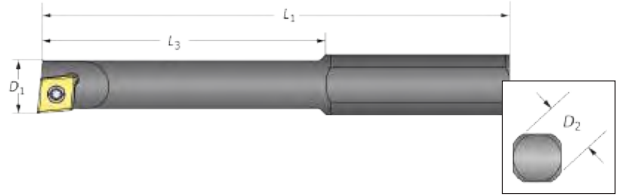
B20: 32



Boring Bars

Diameter Range: 0.050" - 0.750"

B20

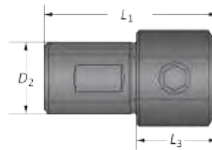
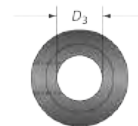


Imperial (in)

Style	Min. Boring Diameter	Boring Bar			Weight (lbs)	Insert Form	Part No.
	D_1	L_3	L_1	D_2			
 Steel	0.250	1.062	2.500	0.500	0.080	WBGX0301..	0250B
	0.312	1.437	2.750	0.500	0.080	WBGX0301..	0312B
	0.375	1.750	3.062	0.500	0.100	WBGX0301..	0375B
	0.437	2.062	3.375	0.500	0.110	CC..215..	0437B
	0.500	2.187	3.500	0.500	0.140	CC..215..	0500B
Heavy Metal	0.365	2.250	4.000	0.312	0.080	CC..215..	0365HM*
	0.550	3.250	6.000	0.500	0.300	CC..215..	0550BHM
Carbide	0.625	4.500	8.000	0.500	0.410	CC..215..	0625BCS

*Reducing sleeve required.

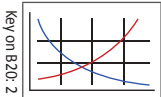
Reducing Sleeves



Imperial (in)

Reducing Sleeve				Weight (lbs)	Part No.
D_3	D_2	L_1	L_3		
 0.312	0.500	1.312	—	0.040	BTH-03120500
0.375	0.500	1.312	—	0.030	BTH-03750500

B20: 47 - 48



B20: 43 - 44



Inserts sold separately.

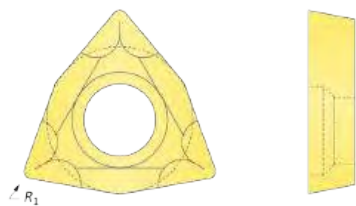
 = Metric (mm) = Imperial (in)



Boring Inserts

Trigon | 80° Diamond

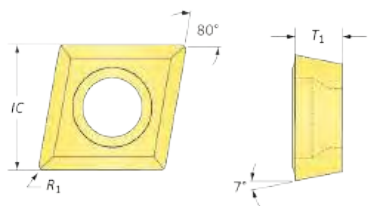
Coated Trigon Insert



Imperial (in)

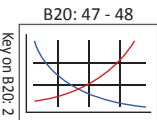
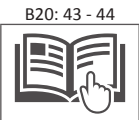
Insert Form		Insert R_1	Part No.
i	WBGX0301..	0.004	WBGX030101

Coated 80° Diamond Insert



Imperial (in)

Insert Form		IC	Insert T_1	R_1	Part No.
i	CC..215..	0.250	0.094	0.008	CCMT060202
				0.016	CCMT060204
				0.031	CCMT060208



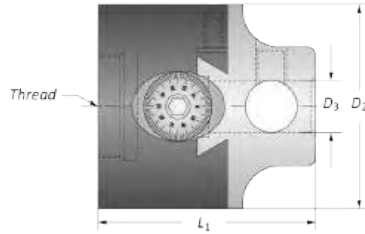
m = Metric (mm)
i = Imperial (in)



CB Versatile Boring Head

Diameter Range: 0.250" - 21.500"

B20



Imperial (in)

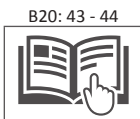
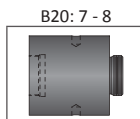
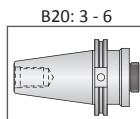
	Boring Range	Thread Connection	Boring Head			Weight (lbs)	Max Spindle Speed (RPM)	Part No.
	D_1		L_1	D_2	D_3			
i	0.250 - 6.687	7/8 - 20	2.435	2.000	0.500	1.600	2500	CB202B
	0.250 - 11.000	1-1/2 - 18	3.166	3.000	0.750	4.700	1750	CB203D
	0.500 - 13.437	1-1/2 - 18	3.715	4.000	1.000	9.300	800	CB204E
	0.500 - 21.500	2-1/4 - 10	5.475	6.000	1.500	26.400	500	CB206F

IMPORTANT: Wax covered gib screws are factory set and should not be removed. Adjustment of these screws will cause performance issues.

Imperial (in) = 0.001" adjustment on diameter.

NOTE: Max spindle speed: RPM (in table) at 0 radial offset.

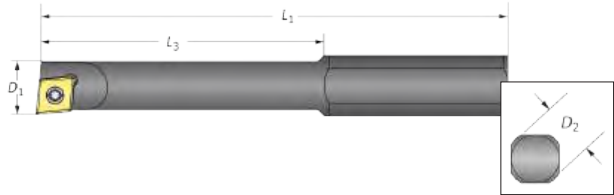
IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.



= Metric (mm)
 = Imperial (in)

Boring Bars

Diameter Range: 0.050" - 0.750"

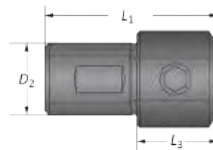
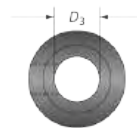


B20

Imperial (in)

Style	Min. Boring Diameter	Boring Bar			Weight (lbs)	Insert Form	Part No.
	D_1	D_2	L_3	L_1			
i Steel	0.250	0.500	1.062	2.500	0.080	WBGX0301..	0250B
	0.312	0.500	1.437	2.750	0.080	WBGX0301..	0312B
	0.375	0.500	1.750	3.062	0.100	WBGX0301..	0375B
	0.437	0.500	2.062	3.375	0.110	CC..215..	0437B
	0.500	0.500	2.187	3.500	0.140	CC..215..	0500B
	0.500	0.750	2.500	4.250	0.280	CC..215..	0500D
	0.750	0.750	3.000	4.687	0.430	CC..325..	0750D
	1.000	0.750	3.500	5.125	0.570	CC..325..	1000D
Heavy Metal	1.250	0.750	4.000	5.562	0.570	CC..325..	1250D
	0.365	0.312	2.250	4.000	0.080	CC..215..	0365HM
	0.425	0.375	2.250	4.000	0.110	CC..215..	0425BHM
	0.550	0.500	3.250	6.000	0.300	CC..215..	0550BHM
	0.688	0.625	4.250	8.000	0.630	CC..325..	0688CHM
Carbide	0.832	0.750	4.750	10.000	1.150	CC..325..	0832DHM
	0.625	0.500	4.500	8.000	0.410	CC..215..	0625BCS
	0.875	0.750	6.000	10.000	1.130	CC..325..	0875DCS

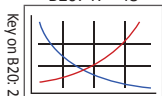
Reducing Sleeves



Imperial (in)

Reducing Sleeve					Weight (lbs)	Part No.
D_3	D_2	L_1	L_3			
0.312	0.500	1.312	—		0.040	BTH-03120500
0.375	0.500	1.312	—		0.030	BTH-03750500
0.375	0.750	2.406	—		0.190	BTH-03750750
0.500	0.750	2.406	0.910		0.040	BTH-05000750
0.625	0.750	1.500	—		0.060	BTH-06250750
0.750	1.000	2.405	1.125		0.400	BTH-07501000
0.750	1.500	3.000	1.000		1.400	BTH-07501500

B20: 47 - 48



B20: 43 - 44



Inserts sold separately.

m = Metric (mm)

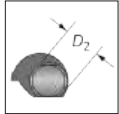
i = Imperial (in)



Cross Hole Boring Bars

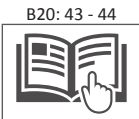
Diameter Range: 2.875" - 21.500"

B20



Imperial (in)

	Min. Boring Diameter	Boring Bar		Weight (lbs)	Insert Form	Part No.
		D_2	L_1			
i	2.875	0.500	2.750	0.140	CC..215..	0500BCH
	4.937	0.750	4.750	0.550	CC..325..	0750DCH
	5.625	1.000	5.310	1.020	CC..325..	1000ECH
	9.093	1.500	9.125	4.130	CC..43..	1500FCH



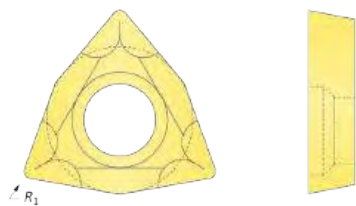
Inserts sold separately.

= Metric (mm)
 = Imperial (in)

Boring Inserts

Trigon | 80° Diamond

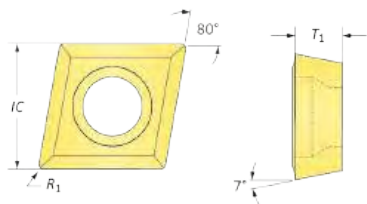
Coated Trigon Insert



Imperial (in)

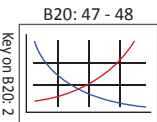
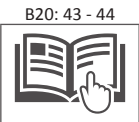
Insert Form		Insert R_1	Part No.
i	WBGX0301..	0.004	WBGX030101

Coated 80° Diamond Insert



Imperial (in)

Insert Form		IC	Insert T_1	R_1	Part No.
i	CC..215..	0.250	0.094	0.008	CCMT060202
				0.016	CCMT060204
				0.031	CCMT060208
	CC..325...	0.375	0.156	0.008	CCMT09T302
				0.016	CCMT09T304
				0.031	CCMT09T308
	CC..43..	0.500	0.188	0.031	CCMT120408



m = Metric (mm)
i = Imperial (in)



Accessories

Screws, Driver, and Wrenches

Insert Screws and Drivers

Insert Form	Insert Part No.	Thread	Insert Driver Part No.	Technical Information	
				Torque Specs	Key Size
WBGX0301..	215377	M2x4	115537	0.6 (N·m)	T6
CC..215.. CC..0602..	115676	M2.5x5	115590	1.2 (N·m)	T8
CC..32500 CC..09T3 (<Ø37mm)	115672	M3.5x7.5	115664	3.0 (N·m)	T15
CC..32500 CC..09T3 (>Ø36mm)	115673	M3.5x9	115664	3.0 (N·m)	T15
CC..43.. CC..1204..	215149	M4.5x11.5	215150	5.0 (N·m)	T20
TC..215.. TC..1102..	115676	M2.5x5	115590	1.2 (N·m)	T8
TC..325.. TC..16T3	115673	M3.5x9	115664	3.0 (N·m)	T15

Pin Spanner Wrenches

Body Diameter	Pin Spanner Wrench Part No.
25.00 mm (1.000")	CB1000-PSW
32.00 mm (1.250")	CB1250-PSW
38.00 mm (1.500")	CB1500-PSW
38.00 mm (2.000")	CB2000-PSW
63.50 mm (2.500")	CB2500-PSW
76.00 mm (3.000")	CB3000-PSW
101.00 mm (4.000")	CB4000-PSW

Hardware Kits

Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.
CB-038MA	CB038-HDW	CB032MTC	CB032M-HDW	CB101M-TP	CB101M-HDW
CB-038MB	CB038-HDW	CB038M-CP	CB038-HDW	CB1250-CP	CB1250-HDW
CB-050MA	CB050M-HDW	CB038M-CPMA	CB038-HDW	CB1250-CPMA	CB1250-HDW
CB-050MB	CB050M-HDW	CB038M-TP	CB038-HDW	CB1250-TP	CB1250-HDW
CB-064MBMA	CB050M-HDW	CB038M-TPMA	CB038-HDW	CB1250-TPMA	CB1250-HDW
CB-076MD	CB076M-HDW	CB038MCC	CB038-HDW	CB1250CC	CB1250-HDW
CB-076MDMA	CB076M-HDW	CB038MTC	CB038-HDW	CB1250TC	CB1250-HDW
CB-101ME	CB101M-HDW	CB050M-CP	CB2000-HDW	CB1500-CP	CB1500-HDW
CB-1500AMA	CB1500-HDW	CB050M-CPMA	CB050M-HDW	CB1500-CPMA	CB1500-HDW
CB-1500B	CB1500-HDW	CB050M-TP	CB2000-HDW	CB1500-TP	CB1500-HDW
CB-202A	CB2000-HDW	CB050M-TP	CB050M-HDW	CB1500-TPMA	CB1500-HDW
CB-202B	CB2000-HDW	CB050M-TPMA	CB050M-HDW	CB1500CC	CB1500-HDW
CB-203D	CB3000-HDW	CB050M-TPMA	CB050M-HDW	CB1500TC	CB1500-HDW
CB-204E	CB4000-HDW	CB050M-TPMA	CB050M-HDW	CB2000-CPMA	CB2000-HDW
CB-206F	CB6000-HDW	CB050MCC	CB050M-HDW	CB2000-TPMA	CB2000-HDW
CB-2375A	CB1500-HDW	CB050MTC	CB050M-HDW	CB2000CC	CB2000-HDW
CB-2500BMA	CB2000-HDW	CB076M-CP	CB076M-HDW	CB2000TC	CB2000-HDW
CB-3000DMA	CB3000-HDW	CB076M-CPMA	CB076M-HDW	CB202B	CB2000-HDW
CB025M-CP	CB025M-HDW	CB076M-TPMA	CB076M-HDW	CB203D	CB3000-HDW
CB025M-CPMA	CB025M-HDW	CB076MCC	CB076M-HDW	CB204E	CB4000-HDW
CB025M-TP	CB025M-HDW	CB076MTC	CB076M-HDW	CB206F	CB6000-HDW
CB025M-TPMA	CB025M-HDW	CB1000-CP	CB1000-HDW	CB2500BMA	CB2000-HDW
CB025MCC	CB025M-HDW	CB1000-CPMA	CB1000-HDW	CB3000-CP	CB3000-HDW
CB025MTC	CB025M-HDW	CB1000-TP	CB1000-HDW	CB3000-CPMA	CB3000-HDW
CB032M-CPMA	CB032M-HDW	CB1000-TPMA	CB1000-HDW	CB3000-TP	CB3000-HDW
CB032M-TP	CB032M-HDW	CB1000CC	CB1000-HDW	CB3000-TPMA	CB3000-HDW
CB032M-TPMA	CB032M-HDW	CB1000TC	CB1000-HDW	CB3000CC	CB3000-HDW
CB032MCC	CB032M-HDW	CB101-CP	CB101M-HDW	CB3000TC	CB3000-HDW



Hardware Kits

Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.	Boring Head Part No.	Hardware Kit Part No.
CB4000-CP	CB4000-HDW	CBER40S-CP	CB1250-HDW	CT1250-1	CT1250-HDW
CB4000-TP	CB4000-HDW	CBER40S-CPMA	CB1250-HDW	CT1250-2	CT1250-HDW
CB4000-TP	CB4000-HDW	CBER40S-CPMA	CB1250-HDW	CT1500-0	CT1500-HDW
CB4000-TP	CB4000-HDW	CBER40S-SB	CB1250-HDW	CT1500-1	CT1500-HDW
CBER16-CP	CB0625-HDW	CBER40S-TP	CB1250-HDW	CT1500-2	CT1500-HDW
CBER16-SG	CB0625-HDW	CBER40S-TPMA	CB1250-HDW	CT2000-0	CT2000-HDW
CBER16-TP	CB0625-HDW	CBO32M-CP	CB032M-HDW	CT2000-1	CT2000-HDW
CBER16M-CP	CB0625-HDW	CBO76M-TP	CB076M-HDW	CT2000-2	CT2000-HDW
CBER16M-TP	CB0625-HDW	CBR-0625CP	CB0625-HDW	CT3000-0	CT3000-HDW
CBER16MS-CP	CB0625-HDW	CBR-0625SG	CB0625-HDW	CT3000-1	CT3000-HDW
CBER16MS-TP	CB0625-HDW	CBR-0628TP	CB0625-HDW	CT3000-2	CT3000-HDW
CBER16S-CP	CB0625-HDW	CBR-0750CP	CB0750-HDW	MB002-500	CB1500-HDW
CBER16S-SG	CB0625-HDW	CBR-0750SH	CB0750-HDW	MB002-625	CB1500-HDW
CBER16S-TP	CB0625-HDW	CBR-0750TP	CB0750-HDW	MB002-750	CB1500-HDW
CBER20-CP	CB0625-HDW	CBR-1000CP	CB1000-HDW	MB152-500	CB1500-HDW
CBER20-SG	CB0625-HDW	CBR-1000CPMA	CB1000-HDW	MB152-625	CB1500-HDW
CBER20-TP	CB0625-HDW	CBR-1000SA	CB1000-HDW	MB152-750	CB1500-HDW
CBER20M-CP	CB0625-HDW	CBR-1000TP	CB1000-HDW	MBS0500B	CB1500-HDW
CBER20M-TP	CB0625-HDW	CBR-1000TPMA	CB1000-HDW	SQ-1500B	S1500-HDW
CBER20MS-CP	CB0625-HDW	CBR-1250CP	CB1250-HDW	SQ-2000B	S2000-HDW
CBER20MS-TP	CB0625-HDW	CBR-1250CPMA	CB1250-HDW	SQ-3000D	S3000-HDW
CBER20S-CP	CB0625-HDW	CBR-1250SB	CB1250-HDW	SQ-3000E	S3000-HDW
CBER20S-SG	CB0625-HDW	CBR-1250TP	CB1250-HDW	TMT-0750H	TMT0750-HDW
CBER20S-TP	CB0625-HDW	CBR-1250TPMA	CB1250-HDW	TMT-1000H	TMT0750-HDW
CBER25-CP	CB0750-HDW	CBS-0625CP	CB0625-HDW		
CBER25-SH	CB0750-HDW	CBS-0625SG	CB0625-HDW		
CBER25-TP	CB0750-HDW	CBS-0625TP	CB0625-HDW		
CBER25-TP	CB0750-HDW	CBS-0750CP	CB0750-HDW		
CBER25M-CP	CB0750-HDW	CBS-0750SH	CB0750-HDW		
CBER25MS-CP	CB0750-HDW	CBS-0750TP	CB0750-HDW		
CBER25MS-TP	CB0750-HDW	CBS-1000CP	CB1000-HDW		
CBER25S-CP	CB0750-HDW	CBS-1000CPMA	CB1000-HDW		
CBER25S-SH	CB0750-HDW	CBS-1000SA	CB1000-HDW		
CBER25S-TP	CB0750-HDW	CBS-1000TP	CB1000-HDW		
CBER32-CP	CB1000-HDW	CBS-1000TPMA	CB1000-HDW		
CBER32-CPMA	CB1000-HDW	CBS-1250CP	CB1250-HDW		
CBER32-SA	CB1000-HDW	CBS-1250CPMA	CB1250-HDW		
CBER32-TP	CB1000-HDW	CBS-1250SB	CB1250-HDW		
CBER32-TPMA	CB1000-HDW	CBS-1250TP	CB1250-HDW		
CBER32M-CP	CB1000-HDW	CBS-1250TPMA	CB1250-HDW		
CBER32M-CPMA	CB1000-HDW	CBS1250B	CB1250-HDW		
CBER32M-TP	CB1000-HDW	CP050M-CP	CB050M-HDW		
CBER32M-TPMA	CB1000-HDW	CSL-202	CB2000-HDW		
CBER32MS-CP	CB1000-HDW	CSL-203	CB3000-HDW		
CBER32MS-CPMA	CB1000-HDW	CSL-204	CB4000-HDW		
CBER32MS-TP	CB1000-HDW	CT025M-0	CT025M-HDW		
CBER32MS-TPMA	CB1000-HDW	CT025M-1	CT025M-HDW		
CBER32S-CP	CB1000-HDW	CT025M-2	CT025M-HDW		
CBER32S-CPMA	CB1000-HDW	CT032M-0	CT032M-HDW		
CBER32S-SA	CB1000-HDW	CT032M-1	CT032M-HDW		
CBER32S-TP	CB1000-HDW	CT032M-2	CT032M-HDW		
CBER32S-TPMA	CB1000-HDW	CT038-2	CT038M-HDW		
CBER40-CP	CB1250-HDW	CT038M-0	CT038M-HDW		
CBER40-CPMA	CB1250-HDW	CT038M-1	CT038M-HDW		
CBER40-SB	CB1250-HDW	CT050M-0	CT050M-HDW		
CBER40-TP	CB1250-HDW	CT050M-1	CT050M-HDW		
CBER40-TPMA	CB1250-HDW	CT050M-2	CT050M-HDW		
CBER40M-CP	CB1250-HDW	CT076M-0	CT076M-HDW		
CBER40M-CPMA	CB1250-HDW	CT076M-1	CT076M-HDW		
CBER40M-TP	CB1250-HDW	CT076M-2	CT076M-HDW		
CBER40M-TPMA	CB1250-HDW	CT1000-0	CT1000-HDW		
CBER40MS-CP	CB1250-HDW	CT1000-1	CT1000-HDW		
CBER40MS-TP	CB1250-HDW	CT1000-2	CT1000-HDW		
CBER40MS-TPMA	CB1250-HDW	CT1250-0	CT1250-HDW		

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**Technical Information**

Torque Specs

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Assembly Item Number	Torque Specs					
	Lock Screw (N·m)	Locking Screw Allen Key Size	Dial Adjust Allen Key Size	Microadjusting Dial Allen Key Size	Clamping Screw Allen Key Size	Insert Torx® Screw Driver Size
MBS0500B	1.4	5/64	5/32	—	1/8	—
CBS1250B	0.7	1/16	5/32	—	1/8	—
MDS0625	1.4	9/64	7/64	—	—	T8
MDS0750	1.5	5/32	7/64	—	—	T15
MDS16M	1.4	2.5 mm	2.5 mm	—	—	T8
MDS20M	1.5	3.0 mm	2.5 mm	—	—	T15
CB1000CC	0.6	0.050	5/32	3/32	—	T8
CB1000TC	0.6	0.050	5/32	3/32	—	T8
CB1250CC	0.7	1/16	5/32	3/32	—	T8
CB1250TC	0.7	1/16	5/32	3/32	—	T8
CB1500CC	1.4	5/64	5/32	7/64	—	T15
CB1500TC	1.4	5/64	5/32	7/64	—	T15
CB2000CC	2.3	3/32	5/32	7/64	—	T15
CB2000TC	2.3	3/32	5/32	7/64	—	T15
CB3000CC	5.3	1/8	1/4	7/64	—	T15
CB3000TC	5.3	1/8	1/4	7/64	—	T15
CB025MCC	0.6	1.5 mm	4.0 mm	2.5 mm	—	T8
CB025MTC	0.6	1.5 mm	4.0 mm	2.5 mm	—	T8
CB032MCC	0.7	2.0 mm	4.0 mm	2.5 mm	—	T8
CB032MTC	0.7	2.0 mm	4.0 mm	2.5 mm	—	T8
CB038MCC	1.4	2.0 mm	4.0 mm	3.0 mm	—	T15
CB038MTC	1.4	2.0 mm	4.0 mm	3.0 mm	—	T15
CB050MCC	2.3	2.5 mm	4.0 mm	3.0 mm	—	T15
CB050MTC	2.3	2.5 mm	4.0 mm	3.0 mm	—	T15
CB076MCC	5.3	3.0 mm	6.0 mm	3.0 mm	—	T15
CB076MTC	5.3	3.0 mm	6.0 mm	3.0 mm	—	T15
CB2500BMA	2.3	3/32	1/4	7/64	7/32	—
CB202B	2.3	3/32	5/32	—	5/32	—
CB203D	5.3	1/8	1/4	—	7/32	—
CB204E	12.4	5/32	1/4	—	7/32	—
CB206F	12.4	5/32	5/16	—	1/4	—

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

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Setup Instructions

Standard Adjusting Boring Heads

Adjusting Standard Adjusting Boring Heads (see Figure B1)

1. Loosen locking screw (6).
2. Turn dial screw (3) to desired graduation.
3. Tighten locking screw (6) to proper torque spec (laser marked on tool).

IMPORTANT: Do not loosen the gib screws (5). It can cause poor performance.

NOTE: To machine smaller bore diameters, turn dial screw (3) counterclockwise one full rotation to remove any backlash. Once backlash is mitigated, turn dial screw (3) clockwise to desired graduation.

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No.	Part
1.	Bar holder
2.	Boring head body
3.	Dial screw
4.	Bar holder set screws
5.	Gib screws (DO NOT ADJUST)
6.	Locking screw

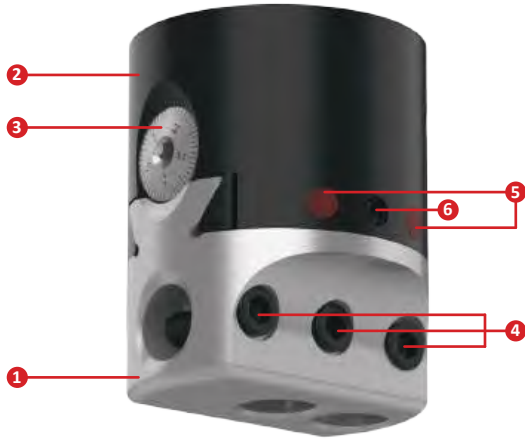


Figure B1

Setup Instructions

Microadjusting Boring Heads

Setting Up Microadjusting Boring Heads (see Figure B2)

Set the microadjusting dial screw range

1. The microadjusting dial screws (4) only have a total range of 0.152 mm (0.006") on diameter. To zero, turn dial (4) clockwise until dial screw bottoms out. Turn the dial (4) two complete turns counterclockwise. Turn dial (4) one half turn clockwise. Dial is now centered for 0.076 mm (0.003") positive or negative travel.

Setting the diameter of the boring head

2. Loosen locking screw (6).
3. Turn dial screw (3) to adjust to the desired diameter using a presetter or plunge indicator or the dial screw (3).
4. Tighten the locking screw (6) to the proper torque spec (laser marked on the tool).
 - Microadjustments will be made at the machine.
5. Make a shallow test cut (roughly 6.35 mm (0.250") deep) to determine the actual diameter.
6. Use the microadjusting dial (4) to adjust to the finish diameter. Do not release the locking screw (6) for microadjustments.
 - If the hole diameter is more than 0.05 mm (0.002") from the target hole size, return to step two.

IMPORTANT: Do not loosen the gib screws (5). It can cause poor performance.

NOTE: Backlash occurs when the diameter of the boring head needs to be decreased. To remove backlash, turn the dial (3) counterclockwise at least one half of a full rotation past the desired adjustment. Once backlash is mitigated, turn dial screw (3) clockwise to the desired adjustment.

No.	Part
1	Bar holder
2	Boring head body
3	Dial screw
4	Microadjusting dial screw
5	Gib screws (DO NOT ADJUST)
6	Locking screw



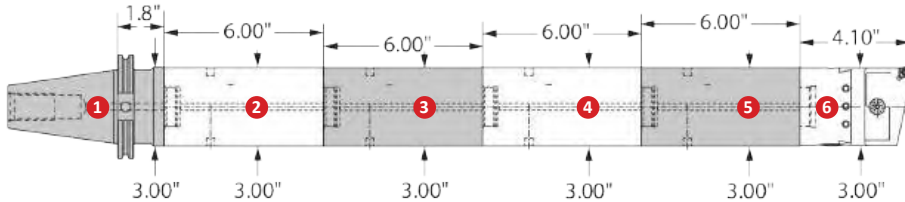
Figure B2



Guidelines for Not Exceeding Recommended Length-to-Diameter Ratio

To calculate, see graphics below:

B20



! Too many components!

NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

Step 1: Find L : D by component.

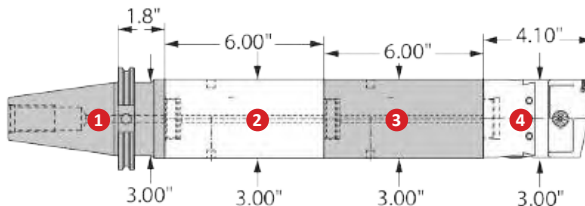
①	$0.6 = 1.88/3.00$	→	0.6
②	$2.0 = 6.00/3.00$	→	2.0
③	$2.0 = 6.00/3.00$	→	2.0
④	$2.0 = 6.00/3.00$	→	2.0
⑤	$2.0 = 6.00/3.00$	→	2.0
⑥	$1.4 = 4.10/3.00$	→	+1.4



10.0 = L : D ratio



Too long with too many components!



NOTE: Length-to-diameter ratio is calculated using body diameters not cutting diameter.

Step 1: Find L : D by component.

①	$0.6 = 1.88/3.00$	→	0.6
②	$2.0 = 6.00/3.00$	→	2.0
③	$2.0 = 6.00/3.00$	→	2.0
④	$1.4 = 4.10/3.00$	→	+1.4



6.0 = L : D ratio

⚠ WARNING

Tool failure can cause serious injury. To prevent:

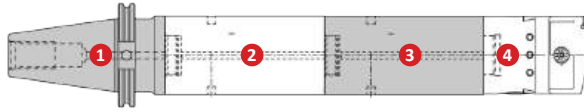
-Do not exceed recommended 9xD length-to-diameter ratio or exceed 4 total components (including shank).

Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.



Calculating Tool Assembly Weight

To calculate, see graphics below:



B20

Step 1: Find weight for each component circled in the example table below.

Example:

Imperial (in)

Boring Range D_1	Thread Connection	Boring Head		Weight (lbs)	Insert Form	Part No.
		L_1	D_2			
1.050 - 1.320	7/8 - 20	2.690	1.000	0.500	CC..215..	CB1000CC
					TC..215..	CB1000TC
1.300 - 1.600	7/8 - 20	2.900	1.250	0.800	CC..215..	CB1250CC
					TC..215..	CB1250TC
1.585 - 2.700	7/8 - 20	3.200	1.500	1.300	CC..325..	CB1500CC
					TC..325..	CB1500TC
2.060 - 3.320	7/8 - 20	3.590	2.000	2.400	CC..325..	CB2000CC
					TC..325..	CB2000TC
3.065 - 5.065	1-1/2 - 18	4.100	3.000	5.800	CC..325..	CB3000CC
					TC..325..	CB3000TC

Step 2: Calculate total assembly weight.

$$\begin{array}{r}
 \textcircled{1} \quad 8.03 \text{ lbs} \\
 \textcircled{2} \quad 11.50 \text{ lbs} \\
 \textcircled{3} \quad 11.50 \text{ lbs} \\
 \textcircled{4} + 5.80 \text{ lbs} \\
 \hline
 36.83 \text{ lbs}
 \end{array}$$

Step 3: Consult machine tool builder to ensure tool assembly weight does not exceed machine capabilities.

⚠ WARNING Exceeding weight capacity for machine tool spindle and tool changer can cause machine damage and/or serious injury. To prevent:
 -Consult machine tool builder for machine's weight limitations.
 Factory technical assistance is available for you through our Application Engineering department: appeng@alliedmachine.com.

**Recommended Drilling Data | Metric (mm)****CRITERION®****B20**

ISO	Material	Hardness (BHN)	Grade	Speed (m/min)	Recommended Feed (mm / tooth)			
					Nose Radius			
					0.1 mm	0.2 mm	0.4 mm	0.8 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	Carbide	160 - 300	0.02 - 0.07	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	85 - 275	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	125 - 325	Carbide	145 - 250	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	Carbide	120 - 210	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Structural Steel A36, A285, A516, etc.	100 - 350	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
	Super Duplex Stainless Steel	135 - 275	Carbide	90 - 160	0.02 - 0.05	0.05 - 0.10	0.07 - 0.10	0.10 - 0.15
K	SG / Nodular Cast Iron	120 - 320	Carbide	145 - 260	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Grey / White Iron	180 - 320	Carbide	180 - 306	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
N	Cast Aluminum	30 - 180	Carbide	260 - 306	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Wrought Aluminum	30 - 180	Carbide	205 - 305	0.02 - 0.07	0.05 - 0.13	0.10 - 0.15	0.15 - 0.23
	Aluminum Bronze	100 - 250	Carbide	145 - 280	0.02 - 0.05	0.05 - 0.10	0.10 - 0.13	0.13 - 0.20
	Brass	100	Carbide	205 - 305	0.02 - 0.05	0.05 - 0.10	0.07 - 0.13	0.13 - 0.20
	Copper	60	Carbide	100 - 180	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.13
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Carbide	30 - 70	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
	Titanium Alloy	140 - 310	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
	Aerospace Alloy S82	185 - 350	Carbide	40 - 90	0.02 - 0.05	0.05 - 0.07	0.07 - 0.13	0.10 - 0.15
H	Wear Plate	400 - 600	Carbide	30 - 60	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15
	Hardened Steel	300 - 500	Carbide	40 - 80	0.02 - 0.05	0.05 - 0.07	0.07 - 0.10	0.10 - 0.15

NOTE: Speed not to exceed max recommended RPM for boring head.**Deep Hole Boring Speed Adjustment****⚠ For Dynamic Boring Tool Length**

Boring Type	7xD	8xD	9xD
Finishing	0.70	0.50	0.30

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 260 m/min, then the speed for an 8xD finish boring assembly in the same application would be 260 m/min. (260 m/min x 0.50 = 130 m/min)

5xD = 260 m/min

8xD = 130 m/min

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages **B20: 47 - 48** for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46** or visit www.alliedmachine.com/CriterionBoringGuidelines.



Recommended Drilling Data | Imperial (in)

CRITERION®								
ISO	Material	Hardness (BHN)	Grade	Speed (SFM)	Recommended Feed (inch / tooth)			
					Nose Radius			
					0.004"	0.008"	0.016"	0.031"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 250	Carbide	525 - 975	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
	Low-Carbon Steel 1010, 1020, 1025, 1522, etc.	85 - 275	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Medium-Carbon Steel 1030, 1040, 1050, 1527, etc.	125 - 325	Carbide	475 - 825	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Alloy Steel 4140, 5140, 8640, etc.	125 - 375	Carbide	400 - 700	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 400	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Structural Steel A36, A285, A516, etc.	100 - 350	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 250	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
M	Stainless Steel 400 Series 416, 420, etc.	185 - 350	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
	Super Duplex Stainless Steel	135 - 275	Carbide	300 - 525	0.001 - 0.002	0.002 - 0.004	0.003 - 0.004	0.004 - 0.006
K	SG / Nodular Cast Iron	120 - 320	Carbide	475 - 850	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Grey / White Iron	180 - 320	Carbide	600 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
N	Cast Aluminum	30 - 180	Carbide	850 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Wrought Aluminum	30 - 180	Carbide	675 - 1000	0.001 - 0.003	0.002 - 0.005	0.004 - 0.006	0.006 - 0.009
	Aluminum Bronze	100 - 250	Carbide	475 - 925	0.001 - 0.002	0.002 - 0.004	0.004 - 0.005	0.005 - 0.008
	Brass	100	Carbide	675 - 1000	0.001 - 0.002	0.002 - 0.004	0.003 - 0.005	0.005 - 0.008
	Copper	60	Carbide	325 - 600	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.005
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Carbide	100 - 225	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
	Titanium Alloy	140 - 310	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
	Aerospace Alloy S82	185 - 350	Carbide	125 - 300	0.001 - 0.002	0.002 - 0.003	0.003 - 0.005	0.004 - 0.006
H	Wear Plate	400 - 600	Carbide	100 - 200	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006
	Hardened Steel	300 - 500	Carbide	125 - 275	0.001 - 0.002	0.002 - 0.003	0.003 - 0.004	0.004 - 0.006

NOTE: Speed not to exceed max recommended RPM for boring head.

Deep Hole Boring Speed Adjustment

⚠ For Dynamic Boring Tool Length			
Boring Type	7xD	8xD	9xD
Finishing	0.70	0.50	0.30

Recommended Speed Example

If the recommended speed for a finish boring assembly under 5xD is 400 SFM, then the speed for an 8xD finish boring assembly in the same application would be 200 SFM. (400 SFM x 0.50 = 200 SFM)

5xD = 400 SFM	8xD = 200 SFM
---------------	---------------

IMPORTANT: Max spindle speed refers to maximum possible speed for an individual boring head and is not a recommended parameter. Refer to pages B20: 47 - 48 for recommended application specific parameters or factory technical assistance is available through our Application Engineering department: appeng@alliedmachine.com.

⚠ WARNING Assembly of modular components may cause machine damage and/or serious injury. To prevent:

- Do not exceed the **allowable weight** for your machine tool.
 - Do not exceed the recommended **length-to-diameter** ratio, which can impact tool stability and performance.
- For detailed guidelines on safe configurations, **please refer to pages B20: 45 - 46 or visit** www.alliedmachine.com/CriterionBoringGuidelines.

REAMING

PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

www.alliedmachine.com



Reaming Overview

Reamer Types

REAMER STYLES



Monobloc

- Diameter range: 5.800 mm - 32.100 mm.
- Available with central or radial through coolant.
- Can be used for through or blind holes.
- Cylindrical shanks improve concentricity.
- Expandable to accommodate for wear.



Replaceable Head

- Diameter range: 9.600 mm - 80.600 mm.
- Heads are available as fixed or expanding for improved productivity.
- Straight, left-hand, or right-hand helical flutes provide solutions for both through and blind holes.
- Cylindrical or modular shanks improve concentricity.



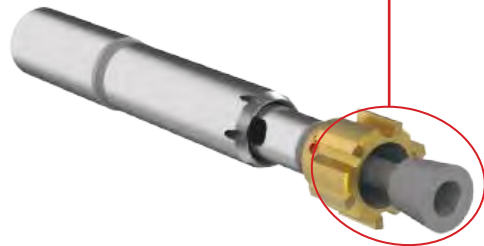
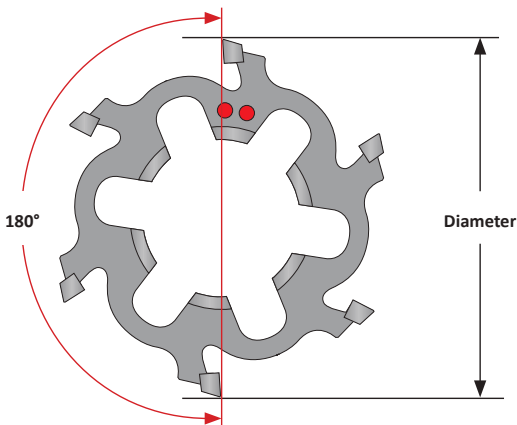
Cutting Ring

- Diameter range: 17.600 mm - 200.600 mm.
- The cutting edges are positioned asymmetrically to assure the best roundness of the hole.
- Holes with tight tolerances can be accommodated, and the expansion ensures a perfect holding of the reaming diameter.

General Reaming Notes

- If the depth is over 9xD, use a short length reamer to pilot the hole. Then finish with the longer length ⚠.
- For blind-hole applications, always use central coolant. If in doubt, contact Allied's Application Engineering department.
- More stock allowance can be taken in softer materials. Less stock allowance should be taken in harder materials.
- A common practice is to rapid out of the cut on through holes and to breakout only 2 mm past the reaming depth.

IMPORTANT: Always use Molykote® (anti-seize applicant) on the conical seat and the threads on the central screw for assembly.



NOTE: The position of the dimples indicates which two cutting teeth are 180° opposed. Diameter measurements should be taken from these two cutting teeth.

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a shorter reamer to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Factory technical assistance is available for your specific applications through our Application Engineering department:

appeng@alliedmachine.com.

Reaming Overview

Quick Selection Guide

		50 mm					100 mm					150 mm					200 mm				
Replaceable Head	Monobloc 5.800 mm - 32.100 mm (0.2283" - 1.2638")																				
	5000 Series (expandable) 9.600 mm - 32.600 mm (0.3780" - 1.2835")																				
	7000 Series (expandable) 11.800 mm - 60.609 mm (0.4646" - 2.3862")																				
	7000 Series (fixed) 11.800 mm - 60.609 mm (0.4646" - 2.3862")																				
	9000 Series (fixed) 11.800 mm - 40.600 mm (0.4646" - 1.5984")																				
	Cutting Ring 32.600 mm - 200.600 mm (1.2835" - 7.8976")																				

► Any product line with a black arrow indicates that nonstandard diameters can be ordered by contacting Application Engineering.

Breakdown by Features

Reamer Style	Capable Tolerance	Fastest Setup	Replaceable Cutting Head	Expandable to Adjust for Wear	Recondition Available	Cylindrical Shanks	Modular Shanks	Through-Coolant Options
 Monobloc	H6			☒	☒	☒		☒
 5000 Series (expandable)	H6	☒	☒	☒		☒	☒	☒
 7000 Series (expandable)	H6		☒	☒	☒	☒	☒	☒
 7000 Series (fixed)	H7	☒	☒		☒	☒	☒	☒
 9000 Series (fixed)	H7	☒	☒			☒	☒	☒
 Cutting Ring	H6		☒	☒	☒	☒	☒	☒

For more details on how to select a reamer, see the following pages.



Reaming Overview

How The Reamers Works

How the Reamer Works

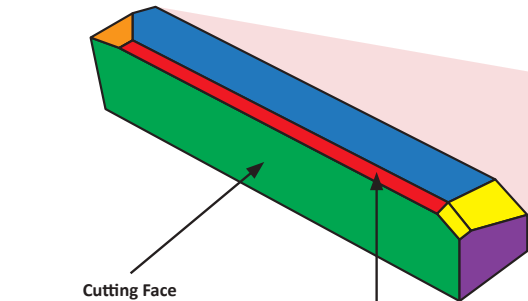
- The cut is made in the lead-in zone (3), and the chip is made on the cutting face (1). The chip is removed by coolant.
- The lead-in (3) is defined depending on the application, the workpiece material, and the stock allowance.
- The radial land (2) is important for holding a good alignment, improving the surface roughness, and giving an effect similar to burnishing. The dimension of the radial land depends on the diameter.
- The radial land (2) is manufactured to be tapered on the rear.
- Fixed reamers are manufactured at the exact tapered value. Expandable reamers must be adjusted to the exact diameter. Both are already supplied at the nominal diameter by the manufacturer.
- The undercut of the cutting edge (5) avoids retract marks on the piece when the reamer is retracted from the cut.
- The front of the cutting edge (6) does not cut; if this feature is needed, a frontal lead must be supplied.

When to Apply a Reamer

- When the requested tolerance on diameter is IT8 or less.
- When the requested finish is $1.6 \mu\text{m}$ ($63 \mu\text{in}$) Ra or greater.
- When the critical geometry characteristics of the hole are the roundness and straightness.
- When parts are being mass produced.
- When the parts are large and expensive.

Elements of the Cutting Tooth

- (1) Cutting Face
- (2) Radial Land
- (3) Lead-in / Primary Face / Secondary Face
- (4) Rear Face
- (5) Undercut of Cutting Edge
- (6) Front of Cutting Edge



Cutting Face

Chips travel over this area, which aids in chip evacuation.

Radial Land

This area helps guide the reamer.



Reaming Overview

Reamer Recommendation Guide

			Uninterrupted Cut					Interrupted Cut		
ISO Material		Hardness (BHN)	Lead				Substrate & Coating	Lead		Substrate & Coating
			Through Hole		Blind Hole			Through Hole	Blind Hole	
			①	②	①	②				
			Straight	Left-Hand Helical	Right-Hand Helical	Straight		Left-Hand Helical	Right-Hand Helical	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	—	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiN
	Low-Carbon Steel 1010, 1020, 1522, 1144, etc.	<250	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiN
	Medium-Carbon Steel 1030, 1040, 1050, 1140, 1151, etc.	<300	N, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiAlN
	Alloy Steel 4140, 5140, 8640, etc.	<350	G, K	E	E, K	G, K	Cermet Uncoated	E	E	Carbide TiAlN
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	G, K	M	M, K	G, K	Carbide Alcrona	M*	M	Carbide Alcrona
	Structural Steel	—	G, K	E	E	G, K	Cermet Alcrona	E	E	Carbide Alcrona
	Tool Steel	—	K	M	M, K	K	Carbide TiAlN	M*	M*	Carbide TiAlN
S	High-Temp Alloy	—	G	M	M	G	Carbide TiAlN	M*	M*	Carbide TiAlN
	Titanium Alloys	—	T	—	—	T	Carbide T	E	E	Carbide T
M	Austenitic Stainless Steel 304, 316, etc.	—	K	M	M, K	K	Carbide Alcrona	M	M	Carbide Alcrona
	Ferritic Martensitic Stainless Steel 416, 420, 17-4PH, 15-5PH, etc.	—	N	E	K	K	Cermet or Carbide Alcrona	E	E	Carbide Alcrona
K	Ductile Cast Iron Spheroidal - GS500	<130	V	E	E	V	Carbide Alcrona	E	E	Carbide Alcrona
		130+	V	E	E	V	Cermet Alcrona	E	E	Carbide Alcrona
	Grey Cast Iron GC15 - GC20 - GC25 - GC35	—	V	E	E	V	Carbide TiAlN	E	E	Carbide TiAlN
N	Bronze Brass Copper	<300	—	E	K	K	Carbide TiN	E	E	Carbide TiN
	Aluminum	< 7% Si	V	E	E	V	Carbide Uncoated	E	E	Carbide Uncoated
		7% Si+	G	E	E	G	PCD Uncoated	E	E	PCD Uncoated

*Contact our Application Engineering department for special geometries to improve tool life.

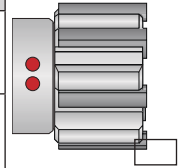


Reaming Overview

Lead-in Angle Information

Straight Flute

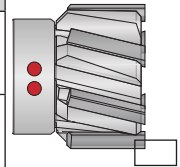
Lead-in	Angles	Chip Evacuation	Description
A			Lead-in can be used to improve finish.
F			Can be used for stock removal at the bottom of the hole. Reduce the feed by 40% of the values on the recommended cutting data pages.
G			Standard and suitable for most materials.
L			May provide improved straightness. Reduce the feed by 40% of the values on the recommended cutting data pages.
N			Ideal for through holes. It is possible to increase the feed up to 100% of the values on the recommended cutting data pages.
T			Suitable for titanium based alloys.
V			Suitable for most materials and increases tool life.
K			Excellent at breaking small chips that are easy to evacuate in blind-hole applications. Requires 50% increased feed rate, which will result in reduced tool life when compared to other leads.



Straight

Helical Flute (Right-Hand) - Blind-hole Applications Only

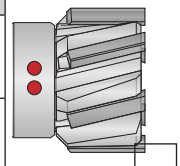
Lead-in	Angles	Chip Evacuation	Description
E			Standard and suitable for most materials.
M			May provide better penetration rates in steels over 200 BHN.
K			Excellent at breaking small chips that are easy to evacuate in blind-hole applications. Requires 50% increased feed rate, which will result in reduced tool life when compared to other leads.



Helical

Helical Flute (Left-Hand) - Through-hole Applications Only

Lead-in	Angles	Chip Evacuation	Description
E			Standard and suitable for most materials. NOTE: Through-hole applications only.
M			May provide better penetration rates in steels over 200 BHN. NOTE: Through-hole applications only.



Helical

Reaming Overview

Coatings, Cutting Materials, and Dimple Indicators

Coating Information

			
Uncoated Ideal for nonferrous applications.	TiN (N) Ideal for general purpose applications.	TiAlN (A) Provides higher heat resistance to improve tool life.	TiCN (C) Provides improved surface finish.
			
Alcrona (K) Provides excellent wear resistance and can help increase cutting speeds.	Hardcut (H) Ideal for cast iron and hardened steel applications.	R Coating (R) Improved tool life in cast iron materials.	T Coating (T) Optimized tool life in titanium and very hard materials.

Cutting Material Information

Material	Indicator	Details
Carbide	K	A fine-grain carbide suitable for all conventional reaming applications. Recommended where rigidity is not excellent and speeds must be reduced.
Cermet	S	Cermet provides high wear resistance and is recommended for abrasive and increased speed applications. Not recommended for poor rigidity or interrupted cuts.

Dimple Indicators

Material	Replaceable Head Style			
	9000 Series	7000 and 5000 Series	Monobloc Style	Cutting Ring Style
Carbide	Chamfered Profile	Two Dimples	Two Dimples	Two Dimples
				
Cermet	Sharp Edge Profile	Two Dimples with Line	Two Dimples with Line	Two Dimples with Line
				

NOTE: The dimple location also indicates which two cutting teeth are 180° opposed.

SECTION

C10-RAS

Radial Adjusting Shanks

Radial Adjusting Shanks



Radial Adjusting Shanks

- ▶ Large range of shanks for different machine types.
- ▶ Highly adjustable for improved concentricity.
- ▶ All shanks are available with through coolant.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

S.C.A.M.I.®

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Product Overview

Cerit® System



Large range of shanks for different machine types



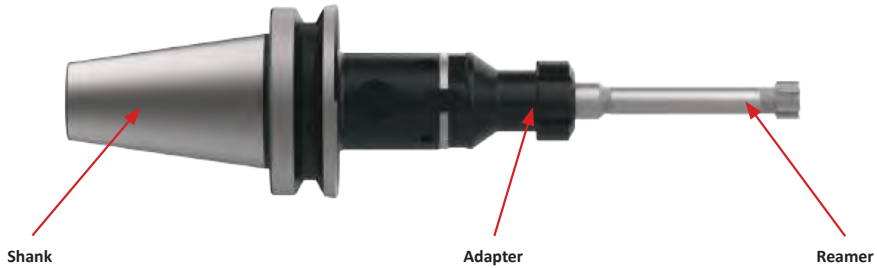
Highly adjustable for improved concentricity



All shanks are available with through coolant

All the Pieces You Need

Modular System courtesy of



DIN 69871/1 B and A



HSK-A DIN 69893/1



JMTBA MAS-403
BT B and BT



Straight



Collet Chuck Adapter



Cylindrical Shank
Adapter

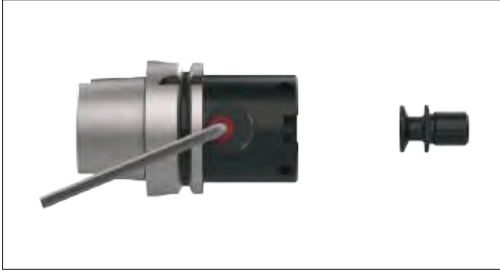


Product Overview

Setup Information

Radial Adjusting Shanks and Ring Style Arbors

The following is a quick guide for setting up a radial adjusting shank and a ring style reamer. The ring reamer arbor does not contain the tang needed to connect to the shank. The tang must first be removed from the shank and then installed into the reamer arbor (demonstrated below).



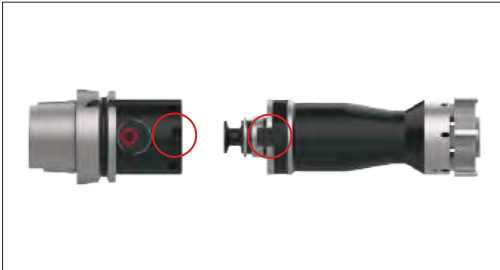
Step 1:

The tang comes installed with the shank. Loosen the clamping screw on each side and remove the tang from the shank.



Step 2:

Thread the tang into the back end of the ring arbor. Use a bench vise and wrench to tighten.



Step 3:

Assemble the ring arbor to the shank. With the clamping screws still loosened, align the key on the arbor to the keyway on the shank.



Step 4:

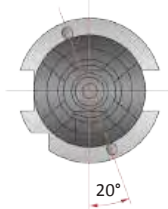
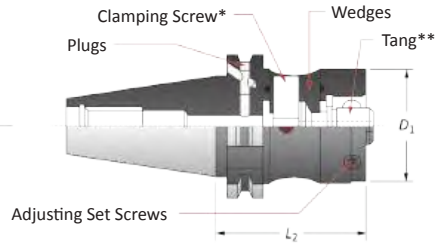
Once the ring arbor is connected with the shank, tighten the clamping screws to secure the tang back into place.



Radial Adjusting Shanks

DIN 69871-1 B and A | JMTBA MAS-403 BT B and BT

C10



Maximum radial adjustment is ± 0.20 mm (0.008") on diameter.

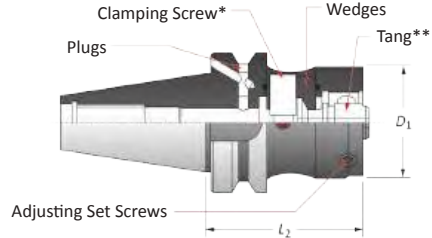
Shank				Spare Parts						
ISO Taper	D_1	L_2	Retention Knob Thread Size	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Plugs	Replacement Tang**	Clamping Screw Key
40	50	65	M16 x 2	02B.40.50L.65	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	85	M16 x 2	02B.40.63L.85	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
45	50	70	M20 x 2.5	02B.45.50L.70	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	70	M20 x 2.5	02B.45.63L.70	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
50	50	70	M24 x 3	02B.50.50L.70	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	70	M24 x 3	02B.50.63L.70	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
	80	70	M24 x 3	❖ 02B.50.80L.70	ATR18775.2.3	ATR18775.1	M8x1x20G	M5x5TG	ATT14104	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.

** Tang must be fitted to all reamer arbors and adapters prior to assembly.

❖ Could cause interference with tool changer mechanism.

NOTE: Shanks can be converted into DIN 69871/1A coolant by screwing the two plugs clockwise to the end of their stroke.



Maximum radial adjustment is ± 0.20 mm (0.008") on diameter.

Shank				Spare Parts						
BT Taper	D_1	L_2	Retention Knob Thread Size	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Plugs	Replacement Tang**	Clamping Screw Key
40	50	70	M16 x 2	BTB.40.50L.70	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	80	M16 x 2	BTB.40.63L.80	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
50	50	90	M24 x 3	BTB.50.50L.90	ATR14102.2.3	ATR14102.1	M8x1x10G	M5x5TG	ATT14103	6 mm
	63	90	M24 x 3	BTB.50.63L.90	ATR14108.2.3	ATR14108.1	M8x1x14G	M5x5TG	ATT14104	6 mm
	80	90	M24 x 3	BTB.50.80L.90	ATR18775.2.3	ATR18775.1	M8x1x20G	M5x5TG	ATT14104	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.

** Tang must be fitted to all reamer arbors and adapters prior to assembly.

NOTE: Shanks can be converted into MAS-403 BT coolant by screwing the two plugs clockwise to the end of their stroke.

C10: 3 -4



Key on C10: 2

Modular system courtesy of 

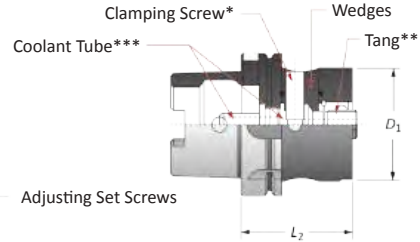
Reference Key

Symbol	Attribute
D_1	Modular shank size
L_2	Gage length



Radial Adjusting Shanks

HSK-A DIN 69893-1 | Straight

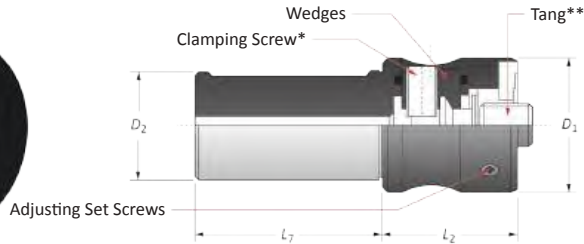


Shank			Spare Parts							
HSK	D ₁	L ₂	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Replacement Tang**	Clamping Screw Key	Coolant Tube Key	Coolant Tube***
63	50	70	HSKA.63.50L.70	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm	ATR23856	ATT23728
	63	75	HSKA.63.63L.75	ATR.41613.4	ATR14108.1	M8x1x14G	ATT14104	6 mm	ATR23856	ATT23728
100	50	80	HSKA.100.50L.80	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm	ATR23856	ATT23656
	63	80	HSKA.100.63L.80	ATR14108.2.3	ATR14108.1	M8x1x14G	ATT14104	6 mm	ATR23856	ATT23656
	80	80	HSKA.100.80L.80	ATR18775.2.3	ATR18775.1	M8x1x20G	ATT14104	6 mm	ATR23856	ATT23656

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.

** Tang must be fitted to all ring arbors and adapters prior to assembly.

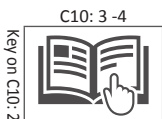
*** Coolant tube sold separately.



Shank				Spare Parts					
D ₁	D ₂	L ₂	L ₇	Part No.	Wedges + O-Ring	Clamping Screw*	Adjusting Set Screws	Replacement Tang**	Clamping Screw Key
50	25	50	70	CIL.25.50.50	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm
	32	50	70	CIL.32.50.50	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm
	40	50	70	CIL.40.50.50	ATR14102.2.3	ATR14102.1	M8x1x10G	ATT14103	6 mm

* Light torque exerted on the clamping screw transmits high axial forces, which provide stiffness and extreme accuracy to the assembly.

** Tang must be fitted to all ring arbors and adapters prior to assembly.



C10: 3 -4

Modular system courtesy of C-Cor.

Reference Key

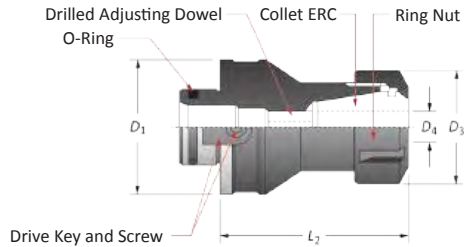
Symbol	Attribute
D ₁	Modular shank size
D ₂	Shank diameter
L ₂	Gage length
L ₇	Shank length



Radial Adjusting Adapters

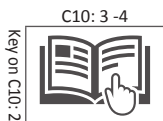
Collet Chuck Adapters

C10



Collet Sleeve Size*	Adapter				Part No.	Spare Parts					
	D_1	D_3	D_4	L_2		Clamping Screw	Ring Nut	Adjusting Dowel	Drive Key	Ring Nut Wrench	Adjusting Dowel Key
ERC25	50	42	0.5 - 16 mm	70	30.50R.25.70	M4x8V	G25S	M12x16GF	TAB3924	CH25S	6 mm
ERC32	50	50	1 - 20 mm	70	30.50R.32.70	M4x8V	G32S	M16x15x18GF	TAB3924	CH32S	8 mm
ERC32	63	50	1 - 20 mm	90	30.63R.32.90	M6x12V	G32S	M12x16GF	TAB3923.1	CH32S	6 mm
ERC40	63	63	2 - 30 mm	90	30.63R.40.90	M6x12V	G40S	M20x2x20GF	TAB3923.1	CH40S	10 mm
ERC32	80	50	1 - 20 mm	90	30.80R.32.90	M6x16V	G32S	M12x16GF	TAB3923.2	CH32S	6 mm
ERC40	80	63	2 - 30 mm	90	30.80R.40.90	M6x16V	G40S	M20x2x20GF	TAB3923.2	CH40S	10 mm

*Collet sleeve not included.



Modular system courtesy of CERAT.

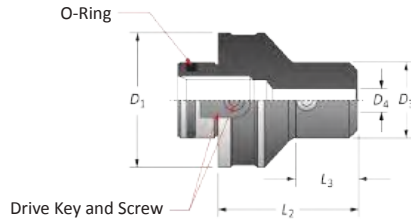
Reference Key

Symbol	Attribute
D_1	Modular shank size
D_3	Body diameter
D_4	Shank diameter
L_2	Gage length



Radial Adjusting Adapters

Cylindrical Shank Adapters



Adapter					Part No.	Spare Parts			
D_1	D_4	D_3	L_2	L_3		Drive Key	Screw	Set Screw	Set Screw Key
50	6	25	50	22.5	35.50R.06.50	TAB3924	M4x8V	M6x8G	3 mm
	8	28	50	24.5	35.50R.08.50	TAB3924	M4x8V	M8x8G	4 mm
	10	35	50	26.5	35.50R.10.50	TAB3924	M4x8V	M10x10G	5 mm
	12	42	60	38.5	35.50R.12.60	TAB3924	M4x8V	M12x12G	6 mm
	14	44	60	42	35.50R.14.60	TAB3924	M4x8V	M12x12G	6 mm
	16	48	60	40	35.50R.16.60	TAB3924	M4x8V	M14x14G	6 mm
	18	50	60	—	35.50R.18.60	TAB3924	M4x8V	M14x14G	6 mm
63	20	52	60	41	35.50R.20.60	TAB3924	M4x8V	M16x2x14G	8 mm
	8	28	60	28	35.63R.08.60	TAB3923.1	M6x12V	M8x8G	4 mm
	10	35	70	40	35.63R.10.70	TAB3923.1	M6x12V	M10x10G	5 mm
	12	42	70	42	35.63R.12.70	TAB3923.1	M6x12V	M12x12G	6 mm
	14	44	60	32	35.63R.14.60	TAB3923.1	M6x12V	M12x12G	6 mm
	16	48	70	44	35.63R.16.70	TAB3923.1	M6x12V	M14x14G	6 mm
	18	50	70	40	35.63R.18.70	TAB3923.1	M6x12V	M14x14G	6 mm
50	20	52	70	45	35.63R.20.70	TAB3923.1	M6x12V	M16x2x14G	8 mm
	25	65	80	61	40.50R.25.80	TAB3924	M4x8V	M18x2x18G	8 mm
63	32	72	80	65	40.50R.32.80	TAB3924	M4x8V	M20x2x18G	10 mm
	25	65	80	58	40.63R.25.80	TAB3923.1	M6x12V	M18x2x18G	8 mm
80	32	72	80	—	40.63R.32.80	TAB3923.1	M6x12V	M20x2x18G	10 mm
	25	65	80	50.5	40.80R.25.80	TAB3923.2	M6x12V	M18x2x18G	8 mm
	32	72	80	54	40.80R.32.80	TAB3923.2	M6x12V	M20x2x18G	10 mm

Reference Key

Symbol	Attribute
D_1	Modular shank size
D_3	Body diameter
D_4	Shank diameter
L_2	Gage length
L_3	Reference length

C10: 3 -4



Modular system courtesy of

SECTION

C20-MBR

Monobloc Style Reamers

MONOBLOC REAMERS

5.800 mm - 32.100 mm
(0.2283" - 1.2638")



Made for high-precision production

The monobloc reamer is an excellent replacement for solid carbide reamers because it allows for diameter expansion to accommodate for cutting edge wear. The monobloc reamer can also be repaired to new condition, which extends the life of the investment. ALVAN reamers hold tight tolerances while improving the surface finish of the hole. Our expandable option accommodates for cutting edge wear.

- ▶ Ideal for diameters under 15.00 mm (0.5906").
- ▶ Improves hole quality and surface finish.
- ▶ Expandable design accommodates for wear.

Applicable Industries



Aerospace



Agriculture



Automotive



Defense



General Production



Heavy Equipment



Medical



Oil and Gas



Renewable Energy/ Energy



Tool, Mold, and Die

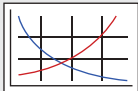
S.C.A.M.I.®

Reference Icons

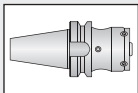
The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Introduction Information

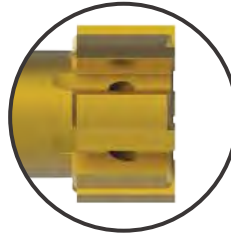
Product Overview

Monobloc Reamer Features

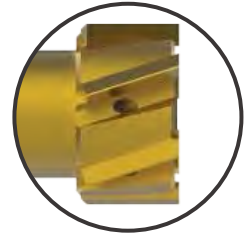
- Diameter range: 5.800 mm - 32.100 mm (0.2283" - 1.2638").
- Available with straight or left-hand helical flutes.
- Expands to accommodate for wear.
- Available with cylindrical shanks only.
- Workday lead time 15 - 25 days (quantity dependent).
- Available for recondition.



C20



Straight Flute



Left-Hand Helical Flute



Uncoated



TiN Coated



TiAlN Coated



TiCN Coated



Alcrona Coated



Hardcut Coated

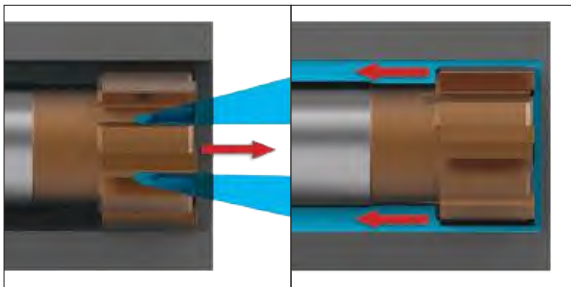


R Coated



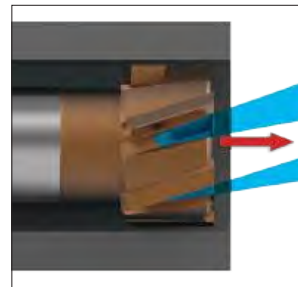
T Coated

Straight Flute - Through or Blind Holes



Use for either through-hole or blind-hole applications. The coolant flow determines the direction of the chip evacuation.

Left-Hand Helical Flute - Through Holes Only



Use when reaming through-hole applications. The cutting action of the helical flutes forces the chips forward for evacuation.



Introduction Information

Product Nomenclature

Monobloc Style Reamers

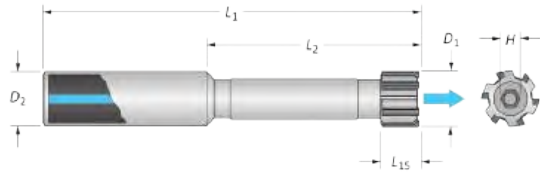
	9	3627	-	KL	E	-	06000	+	003	-	003
Diameter Unit	Shank Measure	Series		Substrate and Coating		Lead-in	Diameter		Tolerance*		
Blank = Metric (mm)	Blank = Metric (mm)	2441		Cermet	Cermet	E	XXXXX = X.XXXXX"		4 decimal places = inch tolerance		
I = Imperial (in)	9 = Imperial (in)	3620		KL = Uncoated	SV = Uncoated	M	XX.XXX mm		3 decimal places = mm tolerance		
		3627		KN = TiN	SN = TiN	A					
		2431		KC = TiCN	SC = TiCN	F					
		3610		KA = TiAlN	SA = TiAlN	G					
		3617		KK = Alcrona	SK = Alcrona	L					
				KH = Hardcut	SH = Hardcut	N					
				KR = R	SR = R	T					
				KT = T	ST = T	V					
						K					

*The total tolerance capable is 0.005 mm (0.0002").

NOTE: If diameter and tolerance are specified in inch units, put an "I" at the beginning of the item number.

Reference Key

Symbol	Attribute
D_1	Reamer diameter
D_2	Shank diameter
L_1	Overall length
L_2	Body length
L_{15}	Cutting edge length
H	Hex key



PRODUCT DETAILS

Series Details

Series	2441	3620	3627	2431	3610	3617
Flute	Straight	●	●	●	●	
	Left-hand helical		●			●
Length	Short	●	●			
	Long			●	●	●
Coolant	Radial	●	●		●	●
	Central	●		●		

Reamer Lead-In

	T	F	N	Straight Flute					Left-hand helical	
				G	L	A	V	K	E	M
P			●	●		○	○	○	●	
M			○	●				○	●	
K				○			●	○	○	●
N				●			○		●	○
S	●			○					●	○
H			○	●					○	●

● Best ○ Better ○ Good

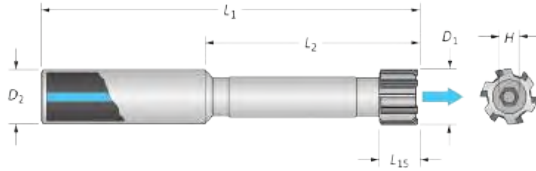
NOTE: For more detailed descriptions of cutting material, lead-ins, and coatings, please see pg. xv - xvi.



2441 Series

Short Length

C20



Series	2441	Flute	Straight	Application	Blind Holes	Coolant	Central
--------	------	-------	----------	-------------	-------------	---------	---------

Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 2441-XXX-D ₁ +XXXX-XXXX					Part No. 92441-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	40	80	12	0.2283 - 0.2602	0.315	1.575	3.071	0.500	4	1.5
6.610 - 7.609	8	40	80	12	0.2603 - 0.2996	0.315	1.575	3.071	0.500	4	2
7.610 - 8.609	10	40	80	12	0.2997 - 0.3389	0.394	1.575	3.071	0.500	4	2.5
8.610 - 9.609	10	50	90	12	0.3390 - 0.3783	0.394	1.969	3.465	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	60	105	12	0.4178 - 0.4570	0.394	1.969	3.740	0.500	6	3
11.610 - 12.609	10	60	105	12	0.4571 - 0.4964	0.394	1.969	3.740	0.500	6	3
12.610 - 13.609	10	60	105	12	0.4965 - 0.5358	0.394	1.969	3.740	0.500	6	4
13.610 - 14.609	10	70	115	12	0.5359 - 0.5752	0.394	1.969	3.740	0.500	6	4
14.610 - 15.609	10	70	115	12	0.5753 - 0.6145	0.394	1.969	3.740	0.500	6	4
15.610 - 16.609	10	80	130	16	0.6146 - 0.6539	0.394	1.969	3.937	0.625	6	4
16.610 - 17.609	10	80	130	16	0.6540 - 0.6933	0.394	1.969	3.937	0.625	6	5
17.610 - 18.609	12	90	140	16	0.6934 - 0.7326	0.472	1.969	3.937	0.625	6	5
18.610 - 19.109	12	90	150	20	0.7327 - 0.7523	0.472	2.362	4.724	0.750	6	5
19.110 - 20.109	12	100	160	20	0.7524 - 0.7917	0.472	2.362	4.724	0.750	6	5
20.110 - 21.109	12	100	160	20	0.7918 - 0.8311	0.472	2.362	4.724	0.750	6	5
21.110 - 22.109	12	100	160	20	0.8312 - 0.8704	0.472	2.362	4.724	0.750	6	6
22.110 - 23.109	12	100	160	20	0.8705 - 0.9098	0.472	2.362	4.724	0.750	6	6
23.110 - 24.109	12	100	160	20	0.9099 - 0.9492	0.472	2.362	4.724	0.750	6	6
24.110 - 25.109	12	100	160	20	0.9493 - 0.9885	0.472	2.362	4.724	0.750	6	6
25.110 - 26.109	16	110	170	25	0.9886 - 1.0279	0.472	2.953	5.315	1.000	6	6
26.110 - 27.109	16	110	170	25	1.0280 - 1.0673	0.551	2.953	5.315	1.000	6	6
27.110 - 28.109	16	110	170	25	1.0674 - 1.1067	0.551	2.953	5.315	1.000	6	8
28.110 - 29.109	16	110	170	25	1.1068 - 1.1460	0.551	2.953	5.315	1.000	6	8
29.110 - 30.109	16	110	170	25	1.1461 - 1.1854	0.551	2.953	5.315	1.000	6	8
30.110 - 31.109	16	110	170	25	1.1855 - 1.2248	0.551	2.953	5.315	1.000	6	8
31.110 - 32.100	16	110	170	25	1.2249 - 1.2638	0.551	2.953	5.315	1.000	6	8

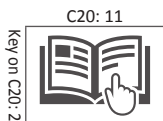
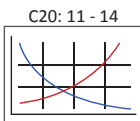
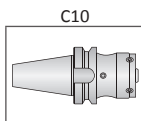
Coating and Substrate Code (Part No. 2441-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 2441-XXX-D₁+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●	●	○	○	○
M			●	●	●	○	○	○
K			●	●	●	○	○	○
N			●	●	●	○	○	○
S	●		●	●	●	○	○	○
H			●	●	●	○	○	○

● Best ○ Better ○ Good



2441 - K N F - 030600 + 005 - 005

2441 Series - Metric Shank

Carbide

TiN Coating

F Lead-in

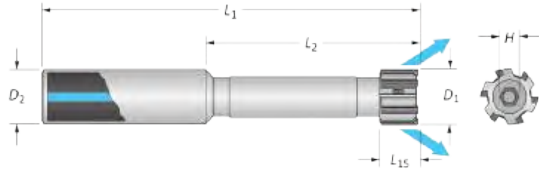
Diameter

Tolerance



3620 Series

Short Length



Series	3620	Flute	Straight	Application	Through Holes	Coolant	Radial
--------	------	-------	----------	-------------	---------------	---------	--------

Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 3620-XXX-D ₁ +XXXX-XXXX					Part No. 93620-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	40	78	12	0.2283 - 0.2602	0.315	1.575	3.071	0.500	4	1.5
6.610 - 7.609	8	40	78	12	0.2603 - 0.2996	0.315	1.575	3.071	0.500	4	2
7.610 - 8.609	10	40	78	12	0.2997 - 0.3389	0.394	1.575	3.071	0.500	4	2.5
8.610 - 9.609	10	50	88	12	0.3390 - 0.3783	0.394	1.969	3.465	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	50	95	12	0.4178 - 0.4570	0.394	1.969	3.740	0.500	6	3
11.610 - 12.609	10	50	95	12	0.4571 - 0.4964	0.394	1.969	3.740	0.500	6	3
12.610 - 13.609	10	50	95	12	0.4965 - 0.5358	0.394	1.969	3.740	0.500	6	4
13.610 - 14.609	10	50	95	12	0.5359 - 0.5752	0.394	1.969	3.740	0.500	6	4
14.610 - 15.609	10	50	95	12	0.5753 - 0.6145	0.394	1.969	3.740	0.500	6	4
15.610 - 16.609	10	50	100	16	0.6146 - 0.6539	0.394	1.969	3.937	0.625	6	4
16.610 - 17.609	10	50	100	16	0.6540 - 0.6933	0.394	1.969	3.937	0.625	6	5
17.610 - 18.609	12	50	100	16	0.6934 - 0.7326	0.472	1.969	3.937	0.625	6	5
18.610 - 19.109	12	60	120	20	0.7327 - 0.7523	0.472	2.362	4.724	0.750	6	5
19.110 - 20.109	12	60	120	20	0.7524 - 0.7917	0.472	2.362	4.724	0.750	6	5
20.110 - 21.109	12	60	120	20	0.7918 - 0.8311	0.472	2.362	4.724	0.750	6	5
21.110 - 22.109	12	60	120	20	0.8312 - 0.8704	0.472	2.362	4.724	0.750	6	6
22.110 - 23.109	12	60	120	20	0.8705 - 0.9098	0.472	2.362	4.724	0.750	6	6
23.110 - 24.109	12	60	120	20	0.9099 - 0.9492	0.472	2.362	4.724	0.750	6	6
24.110 - 25.109	12	60	120	20	0.9493 - 0.9885	0.472	2.362	4.724	0.750	6	6
25.110 - 26.109	16	70	135	25	0.9886 - 1.0279	0.472	2.953	5.315	1.000	6	6
26.110 - 27.109	16	70	135	25	1.0280 - 1.0673	0.551	2.953	5.315	1.000	6	6
27.110 - 28.109	16	70	135	25	1.0674 - 1.1067	0.551	2.953	5.315	1.000	6	8
28.110 - 29.109	16	70	135	25	1.1068 - 1.1460	0.551	2.953	5.315	1.000	6	8
29.110 - 30.109	16	70	135	25	1.1461 - 1.1854	0.551	2.953	5.315	1.000	6	8
30.110 - 31.109	16	70	135	25	1.1855 - 1.2248	0.551	2.953	5.315	1.000	6	8
31.110 - 32.100	16	70	135	25	1.2249 - 1.2638	0.551	2.953	5.315	1.000	6	8

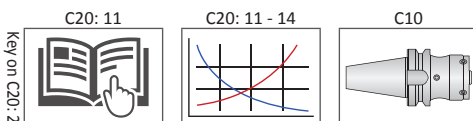
Coating and Substrate Code (Part No. 3620-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 3620-XXX-D₁+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●	●	●	○	○
M			○	●	●	●	●	○
K				○			●	○
N				●			○	
S	●			○				
H			○	●				

● Best ○ Better ○ Good



Key on C20: 2

3620 - K N F - 030600 + 005 - 005

3620 Series - Metric Shank

Carbide

TiN Coating

F Lead-in

Diameter

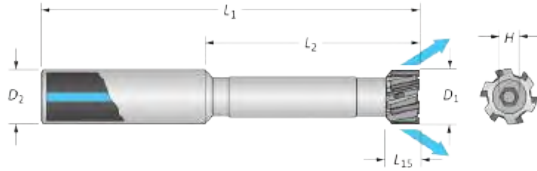
Tolerance



3627 Series

Short Length

C20



Series	3627	Flute	Helical	Application	Through Holes	Coolant	Radial
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Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 3627-XXX-D ₁ +XXXX-XXXX					Part No. 93627-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	40	80	12	0.2283 - 0.2602	0.315	1.575	3.150	0.500	4	1.5
6.610 - 7.609	8	40	80	12	0.2603 - 0.2996	0.315	1.575	3.150	0.500	4	2
7.610 - 8.609	10	40	80	12	0.2997 - 0.3389	0.394	1.575	3.150	0.500	4	2.5
8.610 - 9.609	10	50	90	12	0.3390 - 0.3783	0.394	1.969	3.543	0.500	4	2.5
9.610 - 10.609	10	50	95	12	0.3784 - 0.4177	0.394	1.969	3.740	0.500	6	3
10.610 - 11.609	10	60	105	12	0.4178 - 0.4570	0.394	2.362	4.134	0.500	6	3
11.610 - 12.609	10	60	105	12	0.4571 - 0.4964	0.394	2.362	4.134	0.500	6	3
12.610 - 13.609	10	60	105	12	0.4965 - 0.5358	0.394	2.362	4.134	0.500	6	4
13.610 - 14.609	10	70	115	12	0.5359 - 0.5752	0.394	2.756	4.528	0.500	6	4
14.610 - 15.609	10	70	115	12	0.5753 - 0.6145	0.394	2.756	4.528	0.500	6	4
15.610 - 16.609	10	80	130	16	0.6146 - 0.6539	0.394	3.150	5.118	0.625	6	4
16.610 - 17.609	10	80	130	16	0.6540 - 0.6933	0.394	3.150	5.118	0.625	6	5
17.610 - 18.609	12	90	140	16	0.6934 - 0.7326	0.472	3.543	5.512	0.625	6	5
18.610 - 19.109	12	90	150	20	0.7327 - 0.7523	0.472	3.543	5.906	0.750	6	5
19.110 - 20.109	12	100	160	20	0.7524 - 0.7917	0.472	3.937	6.299	0.750	6	5
20.110 - 21.109	12	100	160	20	0.7918 - 0.8311	0.472	3.937	6.299	0.750	6	5
21.110 - 22.109	12	100	160	20	0.8312 - 0.8704	0.472	3.937	6.299	0.750	6	6
22.110 - 23.109	12	100	160	20	0.8705 - 0.9098	0.472	3.937	6.299	0.750	6	6
23.110 - 24.109	12	100	160	20	0.9099 - 0.9492	0.472	3.937	6.299	0.750	6	6
24.110 - 25.109	12	100	160	20	0.9493 - 0.9885	0.472	3.937	6.299	0.750	6	6
25.110 - 26.109	16	110	170	25	0.9886 - 1.0279	0.472	4.331	6.693	1.000	6	6
26.110 - 27.109	16	110	170	25	1.0280 - 1.0673	0.551	4.331	6.693	1.000	6	6
27.110 - 28.109	16	110	170	25	1.0674 - 1.1067	0.551	4.331	6.693	1.000	6	8
28.110 - 29.109	16	110	170	25	1.1068 - 1.1460	0.551	4.331	6.693	1.000	6	8
29.110 - 30.109	16	110	170	25	1.1461 - 1.1854	0.551	4.331	6.693	1.000	6	8
30.110 - 31.109	16	110	170	25	1.1855 - 1.2248	0.551	4.331	6.693	1.000	6	8
31.110 - 32.100	16	110	170	25	1.2249 - 1.2638	0.551	4.331	6.693	1.000	6	8

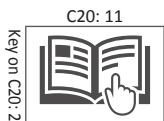
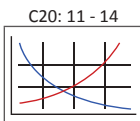
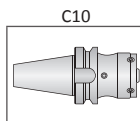
Coating and Substrate Code (Part No. 3627-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 3627-XXX-D₁+XXXX-XXXX)

ISO Material	E	M
P	●	
M	●	
K	○	●
N	●	○
S	●	○
H	○	●

● Best ○ Better ○ Good



3627 - K N F - 030600 + 005 - 005

3627 Series - Metric Shank

Carbide

TiN Coating

F Lead-in

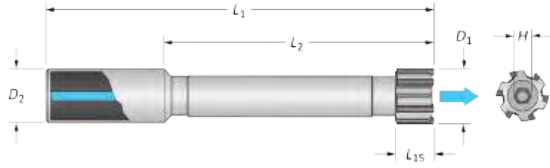
Diameter

Tolerance



2431 Series

Long Length



Series	2431	Flute	Straight	Application	Blind Holes	Coolant	Central
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Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 2431-XXX-D ₁ +XXXX-XXXX					Part No. 92431-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

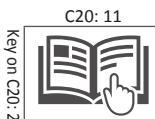
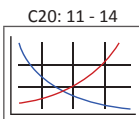
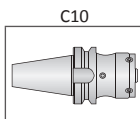
Coating and Substrate Code (Part No. 2431-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 2431-XXX-D₁+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●	●	○	○	○
M			○	●	●			○
K				○			●	○
N				●			○	
S	●			○				
H			○	●				

● Best ○ Better ○ Good



Key on C20: 2

2431 - K N F - 030600 + 005 - 005

2441 Series - Metric Shank

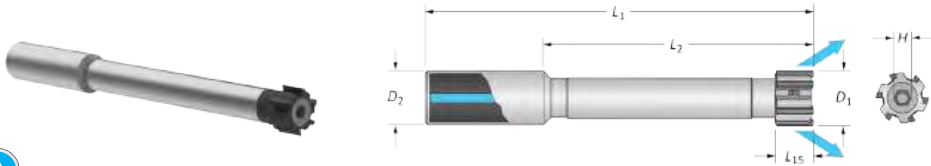
Diagram showing: Diameter, F Lead-in, TiN Coating, Carbide, Tolerance



3610 Series

Long Length

C20



Series	3610	Flute	Straight	Application	Through Holes	Coolant	Radial
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Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 3610-XXX-D ₁ +XXXX-XXXX					Part No. 93610-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

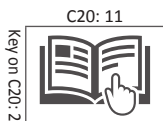
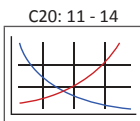
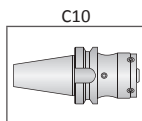
Coating and Substrate Code (Part No. 3610-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 3610-XXX-D₁+XXXX-XXXX)

ISO Material	T	F	N	G	L	A	V	K
P			●	●	●	○	○	○
M			●	●	●	○	○	○
K			●	●	●	○	○	○
N			●	●	●	○	○	○
S	●		●	●	●	○	○	○
H			●	●	●	○	○	○

● Best ○ Better ○ Good



3610 - K N F - 030600 + 005 - 005

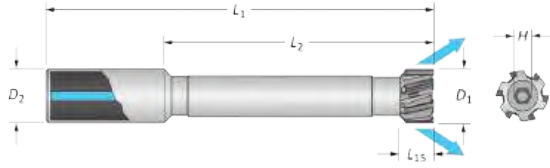
3610 Series - Metric Shank

K Carbide
N TiN Coating
F Lead-in
030600 Diameter
+ 005 Tolerance
- 005 Tolerance



3617 Series

Long Length



Series	3617	Flute	Helical	Application	Through Holes	Coolant	Radial
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Metric Shank					Inch Shank					No. of Teeth	H (mm)
Part No. 3617-XXX-D ₁ +XXXX-XXXX					Part No. 93617-XXX-D ₁ +XXXX-XXXX						
D ₁ Range	L ₁₅	L ₂	L ₁	D ₂	D ₁ Range	L ₁₅	L ₂	L ₁	D ₂		
5.800 - 6.609	8	85	123	12	0.2283 - 0.2602	0.315	3.346	4.843	0.500	4	1.5
6.610 - 7.609	8	85	123	12	0.2603 - 0.2996	0.315	3.346	4.843	0.500	4	2
7.610 - 8.609	10	85	123	12	0.2997 - 0.3389	0.394	3.346	4.843	0.500	4	2.5
8.610 - 9.609	10	85	123	12	0.3390 - 0.3783	0.394	3.346	4.843	0.500	4	2.5
9.610 - 10.609	10	115	160	12	0.3784 - 0.4177	0.394	4.528	6.299	0.500	6	3
10.610 - 11.609	10	115	160	12	0.4178 - 0.4570	0.394	4.528	6.299	0.500	6	3
11.610 - 12.609	10	115	160	12	0.4571 - 0.4964	0.394	4.528	6.299	0.500	6	3
12.610 - 13.609	10	115	160	12	0.4965 - 0.5358	0.394	4.528	6.299	0.500	6	4
13.610 - 14.609	10	115	160	12	0.5359 - 0.5752	0.394	4.528	6.299	0.500	6	4
14.610 - 15.609	10	115	160	12	0.5753 - 0.6145	0.394	4.528	6.299	0.500	6	4
15.610 - 16.609	10	130	180	16	0.6146 - 0.6539	0.394	5.118	7.087	0.625	6	4
16.610 - 17.609	10	130	180	16	0.6540 - 0.6933	0.394	5.118	7.087	0.625	6	5
17.610 - 18.609	12	130	180	16	0.6934 - 0.7326	0.472	5.118	7.087	0.625	6	5
18.610 - 19.109	12	140	200	20	0.7327 - 0.7523	0.472	5.512	7.874	0.750	6	5
19.110 - 20.109	12	140	200	20	0.7524 - 0.7917	0.472	5.512	7.874	0.750	6	5
20.110 - 21.109	12	140	200	20	0.7918 - 0.8311	0.472	5.512	7.874	0.750	6	5
21.110 - 22.109	12	140	200	20	0.8312 - 0.8704	0.472	5.512	7.874	0.750	6	6
22.110 - 23.109	12	140	200	20	0.8705 - 0.9098	0.472	5.512	7.874	0.750	6	6
23.110 - 24.109	12	140	200	20	0.9099 - 0.9492	0.472	5.512	7.874	0.750	6	6
24.110 - 25.109	12	140	200	20	0.9493 - 0.9885	0.472	5.512	7.874	0.750	6	6
25.110 - 26.109	16	150	210	25	0.9886 - 1.0279	0.472	5.906	8.268	1.000	6	6
26.110 - 27.109	16	150	210	25	1.0280 - 1.0673	0.551	5.906	8.268	1.000	6	6
27.110 - 28.109	16	150	210	25	1.0674 - 1.1067	0.551	5.906	8.268	1.000	6	8
28.110 - 29.109	16	150	210	25	1.1068 - 1.1460	0.551	5.906	8.268	1.000	6	8
29.110 - 30.109	16	150	210	25	1.1461 - 1.1854	0.551	5.906	8.268	1.000	6	8
30.110 - 31.109	16	150	210	25	1.1855 - 1.2248	0.551	5.906	8.268	1.000	6	8
31.110 - 32.100	16	150	210	25	1.2249 - 1.2638	0.551	5.906	8.268	1.000	6	8

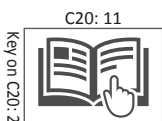
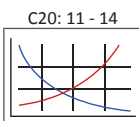
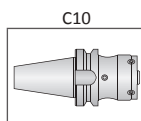
Coating and Substrate Code (Part No. 3617-XXX-D₁+XXXX-XXXX)

Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

Lead-in (Part No. 3617-XXX-D₁+XXXX-XXXX)

ISO Material	E	M
P	●	
M	●	
K	⊙	●
N	●	⊙
S	●	⊙
H	⊙	●

● Best ⊙ Better ○ Good



Key on C20: 2

3617 - K N F - 030600 + 005 - 005

3617 Series - Metric Shank

Carbide

TiN Coating

F Lead-in

Diameter

Tolerance



Setup Information



C20



Tolerance

All monobloc reamers are ground to the requested diameter and set in the middle of the hole tolerance ready for use.

Adjustment

The adjustment must be made to compensate for wear to the cutting edges when the size reaches its lower tolerance. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level. Then the reamer must be reground. The maximum expansion is about 1% of the diameter.

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.





Recommended Drilling Data | Metric (mm)

MONOBLOC

ISO	Material	Hardness (BHN)	Speed (m/min)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	7 - 15	60 - 80	90 - 300
		180 - 250	6 - 10	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	7 - 15	60 - 80	90 - 300
		180 - 275	6 - 10	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 325	6 - 10	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 70	80 - 200
		180 - 375	4 - 8	30 - 50	60 - 150
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	3 - 6	15 - 30	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	7 - 15	60 - 80	90 - 300
M		180 - 350	6 - 10	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	7 - 15	60 - 80	90 - 300
		200 - 250	6 - 10	40 - 70	80 - 200
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	4 - 10	30 - 50	60 - 150
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	4 - 10	30 - 50	60 - 150
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	15 - 30	50 - 70	—
		> 200	10 - 20	50 - 70	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	8 - 12	30 - 50	60 - 120
	Copper and Alloys, and Brass	< 500	10 - 18	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	10 - 20	80 - 160	100 - 300
S	Aluminum and Alloys	< 150	15 - 30	100 - 200	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 10	30 - 50	—
	Titanium Alloy	140 - 310	4 - 15	30 - 50	—

Formulas

1. $\text{RPM} = (318.47 \cdot \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3. $\text{m/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)	

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Imperial (in)

MONOBLOC

ISO	Material	Hardness (BHN)	Speed (SFM)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	25 - 50	200 - 260	300 - 980
		180 - 250	20 - 35	130 - 230	260 - 660
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	25 - 50	200 - 260	300 - 980
		180 - 275	20 - 35	130 - 230	260 - 660
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 325	20 - 35	130 - 230	260 - 660
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 35	130 - 230	260 - 660
		180 - 375	15 - 25	100 - 160	200 - 490
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	10 - 20	50 - 100	200 - 390
	Structural Steel A36, A285, A516, etc.	125 - 180	25 - 50	200 - 260	300 - 980
M		180 - 350	20 - 35	130 - 230	260 - 660
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	25 - 50	200 - 260	300 - 980
		200 - 250	20 - 35	130 - 230	260 - 660
K	Stainless Steel 400 Series 416, 420, etc.	135 - 350	15 - 25	100 - 160	200 - 490
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	15 - 25	100 - 160	200 - 490
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	50 - 100	160 - 230	—
		> 200	35 - 65	160 - 230	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	25 - 40	100 - 160	200 - 400
N	Copper and Alloys, and Brass	< 500	35 - 60	330 - 660	—
	Bronze, and Bronze Phosphorous	< 180	35 - 65	260 - 520	330 - 980
	Aluminum and Alloys	< 150	50 - 100	330 - 660	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 25	60 - 200	—
	Titanium Alloy	140 - 310	15 - 25	60 - 200	—

Formulas

1.	RPM = $(3.82 \bullet \text{SFM}) / \text{DIA}$ <i>where:</i> RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = diameter of drill (inch)	2.	IPM = $\text{RPM} \bullet \text{IPR}$ <i>where:</i> IPM = inches per minute (in/min) RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)
3.	SFM = $\text{RPM} \bullet 0.262 \bullet \text{DIA}$ <i>where:</i> SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)		

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Stock Allowance and Coolant | Metric (mm)

MONOBLOC						
ISO Material		Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter*		
				5.80 mm - 10.00 mm	10.01 mm - 22.00 mm	22.01 mm - 32.10 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	Water Soluble / Cutting Oil	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	Copper and Alloys, and Brass	< 500	Water Soluble	0.08 - 0.15	0.15 - 0.25	0.15 - 0.30
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.10 - 0.20	0.15 - 0.25	0.20 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.



Stock Allowance and Coolant | Imperial (in)

MONOBLOC											
ISO Material		Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter*							
				0.2283" - 0.3940"	0.3941" - 0.7090"	0.7091" - 1.2638"					
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020					
		180 - 250									
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180									
		180 - 275									
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180									
		180 - 325									
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180									
		180 - 375									
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450									
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020					
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275									
	K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)					< 200	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
							> 200				
Spheroidal Cast Iron (Ferritic)		260 - 320									
N	Copper and Alloys, and Brass	< 500	Water Soluble	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020					
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil								
	Aluminum and Alloys	< 150									
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.008 - 0.016	0.012 - 0.016	0.012 - 0.020					
	Titanium Alloy	140 - 310									

C20

*Stock value is on diameter.

SECTION

C30-RHR

Replaceable Head Reamers

REPLACEABLE HEAD REAMERS

7000, 9000, & 5000 Series



Efficient high-production performance

7000 Series

Features both expandable and fixed heads in multiple diameters within the same arbor to reduce inventory requirements.

- ▶ 11.800 mm - 60.609 mm (0.4646" - 2.3862")

9000 Series

Quick-change fixed head design for reduced downtime when assembling and indexing new heads in high-production applications.

- ▶ 11.800 mm - 40.600 mm (0.4646" - 1.5984")

5000 Series

Twist-locking expandable head design that excels in applications requiring extremely tight tolerances where minimizing operator intervention is critical.

- ▶ 9.600 mm - 32.600 mm (0.3780" - 1.2835")

Applicable Industries



Aerospace



Agriculture



Automotive



Defense



General Production



Heavy Equipment



Medical



Oil and Gas



Renewable Energy/ Energy



Tool, Mold, and Die

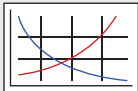
S.C.A.M.I.®

Reference Icons

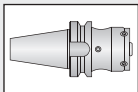
The following icons will appear throughout the catalog to help you navigate between products.



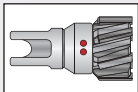
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



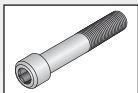
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



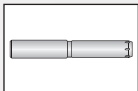
Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Replaceable Reamer Heads
Refers to the reamer head options that connect to the reamer mandrels.



Replaceable Reamer Screws
Refers to the reamer head screw options that connect the head to the reamer mandrels.



Replaceable Reamer Mandrels
Refers to the reamer mandrel options that connect with the head and screw.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

WARNING means that failure to follow the precautions in this message could result in tool failure and serious injury.

NOTICE means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.

NOTE and **IMPORTANT** are also used. These are important that you read and follow but are not safety-related.

Visit www.alliedmachine.com for the most up-to-date information and procedures.

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Introduction Information

Product Overview

Expandable Heads

5000 Series



- 9.600 mm - 32.600 mm (0.3780" - 1.2835").
- Heads arrive set to finish diameter and specified tolerance.
- Twist-lock heads for precision locating of the head to the mandrel.
- Best TIR repeatability from head to head providing consistent tool wear and maximized tool life.

7000 Series



- 11.800 mm - 60.609 mm (0.4646" - 2.3862").
- Multiple diameters within the same arbor reduce inventory requirements.
- Coolant configurations for blind and through-hole applications.
- Reamer head reconditions are available upon request.
- Expands up to 1% on diameter to accommodate for wear.
- ± 0.005 mm (0.0002") tolerance capability.

**C30**

Fixed Heads

7000 Series



- 11.800 mm - 60.609 mm (0.4646" - 2.3862").
- 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameters available as specials by contacting Application Engineering.
- Multiple diameters within the same arbor reduce inventory requirements.
- Coolant configurations for blind and through-hole applications.
- Reamer head reconditions are available upon request.
- Nonexpanding diameter for simple on-machine replacement.
- H7 tolerance capability.

9000 Series



- 11.800 mm - 40.600 mm (0.4646" - 1.5984").
- Heads are precision ground to finish diameter.
- Quick-change heads require minimal downtime for replacement.
- Sintered carbide or cermet design provides improved rigidity in difficult applications.
- H7 tolerance capability.

Coatings

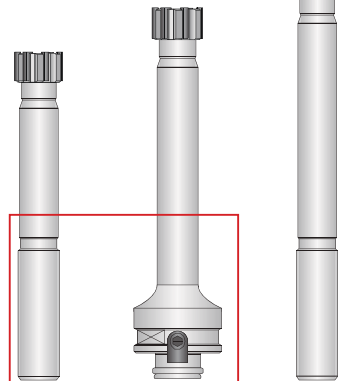
Uncoated	TiN	TiAlN	TiCN	Alcrona	Hardcut	R Coating	T Coating

Reference Key

Symbol	Attribute
D_1	Reamer head diameter
D_2	Shank diameter
L_1	Overall length
L_2	Length of cut
H	Hex key (listed with screws)

Mandrel Shanks Available:

- Cylindrical
- Modular Connection



Short Length

Standard Length

Long Length



Introduction Information

Product Nomenclature

7000 Series Replaceable Reamer Heads

	7400	—	KN		G	—	12000
Diameter Unit	Series		Substrate and Coating		Lead-in		Diameter
Blank = Metric (mm)	7400		Cermet	Cermet	E		XXXXX =
	7405		KL = Uncoated	SV = Uncoated	M		X.XXXX"
I = Imperial (in)	7600		KN = TiN	SN = TiN	A		XX.XXX mm
	7605		KC = TiCN	SC = TiCN	G		
	7700		KA = TiAlN	SA = TiAlN	L		
	7705		KK = Alcrona	SK = Alcrona	N		
			KH = Hardcut	SH = Hardcut	T		
			KR = R	SR = R coating	V		
			KT = T	ST = T	K		



C30

NOTE: For reconitions, put an "R" at the beginning of the item number (7000 series only).

NOTE: Contact Application Engineering about optional add-on features for 7000 series.

9000/5000 Series Replaceable Reamer Heads

	9700	—	KN		G	H	—	12000	+	000	—	018
Diameter Unit	Series		Substrate and Coating		Lead-in	Optional add-on		Diameter		Tolerance*		
Blank = Metric (mm) I = Imperial (in)	9400		Cermet	Cermet	E	Blank = No add-on		XXXXX = X.XXXX" XX.XXX mm		4 decimal places = inch tolerance		
	9600		KL = Uncoated	SV = Uncoated	M	H = Half circular face				3 decimal places = mm tolerance		
	9700		KN = TiN	SN = TiN	A							
	5400		KC = TiCN	SC = TiCN	F	Z = Double back taper						
	5401		KA = TiAlN	SA = TiAlN	G							
	5600		KK = Alcrona	SK = Alcrona	L	HZ = Half circular face and double back taper						
	5700		KH = Hardcut	SH = Hardcut	N							
			KR = R	SR = R	T							
			KT = T	ST = T	V							
					K							

*The total tolerance capable for 5000 series reamers is 0.005 mm (0.0002") and H7 for 9000 series reamers.

Series Details

Series		7000 Series						5000 Series				9000 Series		
		7400	7600	7700	7405	7605	7705	5400	5401	5600	5700	9400	9600	9700
Flute	Straight	●			●			●	●			●		
	Right-hand helical		●			●				●			●	
	Left-hand helical			●			●				●			●
Head	Fixed	●	●	●								●	●	●
	Expandable				●	●	●	●	●	●	●			
Coolant	Radial (through hole)	—	—	—	—	—	—	●			●	—	—	—
	Central (blind hole)	—	—	—	—	—	—		●	●		—	—	—



7000 Series Replaceable Head Reamer

Overview

7000 SERIES

11.800 mm - 80.600 mm (0.4646" - 3.1732")

- ▶ Features both expandable and fixed diameter heads.
- ▶ Multiple diameters within the same arbor reduce inventory requirements.
- ▶ Coolant configurations for blind and through-hole applications.
- ▶ Available with brazed carbide, cermet, or PCD cutting edges.
- ▶ Reamer head reconditions are available upon request.



fixed head reamers



- ▶ Nonexpanding diameter for simple on-machine replacement.
- ▶ H7 tolerance capability.

expandable head reamers



- ▶ Expands to accommodate for wear.
- ▶ ± 0.005 mm (0.0002") tolerance capability.

Lead Time in Workdays

7000 Series		2 - 5 pcs	6 - 19 pcs	20+ pcs
Fixed	Coated	20	25	25
	Uncoated	15	20	20
Expandable	Coated	20	25	30
	Uncoated	15	20	25

Building Your Complete Tool

You will need all three pieces to complete your replaceable head reamer assembly. The item numbers for the screws and the mandrels are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

The complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.

1

Select Your Head



C30: 12

2

Select Your Screw



C30: 6 - 7

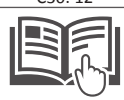
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Select Your Mandrel

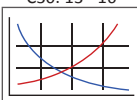
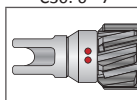


C30: 10 - 11

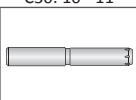
Key on C30: 2



C30: 13 - 16



C30: 8 - 9





Reamer Heads

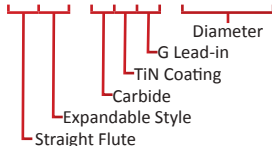
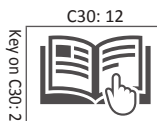
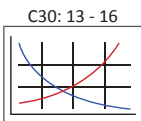
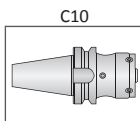
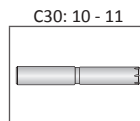
Expandable

Build Your Part No.

1 Series	7405 Series	7605 Series	7705 Series																																																																																																																
2 Flute Style Your flute style is based on your series selection (above).	Straight Flute 	Helical Flute (Right-Hand) 	Helical Flute (Left-Hand) 																																																																																																																
3 Carbide Grade and Coating Codes These are the combinations of grades and coatings you can choose from.	 <table border="1"> <thead> <tr> <th></th><th>Uncoated</th><th>TiN</th><th>TiCN</th><th>TiAlN</th><th>Alcrona</th><th>Hardcut</th><th>R Coating</th><th>T Coating</th></tr> </thead> <tbody> <tr> <td>Carbide</td><td>KL</td><td>KN</td><td>KC</td><td>KA</td><td>KK</td><td>KH</td><td>KR</td><td>KT</td></tr> <tr> <td>Cermet</td><td>SV</td><td>SN</td><td>SC</td><td>SA</td><td>SK</td><td>SH</td><td>SR</td><td>ST</td></tr> </tbody> </table>				Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating	Carbide	KL	KN	KC	KA	KK	KH	KR	KT	Cermet	SV	SN	SC	SA	SK	SH	SR	ST																																																																																					
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● Best ○ Better ○ Good

7405 - K N G - 50000



Key on C30: 2



Reamer Heads

Fixed

Build Your Part No.

1

Series

7400 Series

7600 Series

7700 Series

2

Flute Style

Straight Flute

Helical Flute (Right-Hand)

Helical Flute (Left-Hand)



C30

3

Carbide Grade and Coating Codes

These are the combinations of grades and coatings you can choose from.

	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	KL	KN	KC	KA	KK	KH	KR	KT
Cermet	SV	SN	SC	SA	SK	SH	SR	ST

4

Lead-in Recommendations

	T	F	N	G	L	A	V	K
P			●	●	●	○	○	
M			●	●	●	○	○	
K			●	●	●	○	○	
N			●	●	●	○	○	
S	●		●	●	●	○	○	
H			●	●	●	○	○	

	E	M	K
P	●	●	○
M	●	●	○
K	●	●	○
N	●	●	○
S	●	●	○
H	●	●	○

	E	M
P	●	○
M	●	○
K	●	○
N	●	○
S	●	○
H	●	○

5

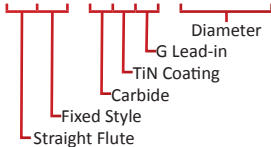
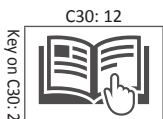
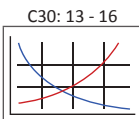
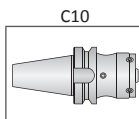
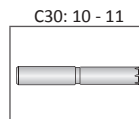
Diameter

For the diameter portion of the item number, refer to the following tables:

Metric (mm)		Imperial (in)	
D ₁ Range	Tolerance (min/max)	D ₁ Range	Tolerance (min/max)
11.800 - 18.000	+0 / +0.018	0.4646 - 0.7086	+0 / +0.0007
18.001 - 30.000	+0 / +0.021	0.7087 - 1.1810	+0 / +0.0008
30.001 - 50.000	+0 / +0.025	1.1811 - 1.9684	+0 / +0.0010
50.001 - 60.609	+0 / +0.030	1.9685 - 2.3862	+0 / +0.0012

60.610 mm - 80.600 mm (2.3863" - 3.1732") diameters are available as specials by contacting Application Engineering.

● Best ○ Better ○ Good

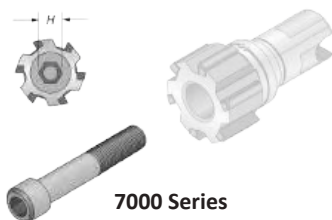
7400 - K N G - 50000

C30: 7

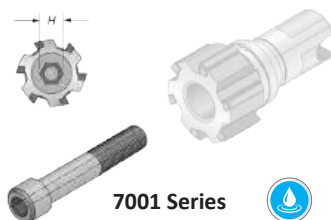
www.alliedmachine.com | 1.330.343.4283

Replaceable Head Screws

Fixed



7000 Series



7001 Series



D ₁ Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 14.609	0.4646 - 0.5751	7000-VI-001	2.5
14.610 - 17.609	0.5752 - 0.6932	7000-VI-002	3
17.610 - 21.609	0.6933 - 0.8507	7000-VI-003	4
21.610 - 26.609	0.8508 - 1.0475	7000-VI-004	5
26.610 - 32.609	1.0476 - 1.2838	7000-VI-005	6
32.610 - 40.609	1.2839 - 1.5987	7000-VI-006	6
40.610 - 50.609	1.5988 - 1.9924	7000-VI-007	8
50.610 - 60.609	1.9925 - 2.3862	7000-VI-008	10
60.610 - 80.600	2.3863 - 3.1732	7000-VI-009	12

D ₁ Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 14.609	0.4646 - 0.5751	7001-VI-001	2.5
14.610 - 17.609	0.5752 - 0.6932	7001-VI-002	3
17.610 - 21.609	0.6933 - 0.8507	7001-VI-003	4
21.610 - 26.609	0.8508 - 1.0475	7001-VI-004	5
26.610 - 32.609	1.0476 - 1.2838	7001-VI-005	6
32.610 - 40.609	1.2839 - 1.5987	7001-VI-006	6
40.610 - 50.609	1.5988 - 1.9924	7001-VI-007	8
50.610 - 60.609	1.9925 - 2.3862	7001-VI-008	10
60.610 - 80.600	2.3863 - 3.1732	7001-VI-009	12

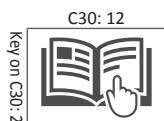
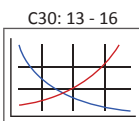
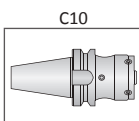
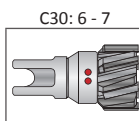
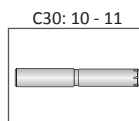
* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.



C30

7000 Series Locking Screws	
Radial Coolant Only	No Coolant
	
7000 Series Mandrels	7001 Series Mandrels

7001 Series Locking Screws	
Radial and Central Coolant	Central Coolant Only
	
7000 Series Mandrels	7001 Series Mandrels

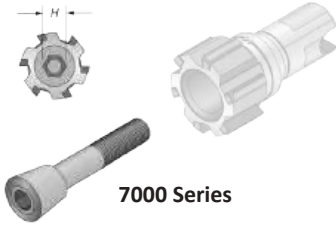


Key on C30: 2

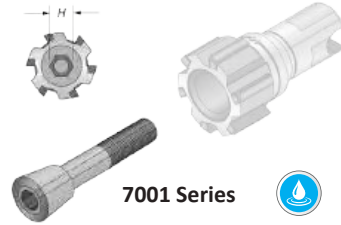


Replaceable Head Screws

Expandable



7000 Series



7001 Series



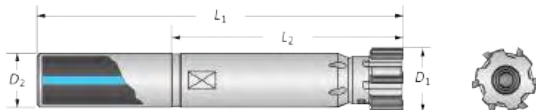
C30

D ₁ Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 12.609	0.4646 - 0.4964	7000-VI-012	3.5
12.610 - 13.609	0.4965 - 0.5357	7000-VI-013	
13.610 - 14.609	0.5358 - 0.5751	7000-VI-014	
14.610 - 15.609	0.5752 - 0.6145	7000-VI-015	4
15.610 - 16.609	0.6146 - 0.6538	7000-VI-016	
16.610 - 17.609	0.6539 - 0.6932	7000-VI-017	
17.610 - 18.609	0.6933 - 0.7326	7000-VI-018	5
18.610 - 19.609	0.7327 - 0.7719	7000-VI-019	
19.610 - 20.609	0.7720 - 0.8113	7000-VI-020	
20.610 - 21.609	0.8114 - 0.8507	7000-VI-021	6
21.610 - 22.609	0.8508 - 0.8901	7000-VI-022	
22.610 - 23.609	0.8902 - 0.9294	7000-VI-023	
23.610 - 24.609	0.9295 - 0.9688	7000-VI-024	8
24.610 - 25.609	0.9689 - 1.0082	7000-VI-025	
25.610 - 26.609	1.0083 - 1.0475	7000-VI-026	
26.610 - 27.609	1.0476 - 1.0869	7000-VI-027	10
27.610 - 28.609	1.0870 - 1.1263	7000-VI-028	
28.610 - 29.609	1.1264 - 1.1656	7000-VI-029	
29.610 - 30.609	1.1657 - 1.2050	7000-VI-030	12
30.610 - 31.609	1.2051 - 1.2444	7000-VI-031	
31.610 - 32.609	1.2445 - 1.2838	7000-VI-032	
32.610 - 33.609	1.2839 - 1.3231	7000-VI-033	14
33.610 - 34.609	1.3232 - 1.3625	7000-VI-034	
34.610 - 35.609	1.3626 - 1.4019	7000-VI-035	
35.610 - 36.609	1.4020 - 1.4412	7000-VI-036	16
36.610 - 37.609	1.4413 - 1.4806	7000-VI-037	
37.610 - 38.609	1.4807 - 1.5200	7000-VI-038	
38.610 - 39.609	1.5201 - 1.5593	7000-VI-039	18
39.610 - 40.609	1.5594 - 1.5987	7000-VI-040	
40.610 - 41.609	1.5988 - 1.6381	7000-VI-041	
41.610 - 42.609	1.6382 - 1.6775	7000-VI-042	20
42.610 - 43.609	1.6776 - 1.7168	7000-VI-043	
43.610 - 44.609	1.7169 - 1.7562	7000-VI-044	
44.610 - 45.609	1.7563 - 1.7956	7000-VI-045	22
45.610 - 46.609	1.7957 - 1.8349	7000-VI-046	
46.610 - 47.609	1.8350 - 1.8743	7000-VI-047	
47.610 - 48.609	1.8744 - 1.9137	7000-VI-048	24
48.610 - 49.609	1.9138 - 1.9530	7000-VI-049	
49.610 - 50.609	1.9531 - 1.9924	7000-VI-050	
50.610 - 51.609	1.9925 - 2.0318	7000-VI-051	26
51.610 - 52.609	2.0319 - 2.0712	7000-VI-052	
52.610 - 53.609	2.0713 - 2.1105	7000-VI-053	
53.610 - 54.609	2.1106 - 2.1499	7000-VI-054	28
54.610 - 55.609	2.1500 - 2.1893	7000-VI-055	
55.610 - 56.609	2.1894 - 2.2286	7000-VI-056	
56.610 - 57.609	2.2287 - 2.2680	7000-VI-057	30
57.610 - 58.609	2.2681 - 2.3074	7000-VI-058	
58.610 - 59.609	2.3075 - 2.3468	7000-VI-059	
59.610 - 60.609	2.3469 - 2.3862	7000-VI-060	

D ₁ Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 12.609	0.4646 - 0.4964	7001-VI-012	3.5
12.610 - 13.609	0.4965 - 0.5357	7001-VI-013	
13.610 - 14.609	0.5358 - 0.5751	7001-VI-014	
14.610 - 15.609	0.5752 - 0.6145	7001-VI-015	4
15.610 - 16.609	0.6146 - 0.6538	7001-VI-016	
16.610 - 17.609	0.6539 - 0.6932	7001-VI-017	
17.610 - 18.609	0.6933 - 0.7326	7001-VI-018	5
18.610 - 19.609	0.7327 - 0.7719	7001-VI-019	
19.610 - 20.609	0.7720 - 0.8113	7001-VI-020	
20.610 - 21.609	0.8114 - 0.8507	7001-VI-021	6
21.610 - 22.609	0.8508 - 0.8901	7001-VI-022	
22.610 - 23.609	0.8902 - 0.9294	7001-VI-023	
23.610 - 24.609	0.9295 - 0.9688	7001-VI-024	8
24.610 - 25.609	0.9689 - 1.0082	7001-VI-025	
25.610 - 26.609	1.0083 - 1.0475	7001-VI-026	
26.610 - 27.609	1.0476 - 1.0869	7001-VI-027	10
27.610 - 28.609	1.0870 - 1.1263	7001-VI-028	
28.610 - 29.609	1.1264 - 1.1656	7001-VI-029	
29.610 - 30.609	1.1657 - 1.2050	7001-VI-030	12
30.610 - 31.609	1.2051 - 1.2444	7001-VI-031	
31.610 - 32.609	1.2445 - 1.2838	7001-VI-032	
32.610 - 33.609	1.2839 - 1.3231	7001-VI-033	14
33.610 - 34.609	1.3232 - 1.3625	7001-VI-034	
34.610 - 35.609	1.3626 - 1.4019	7001-VI-035	
35.610 - 36.609	1.4020 - 1.4412	7001-VI-036	16
36.610 - 37.609	1.4413 - 1.4806	7001-VI-037	
37.610 - 38.609	1.4807 - 1.5200	7001-VI-038	
38.610 - 39.609	1.5201 - 1.5593	7001-VI-039	18
39.610 - 40.609	1.5594 - 1.5987	7001-VI-040	
40.610 - 41.609	1.5988 - 1.6381	7001-VI-041	
41.610 - 42.609	1.6382 - 1.6775	7001-VI-042	20
42.610 - 43.609	1.6776 - 1.7168	7001-VI-043	
43.610 - 44.609	1.7169 - 1.7562	7001-VI-044	
44.610 - 45.609	1.7563 - 1.7956	7001-VI-045	22
45.610 - 46.609	1.7957 - 1.8349	7001-VI-046	
46.610 - 47.609	1.8350 - 1.8743	7001-VI-047	
47.610 - 48.609	1.8744 - 1.9137	7001-VI-048	24
48.610 - 49.609	1.9138 - 1.9530	7001-VI-049	
49.610 - 50.609	1.9531 - 1.9924	7001-VI-050	
50.610 - 51.609	1.9925 - 2.0318	7001-VI-051	26
51.610 - 52.609	2.0319 - 2.0712	7001-VI-052	
52.610 - 53.609	2.0713 - 2.1105	7001-VI-053	
53.610 - 54.609	2.1106 - 2.1499	7001-VI-054	28
54.610 - 55.609	2.1500 - 2.1893	7001-VI-055	
55.610 - 56.609	2.1894 - 2.2286	7001-VI-056	
56.610 - 57.609	2.2287 - 2.2680	7001-VI-057	30
57.610 - 58.609	2.2681 - 2.3074	7001-VI-058	
58.610 - 59.609	2.3075 - 2.3468	7001-VI-059	
59.610 - 60.609	2.3469 - 2.3862	7001-VI-060	

Mandrels

Cylindrical



Short

D ₁ Range*		Mandrel			No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)		7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	50	95	12	6	7000-MC-001	7001-MC-001
14.610 - 17.609	0.5752 - 0.6932	65	113	16	6	7000-MC-002	7001-MC-002
17.610 - 21.609	0.6933 - 0.8507	75	125	20	6	7000-MC-003	7001-MC-003
21.610 - 26.609	0.8508 - 1.0475	85	135	20	6	7000-MC-004	7001-MC-004
26.610 - 32.609	1.0476 - 1.2838	105	161	25	6	7000-MC-005	7001-MC-005
32.610 - 40.609	1.2839 - 1.5987	120	180	32	6	7000-MC-006	7001-MC-006
40.610 - 45.609	1.5988 - 1.7956	120	180	32	6	7000-MC-007	7001-MC-007
45.610 - 50.609	1.7957 - 1.9924	120	180	32	8	7000-MC-075	7001-MC-075
50.610 - 60.609	1.9925 - 2.3862	120	190	32	8	7000-MC-008	7001-MC-008
60.610 - 80.600	2.3863 - 3.1732	120	180	32	8/10/12	7000-MC-009	—



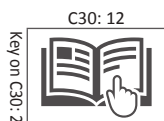
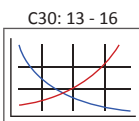
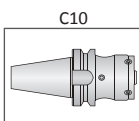
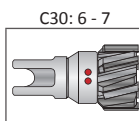
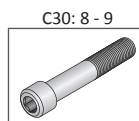
Long

D ₁ Range*		Mandrel			No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)		7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	95	140	12	6	7000-ML-001	7001-ML-001
14.610 - 17.609	0.5752 - 0.6932	105	153	16	6	7000-ML-002	7001-ML-002
17.610 - 21.609	0.6933 - 0.8507	125	175	20	6	7000-ML-003	7001-ML-003
21.610 - 26.609	0.8508 - 1.0475	145	195	20	6	7000-ML-004	7001-ML-004
26.610 - 32.609	1.0476 - 1.2838	165	221	25	6	7000-ML-005	7001-ML-005
32.610 - 40.609	1.2839 - 1.5987	185	245	32	6	7000-ML-006	7001-ML-006
40.610 - 45.609	1.5988 - 1.7956	185	245	32	6	7000-ML-007	7001-ML-007
45.610 - 50.609	1.7957 - 1.9924	185	245	32	8	7000-ML-075	7001-ML-075
50.610 - 60.609	1.9925 - 2.3862	185	255	32	8	7000-ML-008	7001-ML-008
60.610 - 80.600	2.3863 - 3.1732	185	245	32	8/10/12	7000-ML-009	—

* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.

7000 Series Locking Screws	
Radial Coolant Only	No Coolant
	
7000 Series Mandrels	7001 Series Mandrels

7001 Series Locking Screws	
Radial and Central Coolant	Central Coolant Only
	
7000 Series Mandrels	7001 Series Mandrels

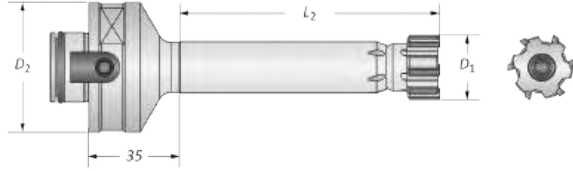


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Mandrels

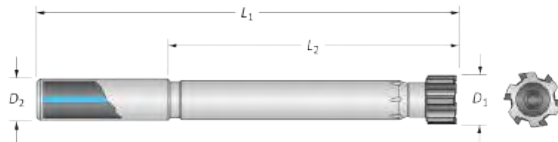
Modular Shank | AR Upper Receiver



Standard

D_1 Range*		Mandrel		No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L_2 (mm)	D_2 (mm)		7000 Series	7001 Series
11.800 - 14.609	0.4646 - 0.5751	65	50	6	7000-MM-001	7001-MM-001
14.610 - 17.609	0.5752 - 0.6932	80	50	6	7000-MM-002	7001-MM-002
17.610 - 21.609	0.6933 - 0.8507	90	50	6	7000-MM-003	7001-MM-003
21.610 - 26.609	0.8508 - 1.0475	100	50	6	7000-MM-004	7001-MM-004
26.610 - 32.609	1.0476 - 1.2838	110	50	6	7000-MM-005	7001-MM-005
32.610 - 40.609	1.2839 - 1.5987	120	50	6	7000-MM-006	7001-MM-006
40.610 - 45.609	1.5988 - 1.7956	120	50	6	7000-MM-007	7001-MM-007
45.610 - 50.609	1.7957 - 1.9924	120	50	8	7000-MM-075	7001-MM-075
50.610 - 60.609	1.9925 - 2.3862	120	50	8	7000-MM-008	7001-MM-008
60.610 - 80.600	2.3863 - 3.1732	120	63	8/10/12	7000-MM-009	—

* 60.610 mm - 80.600 mm (2.3863" - 3.1732") diameter heads are available as specials by contacting Application Engineering.



D_1		Mandrel			No. of Teeth	Part No.
Metric (mm)	Imperial (in)	L_2 (in)	L_1 (in)	D_2 (in)		7000 Series
30.163	1.1875	9.65	11.65	0.75	6	7000-MC-AR10
25.400	1.0000	8.66	10.63	0.75	6	7000-MC-AR15

7000 Series Locking Screws

Radial Coolant Only



7000 Series Mandrels

No Coolant



7001 Series Mandrels

7001 Series Locking Screws

Radial and Central Coolant

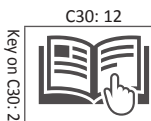


7000 Series Mandrels

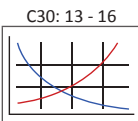
Central Coolant Only



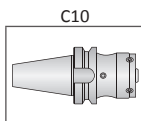
7001 Series Mandrels



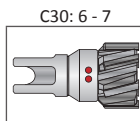
C30: 12



C30: 13 - 16



C10



C30: 6 - 7



C30: 8 - 9

Setup Information

Fixed Head Style



Tolerance: Fixed reamers are manufactured at 2/3 of the tolerance.

Recommended Tightening Torque

Metric		Imperial	
D ₁ Range (mm)	Torque (N-m)	D ₁ Range (inch)	Torque (in-lbs)
11.800 - 14.609	2.5	0.4646 - 0.5751	22.13
14.610 - 17.609	3.5	0.5752 - 0.6932	30.98
17.610 - 21.609	5.0	0.6933 - 0.8507	44.25
21.610 - 26.609	7.0	0.8508 - 1.0475	61.96
26.610 - 32.609	10.0	1.0476 - 1.2838	88.51
32.610 - 40.609	12.0	1.2839 - 1.5987	106.21
40.610 - 50.609	16.0	1.5988 - 1.9924	141.61
50.610 - 60.609	20.0	1.9925 - 2.3862	177.01



C30

Expandable Head Style



Tolerance: Expandable reamers are manufactured to the middle of the tolerance.

Expanding Heads Adjustment

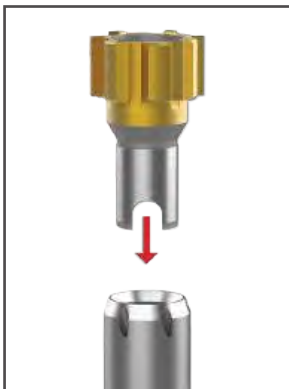
When the size reaches its lower tolerance, the head can be adjusted to compensate for wear to the cutting edges. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level.

Adjustment Procedure

Slowly turn the right-hand threaded screw clockwise while checking the diameter setting of the reamer with a micrometer. When the required diameter is achieved, the tool is ready for use.

Replaceable Head Reamer 7000 Series Assembly

Fixed and Expandable Styles



Step 1:
Insert the replaceable reamer head into the mandrel.

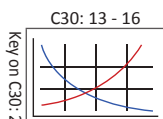
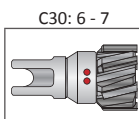
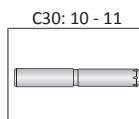


Step 2:
Insert the screw into the reamer head opening to secure it to the mandrel.



Step 3:
Tighten the screw.

NOTE: We recommend lubricating the thread and the conical surface of contact between the reamer head and the screw with antifriction MOLYKOTE® grease.





Recommended Drilling Data | Metric (mm)

7000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min)		
			Uncoated Carbide	Coated Carbide	Cermet
 C30	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	10 - 20	60 - 80	90 - 300
		180 - 250	7 - 15	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	10 - 20	60 - 80	90 - 300
		180 - 275	7 - 15	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 325	7 - 15	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 60	50 - 60
		180 - 375	4 - 8	40 - 50	60 - 120
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	4 - 8	40 - 50	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	10 - 20	60 - 80	90 - 300
M		180 - 350	7 - 15	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	10 - 20	60 - 80	90 - 300
		200 - 250	7 - 15	40 - 70	80 - 200
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	6 - 10	40 - 60	50 - 60
K	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	6 - 10	40 - 60	50 - 60
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	20 - 40	120 - 200	—
		> 200	15 - 30	120 - 200	—
N	Spheroidal Cast Iron (Ferritic)	260 - 320	10 - 15	—	90 - 140
	Copper and Alloys, and Brass	< 500	60 - 200	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	20 - 40	80 - 160	100 - 300
	Aluminum and Alloys	< 150	20 - 100	—	—
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 10	30 - 50	—
	Titanium Alloy	140 - 310	4 - 15	30 - 50	—

Formulas

1.	RPM = (318.47 • m/min) / DIA where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2.	mm/min = RPM • mm/rev where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3.	m/min = RPM • 0.003 • DIA where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)		

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Metric (mm)

7000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter

11.80 mm - 21.60 mm		21.61 mm - 39.60 mm		39.61 mm - 80.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 0.60	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.40	—	0.30 - 0.60	—	0.40 - 0.80	—
0.30 - 0.60	0.40 - 1.00	0.30 - 0.60	0.50 - 1.20	0.30 - 0.60	0.60 - 1.50
0.30 - 0.60	—	0.40 - 1.00	—	0.40 - 1.00	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—



C30



Recommended Drilling Data | Imperial (in)

7000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	33 - 66	197 - 262	295 - 984
		180 - 250	23 - 49	131 - 230	262 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	33 - 66	197 - 262	295 - 984
		180 - 275	23 - 49	131 - 230	262 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 325	23 - 49	131 - 230	262 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 33	131 - 197	164 - 197
		180 - 375	13 - 26	131 - 164	197 - 394
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	13 - 26	131 - 164	197 - 394
	Structural Steel A36, A285, A516, etc.	125 - 180	33 - 66	197 - 262	295 - 984
M		180 - 350	23 - 49	131 - 230	262 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	33 - 66	197 - 262	295 - 984
		200 - 250	23 - 49	131 - 230	262 - 656
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	20 - 33	131 - 197	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	20 - 33	131 - 197	164 - 197
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	66 - 131	394 - 656	—
		> 200	49 - 98	394 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	33 - 49	—	295 - 459
	Copper and Alloys, and Brass	< 500	197 - 656	328 - 656	—
	Bronze, and Bronze Phosphorous	< 180	66 - 131	262 - 525	328 - 984
N	Aluminum and Alloys	< 150	66 - 328	—	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	13 - 33	98 - 164	—
	Titanium Alloy	140 - 310	13 - 49	98 - 164	—

Formulas

1.	RPM	= (3.82 • SFM) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)

2.	IPM	= RPM • IPR
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)

3.	SFM	= RPM • 0.262 • DIA
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

7000 SERIES



C30



Stock Allowance and Coolant | Metric (mm)

7000 SERIES

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter*		
				11.80 mm - 21.60 mm	21.61 mm - 39.60 mm	39.61 mm - 80.60 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
M		180 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
K	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		> 200				
N	Spheroidal Cast Iron (Ferritic)	260 - 320	Water Soluble	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Copper and Alloys, and Brass	< 500				
	Bronze, and Bronze Phosphorous	< 180				
	Aluminum and Alloys	< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.



C30



Stock Allowance and Coolant | Imperial (in)

7000 SERIES										
ISO Material		Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter*						
				0.4646" - 0.8504"	0.8505" - 1.5590"	1.5591" - 3.1732"				
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180 180 - 250	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180 180 - 275								
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180 180 - 325								
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180 180 - 375								
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450								
	Structural Steel A36, A285, A516, etc.	125 - 180 180 - 350								
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200 200 - 250								
	M	Stainless Steel 400 Series 416, 420, etc.					135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016
Stainless Steel 300 Series 304, 316, 17-4PH, etc.		135 - 275								
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200 > 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Spheroidal Cast Iron (Ferritic)	260 - 320								
	N	Copper and Alloys, and Brass	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016			
Bronze, and Bronze Phosphorous		< 180	Water Soluble / Cutting Oil							
Aluminum and Alloys		< 150								
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Titanium Alloy	140 - 310								


C30

*Stock value is on diameter.



9000 Series Replaceable Head Reamer

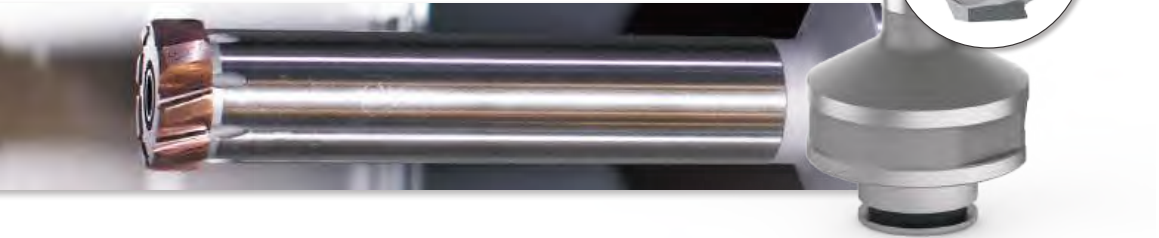
Overview

9000 SERIES

11.800 mm - 40.600 mm (0.4646" - 1.5984")

- ▶ Features fixed diameter heads.
- ▶ Heads are precision ground to finish diameter.
- ▶ Quick-change heads require minimal downtime for replacement.
- ▶ Sintered carbide or cermet design provides improved rigidity in difficult applications.
- ▶ H7 tolerance capability.

C30



Lead Time in Workdays

9000 Series	2 - 9 pcs	10 - 49 pcs	50 - 99 pcs	100+ pcs
Coated	20	25	30	35
Uncoated	15	20	25	30

Building Your Complete Tool

You will need all three pieces to complete your replaceable head reamer assembly. The item numbers for the screws and the mandrels are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

The complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.

1

Select Your Head



2

Select Your Screw



3

Select Your Mandrel



C30: 23

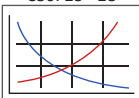
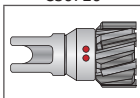
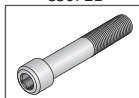
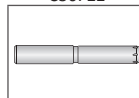
C30: 25 - 28

C30: 20

C30: 21

C30: 22

Key on C30: 2





Reamer Heads

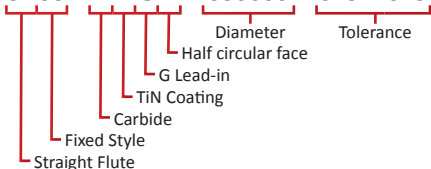
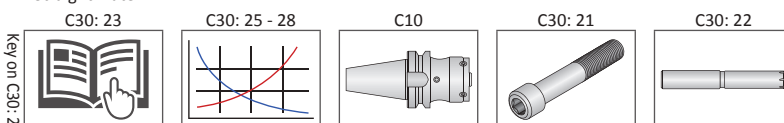
Fixed

Build Your Part No.

1 Series	9400 Series	9600 Series	9700 Series																																																																																																																
2 Flute Style Your flute style is based on your series selection (above).	Straight Flute 	Helical Flute (Right-Hand) 	Helical Flute (Left-Hand) 																																																																																																																
3 Carbide Grade and Coating Codes These are the combinations of grades and coatings you can choose from.	 <table border="1"> <thead> <tr> <th></th><th>Uncoated</th><th>TiN</th><th>TiCN</th><th>TiAlN</th><th>Alcrona</th><th>Hardcut</th><th>R Coating</th><th>T Coating</th></tr> </thead> <tbody> <tr> <td>Carbide</td><td>KL</td><td>KN</td><td>KC</td><td>KA</td><td>KK</td><td>KH</td><td>KR</td><td>KT</td></tr> <tr> <td>Cermet</td><td>SV</td><td>SN</td><td>SC</td><td>SA</td><td>SK</td><td>SH</td><td>SR</td><td>ST</td></tr> </tbody> </table>				Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating	Carbide	KL	KN	KC	KA	KK	KH	KR	KT	Cermet	SV	SN	SC	SA	SK	SH	SR	ST																																																																																					
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● Best ○ Better ○ Good

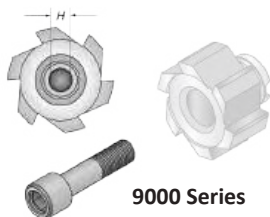
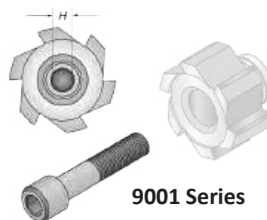
9400 – K N G H – 030600 + 025 – 025





Replaceable Head Screws

Expandable

**9000 Series****9001 Series****C30**

D_1 Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 14.609	0.4646 - 0.5751	9000-VI-001	2.5
14.610 - 17.609	0.5752 - 0.6932	9000-VI-002	3
17.610 - 21.609	0.6933 - 0.8507	9000-VI-003	4
21.610 - 26.609	0.8508 - 1.0475	9000-VI-004	5
26.610 - 32.609	1.0476 - 1.2838	9000-VI-005	6
32.610 - 40.600	1.2839 - 1.5984	9000-VI-006	6

9000 Series Locking Screws

Radial Coolant Only



D_1 Range*		Part No.	H (mm)
Metric (mm)	Imperial (in)		
11.800 - 14.609	0.4646 - 0.5751	9001-VI-001	2.5
14.610 - 17.609	0.5752 - 0.6932	9001-VI-002	3
17.610 - 21.609	0.6933 - 0.8507	9001-VI-003	4
21.610 - 26.609	0.8508 - 1.0475	9001-VI-004	5
26.610 - 32.609	1.0476 - 1.2838	9001-VI-005	6
32.610 - 40.600	1.2839 - 1.5984	9001-VI-006	6

9001 Series Locking Screws

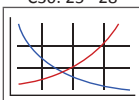
Radial and Central Coolant



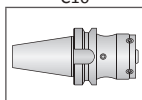
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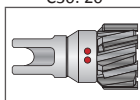
C30: 25 - 28



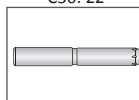
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C30: 20



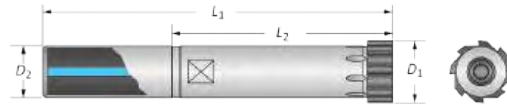
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Key on C30: 2

Mandrels

Cylindrical



Short

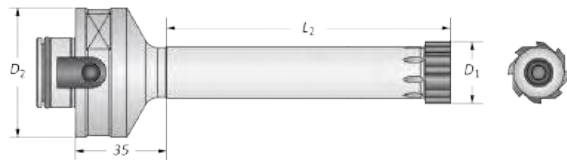
D ₁ Range		Mandrel			No. of Teeth	Part No.
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)		
11.800 - 14.609	0.4646 - 0.5751	50.00	95.00	12.00	6	9000-MC-001
14.610 - 17.609	0.5752 - 0.6932	65.00	113.00	16.00	6	9000-MC-002
17.610 - 21.609	0.6933 - 0.8507	75.00	125.00	20.00	6	9000-MC-003
21.610 - 26.609	0.8508 - 1.0475	85.00	135.00	20.00	8	9000-MC-004
26.610 - 32.609	1.0476 - 1.2838	105.00	161.00	25.00	8	9000-MC-005
32.610 - 36.609	1.2839 - 1.4412	120.00	180.00	32.00	10	9000-MC-006
36.610 - 40.600	1.4413 - 1.5984	120.00	180.00	32.00	10	9000-MC-007



Long

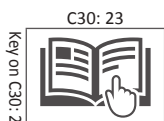
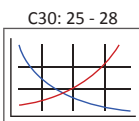
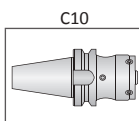
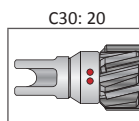
D ₁ Range		Mandrel			No. of Teeth	Part No.
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)		
11.800 - 14.609	0.4646 - 0.5751	95.00	140.00	12.00	6	9000-ML-001
14.610 - 17.609	0.5752 - 0.6932	105.00	153.00	16.00	6	9000-ML-002
17.610 - 21.609	0.6933 - 0.8507	125.00	175.00	20.00	6	9000-ML-003
21.610 - 26.609	0.8508 - 1.0475	145.00	195.00	20.00	8	9000-ML-004
26.610 - 32.609	1.0476 - 1.2838	165.00	221.00	25.00	8	9000-ML-005
32.610 - 36.609	1.2839 - 1.4412	185.00	245.00	32.00	10	9000-ML-006
36.610 - 40.600	1.4413 - 1.5984	185.00	245.00	32.00	10	9000-ML-007

Modular



Long

D ₁ Range		Mandrel		No. of Teeth	Part No.
Metric (mm)	Imperial (in)	L ₂ (mm)	D ₂ (mm)		
11.800 - 14.609	0.4646 - 0.5751	65.00	50.00	6	9000-MM-001
14.610 - 17.609	0.5752 - 0.6932	80.00	50.00	6	9000-MM-002
17.610 - 21.609	0.6933 - 0.8507	100.00	50.00	6	9000-MM-003
21.610 - 26.609	0.8508 - 1.0475	110.00	50.00	8	9000-MM-004
26.610 - 32.609	1.0476 - 1.2838	120.00	50.00	8	9000-MM-005
32.610 - 36.609	1.2839 - 1.4412	120.00	50.00	10	9000-MM-006
36.610 - 40.600	1.4413 - 1.5984	120.00	50.00	10	9000-MM-007



Key on C30: 2



Setup Information

Fixed Head Style



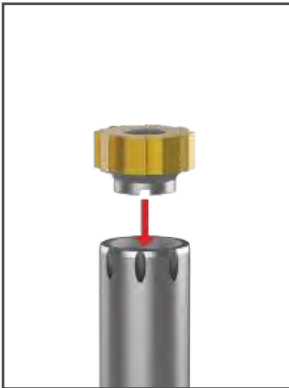
Tolerance: Fixed reamers are manufactured at 2/3 of the tolerance.

Recommended Tightening Torque

Metric		Imperial	
D_1 Range (mm)	Torque (N-m)	D_1 Range (inch)	Torque (in-lbs)
11.800 - 14.609	2.5	0.4646 - 0.5751	22.13
14.610 - 17.609	3.5	0.5752 - 0.6932	30.98
17.610 - 21.609	4.5	0.6933 - 0.8507	39.83
21.610 - 26.609	6.0	0.8508 - 1.0475	53.10
26.610 - 32.609	10.0	1.0476 - 1.2838	88.51
32.610 - 40.600	12.0	1.2839 - 1.5984	106.21

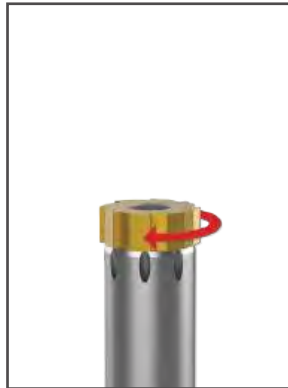
C30

Replaceable Head Reamer 9000 Series Assembly



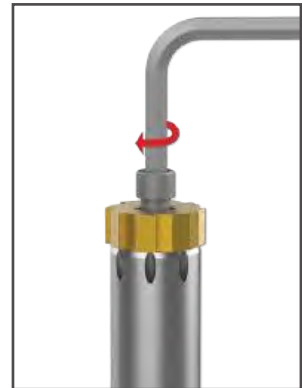
Step 1:

Carefully clean the connecting surfaces and insert the replaceable reamer head into the mandrel.



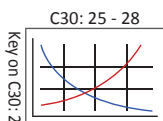
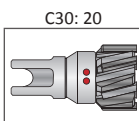
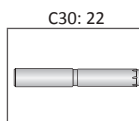
Step 2:

Screw the head in by hand clockwise until it makes contact the mandrel.



Step 3:

Tighten the screw according to the predetermined value in the table.



[illegible]



Recommended Drilling Data | Metric (mm)

9000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	10 - 20	60 - 80	90 - 300
		180 - 250	7 - 15	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	10 - 20	60 - 80	90 - 300
		180 - 275	7 - 15	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	10 - 20	60 - 80	90 - 300
		180 - 325	7 - 15	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 60	50 - 60
		180 - 375	4 - 8	60 - 120	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	4 - 8	60 - 120	—
	Structural Steel A36, A285, A516, etc.	125 - 180	10 - 20	60 - 80	90 - 300
M		180 - 350	7 - 15	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	10 - 20	60 - 80	90 - 300
		200 - 250	7 - 15	40 - 70	80 - 200
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	6 - 10	40 - 60	50 - 60
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	6 - 10	40 - 60	50 - 60
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	20 - 40	120 - 200	—
		> 200	15 - 30	120 - 200	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	10 - 15	—	90 - 140
	Copper and Alloys, and Brass	< 500	60 - 200	100 - 200	-
	Bronze, and Bronze Phosphorous	< 180	20 - 40	80 - 160	100 - 300
S	Aluminum and Alloys	< 150	20 - 100	—	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	6 - 10	15 - 30	—
	Titanium Alloy	140 - 310	6 - 10	15 - 30	—

Formulas

1. $\text{RPM} = (318.47 \cdot \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3. $\text{m/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)	

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Metric (mm)

9000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter

11.80 mm - 21.60 mm		21.61 mm - 39.60 mm		39.61 mm - 40.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.60	0.50 - 1.00	0.30 - 0.80	0.60 - 1.20	0.60 - 1.00	0.70 - 1.50
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.60	0.50 - 1.00	0.30 - 0.70	0.60 - 1.20	0.40 - 0.80	0.80 - 1.60
0.20 - 0.40	—	0.30 - 0.60	—	0.40 - 0.80	—
0.30 - 0.60	0.40 - 1.00	0.30 - 0.60	0.50 - 1.20	0.30 - 0.60	0.60 - 1.50
0.30 - 0.60	—	0.40 - 1.00	—	0.40 - 1.00	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—
0.20 - 0.40	—	0.30 - 0.50	—	0.40 - 0.60	—



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Recommended Drilling Data | Imperial (in)

9000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	33 - 66	197 - 262	295 - 984
		180 - 250	23 - 49	131 - 230	262 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	33 - 66	197 - 262	295 - 984
		180 - 275	23 - 49	131 - 230	262 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	33 - 66	197 - 262	295 - 984
		180 - 325	23 - 49	131 - 230	262 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 33	131 - 197	164 - 197
		180 - 375	13 - 26	197 - 394	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	13 - 26	197 - 394	—
	Structural Steel A36, A285, A516, etc.	125 - 180	33 - 66	197 - 262	295 - 984
M		180 - 350	23 - 49	131 - 230	262 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	33 - 66	197 - 262	295 - 984
		200 - 250	23 - 49	131 - 230	262 - 656
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	20 - 33	131 - 197	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	20 - 33	131 - 197	164 - 197
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	66 - 131	394 - 656	—
		> 200	49 - 98	394 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	33 - 49	—	295 - 459
	Copper and Alloys, and Brass	< 500	197 - 656	328 - 656	—
	Bronze, and Bronze Phosphorous	< 180	66 - 131	262 - 525	328 - 984
N	Aluminum and Alloys	< 150	66 - 328	—	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	20 - 33	49 - 98	—
	Titanium Alloy	140 - 310	20 - 33	49 - 98	—

Formulas

1.	RPM	= (3.82 • SFM) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)

2.	IPM	= RPM • IPR
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)

3.	SFM	= RPM • 0.262 • DIA
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

9000 SERIES



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Stock Allowance and Coolant | Metric (mm)

9000 SERIES

ISO Material		Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter*		
				11.80 mm - 21.60 mm	21.61 mm - 39.60 mm	39.61 mm - 40.60 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
Structural Steel A36, A285, A516, etc.	125 - 180					
	180 - 350					
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
	200 - 250					
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	Copper and Alloys, and Brass	< 500	Water Soluble	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.



Stock Allowance and Coolant | Imperial (in)

9000 SERIES						
ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter*		
				0.4646" - 0.8504"	0.8505" - 1.5590"	1.5591" - 1.5984"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180 180 - 250	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180 180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180 180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180 180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180 180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200 200 - 250				
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200 > 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Spheroidal Cast Iron (Ferritic)	260 - 320				
N	Copper and Alloys, and Brass	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016
	Titanium Alloy	140 - 310				



*Stock value is on diameter.



5000 Series Replaceable Head Reamer

Overview

5000 SERIES

9.600 mm - 32.600 mm (0.3780" - 1.2835")

- ▶ Features expandable diameter heads.
- ▶ Heads arrive set to finish diameter and specified tolerance.
- ▶ Twist-lock heads for precision locating of the head to the mandrel.
- ▶ Best TIR repeatability from head to head providing consistent tool wear and maximized tool life.
- ▶ Available with brazed carbide or cermet cutting edges.



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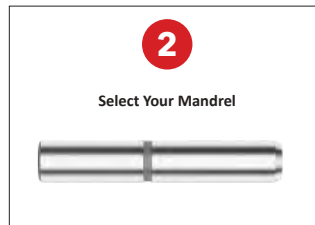
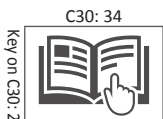
Lead Time in Workdays

5000 Series	2 - 9 pcs	10 - 49 pcs	50 - 99 pcs	100+ pcs
Coated	20	25	30	35
Uncoated	15	20	25	30

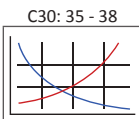
Building Your Complete Tool

You will need both pieces to complete your replaceable head reamer assembly. The complete mandrel item numbers are listed on their respective pages. However, there is a guide on the pages where the heads are located. You must follow the guide to build the item number for the reamer head that you need.

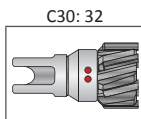
The 5000 series reamers use a twist lock on reamer head, so the screw is included with the head assembly.



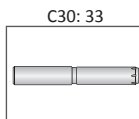
C30: 34



C30: 35 - 38



C30: 32



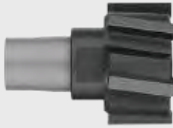
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Reamer Heads

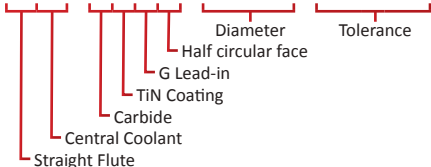
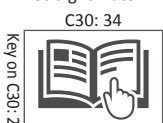
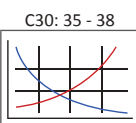
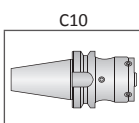
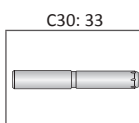
Expandable

Build Your Part No.

1 Series	5400 Series <i>Radial Coolant</i>	5401 Series <i>Central Coolant</i>	5600 Series <i>Central Coolant</i>	5700 Series <i>Radial Coolant</i>																																																																																																																
2 Flute Style Your flute style is based on your series selection (above).	Straight Flute 	Helical Flute (Right-Hand) 	Helical Flute (Left-Hand) 																																																																																																																	
3 Carbide Grade and Coating Codes These are the combinations of grades and coatings you can choose from.	 <table border="1"> <thead> <tr> <th></th><th>Uncoated</th><th>TiN</th><th>TiCN</th><th>TiAlN</th><th>Alcrona</th><th>Hardcut</th><th>R Coating</th><th>T Coating</th></tr> </thead> <tbody> <tr> <td>Carbide</td><td>KL</td><td>KN</td><td>KC</td><td>KA</td><td>KK</td><td>KH</td><td>KR</td><td>KT</td></tr> <tr> <td>Cermet</td><td>SV</td><td>SN</td><td>SC</td><td>SA</td><td>SK</td><td>SH</td><td>SR</td><td>ST</td></tr> </tbody> </table>					Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating	Carbide	KL	KN	KC	KA	KK	KH	KR	KT	Cermet	SV	SN	SC	SA	SK	SH	SR	ST																																																																																					
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4 Lead-in Recommendations	<table border="1"> <thead> <tr> <th></th><th>T</th><th>F</th><th>N</th><th>G</th><th>L</th><th>A</th><th>V</th><th>K</th></tr> </thead> <tbody> <tr> <td>P</td><td></td><td></td><td>●</td><td>●</td><td>○</td><td>○</td><td>○</td><td>○</td></tr> <tr> <td>M</td><td></td><td></td><td>○</td><td>○</td><td></td><td></td><td></td><td>○</td></tr> <tr> <td>K</td><td></td><td></td><td></td><td>○</td><td></td><td></td><td>●</td><td>○</td></tr> <tr> <td>N</td><td></td><td></td><td></td><td>●</td><td></td><td></td><td>○</td><td></td></tr> <tr> <td>S</td><td>●</td><td></td><td>○</td><td></td><td></td><td></td><td></td><td></td></tr> <tr> <td>H</td><td></td><td>○</td><td>●</td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th><th>E</th><th>M</th><th>K</th></tr> </thead> <tbody> <tr> <td>P</td><td>●</td><td></td><td>○</td></tr> <tr> <td>M</td><td>●</td><td></td><td>○</td></tr> <tr> <td>K</td><td>○</td><td>●</td><td>○</td></tr> <tr> <td>N</td><td>●</td><td>○</td><td></td></tr> <tr> <td>S</td><td>●</td><td>○</td><td></td></tr> <tr> <td>H</td><td>○</td><td>●</td><td></td></tr> </tbody> </table> <table border="1"> <thead> <tr> <th></th><th>E</th><th>M</th></tr> </thead> <tbody> <tr> <td>P</td><td>●</td><td></td></tr> <tr> <td>M</td><td>●</td><td></td></tr> <tr> <td>K</td><td>○</td><td>●</td></tr> <tr> <td>N</td><td>●</td><td>○</td></tr> <tr> <td>S</td><td>●</td><td>○</td></tr> <tr> <td>H</td><td>○</td><td>●</td></tr> </tbody> </table>					T	F	N	G	L	A	V	K	P			●	●	○	○	○	○	M			○	○				○	K				○			●	○	N				●			○		S	●		○						H		○	●							E	M	K	P	●		○	M	●		○	K	○	●	○	N	●	○		S	●	○		H	○	●			E	M	P	●		M	●		K	○	●	N	●	○	S	●	○	H	○	●
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● Best ○ Better ○ Good

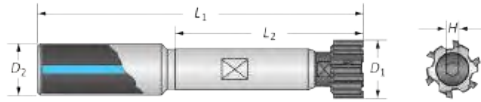
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Mandrels

Cylindrical



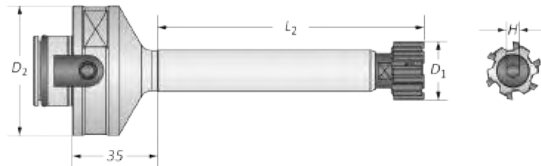
Short

D ₁ Range*		Mandrel			H	No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)	(mm)		Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	50.00	95.00	12.00	3	6	5000-MC-001	5000-CH-007
11.610 - 14.609	0.4571 - 0.5751	50.00	95.00	12.00	3.5	6	5000-MC-002	5000-CH-008
14.610 - 17.609	0.5752 - 0.6932	65.00	113.00	16.00	4	6	5000-MC-003	5000-CH-010
17.610 - 21.609	0.6933 - 0.8507	75.00	125.00	20.00	5	6	5000-MC-004	5000-CH-012
21.610 - 26.609	0.8508 - 1.0475	85.00	135.00	20.00	6	6	5000-MC-005	5000-CH-015
26.610 - 32.600	1.0476 - 1.2835	105.00	161.00	25.00	8	6	5000-MC-006	5000-CH-019

Long

D ₁ Range*		Mandrel			H	No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L ₂ (mm)	L ₁ (mm)	D ₂ (mm)	(mm)		Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	95.00	140.00	12.00	3	6	5000-ML-001	5000-CH-007
11.610 - 14.609	0.4571 - 0.5751	95.00	140.00	12.00	3.5	6	5000-ML-002	5000-CH-008
14.610 - 17.609	0.5752 - 0.6932	105.00	153.00	16.00	4	6	5000-ML-003	5000-CH-010
17.610 - 21.609	0.6933 - 0.8507	125.00	175.00	20.00	5	6	5000-ML-004	5000-CH-012
21.610 - 26.609	0.8508 - 1.0475	145.00	195.00	20.00	6	6	5000-ML-005	5000-CH-015
26.610 - 32.600	1.0476 - 1.2835	165.00	221.00	25.00	8	6	5000-ML-006	5000-CH-019

Modular



Standard

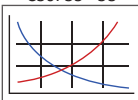
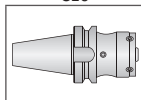
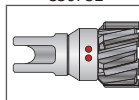
D ₁ Range*		Mandrel		H	No. of Teeth	Part No.	
Metric (mm)	Imperial (in)	L ₂ (mm)	D ₂ (mm)	(mm)		Mandrel	Wrench
9.600 - 11.609	0.3780 - 0.4570	65.00	50.00	3	6	5000-MM-001	5000-CH-007
11.610 - 14.609	0.4571 - 0.5751	65.00	50.00	3.5	6	5000-MM-002	5000-CH-008
14.610 - 17.609	0.5752 - 0.6932	80.00	50.00	4	6	5000-MM-003	5000-CH-010
17.610 - 21.609	0.6933 - 0.8507	100.00	50.00	5	6	5000-MM-004	5000-CH-012
21.610 - 26.609	0.8508 - 1.0475	110.00	50.00	6	6	5000-MM-005	5000-CH-015
26.610 - 32.600	1.0476 - 1.2835	120.00	50.00	8	6	5000-MM-006	5000-CH-019

C30: 34

C30: 35 - 38

C10

C30: 32



Setup Information

Expandable Head Style



Tolerance: Expandable reamers are manufactured to the middle of the tolerance.

Expanding Heads Adjustment

When the size reaches its lower tolerance, the head can be adjusted to compensate for wear to the cutting edges. This operation can be repeated several times until the surface finish of the hole deteriorates to an unacceptable level.



Replaceable Head Reamer 5000 Series Assembly



Step 1:

Carefully clean the connecting surfaces and insert the replaceable reamer head into the mandrel. Screw it in by hand clockwise.



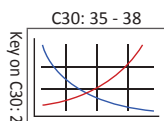
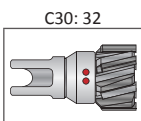
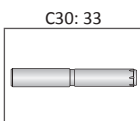
Step 2:

Tighten the replaceable head down with a wrench until the flat surface of the head is in complete contact with the mandrel.



Step 3:

Compensate for wear by adjusting the front expansion screw while using a wrench to keep the head still.





Recommended Drilling Data | Metric (mm)

5000 SERIES

ISO	Material	Hardness (BHN)	Speed (m/min)			
			Uncoated Carbide	Coated Carbide	Coated Cermets	Uncoated Cermets
 C30	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 250	20 - 40	80 - 100	120 - 200	120 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 275	20 - 40	80 - 100	120 - 200	120 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	15 - 20	60 - 80	120 - 200	120 - 200
		180 - 325	20 - 40	80 - 100	120 - 200	120 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	10 - 15	60 - 80	—	100 - 150
		180 - 375	8 - 10	60 - 80	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	8 - 10	60 - 80	—	—
	Structural Steel A36, A285, A516, etc.	125 - 180	15 - 20	60 - 80	120 - 200	120 - 200
M		180 - 350	20 - 40	80 - 100	120 - 200	120 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	15 - 20	60 - 80	120 - 200	120 - 200
		200 - 250	20 - 40	80 - 100	120 - 200	120 - 200
K	Stainless Steel 400 Series 416, 420, etc.	135 - 350	8 - 10	—	—	50 - 60
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	8 - 10	30 - 40	—	—
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	20 - 30	150 - 200	—	—
		> 200	15 - 20	—	100 - 200	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	15 - 20	—	100 - 120	—
N	Copper and Alloys, and Brass	< 500	80 - 100	100 - 200	—	—
	Bronze, and Bronze Phosphorous	< 180	40 - 80	80 - 160	—	150 - 200
	Aluminum and Alloys	< 150	100 - 300	100 - 300	100 - 300	100 - 300
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	5 - 7	20 - 30	—	—
	Titanium Alloy	140 - 310	10 - 15	—	—	—

Formulas

1.	$\text{RPM} = (318.47 \cdot \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2.	$\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3.	$\text{m/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)		

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Metric (mm)

5000 SERIES

Recommended Feed (mm/rev) by Reamer Diameter

9.61 mm - 17.60 mm		17.61 mm - 26.60 mm		26.61 mm - 32.60 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.50 - 0.90	0.60 - 1.20
0.30 - 0.60	0.50 - 1.00	0.30 - 0.60	0.60 - 1.20	0.40 - 0.80	0.60 - 1.20
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00
0.25 - 0.50	0.30 - 0.60	0.30 - 0.60	0.40 - 0.80	0.40 - 0.70	0.50 - 1.00



C30



Recommended Drilling Data | Imperial (in)

5000 SERIES

ISO	Material	Hardness (BHN)	Speed (SFM)			
			Uncoated Carbide	Coated Carbide	Coated Cermets	Uncoated Cermets
 C30	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 250	66 - 131	262 - 328	394 - 656	394 - 656
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 275	66 - 131	262 - 328	394 - 656	394 - 656
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	49 - 66	197 - 262	394 - 656	394 - 656
		180 - 325	66 - 131	262 - 328	394 - 656	394 - 656
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	33 - 49	197 - 262	—	328 - 492
		180 - 375	26 - 33	197 - 262	—	—
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	26 - 33	197 - 262	—	—
	Structural Steel A36, A285, A516, etc.	125 - 180	49 - 66	197 - 262	394 - 656	394 - 656
M		180 - 350	66 - 131	262 - 328	394 - 656	394 - 656
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	49 - 66	197 - 262	394 - 656	394 - 656
		200 - 250	66 - 131	262 - 328	394 - 656	394 - 656
K	Stainless Steel 400 Series 416, 420, etc.	135 - 350	26 - 33	—	—	164 - 197
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	26 - 33	98 - 131	—	—
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	66 - 98	492 - 656	—	—
		> 200	49 - 66	—	328 - 656	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	49 - 66	—	328 - 394	—
N	Copper and Alloys, and Brass	< 500	262 - 328	328 - 656	—	—
	Bronze, and Bronze Phosphorous	< 180	131 - 262	262 - 525	—	492 - 656
	Aluminum and Alloys	< 150	328 - 984	328 - 984	328 - 984	328 - 984
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	16 - 23	66 - 98	—	—
	Titanium Alloy	140 - 310	33 - 49	—	—	—

Formulas

1.	RPM = $(3.82 \bullet \text{SFM}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) SFM = speed (ft/min) DIA = diameter of drill (inch)	2.	IPM = $\text{RPM} \bullet \text{IPR}$ where: IPM = inches per minute (in/min) RPM = revolutions per minute (rev/min) IPR = feed rate (in/rev)
3.	SFM = $\text{RPM} \bullet 0.262 \bullet \text{DIA}$ where: SFM = speed (ft/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (inch)		

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Imperial (in)

5000 SERIES

Recommended Feed (IPR) by Reamer Diameter					
0.3780" - 0.6932"		0.6933" - 1.0475"		1.0476" - 1.2835"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.020 - 0.035	0.024 - 0.047
0.012 - 0.024	0.020 - 0.039	0.012 - 0.024	0.024 - 0.047	0.016 - 0.031	0.024 - 0.047
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039
0.010 - 0.020	0.012 - 0.024	0.012 - 0.024	0.016 - 0.031	0.016 - 0.028	0.020 - 0.039


C30



Stock Allowance and Coolant | Metric (mm)

5000 SERIES

ISO Material		Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter*		
				9.61 mm - 17.60 mm	17.61 mm - 26.60 mm	26.61 mm - 32.60 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180 180 - 250	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180 180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180 180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180 180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180 180 - 350				
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200 200 - 250				
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200 > 200	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Spheroidal Cast Iron (Ferritic)	260 - 320				
	N	Copper and Alloys, and Brass	< 500			
Bronze, and Bronze Phosphorous		< 180	Water Soluble / Cutting Oil			
Aluminum and Alloys		< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.15 - 0.25	0.20 - 0.40	0.30 - 0.40
	Titanium Alloy	140 - 310				

*Stock value is on diameter.



Stock Allowance and Coolant | Imperial (in)

5000 SERIES										
ISO Material		Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter*						
				0.3780" - 0.6932"	0.6933" - 1.0475"	1.5591" - 1.5984"				
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180 180 - 250	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180 180 - 275								
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180 180 - 325								
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180 180 - 375								
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450								
	Structural Steel A36, A285, A516, etc.	125 - 180 180 - 350								
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200 200 - 250								
	M	Stainless Steel 400 Series 416, 420, etc.					135 - 350	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016
Stainless Steel 300 Series 304, 316, 17-4PH, etc.		135 - 275								
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200 > 200	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Spheroidal Cast Iron (Ferritic)	260 - 320								
	N	Copper and Alloys, and Brass	< 500	Water Soluble	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016			
Bronze, and Bronze Phosphorous		< 180	Water Soluble / Cutting Oil							
Aluminum and Alloys		< 150								
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.006 - 0.010	0.008 - 0.016	0.012 - 0.016				
	Titanium Alloy	140 - 310								



*Stock value is on diameter.

SECTION

C40-CRR

Cutting Ring Reamers

CUTTING RING REAMERS

32.600 mm - 200.600 mm
(1.2835" - 7.8976")



Hole roundness without compromise

The cutting ring style reamers are ideal for large diameter holes because they eliminate the need to replace a large solid reamer, reducing waste. The unique design allows for diameter expansion to accommodate for cutting edge wear. The cutting ring style reamer can also be repaired to new condition, which extends the life of the investment. ALVAN reamers hold tight tolerances while improving the surface finish of the hole.

- ▶ Multiple cutting edges, which are set asymmetrically to guarantee almost perfect hole geometry.
- ▶ Expandable to maintain size tolerance, which is particularly useful when repairing the cutting edges.
- ▶ Asymmetrically positioned cutting edges to assure the best roundness of the hole.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

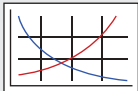
S.C.A.M.I.®

Reference Icons

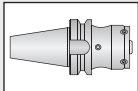
The following icons will appear throughout the catalog to help you navigate between products.



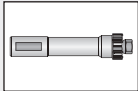
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Modular Connection Shanks
Refers to Cerit modular shanks that can connect with reamers.



Cutting Ring Mandrels
Refers to the reamer mandrel options that connect with the cutting ring.



Cutting Rings
Refers to the available cutting ring options.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Introduction Information

Product Overview

Cutting Ring Reamer Features

- Diameter range: 17.600 mm - 200.600 mm (0.6929" - 7.8976").
- Available with straight or left-hand helical flutes.
- Expands to accommodate for wear.
- Mandrels are available for both through holes or blind holes.
- Workday lead time 20 - 25 days.
- Available for recondition.



Straight Flute



Left-Hand Helical Flute



C40



Uncoated



TiN Coated



TiAlN Coated



TiCN Coated



Alcrona Coated



Hardcut Coated



R Coated



T Coated



Tang

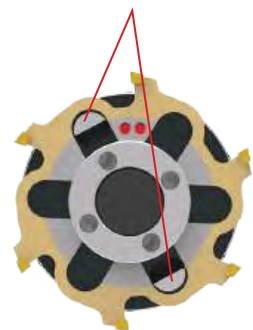
Locking Key

Ground Surface

Cutting Ring

Conical Ring

Drive Pins



Introduction Information

Product Nomenclature

Cutting Rings

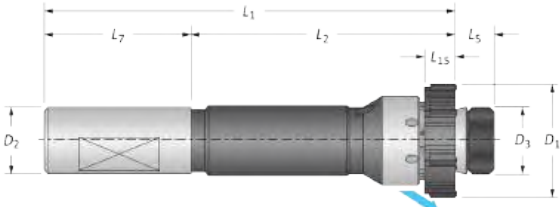
Diameter Unit	2	ANC-ST			F	−	20000	+	003	−	003
		Substrate and Coating			Lead-in		Diameter		Tolerance*		
Blank = Metric (mm) I = Imperial (in)			Carbide	Cermet	E		XXXXX = X.XXXXX" XX.XXX mm		4 decimal places = inch tolerance		
		Uncoated	000-KT	AVC-ST	M				3 decimal places = mm tolerance		
		TiN	TIN-KT	ANC-ST	A						
		TiCN	TIC-KT	ACC-ST	F						
		TiAlN	TIA-KT	AAC-ST	G						
		Alcrona	TLK-KT	ALK-ST	L						
		Hardcut	TLH-KT	ALH-ST	N						
		R coated	TLR-KT	ALR-ST	T						
		T coated	TLT-KT	ALT-ST	V						
					K						

*The total tolerance capable is 0.005 mm (0.0002").
NOTE: If diameter and tolerance are specified in inch units, put an "I" at the beginning of the item number.



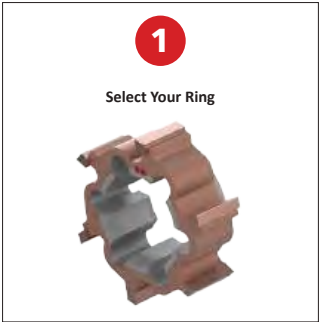
Reference Key

Symbol	Attribute
D ₁	Reamer diameter
D ₂	Shank diameter
D ₃	Maximum conical ring diameter
L ₁	Overall length
L ₂	Length of cut
L ₅	Maximum overhang
L ₇	Shank length
L ₁₅	Flute length



Building Your Complete Tool

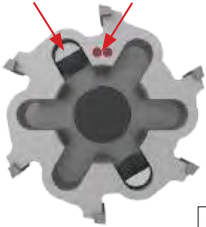
You will need both pieces to complete your ring style reamer assembly. There is a guide on the page where the rings are located. You must follow the guide to build the item number for the reamer ring that you need.
However, the complete mandrel item numbers are listed on their respective pages. You do not need to build the mandrel numbers.





Setup Information

Drive Pin
(11:00 position) Dimples
(12:00 position)

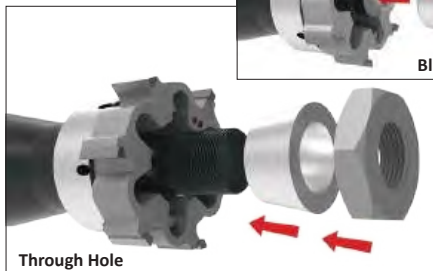


Step 1:

With the drive pins assembled, insert the cutting ring onto the mandrel. Make sure the dimples are at the 12:00 position with the drive pin at the 11:00 position.



Blind Hole



Through Hole



Adjustment Procedure

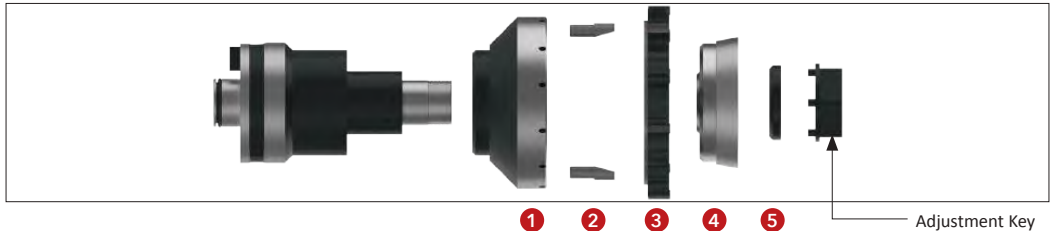
1. Turn the conical ring slowly using an adjustment key (left-hand thread). Adjustment keys are supplied with reamers from diameter 17.600 mm to 40.599 mm.
2. Check the diameter setting of the cutting ring with a micrometer.
3. When the required diameter is achieved, unscrew the conical ring until there is a click and the drive pins are in traction in the opposite direction to the cutting action of the reamer. The reamer is ready for use.

Step 2:

Insert the conical ring. Tighten the lock nut to set the desired reamer size (left-hand thread). Then loosen the lock nut slightly until it "clicks" against the drive wall.

NOTE: We recommend lubricating the thread and the conical surface of contact between the cutting ring and the conical ring with antifriction MOLYKOTE® grease.

For Diameter Range: 100.600 mm - 200.600 mm



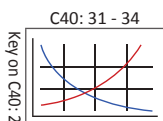
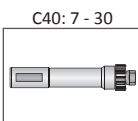
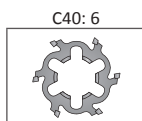
Assembly

1. With the drive pins (2) assembled, mount the flange (1) onto the mandrel. Assemble the cutting ring (3) so the slot on the left side of the dimple is mounted onto the drive pins (2). Insert the conical ring (4).
2. Screw the ring nut (5) onto the mandrel and tighten manually so the conical ring (4) makes contact with the cutting ring (3). The thread is left-handed.

NOTE: We recommend lubricating the thread and the conical surface of contact between the cutting ring and the conical ring with antifriction MOLYKOTE® grease.

Adjustment Procedure

1. Turn the ring nut (5) slowly using a pin spanner.
2. Check the diameter setting of the cutting ring with a micrometer. Make sure the drive pins (2) are in traction and in the opposite direction of the cutting action of the reamer.
3. When the required diameter is achieved, the tool is ready to use.



M = Metric (mm)
I = Imperial (in)

Cutting Rings

17.600 mm - 200.600 mm (0.6929" - 7.8976")



Metric (mm)

	D_1 Range	L_{15}		Number of Teeth
	Metric (mm)	Straight Flute	Helical Flute	
m	32.600 - 45.599	16.00	16.00	6
	45.600 - 79.599	18.50	18.50	6
	79.600 - 100.599	18.50	18.50	8
	100.600 - 110.599	18.50	18.50	10
	110.600 - 200.600	18.50	18.50	12

Imperial (in)

	D_1 Range	L_{15}		Number of Teeth
	Imperial (inch)	Straight Flute	Helical Flute	
i	1.2835 - 1.7952	0.630	0.630	6
	1.7953 - 3.1338	0.728	0.728	6
	3.1339 - 3.9606	0.728	0.728	8
	3.9607 - 4.3543	0.728	0.728	10
	4.3544 - 7.8976	0.728	0.728	12

2ANC-ST F - 055298 + 003 - 003

Diagram showing the breakdown of the code: 2ANC-ST (Cermet with TIN Coating), F (F Lead-in), 055298 (Diameter), and + 003 - 003 (Tolerance).

Coating and Substrate Codes

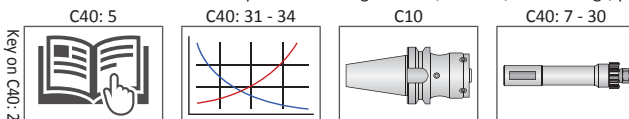
Grade	Uncoated	TiN	TiCN	TiAlN	Alcrona	Hardcut	R Coating	T Coating
Carbide	2000-KT	2TIN-KT	2TIC-KT	2TIA-KT	2TLK-KT	2TLH-KT	2TLR-KT	2TLT-KT
Cermet	2AVC-ST	2ANC-ST	2ACC-ST	2AAC-ST	2ALK-ST	2ALH-ST	2ALR-ST	2ALT-ST

Reamer Lead-In

	Straight Flute								Left-hand helical	
	T	F	N	G	L	A	V	K	E	M
P			●	●		○	○	○	●	
M			○	●				○	●	
K				○			●	○	○	●
N				●			○		●	○
S	●			○					●	○
H			○	●					○	●

● Best ○ Better ○ Good

NOTE: For more detailed descriptions of cutting material, lead-ins, and coatings, please see pg. xv - xvi.

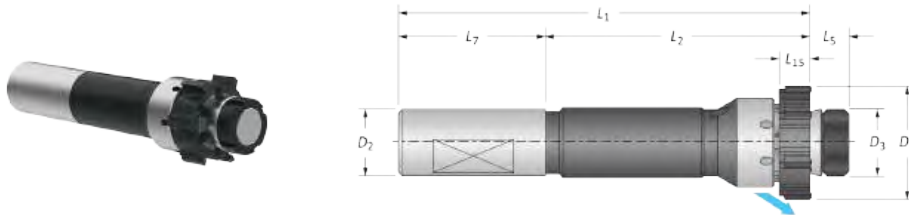


m = Metric (mm)
i = Imperial (in)



4550 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4550	Shank Type	Cylindrical	Application	Through Holes	Coolant	Radial
--------	------	------------	-------------	-------------	---------------	---------	--------

Metric (mm)

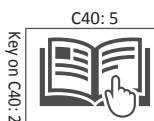
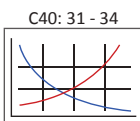
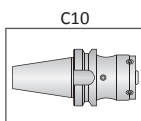
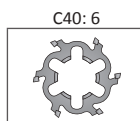
D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
17.600 - 21.599	12.0	11.0	11.0	81	142.0	50	20	6	4550-MC-010*	4550A-MC-010*
21.600 - 25.599	12.0	11.0	12.0	81	142.0	50	20	6	4550-MC-020*	4550A-MC-020*
25.600 - 32.599	15.6	11.0	14.0	102	163.0	50	20	6	4550-MC-030*	4550A-MC-030*
32.600 - 40.599	22.0	14.0	16.0	102	172.0	56	25	6	4550-MC-040	4550A-MC-040
40.600 - 45.599	25.4	15.0	16.0	102	173.0	56	25	6	4550-MC-050	4550A-MC-050
45.600 - 49.599	30.0	20.5	18.5	105	185.5	60	32	6	4550-MC-060	4550A-MC-060
49.600 - 60.599	30.0	20.5	18.5	105	185.5	60	32	6	4550-MC-070	4550A-MC-070
60.600 - 70.599	40.0	24.5	18.5	105	189.5	60	32	6	4550-MC-080	4550A-MC-080
70.600 - 79.599	40.0	24.5	18.5	105	189.5	60	32	6	4550-MC-090	4550A-MC-090
79.600 - 90.599	56.0	28.5	18.5	105	203.5	70	40	8	4550-MC-100	4550A-MC-100
90.600 - 100.599	56.0	28.5	18.5	105	203.5	70	40	8	4550-MC-110	4550A-MC-110

Imperial (in)

D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
0.6929 - 0.8504	0.472	0.433	0.433	3.189	5.591	1.969	0.750	6	94550-MC-010*	94550A-MC-010*
0.8505 - 1.0078	0.472	0.433	0.472	3.189	5.591	1.969	0.750	6	94550-MC-020*	94550A-MC-020*
1.0079 - 1.2834	0.614	0.433	0.551	4.016	6.417	1.969	0.750	6	94550-MC-030*	94550A-MC-030*
1.2835 - 1.5984	0.866	0.551	0.630	4.016	6.772	2.205	1.000	6	94550-MC-040	94550A-MC-040
1.5985 - 1.7952	1.000	0.591	0.630	4.016	6.811	2.205	1.000	6	94550-MC-050	94550A-MC-050
1.7953 - 1.9527	1.181	0.807	0.728	4.134	7.303	2.362	1.250	6	94550-MC-060	94550A-MC-060
1.9528 - 2.3858	1.181	0.807	0.728	4.134	7.303	2.362	1.250	6	94550-MC-070	94550A-MC-070
2.3859 - 2.7795	1.575	0.965	0.728	4.134	7.461	2.362	1.250	6	94550-MC-080	94550A-MC-080
2.7796 - 3.1338	1.575	0.965	0.728	4.134	7.461	2.362	1.250	6	94550-MC-090	94550A-MC-090
3.1339 - 3.5669	2.205	1.122	0.728	4.134	8.012	2.756	1.500	8	94550-MC-100	94550A-MC-100
3.5670 - 3.9606	2.205	1.122	0.728	4.134	8.012	2.756	1.500	8	94550-MC-110	94550A-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.



m = Metric (mm)
i = Imperial (in)



4550 Series Mandrels

Spare Parts



Metric (mm)

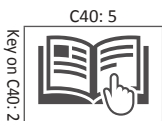
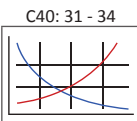
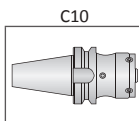
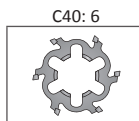
Part No. (Complete Mandrel [^])		Spare Parts				
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
4550-MC-010	4550A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
4550-MC-020	4550A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
4550-MC-030	4550A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
4550-MC-040	4550A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
4550-MC-050	4550A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
4550-MC-060	4550A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
4550-MC-070	4550A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
4550-MC-080	4550A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
4550-MC-090	4550A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
4550-MC-100	4550A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
4550-MC-110	4550A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

Imperial (in)

Part No. (Complete Mandrel [^])		Spare Parts				
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
94550-MC-010	94550A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
94550-MC-020	94550A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
94550-MC-030	94550A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
94550-MC-040	94550A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
94550-MC-050	94550A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
94550-MC-060	94550A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
94550-MC-070	94550A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
94550-MC-080	94550A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
94550-MC-090	94550A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
94550-MC-100	94550A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
94550-MC-110	94550A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

[^]Complete mandrel does not include cutting ring.

♦ Spanner wrench.



Key on C40: 2

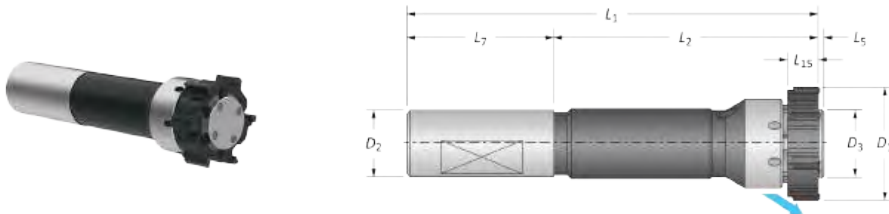
m = Metric (mm)

i = Imperial (in)



4555 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4555	Shank Type	Cylindrical	Application	Blind Holes	Coolant	Radial
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Metric (mm)

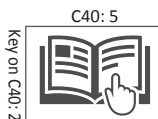
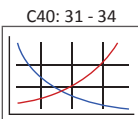
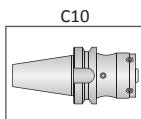
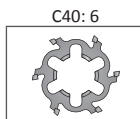
D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
17.600 - 21.599	11.2	1.0	11.0	81	132.0	50	20	6	4555-MC-010*	4555A-MC-010*
21.600 - 25.599	11.2	1.0	12.0	81	132.0	50	20	6	4555-MC-020*	4555A-MC-020*
25.600 - 29.599	15.1	1.0	14.0	102	153.0	50	20	6	4555-MC-030*	4555A-MC-030*
29.600 - 32.599	15.1	1.0	14.0	102	153.0	50	20	6	4555-MC-035*	4555A-MC-035*
32.600 - 36.599	20.3	1.0	16.0	102	159.0	56	25	6	4555-MC-040	4555A-MC-040
36.600 - 40.599	20.3	1.0	16.0	102	159.0	56	25	6	4555-MC-045	4555A-MC-045
40.600 - 45.599	24.1	1.0	16.0	102	159.0	56	25	6	4555-MC-050	4555A-MC-050
45.600 - 49.599	27.9	1.5	18.5	105	166.5	60	32	6	4555-MC-060	4555A-MC-060
49.600 - 55.599	27.9	1.5	18.5	105	166.5	60	32	6	4555-MC-070	4555A-MC-070
55.600 - 60.599	27.9	1.5	18.5	105	166.5	60	32	6	4555-MC-075	4555A-MC-075
60.600 - 65.599	37.1	1.5	18.5	105	166.5	60	32	6	4555-MC-080	4555A-MC-080
65.600 - 70.599	37.1	1.5	18.5	105	166.5	60	32	6	4555-MC-085	4555A-MC-085
70.600 - 79.599	37.1	1.5	18.5	105	166.5	60	32	6	4555-MC-090	4555A-MC-090
79.600 - 90.599	53.1	1.5	18.5	105	176.5	70	40	8	4555-MC-100	4555A-MC-100
90.600 - 100.599	53.1	1.5	18.5	105	176.5	70	40	8	4555-MC-110	4555A-MC-110

Imperial (in)

D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
0.6929 - 0.8504	0.441	0.039	0.433	3.189	5.197	1.969	0.750	6	94555-MC-010*	94555A-MC-010*
0.8505 - 1.0078	0.441	0.039	0.472	3.189	5.197	1.969	0.750	6	94555-MC-020*	94555A-MC-020*
1.0079 - 1.1653	0.594	0.039	0.551	4.016	6.024	1.969	0.750	6	94555-MC-030*	94555A-MC-030*
1.1654 - 1.2834	0.594	0.039	0.551	4.016	6.024	1.969	0.750	6	94555-MC-035*	94555A-MC-035*
1.2835 - 1.4409	0.799	0.039	0.630	4.016	6.260	2.205	1.000	6	94555-MC-040	94555A-MC-040
1.4410 - 1.5984	0.799	0.039	0.630	4.016	6.260	2.205	1.000	6	94555-MC-045	94555A-MC-045
1.5985 - 1.7952	0.949	0.039	0.630	4.016	6.260	2.205	1.000	6	94555-MC-050	94555A-MC-050
1.7953 - 1.9527	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-060	94555A-MC-060
1.9528 - 2.1889	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-070	94555A-MC-070
2.1890 - 2.3858	1.098	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-075	94555A-MC-075
2.3859 - 2.5826	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-080	94555A-MC-080
2.5827 - 2.7795	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-085	94555A-MC-085
2.7796 - 3.1338	1.461	0.059	0.728	4.134	6.555	2.362	1.250	6	94555-MC-090	94555A-MC-090
3.1339 - 3.5669	2.091	0.059	0.728	4.134	6.949	2.756	1.500	8	94555-MC-100	94555A-MC-100
3.5670 - 3.9606	2.091	0.059	0.728	4.134	6.949	2.756	1.500	8	94555-MC-110	94555A-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.





4555 Series Mandrels

Spare Parts



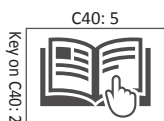
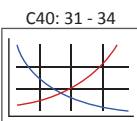
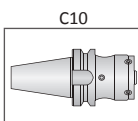
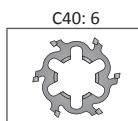
Metric (mm)

Part No. (Complete Mandrel [^])		Spare Parts						
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	3. Adjusting Key	Wrench Size (mm)
4555-MC-010	4555A-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
4555-MC-020	4555A-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
4555-MC-030	4555A-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
4555-MC-035	4555A-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
4555-MC-040	4555A-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
4555-MC-045	4555A-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
4555-MC-050	4555A-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
m 4555-MC-060	4555A-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
4555-MC-070	4555A-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
4555-MC-075	4555A-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
4555-MC-080	4555A-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
4555-MC-085	4555A-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
4555-MC-090	4555A-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
4555-MC-100	4555A-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
4555-MC-110	4555A-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

Imperial (in)

Part No. (Complete Mandrel [^])		Spare Parts						
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	3. Adjusting Key	Wrench Size (mm)
94555-MC-010	94555A-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
94555-MC-020	94555A-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
94555-MC-030	94555A-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
94555-MC-035	94555A-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
94555-MC-040	94555A-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
94555-MC-045	94555A-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
94555-MC-050	94555A-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
i 94555-MC-060	94555A-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
94555-MC-070	94555A-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
94555-MC-075	94555A-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
94555-MC-080	94555A-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
94555-MC-085	94555A-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
94555-MC-090	94555A-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
94555-MC-100	94555A-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
94555-MC-110	94555A-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

[^]Complete mandrel does not include cutting ring.

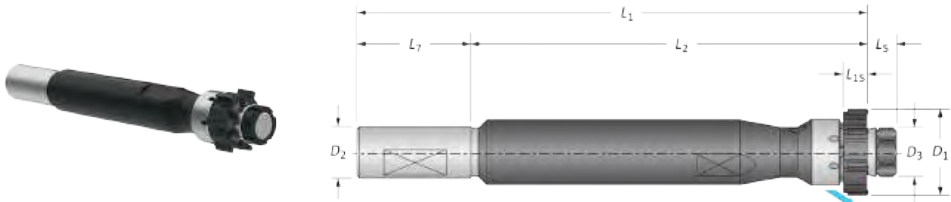


m = Metric (mm)
i = Imperial (in)



4500 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4500	Shank Type	Cylindrical	Application	Through Holes	Coolant	Radial
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Metric (mm)

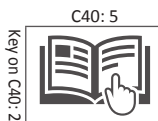
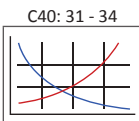
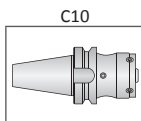
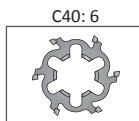
D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
17.600 - 21.599	12.0	11.0	11.0	121	182.0	50	20	6	4500-MC-010*	4500A-MC-010*
21.600 - 25.599	12.0	11.0	12.0	121	182.0	50	20	6	4500-MC-020*	4500A-MC-020*
25.600 - 32.599	15.6	11.0	14.0	153	214.0	50	20	6	4500-MC-030*	4500A-MC-030*
32.600 - 40.599	22.0	14.0	16.0	179	249.0	56	25	6	4500-MC-040	4500A-MC-040
40.600 - 45.599	25.4	15.0	16.0	201	272.0	56	25	6	4500-MC-050	4500A-MC-050
45.600 - 49.599	30.0	20.5	18.5	214	294.5	60	32	6	4500-MC-060	4500A-MC-060
49.600 - 60.599	30.0	20.5	18.5	214	294.5	60	32	6	4500-MC-070	4500A-MC-070
60.600 - 70.599	40.0	24.5	18.5	237	321.5	60	32	6	4500-MC-080	4500A-MC-080
70.600 - 79.599	40.0	24.5	18.5	237	321.5	60	32	6	4500-MC-090	4500A-MC-090
79.600 - 90.599	56.0	28.5	18.5	245	343.5	70	40	6	4500-MC-100	4500A-MC-100
90.600 - 100.599	56.0	28.5	18.5	245	343.5	70	40	8	4500-MC-110	4500A-MC-110

Imperial (in)

D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
0.6929 - 0.8504	0.472	0.433	0.433	4.764	7.165	1.969	0.750	6	94500-MC-010*	94500A-MC-010*
0.8505 - 1.0078	0.472	0.433	0.472	4.764	7.165	1.969	0.750	6	94500-MC-020*	94500A-MC-020*
1.0079 - 1.2834	0.614	0.433	0.551	6.024	8.425	1.969	0.750	6	94500-MC-030*	94500A-MC-030*
1.2835 - 1.5984	0.866	0.551	0.630	7.047	9.803	2.205	1.000	6	94500-MC-040	94500A-MC-040
1.5985 - 1.7952	0.866	0.551	0.630	7.047	9.803	2.205	1.000	6	94500-MC-050	94500A-MC-050
1.7953 - 1.9527	1.000	0.591	0.630	7.913	10.709	2.205	1.000	6	94500-MC-060	94500A-MC-060
1.9528 - 2.3858	1.181	0.807	0.728	8.425	11.594	2.362	1.250	6	94500-MC-070	94500A-MC-070
2.3859 - 2.7795	1.575	0.965	0.728	9.331	12.657	2.362	1.250	6	94500-MC-080	94500A-MC-080
2.7796 - 3.1338	1.575	0.965	0.728	9.331	12.657	2.362	1.250	6	94500-MC-090	94500A-MC-090
3.1339 - 3.5669	2.205	1.122	0.728	9.646	13.524	2.756	1.500	6	94500-MC-100	94500A-MC-100
3.5670 - 3.9606	2.205	1.122	0.728	9.646	13.524	2.756	1.500	8	94500-MC-110	94500A-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.





4500 Series Mandrels

Spare Parts



Metric (mm)

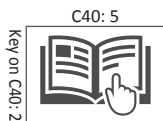
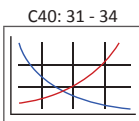
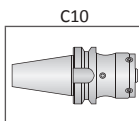
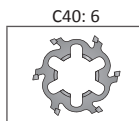
Part No. (Complete Mandrel [^])		Spare Parts				
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
4500-MC-010	4500A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
4500-MC-020	4500A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
4500-MC-030	4500A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
4500-MC-040	4500A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
4500-MC-050	4500A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
4500-MC-060	4500A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
4500-MC-070	4500A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
4500-MC-080	4500A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
4500-MC-090	4500A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
4500-MC-100	4500A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
4500-MC-110	4500A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

Imperial (in)

Part No. (Complete Mandrel [^])		Spare Parts				
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
94500-MC-010	94500A-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
94500-MC-020	94500A-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
94500-MC-030	94500A-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
94500-MC-040	94500A-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
94500-MC-050	94500A-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
94500-MC-060	94500A-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
94500-MC-070	94500A-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
94500-MC-080	94500A-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
94500-MC-090	94500A-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
94500-MC-100	94500A-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
94500-MC-110	94500A-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

[^]Complete mandrel does not include cutting ring.

♦ Spanner wrench.



Key on C40: 2

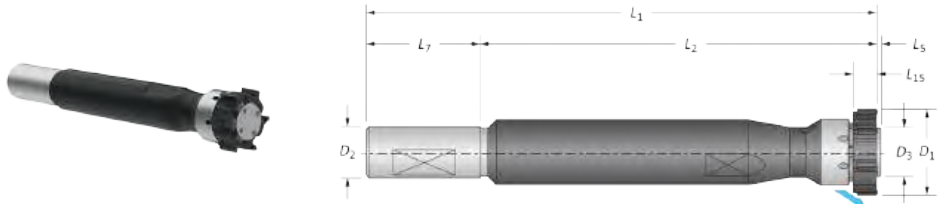
Ⓜ = Metric (mm)

Ⓢ = Imperial (in)



4505 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4505	Shank Type	Cylindrical	Application	Blind Holes	Coolant	Radial
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Metric (mm)

D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
17.600 - 21.599	11.2	1.0	11.0	121	172.0	50	20	6	4505-MC-010*	4505A-MC-010*
21.600 - 25.599	11.2	1.0	12.0	121	172.0	50	20	6	4505-MC-020*	4505A-MC-020*
25.600 - 29.599	15.1	1.0	14.0	153	204.0	50	20	6	4505-MC-030*	4505A-MC-030*
29.600 - 32.599	15.1	1.0	14.0	153	204.0	50	20	6	4505-MC-035*	4505A-MC-035*
32.600 - 36.599	20.3	1.0	16.0	179	236.0	56	25	6	4505-MC-040	4505A-MC-040
36.600 - 40.599	20.3	1.0	16.0	179	236.0	56	25	6	4505-MC-045	4505A-MC-045
40.600 - 45.599	24.1	1.0	16.0	201	258.0	56	25	6	4505-MC-050	4505A-MC-050
45.600 - 49.599	27.9	1.5	18.5	214	275.5	60	32	6	4505-MC-060	4505A-MC-060
49.600 - 55.599	27.9	1.5	18.5	214	275.5	60	32	6	4505-MC-070	4505A-MC-070
55.600 - 60.599	27.9	1.5	18.5	214	275.5	60	32	6	4505-MC-075	4505A-MC-075
60.600 - 65.599	37.1	1.5	18.5	237	298.5	60	32	6	4505-MC-080	4505A-MC-080
65.600 - 70.599	37.1	1.5	18.5	237	298.5	60	32	6	4505-MC-085	4505A-MC-085
70.600 - 79.599	37.1	1.5	18.5	237	298.5	60	32	6	4505-MC-090	4505A-MC-090
79.600 - 90.599	53.1	1.5	18.5	245	316.5	70	40	8	4505-MC-100	4505A-MC-100
90.600 - 100.599	53.1	1.5	18.5	245	316.5	70	40	8	4505-MC-110	4505A-MC-110

Imperial (in)

D ₁ Range	Mandrel					Shank		Teeth	Part No. (Complete Mandrel [^])	
	D ₃	L ₅	L ₁₅	L ₂	L ₁	L ₇	D ₂		With Flat	Without Flat
0.6929 - 0.8504	0.441	0.039	0.433	4.764	6.772	1.969	0.750	6	94505-MC-010*	94505A-MC-010*
0.8505 - 1.0078	0.441	0.039	0.472	4.764	6.772	1.969	0.750	6	94505-MC-020*	94505A-MC-020*
1.0079 - 1.1653	0.594	0.039	0.551	6.024	8.031	1.969	0.750	6	94505-MC-030*	94505A-MC-030*
1.1654 - 1.2834	0.594	0.039	0.551	6.024	8.031	1.969	0.750	6	94505-MC-035*	94505A-MC-035*
1.2835 - 1.4409	0.799	0.039	0.630	7.047	9.291	2.205	1.000	6	94505-MC-040	94505A-MC-040
1.4410 - 1.5984	0.799	0.039	0.630	7.047	9.291	2.205	1.000	6	94505-MC-045	94505A-MC-045
1.5985 - 1.7952	0.949	0.039	0.630	7.913	10.157	2.205	1.000	6	94505-MC-050	94505A-MC-050
1.7953 - 1.9527	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	94505-MC-060	94505A-MC-060
1.9528 - 2.1889	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	94505-MC-070	94505A-MC-070
2.1890 - 2.3858	1.098	0.059	0.728	8.425	10.846	2.362	1.250	6	94505-MC-075	94505A-MC-075
2.3859 - 2.5826	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	94505-MC-080	94505A-MC-080
2.5827 - 2.7795	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	94505-MC-085	94505A-MC-085
2.7796 - 3.1338	1.461	0.059	0.728	9.331	11.752	2.362	1.250	6	94505-MC-090	94505A-MC-090
3.1339 - 3.5669	2.091	0.059	0.728	9.646	12.461	2.756	1.500	8	94505-MC-100	94505A-MC-100
3.5670 - 3.9606	2.091	0.059	0.728	9.646	12.461	2.756	1.500	8	94505-MC-110	94505A-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.



4505 Series Mandrels

Spare Parts



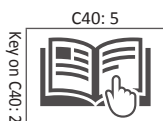
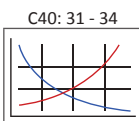
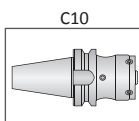
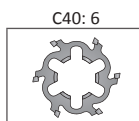
Metric (mm)

Part No. (Complete Mandrel [^])		Spare Parts					
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	3. Adjusting Key
							Wrench Size (mm)
4505-MC-010	4505A-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015
4505-MC-020	4505A-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015
4505-MC-030	4505A-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025
4505-MC-035	4505A-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025
4505-MC-040	4505A-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035
4505-MC-045	4505A-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035
4505-MC-050	4505A-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045
4505-MC-060	4505A-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
4505-MC-070	4505A-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
4505-MC-075	4505A-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
4505-MC-080	4505A-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
4505-MC-085	4505A-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
4505-MC-090	4505A-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
4505-MC-100	4505A-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085
4505-MC-110	4505A-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085

Imperial (in)

Part No. (Complete Mandrel [^])		Spare Parts					
With Flat	Without Flat	1. Drive Pins	Number of Drive Pins	2. Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	3. Adjusting Key
							Wrench Size (mm)
94505-MC-010	94505A-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015
94505-MC-020	94505A-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015
94505-MC-030	94505A-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025
94505-MC-035	94505A-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025
94505-MC-040	94505A-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035
94505-MC-045	94505A-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035
94505-MC-050	94505A-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045
94505-MC-060	94505A-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
94505-MC-070	94505A-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
94505-MC-075	94505A-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055
94505-MC-080	94505A-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
94505-MC-085	94505A-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
94505-MC-090	94505A-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065
94505-MC-100	94505A-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085
94505-MC-110	94505A-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085

[^]Complete mandrel does not include cutting ring.

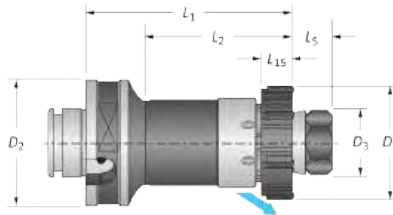


m = Metric (mm)
i = Imperial (in)



4330 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4330	Shank Type	Modular	Application	Through Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		12.0	11.0	11.0	55	75	50	6	4330-MC-010*
21.600 - 25.599	0.8505 - 1.0078		12.0	11.0	12.0	55	75	50	6	4330-MC-020*
25.600 - 32.599	1.0079 - 1.2834		15.6	11.0	14.0	60	80	50	6	4330-MC-030*
32.600 - 40.599	1.2835 - 1.5984		22.0	14.0	16.0	60	80	50	6	4330-MC-040
40.600 - 45.599	1.5985 - 1.7952		25.4	15.0	16.0	60	80	50	6	4330-MC-050
45.600 - 49.599	1.7953 - 1.9527		30.0	20.5	18.5	60	80	50	6	4330-MC-060
49.600 - 60.599	1.9528 - 2.3858		30.0	20.5	18.5	60	80	50	6	4330-MC-070
60.600 - 70.599	2.3859 - 2.7795		40.0	24.5	18.5	65	90	63	6	4330-MC-080
70.600 - 79.599	2.7796 - 3.1338		40.0	24.5	18.5	65	90	63	6	4330-MC-090
79.600 - 90.599	3.1339 - 3.5669		56.0	28.5	18.5	65	90	63	8	4330-MC-100
90.600 - 100.599	3.5670 - 3.9606		56.0	28.5	18.5	65	90	63	8	4330-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

C40

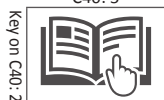
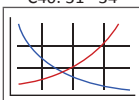
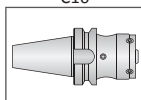
m

C40: 5

C40: 31 - 34

C10

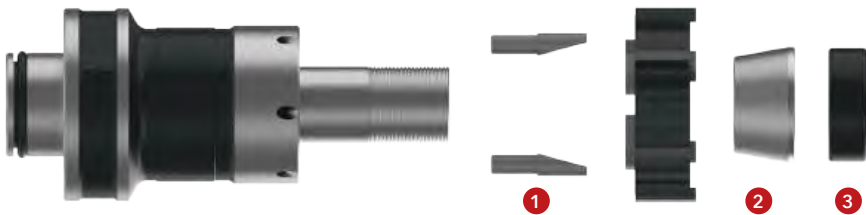
C40: 6



m = Metric (mm)
i = Imperial (in)

4330 Series Mandrels

Spare Parts

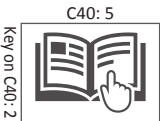
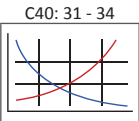
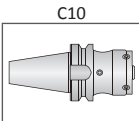
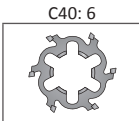


Metric (mm)

Part No. (Complete Mandrel [^])	Spare Parts				
	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
4330-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
4330-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
4330-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
4330-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
4330-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
4330-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
4330-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
4330-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
4330-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
4330-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
4330-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

[^]Complete mandrel does not include cutting ring.

♦ Spanner wrench.

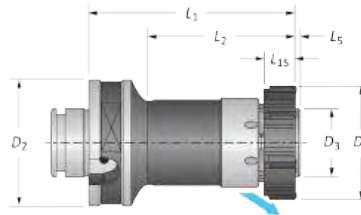


 = Metric (mm)
 = Imperial (in)



4335 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4335	Shank Type	Modular	Application	Blind Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		11.2	1.0	11.0	55	75	50	6	4335-MC-010*
21.600 - 25.599	0.8505 - 1.0078		11.2	1.0	12.0	55	75	50	6	4335-MC-020*
25.600 - 29.599	1.0079 - 1.1653		15.1	1.0	14.0	60	80	50	6	4335-MC-030*
29.600 - 32.599	1.1654 - 1.2834		15.1	1.0	14.0	60	80	50	6	4335-MC-035*
32.600 - 36.599	1.2835 - 1.4409		20.3	1.0	16.0	60	80	50	6	4335-MC-040
36.600 - 40.599	1.4410 - 1.5984		20.3	1.0	16.0	60	80	50	6	4335-MC-045
40.600 - 45.599	1.5985 - 1.7952		24.1	1.0	16.0	60	80	50	6	4335-MC-050
45.600 - 49.599	1.7953 - 1.9527		27.9	1.5	18.5	60	80	50	6	4335-MC-060
49.600 - 55.599	1.9528 - 2.1889		27.9	1.5	18.5	60	80	50	6	4335-MC-070
55.600 - 60.599	2.1890 - 2.3858		27.9	1.5	18.5	60	80	50	6	4335-MC-075
60.600 - 65.599	2.3859 - 2.5826		37.1	1.5	18.5	65	90	63	6	4335-MC-080
65.600 - 70.599	2.5827 - 2.7795		37.1	1.5	18.5	65	90	63	6	4335-MC-085
70.600 - 79.599	2.7796 - 3.1338		37.1	1.5	18.5	65	90	63	6	4335-MC-090
79.600 - 90.599	3.1339 - 3.5669		53.1	1.5	18.5	65	90	63	8	4335-MC-100
90.600 - 100.599	3.5670 - 3.9606		53.1	1.5	18.5	65	90	63	8	4335-MC-110

[^]Complete mandrel does not include cutting ring.

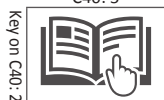
* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.



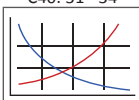
C40

m

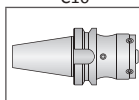
C40: 5



C40: 31 - 34



C10



C40: 6

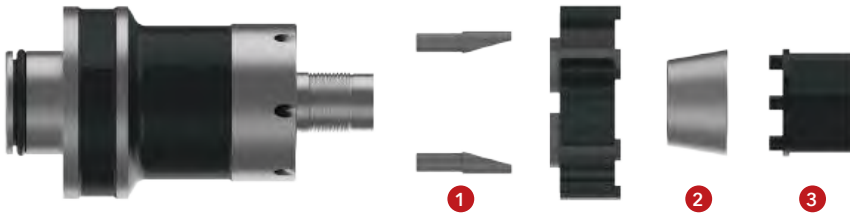


m = Metric (mm)
i = Imperial (in)



4335 Series Mandrels

Spare Parts

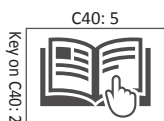


Metric (mm)

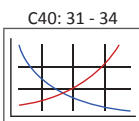
Part No. (Complete Mandrel [^])	Spare Parts							
	1. Drive Pins	Number of Drive Pins	2. Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	3. Adjusting Key	Wrench Size (mm)		
4335-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10	
4335-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10	
4335-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13	
4335-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13	
4335-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18	
4335-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18	
4335-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22	
4335-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26	
4335-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26	
4335-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26	
4335-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34	
4335-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34	
4335-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34	
4335-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46	
4335-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46	

[^]Complete mandrel does not include cutting ring.

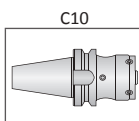

C40



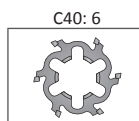
C40: 5



C40: 31 - 34



C10



C40: 6

Key on C40: 2

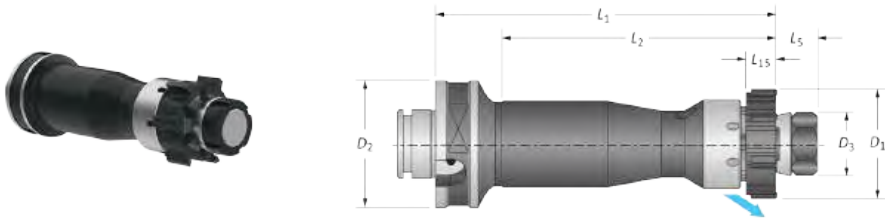
m = Metric (mm)

i = Imperial (in)



4350 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4350	Shank Type	Modular	Application	Through Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		12.0	11.0	11.0	81	116	50	6	4350-MC-010*
21.600 - 25.599	0.8505 - 1.0078		12.0	11.0	12.0	81	116	50	6	4350-MC-020*
25.600 - 32.599	1.0079 - 1.2834		15.6	11.0	14.0	102	137	50	6	4350-MC-030*
32.600 - 40.599	1.2835 - 1.5984		22.0	14.0	16.0	102	137	50	6	4350-MC-040
40.600 - 45.599	1.5985 - 1.7952		25.4	15.0	16.0	102	137	50	6	4350-MC-050
45.600 - 49.599	1.7953 - 1.9527		30.0	20.5	18.5	105	140	50	6	4350-MC-060
49.600 - 60.599	1.9528 - 2.3858		30.0	20.5	18.5	105	140	50	6	4350-MC-070
60.600 - 70.599	2.3859 - 2.7795		40.0	24.5	18.5	105	140	63	6	4350-MC-080
70.600 - 79.599	2.7796 - 3.1338		40.0	24.5	18.5	105	140	63	6	4350-MC-090
79.600 - 90.599	3.1339 - 3.5669		56.0	28.5	18.5	105	140	63	8	4350-MC-100
90.600 - 100.599	3.5670 - 3.9606		56.0	28.5	18.5	105	140	63	8	4350-MC-110

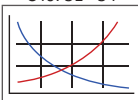
[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

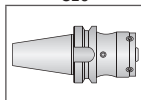
C40: 5



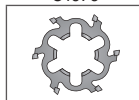
C40: 31 - 34



C10



C40: 6



Key on C40: 2

m = Metric (mm)
i = Imperial (in)

4350 Series Mandrels

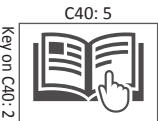
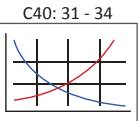
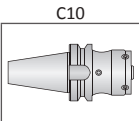
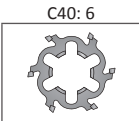
Spare Parts



Metric (mm)

Part No. (Complete Mandrel [^])	Spare Parts				
	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
4350-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
4350-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
4350-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
4350-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
4350-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
4350-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30 ♦
4350-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30 ♦
4350-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40 ♦
4350-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40 ♦
4350-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦
4350-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56 ♦

[^]Complete mandrel does not include cutting ring.
♦ Spanner wrench.

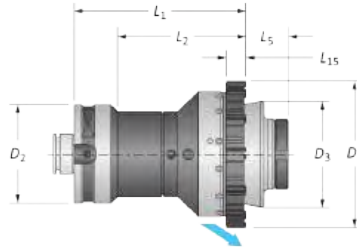


 = Metric (mm)
 = Imperial (in)



4350 Series Mandrels

100.600 mm - 200.600 mm (3.9606" - 7.8976")



Series	4350	Shank Type	Modular	Application	Through Holes	Coolant	Radial
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Metric (mm)

D ₁ Range		Mandrel						Shank	Teeth	Part No.
Metric (mm)	Imperial (inch)	D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂			(Complete Mandrel [^])
100.600 - 110.599	3.9606 - 4.3543	73.8	35.5	18.5	—	140	80	10		4350-MC-120
110.600 - 115.599	4.3544 - 4.5511	80.8	35.5	18.5	—	140	80	12		4350-MC-130
115.600 - 120.599	4.5512 - 4.7480	86.8	35.5	18.5	—	140	80	12		4350-MC-140
120.600 - 125.599	4.7481 - 4.9448	86.8	35.5	18.5	—	140	80	12		4350-MC-150
125.600 - 132.599	4.9449 - 5.2204	90.8	35.5	18.5	—	140	80	12		4350-MC-160
132.600 - 139.599	5.2205 - 5.4960	90.8	35.5	18.5	—	140	80	12		4350-MC-170
139.600 - 145.599	5.4961 - 5.7322	102.8	35.5	18.5	—	140	80	12		4350-MC-180
145.600 - 155.599	5.7323 - 6.1259	107.8	35.5	18.5	—	140	80	12		4350-MC-190
155.600 - 165.599	6.1260 - 6.5196	107.8	48.5	18.5	—	140	80	12		4350-MC-200
165.600 - 175.599	6.5197 - 6.9133	117.8	48.5	18.5	—	140	80	12		4350-MC-210
175.600 - 185.599	6.9134 - 7.3070	127.8	48.5	18.5	—	140	80	12		4350-MC-220
185.600 - 195.599	7.3071 - 7.7007	137.8	48.5	18.5	—	140	80	12		4350-MC-230
195.600 - 200.600	7.7008 - 7.8976	145.8	48.5	18.5	—	140	80	12		4350-MC-240

[^]Complete mandrel does not include cutting ring.

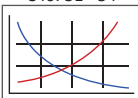
C40

m

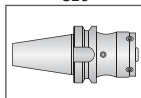
C40: 5



C40: 31 - 34



C10



C40: 6

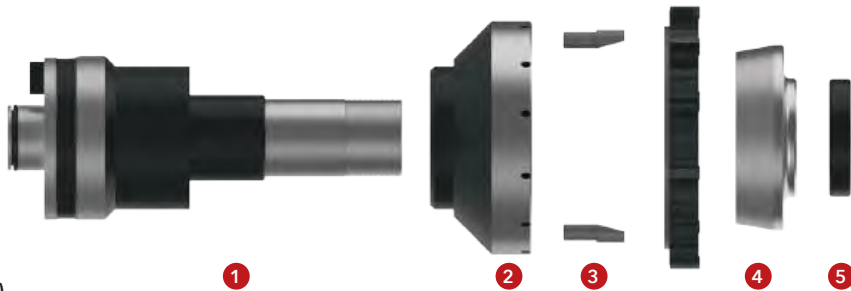


Key on C40: 2

m = Metric (mm)
i = Imperial (in)

4350 Series Mandrels

Spare Parts



Metric (mm)

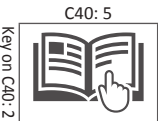
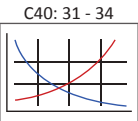
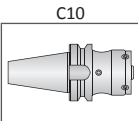
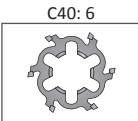
Part No. (Complete Mandrel [^])	Spare Parts						
	1. Mandrel	2. Flange	3. Drive Pins	Number of Drive Pins	4. Conical Ring	5. Nut	Wrench Size (mm)
4350-MC-120	4350-MA-120	4355-FL-035	2000-CO-090	2	2060-BU-010	2000-GH-095	58 ♦
4350-MC-130	4350-MA-120	4355-FL-045	2000-CO-090	2	2060-BU-020	2000-GH-095	58 ♦
4350-MC-140	4350-MA-120	4355-FL-055	2000-CO-090	2	2060-BU-030	2000-GH-095	58 ♦
4350-MC-150	4350-MA-120	4355-FL-065	2000-CO-090	2	2060-BU-030	2000-GH-095	58 ♦
4350-MC-160	4350-MA-120	4355-FL-075	2000-CO-100	2	2060-BU-040	2000-GH-095	58 ♦
4350-MC-170	4350-MA-120	4355-FL-085	2000-CO-100	2	2060-BU-040	2000-GH-095	58 ♦
4350-MC-180	4350-MA-120	4355-FL-095	2000-CO-100	2	2060-BU-050	2000-GH-095	58 ♦
4350-MC-190	4350-MA-120	4355-FL-105	2000-CO-110	2	2060-BU-060	2000-GH-095	58 ♦
4350-MC-200	4350-MA-200	4355-FL-115	2000-CO-110	2	2060-BU-070	2000-GH-120	90 ♦
4350-MC-210	4350-MA-200	4355-FL-125	2000-CO-110	2	2060-BU-080	2000-GH-120	90 ♦
4350-MC-220	4350-MA-200	4355-FL-135	2000-CO-120	2	2060-BU-090	2000-GH-120	90 ♦
4350-MC-230	4350-MA-200	4355-FL-145	2000-CO-120	2	2060-BU-100	2000-GH-120	90 ♦
4350-MC-240	4350-MA-200	4355-FL-155	2000-CO-120	2	2060-BU-110	2000-GH-120	90 ♦

[^]Complete mandrel does not include cutting ring.

♦ Spanner wrench.



C40



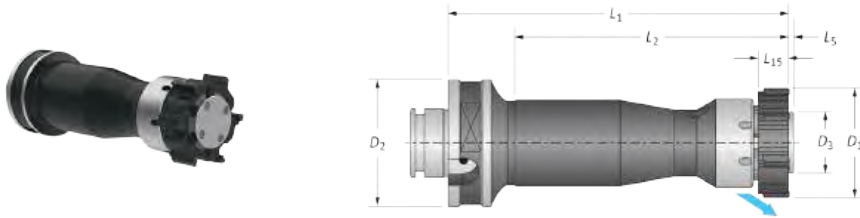
Key on C40: 2

m = Metric (mm)
i = Imperial (in)



4355 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4355	Shank Type	Modular	Application	Blind Holes	Coolant	Radial
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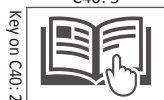
Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		11.2	1.0	11.0	81	116	50	6	4355-MC-010*
21.600 - 25.599	0.8505 - 1.0078		11.2	1.0	12.0	81	116	50	6	4355-MC-020*
25.600 - 29.599	1.0079 - 1.1653		15.1	1.0	14.0	102	137	50	6	4355-MC-030*
29.600 - 32.599	1.1654 - 1.2834		15.1	1.0	14.0	102	137	50	6	4355-MC-035*
32.600 - 36.599	1.2835 - 1.4409		20.3	1.0	16.0	102	137	50	6	4355-MC-040
36.600 - 40.599	1.4410 - 1.5984		20.3	1.0	16.0	102	137	50	6	4355-MC-045
40.600 - 45.599	1.5985 - 1.7952		24.1	1.0	16.0	102	137	50	6	4355-MC-050
45.600 - 49.599	1.7953 - 1.9527		27.9	1.5	18.5	105	140	50	6	4355-MC-060
49.600 - 55.599	1.9528 - 2.1889		27.9	1.5	18.5	105	140	50	6	4355-MC-070
55.600 - 60.599	2.1890 - 2.3858		27.9	1.5	18.5	105	140	50	6	4355-MC-075
60.600 - 65.599	2.3859 - 2.5826		37.1	1.5	18.5	105	140	63	6	4355-MC-080
65.600 - 70.599	2.5827 - 2.7795		37.1	1.5	18.5	105	140	63	6	4355-MC-085
70.600 - 79.599	2.7796 - 3.1338		37.1	1.5	18.5	105	140	63	6	4355-MC-090
79.600 - 90.599	3.1339 - 3.5669		53.1	1.5	18.5	105	140	63	8	4355-MC-100
90.600 - 100.599	3.5670 - 3.9606		53.1	1.5	18.5	105	140	63	8	4355-MC-110

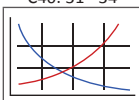
[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.

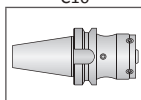
C40: 5



C40: 31 - 34



C10



C40: 6

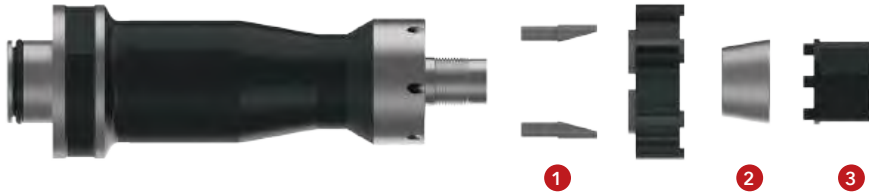


m = Metric (mm)
i = Imperial (in)



4355 Series Mandrels

Spare Parts



Metric (mm)

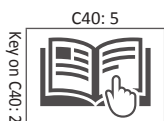
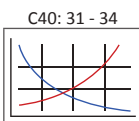
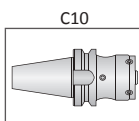
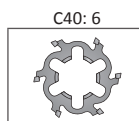
Part No. (Complete Mandrel [^])		Spare Parts						
		1.		2.			3.	
		Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
M	4355-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4355-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4355-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4355-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4355-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4355-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4355-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
	4355-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4355-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4355-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4355-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

[^]Complete mandrel does not include cutting ring.

◆ Spanner wrench.



C40



Key on C40: 2

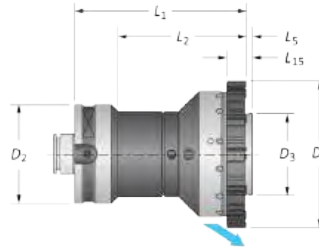
m = Metric (mm)

i = Imperial (in)



4355 Series Mandrels

100.600 mm - 200.600 mm (3.9606" - 7.8976")



Series	4355	Shank Type	Modular	Application	Blind Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank		Part No.
Metric (mm)		Imperial (inch)	D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂	Teeth	(Complete Mandrel^)
	100.600 - 110.599	3.9606 - 4.3543	70.3	1.5	18.5	—	140	80	10	4355-MC-120
	110.600 - 115.599	4.3544 - 4.5511	76.3	1.5	18.5	—	140	80	12	4355-MC-130
	115.600 - 120.599	4.5512 - 4.7480	83.3	1.5	18.5	—	140	80	12	4355-MC-140
	120.600 - 125.599	4.7481 - 4.9448	87.3	1.5	18.5	—	140	80	12	4355-MC-150
	125.600 - 132.599	4.9449 - 5.2204	87.3	1.5	18.5	—	140	80	12	4355-MC-160
	132.600 - 139.599	5.2205 - 5.4960	87.3	1.5	18.5	—	140	80	12	4355-MC-170
M	139.600 - 145.599	5.4961 - 5.7322	99.3	1.5	18.5	—	140	80	12	4355-MC-180
	145.600 - 155.599	5.7323 - 6.1259	104.3	1.5	18.5	—	140	80	12	4355-MC-190
	155.600 - 165.599	6.1260 - 6.5196	104.3	1.5	18.5	—	140	80	12	4355-MC-200
	165.600 - 175.599	6.5197 - 6.9133	114.3	1.5	18.5	—	140	80	12	4355-MC-210
	175.600 - 185.599	6.9134 - 7.3070	124.3	1.5	18.5	—	140	80	12	4355-MC-220
	185.600 - 195.599	7.3071 - 7.7007	134.3	1.5	18.5	—	140	80	12	4355-MC-230
	195.600 - 200.600	7.7008 - 7.8976	142.3	1.5	18.5	—	140	80	12	4355-MC-240

[^]Complete mandrel does not include cutting ring.

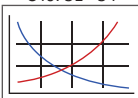
C40

m

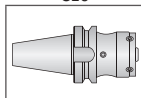
C40: 5



C40: 31 - 34



C10

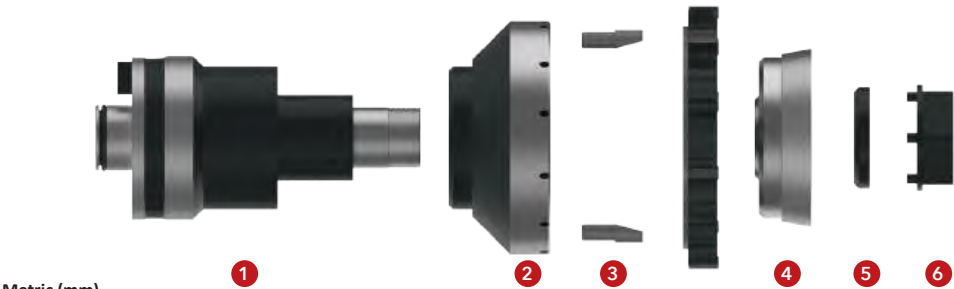


C40: 6



4355 Series Mandrels

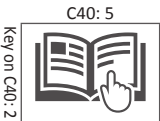
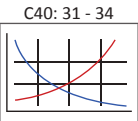
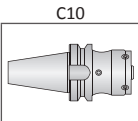
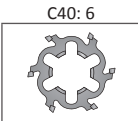
Spare Parts



Metric (mm)

Part No. (Complete Mandrel [^])	Spare Parts							
	1.	2.	3.	Number of Drive Pins	4.	5.	6.	Wrench Size (mm)
	Mandrel	Flange	Drive Pins		Conical Ring	Nut	Adjusting Key	
4355-MC-120	4355-MA-120	4355-FL-035	2000-CO-090	2	4001-AC-116	4001-GH-035	4001-CH-135	46
4355-MC-130	4355-MA-120	4355-FL-045	2000-CO-090	2	4001-AC-126	4001-GH-035	4001-CH-135	46
4355-MC-140	4355-MA-120	4355-FL-055	2000-CO-090	2	4001-AC-136	4001-GH-035	4001-CH-135	46
4355-MC-150	4355-MA-120	4355-FL-065	2000-CO-090	2	4001-AC-136	4001-GH-035	4001-CH-135	46
4355-MC-160	4355-MA-120	4355-FL-075	2000-CO-100	2	4001-AC-146	4001-GH-035	4001-CH-135	46
4355-MC-170	4355-MA-120	4355-FL-085	2000-CO-100	2	4001-AC-146	4001-GH-035	4001-CH-135	46
 4355-MC-180	4355-MA-120	4355-FL-095	2000-CO-100	2	4001-AC-156	4001-GH-035	4001-CH-135	46
4355-MC-190	4355-MA-120	4355-FL-105	2000-CO-110	2	4001-AC-166	4001-GH-035	4001-CH-135	46
4355-MC-200	4355-MA-200	4355-FL-115	2000-CO-110	2	4001-AC-176	4001-GH-115	4001-CH-115	46
4355-MC-210	4355-MA-200	4355-FL-125	2000-CO-110	2	4001-AC-186	4001-GH-115	4001-CH-115	46
4355-MC-220	4355-MA-200	4355-FL-135	2000-CO-120	2	4001-AC-196	4001-GH-115	4001-CH-115	46
4355-MC-230	4355-MA-200	4355-FL-145	2000-CO-120	2	4001-AC-117	4001-GH-115	4001-CH-115	46
4355-MC-240	4355-MA-200	4355-FL-155	2000-CO-120	2	4001-AC-127	4001-GH-115	4001-CH-115	46

[^]Complete mandrel does not include cutting ring.



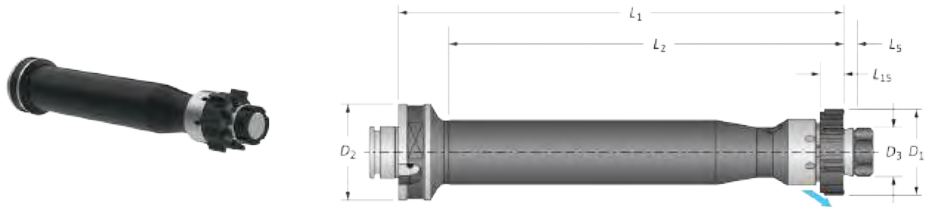
Key on C40: 2

 = Metric (mm)
 = Imperial (in)



4300 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



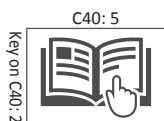
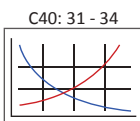
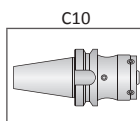
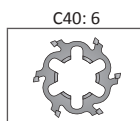
Series	4300	Shank Type	Modular	Application	Through Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		12.0	11.0	11.0	121	156	50	6	4300-MC-010*
21.600 - 25.599	0.8505 - 1.0078		12.0	11.0	12.0	121	156	50	6	4300-MC-020*
25.600 - 32.599	1.0079 - 1.2834		15.6	11.0	14.0	153	188	50	6	4300-MC-030*
32.600 - 40.599	1.2835 - 1.5984		22.0	14.0	16.0	179	214	50	6	4300-MC-040
40.600 - 45.599	1.5985 - 1.7952		25.4	15.0	16.0	201	236	50	6	4300-MC-050
45.600 - 49.599	1.7953 - 1.9527		30.0	20.5	18.5	214	249	50	6	4300-MC-060
49.600 - 60.599	1.9528 - 2.3858		30.0	20.5	18.5	214	249	50	6	4300-MC-070
60.600 - 70.599	2.3859 - 2.7795		40.0	24.5	18.5	237	272	63	6	4300-MC-080
70.600 - 79.599	2.7796 - 3.1338		40.0	24.5	18.5	237	272	63	6	4300-MC-090
79.600 - 90.599	3.1339 - 3.5669		56.0	28.5	18.5	245	280	63	8	4300-MC-100
90.600 - 100.599	3.5670 - 3.9606		56.0	28.5	18.5	245	280	63	8	4300-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.



m = Metric (mm)
i = Imperial (in)

4300 Series Mandrels

Spare Parts



Metric (mm)

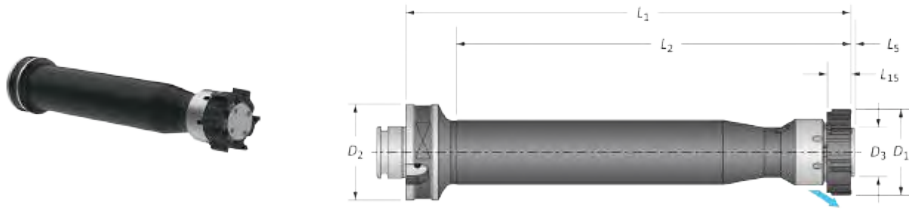
Part No. (Complete Mandrel [^])	Spare Parts				
	1. Drive Pins	Number of Drive Pins	2. Conical Ring	3. Nut	Wrench Size (mm)
4300-MC-010	2000-CO-010	3	2010-AC-010	2000-DA-010	10
4300-MC-020	2000-CO-020	3	2010-AC-010	2000-DA-010	10
4300-MC-030	2000-CO-030	3	2010-AC-020	2000-DA-020	13
4300-MC-040	2000-CO-040	2	2010-AC-030	2000-DA-060	19
4300-MC-050	2000-CO-060	2	2010-AC-040	2000-DA-090	22
4300-MC-060	2000-CO-060	2	2010-AC-050	2000-GH-880	30
4300-MC-070	2000-CO-070	2	2010-AC-050	2000-GH-880	30
4300-MC-080	2000-CO-080	2	2010-AC-060	2000-GH-900	40
4300-MC-090	2000-CO-090	2	2010-AC-060	2000-GH-900	40
4300-MC-100	2000-CO-090	2	2010-AC-070	2000-GH-920	56
4300-MC-110	2000-CO-090	2	2010-AC-070	2000-GH-920	56

[^]Complete mandrel does not include cutting ring.



4305 Series Mandrels

17.600 mm - 100.599 mm (0.6929" - 3.9606")



Series	4305	Shank Type	Modular	Application	Blind Holes	Coolant	Radial
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Metric (mm)

D ₁ Range			Mandrel					Shank	Teeth	Part No. (Complete Mandrel [^])
Metric (mm)	Imperial (inch)		D ₃	L ₅	L ₁₅	L ₂	L ₁	D ₂		
17.600 - 21.599	0.6929 - 0.8504		11.2	1.0	11.0	121	156	50	6	4305-MC-010*
21.600 - 25.599	0.8505 - 1.0078		11.2	1.0	12.0	121	156	50	6	4305-MC-020*
25.600 - 29.599	1.0079 - 1.1653		15.1	1.0	14.0	153	188	50	6	4305-MC-030*
29.600 - 32.599	1.1654 - 1.2834		15.1	1.0	14.0	153	188	50	6	4305-MC-035*
32.600 - 36.599	1.2835 - 1.4409		20.3	1.0	16.0	179	214	50	6	4305-MC-040
36.600 - 40.599	1.4410 - 1.5984		20.3	1.0	16.0	179	214	50	6	4305-MC-045
40.600 - 45.599	1.5985 - 1.7952		24.1	1.0	16.0	201	236	50	6	4305-MC-050
45.600 - 49.599	1.7953 - 1.9527		27.9	1.5	18.5	214	249	50	6	4305-MC-060
49.600 - 55.599	1.9528 - 2.1889		27.9	1.5	18.5	214	249	50	6	4305-MC-070
55.600 - 60.599	2.1890 - 2.3858		27.9	1.5	18.5	214	249	50	6	4305-MC-075
60.600 - 65.599	2.3859 - 2.5826		37.1	1.0	18.5	237	272	63	6	4305-MC-080
65.600 - 70.599	2.5827 - 2.7795		37.1	1.0	18.5	237	272	63	6	4305-MC-085
70.600 - 79.599	2.7796 - 3.1338		37.1	1.0	18.5	237	272	63	6	4305-MC-090
79.600 - 90.599	3.1339 - 3.5669		53.1	1.5	18.5	245	280	63	8	4305-MC-100
90.600 - 100.599	3.5670 - 3.9606		53.1	1.5	18.5	245	280	63	8	4305-MC-110

[^]Complete mandrel does not include cutting ring.

* 17.600 mm - 32.599 mm (0.6929" - 1.2834") diameter cutting rings are available as specials by contacting Application Engineering.



C40

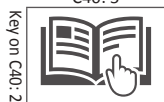
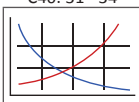
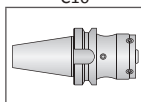
m

C40: 5

C40: 31 - 34

C10

C40: 6



m = Metric (mm)
i = Imperial (in)

4305 Series Mandrels

Spare Parts



Metric (mm)

Part No. (Complete Mandrel^)		Spare Parts						
		1.		2.			3.	
		Drive Pins	Number of Drive Pins	Conical Ring	Conical Ring (2nd Expansion)	Conical Ring (3rd Expansion)	Adjusting Key	Wrench Size (mm)
III	4305-MC-010	2000-CO-010	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4305-MC-020	2000-CO-020	3	4001-AC-115	4001-AC-215	—	4001-CH-015	10
	4305-MC-030	2000-CO-030	3	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4305-MC-035	2000-CO-040	2	4001-AC-125	4001-AC-225	4001-AC-325	4001-CH-025	13
	4305-MC-040	2000-CO-040	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4305-MC-045	2000-CO-050	2	4001-AC-135	4001-AC-235	4001-AC-335	4001-CH-035	18
	4305-MC-050	2000-CO-060	2	4001-AC-145	4001-AC-245	4001-AC-345	4001-CH-045	22
	4305-MC-060	2000-CO-060	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-070	2000-CO-070	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-075	2000-CO-080	2	4001-AC-155	4001-AC-255	4001-AC-355	4001-CH-055	26
	4305-MC-080	2000-CO-080	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-085	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-090	2000-CO-090	2	4001-AC-165	4001-AC-265	4001-AC-365	4001-CH-065	34
	4305-MC-100	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46
	4305-MC-110	2000-CO-090	2	4001-AC-185	4001-AC-285	4001-AC-385	4001-CH-085	46

[^]Complete mandrel does not include cutting ring.



Recommended Drilling Data | Metric (mm)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Speed (m/min)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	7 - 15	60 - 80	90 - 300
		180 - 250	6 - 10	40 - 70	80 - 200
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	7 - 15	60 - 80	90 - 300
		180 - 275	6 - 10	40 - 70	80 - 200
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	7 - 15	60 - 80	90 - 300
		180 - 325	6 - 10	40 - 70	80 - 200
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	6 - 10	40 - 70	80 - 200
		180 - 375	4 - 8	30 - 50	60 - 150
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	3 - 6	15 - 30	60 - 120
	Structural Steel A36, A285, A516, etc.	125 - 180	7 - 15	60 - 80	90 - 300
M		180 - 350	6 - 10	40 - 70	80 - 200
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	7 - 15	60 - 80	90 - 300
		200 - 250	6 - 10	40 - 70	80 - 200
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	4 - 8	30 - 50	60 - 150
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	4 - 8	30 - 50	60 - 150
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	15 - 30	50 - 70	—
		> 200	10 - 20	50 - 70	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	8 - 12	30 - 50	60 - 120
	Copper and Alloys, and Brass	< 500	10 - 18	100 - 200	—
	Bronze, and Bronze Phosphorous	< 180	10 - 20	80 - 160	100 - 300
N	Aluminum and Alloys	< 150	15 - 30	100 - 200	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	4 - 8	30 - 50	—
	Titanium Alloy	140 - 310	4 - 8	30 - 50	—

Formulas

1. $\text{RPM} = (318.47 \cdot \text{m/min}) / \text{DIA}$ where: RPM = revolutions per minute (rev/min) m/min = speed (m/min) DIA = diameter of drill (mm)	2. $\text{mm/min} = \text{RPM} \cdot \text{mm/rev}$ where: mm/min = mm per minute (mm/min) RPM = revolutions per minute (rev/min) mm/rev = feed rate (mm/rev)
3. $\text{m/min} = \text{RPM} \cdot 0.003 \cdot \text{DIA}$ where: m/min = speed (m/min) RPM = revolutions per minute (rev/min) DIA = diameter of drill (mm)	

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Metric (mm)

CUTTING RINGS

Recommended Feed (mm/rev) by Reamer Diameter					
17.60 mm - 40.00 mm		40.01 mm - 80.00 mm		80.01 mm - 200.00 mm	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.30 - 0.60	0.40 - 0.80	0.40 - 0.80	0.50 - 1.00	0.60 - 1.00	0.70 - 1.40
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.50 - 0.80	0.60 - 1.20	0.50 - 1.00	0.80 - 1.60	0.80 - 1.50	1.00 - 2.20
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 0.70	0.40 - 1.00	0.50 - 0.80	0.60 - 1.40	0.80 - 1.20	1.00 - 2.00
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.40 - 1.00	0.60 - 1.50	0.60 - 1.30	0.80 - 1.60	0.80 - 1.70	1.00 - 2.25
0.50 - 0.80	—	0.60 - 1.00	—	0.80 - 1.40	—
0.30 - 0.60	—	0.40 - 0.80	—	0.60 - 1.00	—
0.50 - 0.80	—	0.60 - 1.00	—	0.80 - 1.40	—
0.30 - 0.50	—	0.40 - 0.60	—	0.50 - 0.70	—
0.30 - 0.50	—	0.40 - 0.60	—	0.50 - 0.70	—





Recommended Drilling Data | Imperial (in)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Speed (SFM)		
			Uncoated Carbide	Coated Carbide	Cermet
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	25 - 50	200 - 260	300 - 980
		180 - 250	20 - 35	130 - 230	260 - 660
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	25 - 50	200 - 260	300 - 980
		180 - 275	20 - 35	130 - 230	260 - 660
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	25 - 50	200 - 260	300 - 980
		180 - 325	20 - 35	130 - 230	260 - 660
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	20 - 35	130 - 230	260 - 660
		180 - 375	15 - 25	100 - 160	200 - 490
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	10 - 20	50 - 100	200 - 390
	Structural Steel A36, A285, A516, etc.	125 - 180	25 - 50	200 - 260	300 - 980
M		180 - 350	20 - 35	130 - 230	260 - 660
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	25 - 50	200 - 260	300 - 980
		200 - 250	20 - 35	130 - 230	260 - 660
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	15 - 25	100 - 160	200 - 490
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	15 - 25	100 - 160	200 - 490
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	50 - 100	160 - 230	—
		> 200	35 - 65	160 - 230	—
	Spheroidal Cast Iron (Ferritic)	260 - 320	25 - 40	100 - 160	200 - 400
	Copper and Alloys, and Brass	< 500	35 - 60	330 - 660	—
	Bronze, and Bronze Phosphorous	< 180	35 - 65	260 - 520	330 - 980
S	Aluminum and Alloys	< 150	50 - 100	330 - 660	—
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 25	60 - 200	—
	Titanium Alloy	140 - 310	15 - 25	60 - 200	—

Formulas

1.	RPM	= (3.82 • SFM) / DIA
	where:	
	RPM	= revolutions per minute (rev/min)
	SFM	= speed (ft/min)
	DIA	= diameter of drill (inch)

2.	IPM	= RPM • IPR
	where:	
	IPM	= inches per minute (in/min)
	RPM	= revolutions per minute (rev/min)
	IPR	= feed rate (in/rev)

3.	SFM	= RPM • 0.262 • DIA
	where:	
	SFM	= speed (ft/min)
	RPM	= revolutions per minute (rev/min)
	DIA	= diameter of drill (inch)

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Imperial (in)

CUTTING RINGS

Recommended Feed (IPR) by Reamer Diameter					
0.6929" - 1.5750"		1.5751" - 3.1500"		3.1501" - 7.8972"	
Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M	Lead A, G	Lead E, N, M
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.012 - 0.024	0.016 - 0.031	0.016 - 0.031	0.020 - 0.039	0.024 - 0.039	0.028 - 0.055
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.020 - 0.031	0.024 - 0.047	0.020 - 0.039	0.031 - 0.063	0.031 - 0.059	0.039 - 0.087
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.028	0.016 - 0.039	0.020 - 0.031	0.024 - 0.055	0.031 - 0.047	0.039 - 0.079
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.016 - 0.039	0.024 - 0.059	0.024 - 0.051	0.031 - 0.063	0.031 - 0.067	0.039 - 0.088
0.020 - 0.031	—	0.024 - 0.039	—	0.031 - 0.055	—
0.012 - 0.024	—	0.016 - 0.031	—	0.024 - 0.039	—
0.020 - 0.031	—	0.024 - 0.039	—	0.031 - 0.055	—
0.012 - 0.020	—	0.016 - 0.024	—	0.020 - 0.028	—
0.012 - 0.020	—	0.016 - 0.024	—	0.020 - 0.028	—





Stock Allowance and Coolant | Metric (mm)

CUTTING RINGS

ISO	Material	Hardness (BHN)	Coolant	Recommended Stock (mm) by Reamer Diameter*		
				17.60 mm - 40.00 mm	40.01 mm - 80.00 mm	80.01 mm - 200.00 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 250				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
	Structural Steel A36, A285, A516, etc.	125 - 180				
M		180 - 350	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200				
		200 - 250				
	Stainless Steel 400 Series 416, 420, etc.	135 - 350				
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200				
		> 200				
	Spheroidal Cast Iron (Ferritic)	260 - 320				
	Copper and Alloys, and Brass	< 500				
N	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil	0.15 - 0.30	0.20 - 0.40	0.25 - 0.50
	Aluminum and Alloys	< 150				
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310				
S	Titanium Alloy	140 - 310	Water Soluble / Cutting Oil	0.20 - 0.40	0.30 - 0.40	0.30 - 0.50

*Stock value is on diameter.



Stock Allowance and Coolant | Imperial (in)

CUTTING RINGS						
ISO Material		Hardness (BHN)	Coolant	Recommended Stock (in) by Reamer Diameter*		
				0.6929" - 1.5750"	1.5751" - 3.1500"	3.1501" - 7.8972"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
		180 - 250				
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180				
		180 - 275				
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180				
		180 - 325				
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180				
		180 - 375				
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450				
M	Stainless Steel 400 Series 416, 420, etc.	135 - 350	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275				
	K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	Water Soluble / Cutting Oil	0.006 - 0.012	0.008 - 0.016
		> 200				
Spheroidal Cast Iron (Ferritic)		260 - 320				
N	Copper and Alloys, and Brass	< 500	Water Soluble	0.006 - 0.012	0.008 - 0.016	0.010 - 0.020
	Bronze, and Bronze Phosphorous	< 180	Water Soluble / Cutting Oil			
	Aluminum and Alloys	< 150				
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	Water Soluble / Cutting Oil	0.008 - 0.016	0.012 - 0.016	0.012 - 0.020
	Titanium Alloy	140 - 310				

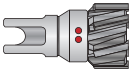

C40

*Stock value is on diameter.

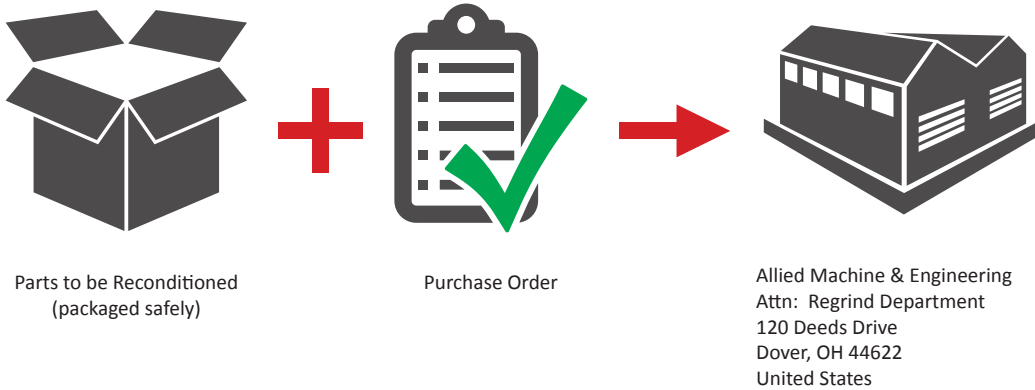


Reconditioning Service

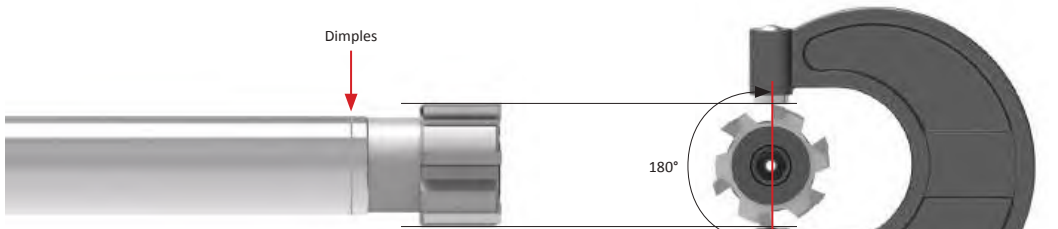
All ALVAN reamers can be reconditioned to help reduce your overall tooling costs. This service is provided through Allied Machine & Engineering by utilizing the expertise of S.C.A.M.I. We will process the tools with a 25-35 workday lead time, depending on the style, the date we receive the tools, and the purchase order.

Reamer Style	Lead Time (workdays)	Part No.	Reconditioned Part No.
 Replaceable Head*	25	I7405-SVG-10000	RI7405SVG10000
 Monobloc	35	AL3620I04853	AL3620I04853 RP1
 Cutting Ring	35	AL2TIAI05820	AL2TIAI05820 RP1

*Only 7000 series heads are eligible for reconditioning.



Diameter Measurement

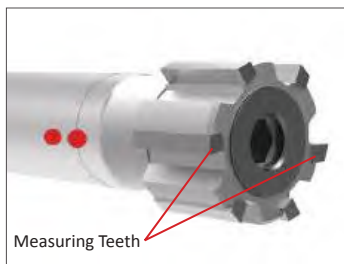


Using the Measuring Teeth

With the reamer assembled, use a presetter or micrometers to measure the reamer diameter using the opposing 180° teeth. A presetter (with at least 2 μm resolution) is preferred to avoid chipping the cutting edges.

NOTE: Only two cutting teeth are 180° opposed. The asymmetric spacing of the other cutting teeth will not induce harmonics, which prevents the tool from creating chatter.

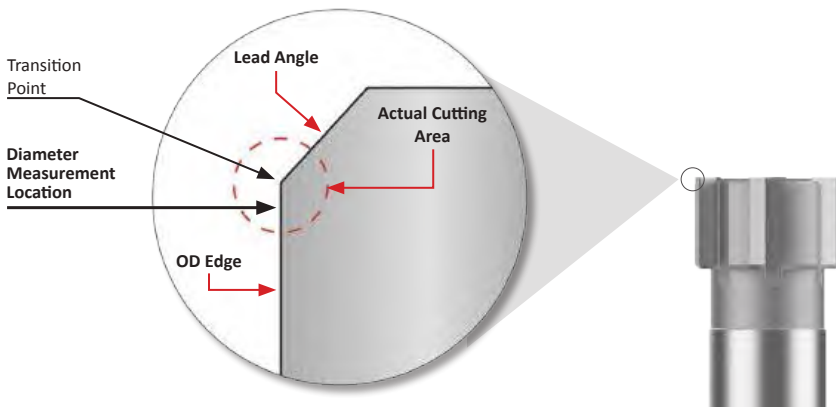
The red dimples indicate which two opposing teeth are the measuring teeth. All S.C.A.M.I. reamers have a dimple to indicate the 180° opposing teeth.



Where to Take the Measurement

When measuring the diameter, take the measurement from the area of the cutting tooth just below the transition from the lead angle to the OD edge. See the illustration below.

The back side of the OD edge has a back taper. This is why measuring from the location just below the lead angle/OD edge transition point results in the most accurate measurement (before the taper begins).





TIR Measurement

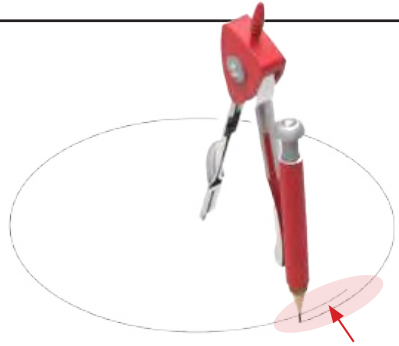
What is TIR?

Total indicator runout (TIR) refers to the distance to which the reamer is cutting off-center. In an ideal situation, the tool would begin in the exact center of the hole, and it would then rotate and cut in a perfect circle. This would result in a TIR of 0.

Because a perfect TIR of 0 is not practical, the goal is to maintain a TIR as close to 0 as possible. The closer the TIR is to 0, the better the reamer will perform.

Allied Machine recommends a TIR of $< 0.013 \text{ mm}$ ($0.0005''$).

Think of attempting to draw a perfect circle with a drafting compass, but the pencil runs slightly outside the point where the circle began because the center point shifted during the pencil's path. This slight area of overlap would be the TIR.



TIR: How far from center the tool will move during its path.



Step 1:

Check the TIR first on the mandrel (or ground) area of the reamer. Center the indicator in line with the dimple.

Measure the TIR by rotating the tool until the indicator reaches the highest value.

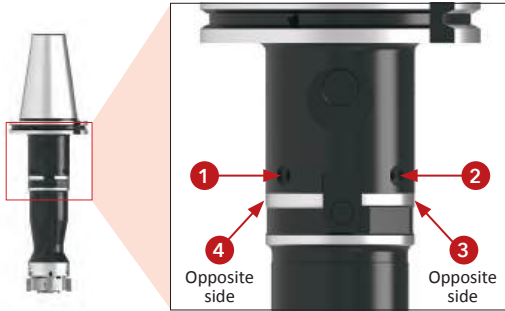


Step 2:

Next, check the TIR on the cutting teeth of the reamer.

NOTE: Rotate the tool counterclockwise to avoid chipping the cutting teeth with the indicator.

TIR Adjustment



Step 1:

Place the tool into the machine spindle. Make contact with the four radial adjustment screws in a concentric fashion (this results in equal pressure surrounding the tool).

Tighten #1, then #3, followed by #2 and #4.



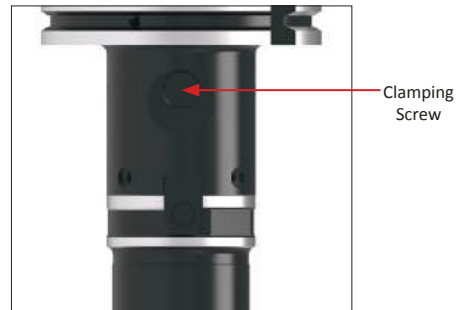
Step 2:

Swipe the dial indicator around the ground portion of the arbor near the coolant outlet holes to verify the TIR.

The TIR should be within 0.013 mm (0.0005") (as close to 0 as possible). This will ensure the TIR check on the cutting teeth will be more true. It also means the arbor is running true to the shank.

Step 3:

Once the TIR is checked on the arbor, check the TIR on the cutting teeth. Rotate the tool counterclockwise to avoid chipping the cutting teeth.

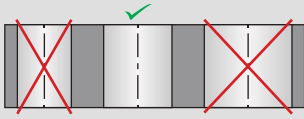


Step 4:

Tighten down the central clamping screws. During the tightening, the tool body will shift slightly. Repeat the TIR check on the cutting teeth and adjust as necessary.

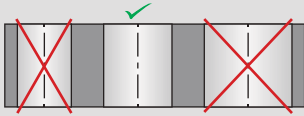


Troubleshooting Guide



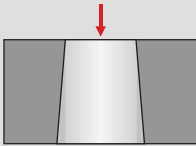
Oversized Hole

- Reamer is running eccentric to the center of the machine spindle. ▶ Use modular system with radial adjustment.
- Excessive misalignment causing reamer to cut on back taper. ▶ Fix the misalignment.
- Material buildup on cutting edges. ▶ Replace the coolant or change the cutting speed.
- Reamer diameter is too large. ▶ Use smaller reamer or regrind existing reamer.



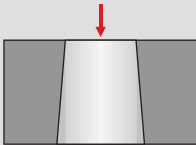
Undersized Hole

- The reamer diameter is too small. ▶ Use larger reamer.
- The reamer diameter is worn. ▶ Expand, regrind, or replace the reamer.
- The coolant is not suitable. ▶ Replace the coolant.
- Stock allowance is too small. ▶ Increase the stock allowance.
- The cutting speed is too low. ▶ Increase the cutting speed.



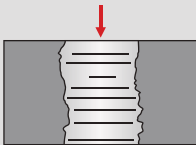
Tapered Hole

- Excessive misalignment. ▶ Correct the misalignment.



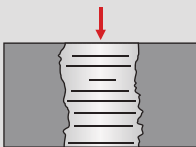
Burr at Hole Entry

- Excessive misalignment. ▶ Correct the misalignment.



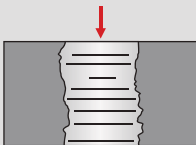
Hole is Not Straight

- Concentricity and alignment error between the workpiece and the tool. ▶ Correct the misalignment and use the modular system with radial adjustment.
- Asymmetrical cutting or angled surfaces. ▶ Create a chamfer on the lead-in.



Poor Hole Finish

- One cutting edge is chipped. ▶ Regrind the reamer.
- The lead-in is irregular. ▶ Regrind the reamer.
- Back taper on the cutting edge is too great. ▶ Regrind the reamer.
- Excessive misalignment. ▶ Correct the misalignment or use the modular system.
- Cutting data is not correct. ▶ Verify the cutting data.
- Poor chip evacuation. ▶ Verify the coolant volume and pressure or use through-tool coolant.



Reamer Creates Excessive Torque Loading

- Back taper on the cutting edge is too small. ▶ Regrind the reamer.
- The radially ground land is too wide. ▶ Regrind the reamer.
- The coolant is not suitable. ▶ Replace the coolant.

This image shows a full page of blank graph paper. The background is a very light gray, and it is covered by a grid of thin, darker gray lines. The grid consists of small, equal-sized squares that extend across the entire area of the page, leaving no margins or other markings.

ROLLER BURNISHING

PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

www.alliedmachine.com

SECTION

D00-BRN

S.C.A.M.I.® Roller Burnishers

ROLLER BURNISHING

3.95 mm - 165.90 mm
(0.1555" - 6.5315")



Get the Finish You Need

Allied Machine is proud to offer roller burnishing tools from S.C.A.M.I. These hole finishing tools provide an extremely high-quality surface finish on both through-hole and blind-hole applications. With roller burnishing, you can eliminate the need for slower and more costly finishing processes and secondary operations such as grinding, honing, and lapping.

Not only will the roller burnishing tools create a smooth surface finish, but they will also harden the material and increase the wear resistance of the part. The benefits of this single operation result in the hole quality you should expect from Allied Machine. Large range of shanks for different machine types.

- ▶ Creates fine surface finishes.
- ▶ Eliminates other processes and saves you money.
- ▶ Increases wear and corrosion resistance.

S.C.A.M.I.®

Applicable Industries

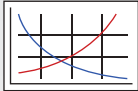
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

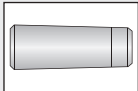
The following icons will appear throughout the catalog to help you navigate between products.



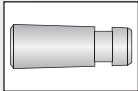
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Through-Hole Rolls
Refers to the rolls available for through-hole burnishing tools.



Blind-Hole Rolls
Refers to the rolls available for blind-hole burnishing tools.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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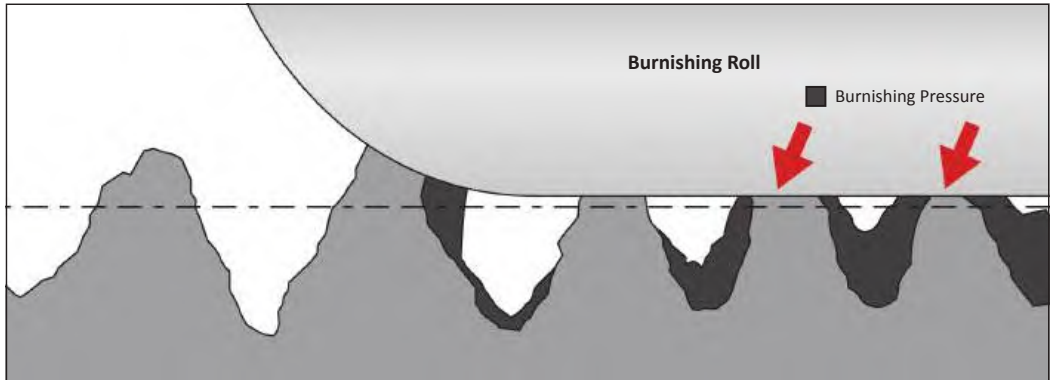
Roller Burnishing Overview

The Principle of Roller Burnishing

Roller burnishing is a cold-working process that produces a fine surface finish. The planetary rotation of the hardened rolls creates pressure over a metal surface. Unlike cold rolling, which produces large sectional changes, roller burnishing involves cold-working on the surface of the workpiece to improve the surface structure.

All machined surfaces consist of a series of peaks and valleys, all having irregular height and spacing. The plastic deformation created by roller burnishing is a displacement of the material in the peaks. When under pressure, the material in the peaks flows into the valleys. During the process, tool marks and irregularities are rolled out, resulting in a mirror-like finish with a tough, work-hardened surface that is also wear and corrosion resistant.

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Advantages of Roller Burnishing: Metallurgical Properties

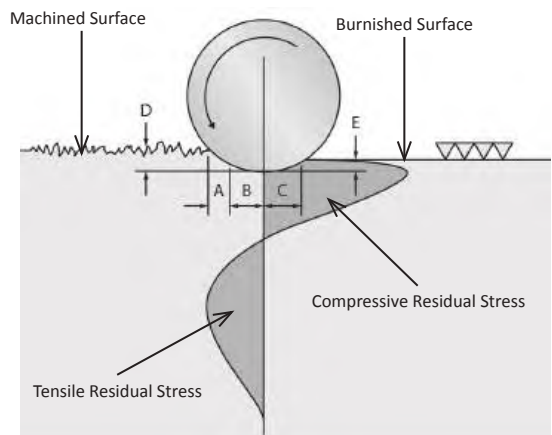
- Grain structure is condensed and refined.
- The compacted surface is **smoother, harder, and more wear resistant** than ground or honed surfaces.
- The process reduces surface porosity and also removes scratches that could hold reactive substances or contaminants. **This increases the corrosion resistance.**
- Depending on the material, the surface hardness can be **increased by as much as 10 points Rockwell C**. This may eliminate the need for heat treatment.
- The plastic deformation induces residual compressive stresses in the surface of the part. This increases the strength properties and fatigue life of the part because any forces on the part must overcome these residual stresses, as well as the tensile strength of the materials, before fatigue conditions occur.

Advantages of Roller Burnishing: Surface Finish

- Creates a high finish to any machinable metal.
- Surfaces that are bored, reamed, or turned to 125 microinches or more can be finished to 4 microinch CLA or less in one pass (at feed rates of 125 to 300 mm/min).
- Roller burnishing replaces grinding, honing, lapping, and other expensive secondary operations.
- Tool marks are rolled out.

The Process

- The first contact with the machined surface occurs in Section A.
- Plastic deformation occurs in Section B as the yield point of the surface is exceeded.
- Section D is the pressurized depth.
- Once the material endures the maximum compressive strain (Section C), it starts relieving elastically (Section E) through the finishing zone.
- This leaves a smooth surface and a compressive residual stress of significant peak value.
- The stresses formed on the material during the compression decrease toward the center. These stresses reach approximately 1 mm below the surface. This increases the surface hardness.



Roller Burnishing Overview

When to Roller Burnish

Conditions for Roller Burnishing

Roller burnishing is a cold-working process used to achieve fine hole finishes. In order to achieve the most optimal results, adhere to the benchmarks below:

- **Finishing:** The ductility and hardness of the workpiece material along with the surface preparation dictates the quality of the burnished finish.
- **Workability:** Any ductile and malleable material up to RC40 can be roller burnished.
- **Worked Surface Properties:** Workpieces with an interrupted surface within 10% of the circumference can be successfully burnished with a standard tool (see Figures 1 and 2).

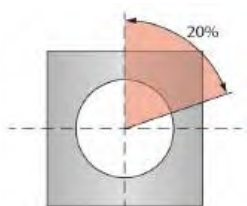


Figure 1

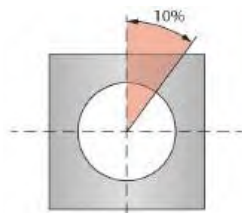


Figure 2

- **Tolerance of the Burnished Piece:** The tolerance range achieved from the burnishing will be equal to that achieved from the premachining since no material will be removed.

The ideal surface for burnishing consists of a succession of peaks. These peaks correspond on regular feed of the preparation tool (see Figure 3). We suggest the ALVAN® expandable reamer for preburnishing because it creates a uniform roughness and a tolerance range of H6 - H7.



Figure 3

Premachining tapers and surface irregularities caused by cutting tool failure must be noted because these conditions cannot be corrected by the roller burnishing process (see Figures 4 and 5).



Figure 4

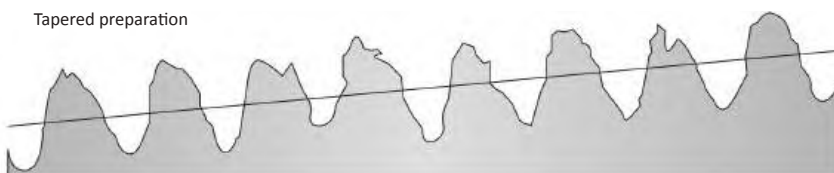


Figure 5



Roller Burnishing Overview

Product Offering

D00



Through-Hole Style

3.95 mm - 165.90 mm (0.1555" - 6.5315")

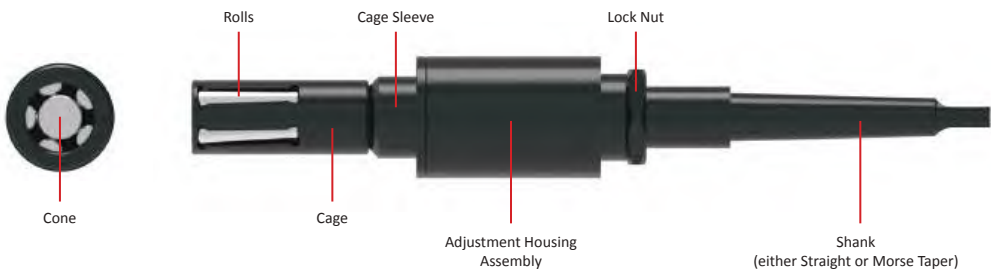


Blind-Hole Style

5.89 mm - 165.90 mm (0.2319" - 6.5315")

Advantages of the Roller Burnishing Tool

- ✓ **Provides accurate size control**
tolerances within 0.013 mm (0.0005") or better (depending on variables such as material).
- ✓ **Produces fine surface finishes**
between 0.03 - 0.4 micromillimeters Ra (1 - 16 microinches Ra).
- ✓ **Increases surface hardness**
by 5 - 10% or more.
- ✓ **Performs a much cleaner operation**
than honing or other abrasive finishing methods.
- ✓ **Provides versatility**
because the operation can be performed on any rotating spindle.
- ✓ **Eliminates the need for slower and costly finishing processes and secondary operations**
such as grinding, honing, lapping, etc.



The Tool Components

All roller burnishing tools (both through hole and blind hole) are composed of the basic burnisher assembly including:

- Cage
- Cone
- Rolls
- Shank (either straight or Morse Taper)



Roller Burnishing Overview

Product Selection Guide

Series	Diameter Range																								Length			
	50.00 mm 1.9685"								100.00 mm 3.9370"								150.00 mm 5.9055"								Short	Standard	Long	Unlimited
H Mini	<div></div>																							<div></div>	<div></div>			
H	<div></div>																							<div></div>	<div></div>	<div></div>		
I		<div></div>																						<div></div>	<div></div>	<div></div>		
K			<div></div>																					<div></div>	<div></div>	<div></div>		
L				<div></div>																				<div></div>	<div></div>	<div></div>		
F					<div></div>																						<div></div>	
M						<div></div>																					<div></div>	
N							<div></div>																				<div></div>	
O								<div></div>																			<div></div>	
P									<div></div>																		<div></div>	
Q										<div></div>																	<div></div>	
R											<div></div>																<div></div>	
S												<div></div>															<div></div>	
T													<div></div>														<div></div>	
U														<div></div>													<div></div>	

NOTE: For H series, through-hole tools start at 3.95 mm (0.1555") and blind-hole tools start at 5.89 mm (0.2319").

When to
ORDER UP

In some cases, there will be a diameter overlap between a series and the series after it. If the diameter you need falls into this overlap, choose the higher of the two series.

- Example:
- You need a 24.64 mm diameter tool. This diameter falls into both the K series and the L series.
- K series diameter range = 16.60 mm - 24.74 mm
 - L series diameter range = 24.54 mm - 31.16 mm

In this scenario, you would choose the L series tool that covers the 24.64 mm diameter.

D00



Roller Burnishing Overview

Product Nomenclature

Roller Burnisher

D00

RDK	H				2	1	0	00470
Diameter Unit	Series				Shank Type	Length	Cage Style	Diameter*
RDK = Through hole RSK = Blind hole	H I K L	F M N O	P Q R S	T U	0 = Straight (mini) 1 = Straight 2 = Morse Taper	0 = Unlimited 1 = Short 2 = Standard 3 = Long	0 = Standard 2 = Mini	XXXXXX = XX.XXX mm XXXXXX = X.XXXX"

*For through holes, use minimum diameter of burnishing range, and for blind holes, use the diameter to burnish.

Cone Reduction Factor (Blind Holes)

When burnishing blind holes, the cone must not extend past the end of the rolls. If it does, the cone will collide with the bottom of the hole. Each burnishing tool has an adjustment range of:

- Approximately 0.5 mm on diameter for tools below 12.7 mm.
- Approximately 1.0 mm on diameter for tools above 12.7 mm.

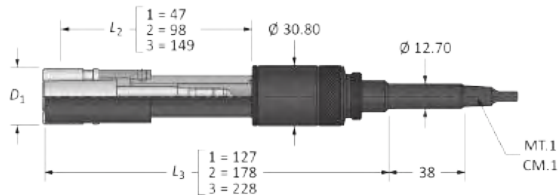
For through-hole burnishing tools, the standard cone value "x" is 1. If the standard cone is used for blind-hole burnishing, the only way it will not extend past the end of the rolls is to reduce the length of the cone. The required length reduction is dependent on the set diameter versus the minimum capable diameter of the tool. The factor of reduction (x) can be calculated using the formulas below and will be a whole integer number ranging from 2 - 8.

The "x" value could result in a decimal figure. If so, round down for answers below 0.80 and round up for answers 0.80 and above.

Diameter (5.89 mm - 12.77 mm)	Diameter (12.64 mm - 127.94 mm)	Diameter (127.90 mm - 165.90 mm)
$x = 1 + \frac{Z - Y}{0.05}$ <p>Z = diameter of the hole Y = minimum diameter setting of tool</p> <p>Example: Z = 11.05 Y = 10.71 mm</p> $x = 1 + \frac{11.05 - 10.71}{0.05} = 7.8$ <p>which is approximated at "x" = 8</p> <p>Correct Cone: RSTH-038-10025</p>	$x = 1 + \frac{Z - Y}{0.10}$ <p>Z = diameter of the hole Y = minimum diameter setting of tool</p> <p>Example: Z = 17.76 Y = 17.40 mm</p> $x = 1 + \frac{17.76 - 17.40}{0.10} = 4.6$ <p>which is approximated at "x" = 4</p> <p>Correct Cone: RSTK-034-00044</p>	$xx = 31 + \frac{Z - Y}{0.10}$ <p>Z = diameter of the hole Y = minimum diameter setting of tool</p> <p>Example: Z = 148.20 Y = 147.90 mm</p> $xx = 31 + \frac{148.20 - 147.90}{0.10} = 34$ <p>Correct Cone: RSTT-034-01480</p>

Reference Key

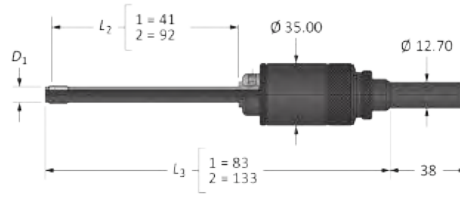
Symbol	Attribute
D_1	Diameter range
L_2	Burnishing length
L_3	Reference length





H Series (mini): 3.95 mm - 4.75 mm (0.1555" - 0.1870")

Through Holes



D00

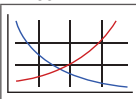
D_1		L	Part No. Straight Shank Assembly	Spare Parts			Qty
Metric (mm)	Imperial (in)			Cage	Cone	Rolls Part No.	
3.95 - 4.15	0.1555 - 0.1634	1	RDKH-012-00395	RDCH-012-10005	RDTH-031-10012	RDRY-704-00047	3
		2	RDKH-022-00395	RDCH-012-20005	RDTH-031-20012		
4.16 - 4.35	0.1638 - 0.1713	1	RDKH-012-00416	RDCH-012-10006	RDTH-035-10012	RDRY-704-00047	3
		2	RDKH-022-00416	RDCH-012-20006	RDTH-035-20012		
4.36 - 4.55	0.1717 - 0.1791	1	RDKH-012-00436	RDCH-012-10007	RDTH-031-10013	RDRY-704-00047	3
		2	RDKH-022-00436	RDCH-012-20007	RDTH-031-20013		
4.56 - 4.75	0.1795 - 0.1870	1	RDKH-012-00456	RDCH-012-10008	RDTH-035-10013	RDRY-704-00047	3
		2	RDKH-022-00456	RDCH-012-20008	RDTH-035-20013		

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

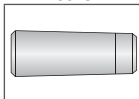
D00: 39 - 40



D00: 41 - 44



D00: 37

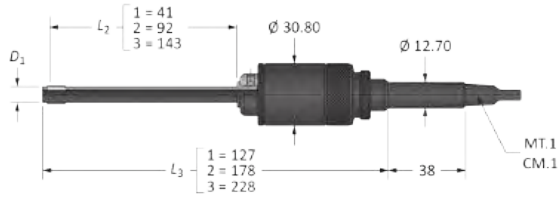


Key on D00: 2

**H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")**

Through Holes

D00



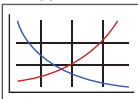
D_1		L	Part No.		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone		
4.70 - 4.90	0.1850 - 0.1929	1	RDKH-210-00470	RDKH-110-00470	RDCH-011-10012	RDTH-031-10012	RDRY-704-00062	3
		2	RDKH-220-00470	RDKH-120-00470	RDCH-011-20012	RDTH-031-20012		
		3	RDKH-230-00470	RDKH-130-00470	RDCH-011-30012	RDTH-031-30012		
4.87 - 5.17	0.1917 - 0.2035	1	RDKH-210-00487	RDKH-110-00487	RDCH-011-10011	RSTH-033-10012	RDRY-704-00062	3
		2	RDKH-220-00487	RDKH-120-00487	RDCH-011-20011	RSTH-033-20012		
		3	RDKH-230-00487	RDKH-130-00487	RDCH-011-30011	RSTH-033-30012		
5.07 - 5.59	0.1996 - 0.2200	1	RDKH-210-00507	RDKH-110-00507	RDCH-011-10013	RDTH-031-10013	RDRY-704-00062	5
		2	RDKH-220-00507	RDKH-120-00507	RDCH-011-20013	RDTH-031-20013		
		3	RDKH-230-00507	RDKH-130-00507	RDCH-011-30013	RDTH-031-30013		
5.49 - 5.99	0.2161 - 0.2358	1	RDKH-210-00549	RDKH-110-00549	RDCH-011-10014	RDTH-031-10013	RDRY-704-00070	5
		2	RDKH-220-00549	RDKH-120-00549	RDCH-011-20014	RDTH-031-20013		
		3	RDKH-230-00549	RDKH-130-00549	RDCH-011-30014	RDTH-031-30013		
5.89 - 6.41	0.2319 - 0.2524	1	RDKH-210-00589	RDKH-110-00589	RDCH-011-10015	RDTH-031-10015	RDRY-704-00070	5
		2	RDKH-220-00589	RDKH-120-00589	RDCH-011-20015	RDTH-031-20015		
		3	RDKH-230-00589	RDKH-130-00589	RDCH-011-30015	RDTH-031-30015		
6.31 - 6.81	0.2484 - 0.2681	1	RDKH-210-00631	RDKH-110-00631	RDCH-011-10016	RDTH-031-10015	RDRY-704-00078	5
		2	RDKH-220-00631	RDKH-120-00631	RDCH-011-20016	RDTH-031-20015		
		3	RDKH-230-00631	RDKH-130-00631	RDCH-011-30016	RDTH-031-30015		
6.71 - 7.21	0.2642 - 0.2839	1	RDKH-210-00671	RDKH-110-00671	RDCH-011-10017	RDTH-031-10017	RDRY-704-00078	5
		2	RDKH-220-00671	RDKH-120-00671	RDCH-011-20017	RDTH-031-20017		
		3	RDKH-230-00671	RDKH-130-00671	RDCH-011-30017	RDTH-031-30017		
7.12 - 7.62	0.2803 - 0.3000	1	RDKH-210-00712	RDKH-110-00712	RDCH-011-10018	RDTH-031-10017	RDRY-704-00086	5
		2	RDKH-220-00712	RDKH-120-00712	RDCH-011-20018	RDTH-031-20017		
		3	RDKH-230-00712	RDKH-130-00712	RDCH-011-30018	RDTH-031-30017		
7.48 - 7.98	0.2945 - 0.3142	1	RDKH-210-00748	RDKH-110-00748	RDCH-011-10019	RDTH-031-10019	RDRY-704-00086	5
		2	RDKH-220-00748	RDKH-120-00748	RDCH-011-20019	RDTH-031-20019		
		3	RDKH-230-00748	RDKH-130-00748	RDCH-011-30019	RDTH-031-30019		
7.88 - 8.38	0.3102 - 0.3299	1	RDKH-210-00788	RDKH-110-00788	RDCH-011-10020	RDTH-031-10019	RDRY-704-00093	5
		2	RDKH-220-00788	RDKH-120-00788	RDCH-011-20020	RDTH-031-20019		
		3	RDKH-230-00788	RDKH-130-00788	RDCH-011-30020	RDTH-031-30019		
8.28 - 8.79	0.3260 - 0.3461	1	RDKH-210-00828	RDKH-110-00828	RDCH-011-10021	RDTH-031-10021	RDRY-704-00093	5
		2	RDKH-220-00828	RDKH-120-00828	RDCH-011-20021	RDTH-031-20021		
		3	RDKH-230-00828	RDKH-130-00828	RDCH-011-30021	RDTH-031-30021		

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

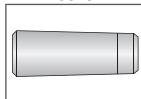
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D00: 41 - 44



D00: 37

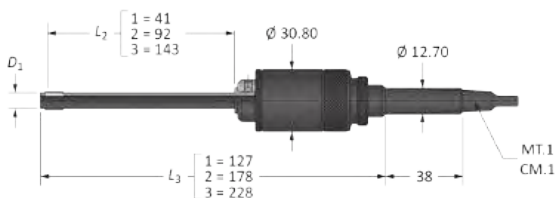




H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

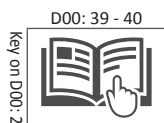
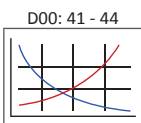
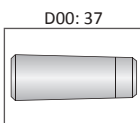
Through Holes

D00



D_1		L	Part No.		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone		
8.66 - 9.16	0.3410 - 0.3606	1	RDKH-210-00866	RDKH-110-00866	RDCH-011-10022	RDTH-031-10019	RDY-704-00109	5
		2	RDKH-220-00866	RDKH-120-00866	RDCH-011-20022	RDTH-031-20019		
		3	RDKH-230-00866	RDKH-130-00866	RDCH-011-30022	RDTH-031-30019		
9.06 - 9.57	0.3567 - 0.3768	1	RDKH-210-00906	RDKH-110-00906	RDCH-011-10023	RDTH-031-10021	RDY-704-00109	5
		2	RDKH-220-00906	RDKH-120-00906	RDCH-011-20023	RDTH-031-20021		
		3	RDKH-230-00906	RDKH-130-00906	RDCH-011-30023	RDTH-031-30021		
9.48 - 9.99	0.3732 - 0.3933	1	RDKH-210-00948	RDKH-110-00948	RDCH-011-10024	RDTH-031-10024	RDY-704-00109	5
		2	RDKH-220-00948	RDKH-120-00948	RDCH-011-20024	RDTH-031-20024		
		3	RDKH-230-00948	RDKH-130-00948	RDCH-011-30024	RDTH-031-30024		
9.91 - 10.42	0.3902 - 0.4102	1	RDKH-210-00991	RDKH-110-00991	RDCH-011-10025	RDTH-031-10025	RDY-704-00109	5
		2	RDKH-220-00991	RDKH-120-00991	RDCH-011-20025	RDTH-031-20025		
		3	RDKH-230-00991	RDKH-130-00991	RDCH-011-30025	RDTH-031-30025		
10.29 - 10.80	0.4051 - 0.4252	1	RDKH-210-01029	RDKH-110-01029	RDCH-011-10026	RDTH-031-10024	RDY-704-00125	5
		2	RDKH-220-01029	RDKH-120-01029	RDCH-011-20026	RDTH-031-20024		
		3	RDKH-230-01029	RDKH-130-01029	RDCH-011-30026	RDTH-031-30024		
10.71 - 11.21	0.4217 - 0.4413	1	RDKH-210-01071	RDKH-110-01071	RDCH-011-10027	RDTH-031-10025	RDY-704-00125	5
		2	RDKH-220-01071	RDKH-120-01071	RDCH-011-20027	RDTH-031-20025		
		3	RDKH-230-01071	RDKH-130-01071	RDCH-011-30027	RDTH-031-30025		
11.11 - 11.61	0.4374 - 0.4571	1	RDKH-210-01111	RDKH-110-01111	RDCH-011-10028	RDTH-031-10028	RDY-704-00125	5
		2	RDKH-220-01111	RDKH-120-01111	RDCH-011-20028	RDTH-031-20028		
		3	RDKH-230-01111	RDKH-130-01111	RDCH-011-30028	RDTH-031-30028		
11.46 - 11.96	0.4512 - 0.4709	1	RDKH-210-01146	RDKH-110-01146	RDCH-011-10029	RDTH-031-10024	RDY-704-00148	5
		2	RDKH-220-01146	RDKH-120-01146	RDCH-011-20029	RDTH-031-20024		
		3	RDKH-230-01146	RDKH-130-01146	RDCH-011-30029	RDTH-031-30024		
11.89 - 12.39	0.4681 - 0.4878	1	RDKH-210-01189	RDKH-110-01189	RDCH-011-10030	RDTH-031-10025	RDY-704-00148	5
		2	RDKH-220-01189	RDKH-120-01189	RDCH-011-20030	RDTH-031-20025		
		3	RDKH-230-01189	RDKH-130-01189	RDCH-011-30030	RDTH-031-30025		
12.27 - 12.77	0.4831 - 0.5028	1	RDKH-210-01227	RDKH-110-01227	RDCH-011-10031	RDTH-031-10028	RDY-704-00148	5
		2	RDKH-220-01227	RDKH-120-01227	RDCH-011-20031	RDTH-031-20028		
		3	RDKH-230-01227	RDKH-130-01227	RDCH-011-30031	RDTH-031-30028		

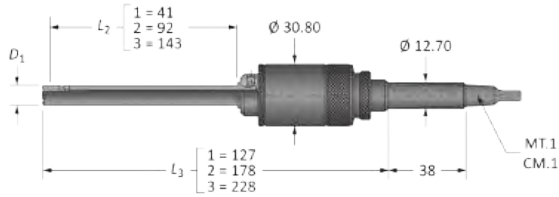
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



**H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")**

Blind Holes

D00

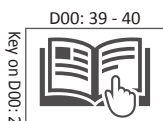
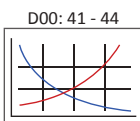
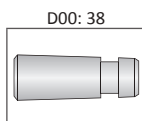


D_1		L	Part No.*		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**		
5.89 - 6.41	0.2319 - 0.2524	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10015	RSTH-03x-10012	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20015	RSTH-03x-20012		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30015	RSTH-03x-30012		
6.31 - 6.81	0.2484 - 0.2681	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10016	RSTH-03x-10013	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20016	RSTH-03x-20013		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30016	RSTH-03x-30013		
6.71 - 7.21	0.2642 - 0.2839	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10017	RSTH-03x-10015	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20017	RSTH-03x-20015		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30017	RSTH-03x-30015		
7.12 - 7.62	0.2803 - 0.3000	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10018	RSTH-03x-10017	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20018	RSTH-03x-20017		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30018	RSTH-03x-30017		
7.48 - 7.98	0.2945 - 0.3142	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10019	RSTH-03x-10019	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20019	RSTH-03x-20019		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30019	RSTH-03x-30019		
7.88 - 8.38	0.3102 - 0.3299	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10020	RSTH-03x-10021	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20020	RSTH-03x-20021		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30020	RSTH-03x-30021		
8.28 - 8.79	0.3260 - 0.3461	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10021	RSTH-03x-10024	RSRY-708-00086	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20021	RSTH-03x-20024		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30021	RSTH-03x-30024		
8.66 - 9.16	0.3410 - 0.3606	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10022	RSTH-03x-10015	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20022	RSTH-03x-20015		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30022	RSTH-03x-30015		
9.06 - 9.57	0.3567 - 0.3768	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10023	RSTH-03x-10017	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20023	RSTH-03x-20017		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30023	RSTH-03x-30017		

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 10.25 mm with MT.1 shank: RSKH-210-01025).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

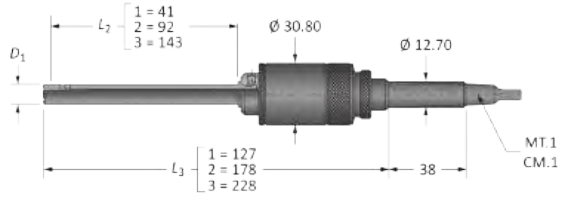
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.





H Series: 4.70 mm - 12.77 mm (0.1850" - 0.5028")

Blind Holes



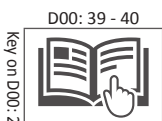
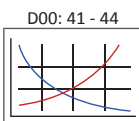
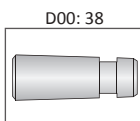
D00

D_1		L	Part No.*		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**		
9.48 - 9.99	0.3732 - 0.3933	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10024	RSTH-03x-10019	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20024	RSTH-03x-20019		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30024	RSTH-03x-30019		
9.91 - 10.42	0.3902 - 0.4102	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10025	RSTH-03x-10021	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20025	RSTH-03x-20021		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30025	RSTH-03x-30021		
10.29 - 10.80	0.4051 - 0.4252	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10026	RSTH-03x-10024	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20026	RSTH-03x-20024		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30026	RSTH-03x-30024		
10.71 - 11.21	0.4217 - 0.4413	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10027	RSTH-03x-10025	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20027	RSTH-03x-20025		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30027	RSTH-03x-30025		
11.11 - 11.61	0.4374 - 0.4571	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10028	RSTH-03x-10028	RSRY-708-00125	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20028	RSTH-03x-20028		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30028	RSTH-03x-30028		
11.46 - 11.96	0.4512 - 0.4709	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10029	RSTH-03x-10021	RSRY-708-00156	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20029	RSTH-03x-20021		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30029	RSTH-03x-30021		
11.89 - 12.39	0.4681 - 0.4878	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10030	RSTH-03x-10024	RSRY-708-00156	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20030	RSTH-03x-20024		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30030	RSTH-03x-30024		
12.27 - 12.77	0.4831 - 0.5028	1	RSKH-210-xxxxx	RSKH-110-xxxxx	RSCH-015-10031	RSTH-03x-10025	RSRY-708-00156	3
		2	RSKH-220-xxxxx	RSKH-120-xxxxx	RSCH-015-20031	RSTH-03x-20025		
		3	RSKH-230-xxxxx	RSKH-130-xxxxx	RSCH-015-30031	RSTH-03x-30025		

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 10.25 mm with MT.1 shank: RSKH-210-01025).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

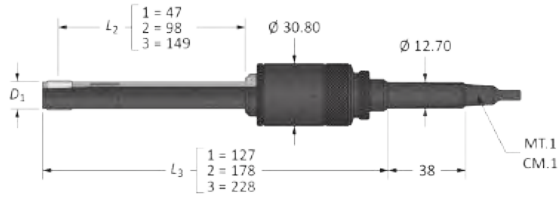


Key on D00: 2

**I Series: 12.64 mm - 16.85 mm (0.4976" - 0.6634")**

Through Holes

D00



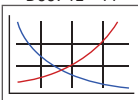
D_1			Part No.		Spare Parts			
Metric (mm)	Imperial (in)	L	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
12.64 - 13.50	0.4976 - 0.5315	1	RDKI-210-01264	RDKI-110-01264	RDCI-400-00500	RDTI-031-10032	RDRY-704-00156	5
		2	RDKI-220-01264	RDKI-120-01264	RDCI-400-00500	RDTI-031-20032		
		3	RDKI-230-01264	RDKI-130-01264	RDCI-400-00500	RDTI-031-30032		
13.45 - 14.45	0.5295 - 0.5689	1	RDKI-210-01345	RDKI-110-01345	RDCI-400-00531	RDTI-031-10034	RDRY-704-00156	5
		2	RDKI-220-01345	RDKI-120-01345	RDCI-400-00531	RDTI-031-20034		
		3	RDKI-230-01345	RDKI-130-01345	RDCI-400-00531	RDTI-031-30034		
14.25 - 15.25	0.5610 - 0.6004	1	RDKI-210-01425	RDKI-110-01425	RDCI-400-00562	RDTI-031-10034	RDRY-704-00172	5
		2	RDKI-220-01425	RDKI-120-01425	RDCI-400-00562	RDTI-031-20034		
		3	RDKI-230-01425	RDKI-130-01425	RDCI-400-00562	RDTI-031-30034		
15.05 - 16.05	0.5925 - 0.6319	1	RDKI-210-01505	RDKI-110-01505	RDCI-400-00593	RDTI-031-10038	RDRY-704-00172	5
		2	RDKI-220-01505	RDKI-120-01505	RDCI-400-00593	RDTI-031-20038		
		3	RDKI-230-01505	RDKI-130-01505	RDCI-400-00593	RDTI-031-30038		
15.85 - 16.85	0.6240 - 0.6634	1	RDKI-210-01585	RDKI-110-01585	RDCI-400-00625	RDTI-031-10038	RDRY-701-00187	5
		2	RDKI-220-01585	RDKI-120-01585	RDCI-400-00625	RDTI-031-20038		
		3	RDKI-230-01585	RDKI-130-01585	RDCI-400-00625	RDTI-031-30038		

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

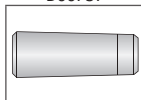
D00: 39 - 40



D00: 41 - 44



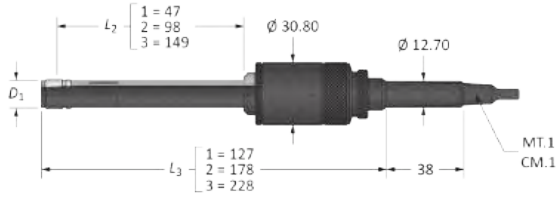
D00: 37





I Series: 12.64 mm - 16.85 mm (0.4976" - 0.6634")

Blind Holes



D00

D_1		L	Part No.*		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**		
12.64 - 13.50	0.4976 - 0.5315	1	RSKI-210-xxxxx	RSKI-110-xxxxx	RSCI-400-00500	RSTI-03x-10032	RSRY-708-00156	5
		2	RSKI-220-xxxxx	RSKI-120-xxxxx	RSCI-400-00500	RSTI-03x-20032		
		3	RSKI-230-xxxxx	RSKI-130-xxxxx	RSCI-400-00500	RSTI-03x-30032		
13.45 - 14.45	0.5295 - 0.5689	1	RSKI-210-xxxxx	RSKI-110-xxxxx	RSCI-400-00531	RSTI-03x-10034	RSRY-708-00156	5
		2	RSKI-220-xxxxx	RSKI-120-xxxxx	RSCI-400-00531	RSTI-03x-20034		
		3	RSKI-230-xxxxx	RSKI-130-xxxxx	RSCI-400-00531	RSTI-03x-30034		
14.25 - 15.25	0.5610 - 0.6004	1	RSKI-210-xxxxx	RSKI-110-xxxxx	RSCI-400-00562	RSTI-03x-10034	RSRY-708-00172	5
		2	RSKI-220-xxxxx	RSKI-120-xxxxx	RSCI-400-00562	RSTI-03x-20034		
		3	RSKI-230-xxxxx	RSKI-130-xxxxx	RSCI-400-00562	RSTI-03x-30034		
15.05 - 16.05	0.5925 - 0.6319	1	RSKI-210-xxxxx	RSKI-110-xxxxx	RSCI-400-00593	RSTI-03x-10038	RSRY-708-00172	5
		2	RSKI-220-xxxxx	RSKI-120-xxxxx	RSCI-400-00593	RSTI-03x-20038		
		3	RSKI-230-xxxxx	RSKI-130-xxxxx	RSCI-400-00593	RSTI-03x-30038		
15.85 - 16.85	0.6240 - 0.6634	1	RSKI-210-xxxxx	RSKI-110-xxxxx	RSCI-400-00625	RSTI-03x-10038	RSRY-708-00187	5
		2	RSKI-220-xxxxx	RSKI-120-xxxxx	RSCI-400-00625	RSTI-03x-20038		
		3	RSKI-230-xxxxx	RSKI-130-xxxxx	RSCI-400-00625	RSTI-03x-30038		

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. long series roller burnisher Ø 14.00 mm with MT.1 shank: RSKI-230-01400).

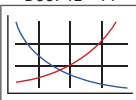
** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

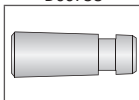
D00: 39 - 40



D00: 41 - 44



D00: 38

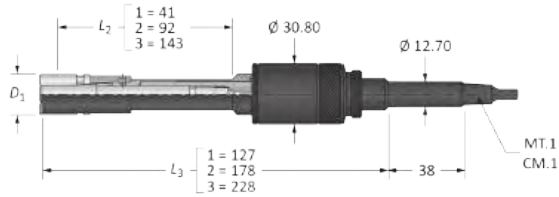


Key on D00: 2

**K Series: 16.60 mm - 24.74 mm (0.6535" - 0.9740")**

Through Holes

D00



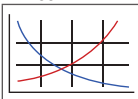
D_1		Part No.		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)	L	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	
16.60 - 17.61	0.6535 - 0.6933	1	RDKK-210-01660	RDKK-110-01660	RDCK-011-00042	RDTK-031-00042	RDYR-701-00187
		2	RDKK-220-01660	RDKK-120-01660	RDCK-011-00042	RDTK-031-00042	
		3	RDKK-230-01660	RDKK-130-01660	RDCK-011-00042	RDTK-031-00042	
17.40 - 18.39	0.6850 - 0.7240	1	RDKK-210-01740	RDKK-110-01740	RDCK-011-00044	RDTK-031-00044	RDYR-701-00187
		2	RDKK-220-01740	RDKK-120-01740	RDCK-011-00044	RDTK-031-00044	
		3	RDKK-230-01740	RDKK-130-01740	RDCK-011-00044	RDTK-031-00044	
18.19 - 19.18	0.7161 - 0.7551	1	RDKK-210-01819	RDKK-110-01819	RDCK-011-00046	RDTK-031-00042	RDYR-701-00218
		2	RDKK-220-01819	RDKK-120-01819	RDCK-011-00046	RDTK-031-00042	
		3	RDKK-230-01819	RDKK-130-01819	RDCK-011-00046	RDTK-031-00042	
18.96 - 19.99	0.7465 - 0.7870	1	RDKK-210-01896	RDKK-110-01896	RDCK-011-00048	RDTK-031-00044	RDYR-701-00218
		2	RDKK-220-01896	RDKK-120-01896	RDCK-011-00048	RDTK-031-00044	
		3	RDKK-230-01896	RDKK-130-01896	RDCK-011-00048	RDTK-031-00044	
19.74 - 20.77	0.7772 - 0.8177	1	RDKK-210-01974	RDKK-110-01974	RDCK-011-00050	RDTK-031-00050	RDYR-701-00218
		2	RDKK-220-01974	RDKK-120-01974	RDCK-011-00050	RDTK-031-00050	
		3	RDKK-230-01974	RDKK-130-01974	RDCK-011-00050	RDTK-031-00050	
20.52 - 21.57	0.8079 - 0.8492	1	RDKK-210-02052	RDKK-110-02052	RDCK-011-00052	RDTK-031-00052	RDYR-701-00218
		2	RDKK-220-02052	RDKK-120-02052	RDCK-011-00052	RDTK-031-00052	
		3	RDKK-230-02052	RDKK-130-02052	RDCK-011-00052	RDTK-031-00052	
21.31 - 22.35	0.8390 - 0.8799	1	RDKK-210-02131	RDKK-110-02131	RDCK-011-00054	RDTK-031-00054	RDYR-701-00218
		2	RDKK-220-02131	RDKK-120-02131	RDCK-011-00054	RDTK-031-00054	
		3	RDKK-230-02131	RDKK-130-02131	RDCK-011-00054	RDTK-031-00054	
22.13 - 23.16	0.8713 - 0.9118	1	RDKK-210-02213	RDKK-110-02213	RDCK-011-00056	RDTK-031-00050	RDYR-701-00265
		2	RDKK-220-02213	RDKK-120-02213	RDCK-011-00056	RDTK-031-00050	
		3	RDKK-230-02213	RDKK-130-02213	RDCK-011-00056	RDTK-031-00050	
22.91 - 23.96	0.9020 - 0.9433	1	RDKK-210-02291	RDKK-110-02291	RDCK-011-00058	RDTK-031-00052	RDYR-701-00265
		2	RDKK-220-02291	RDKK-120-02291	RDCK-011-00058	RDTK-031-00052	
		3	RDKK-230-02291	RDKK-130-02291	RDCK-011-00058	RDTK-031-00052	
23.70 - 24.74	0.9331 - 0.9740	1	RDKK-210-02370	RDKK-110-02370	RDCK-011-00060	RDTK-031-00054	RDYR-701-00265
		2	RDKK-220-02370	RDKK-120-02370	RDCK-011-00060	RDTK-031-00054	
		3	RDKK-230-02370	RDKK-130-02370	RDCK-011-00060	RDTK-031-00054	

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

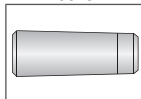
D00: 39 - 40



D00: 41 - 44

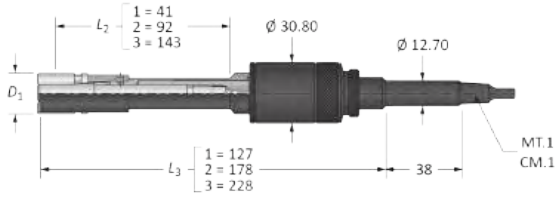


D00: 37



K Series: 16.60 mm - 24.74 mm (0.6535" - 0.9740")

Blind Holes



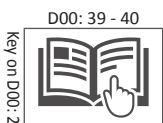
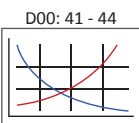
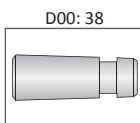
D00

D_1		L	Part No.*		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**		
16.60 - 17.61	0.6535 - 0.6933	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00042	RSTK-03x-00042	RSRY-708-00187	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00042	RSTK-03x-00042		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00042	RSTK-03x-00042		
17.40 - 18.39	0.6850 - 0.7240	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00044	RSTK-03x-00044	RSRY-708-00187	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00044	RSTK-03x-00044		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00044	RSTK-03x-00044		
18.19 - 19.18	0.7161 - 0.7551	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00046	RSTK-03x-00042	RSRY-708-00218	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00046	RSTK-03x-00042		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00046	RSTK-03x-00042		
18.96 - 19.99	0.7465 - 0.7870	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00048	RSTK-03x-00044	RSRY-708-00218	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00048	RSTK-03x-00044		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00048	RSTK-03x-00044		
19.74 - 20.77	0.7772 - 0.8177	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00050	RSTK-03x-00050	RSRY-708-00218	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00050	RSTK-03x-00050		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00050	RSTK-03x-00050		
20.52 - 21.57	0.8079 - 0.8492	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00052	RSTK-03x-00052	RSRY-708-00218	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00052	RSTK-03x-00052		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00052	RSTK-03x-00052		
21.31 - 22.35	0.8390 - 0.8799	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00054	RSTK-03x-00054	RSRY-708-00218	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00054	RSTK-03x-00054		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00054	RSTK-03x-00054		
22.13 - 23.16	0.8713 - 0.9118	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00056	RSTK-03x-00050	RSRY-708-00265	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00056	RSTK-03x-00050		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00056	RSTK-03x-00050		
22.91 - 23.96	0.9020 - 0.9433	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00058	RSTK-03x-00052	RSRY-708-00265	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00058	RSTK-03x-00052		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00058	RSTK-03x-00052		
23.70 - 24.74	0.9331 - 0.9740	1	RSKK-210-xxxxx	RSKK-110-xxxxx	RSCK-015-00060	RSTK-03x-00054	RSRY-708-00265	5
		2	RSKK-220-xxxxx	RSKK-120-xxxxx	RSCK-015-00060	RSTK-03x-00054		
		3	RSKK-230-xxxxx	RSKK-130-xxxxx	RSCK-015-00060	RSTK-03x-00054		

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. standard series roller burnisher Ø 20.00 mm with MT.1 shank: RSCK-120-02000).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

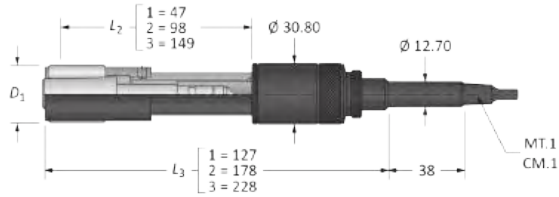


Key on D00: 2

**L Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")**

Through Holes

D00



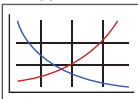
D_1		Part No.		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)	L	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	
24.54 - 25.59	0.9661 - 1.0075	1	RDKL-210-02454	RDKL-110-02454	RDCL-011-00062	RDTL-031-00062	RDRY-701-00265
		2	RDKL-220-02454	RDKL-120-02454	RDCL-011-00062	RDTL-031-00062	
		3	RDKL-230-02454	RDKL-130-02454	RDCL-011-00062	RDTL-031-00062	
25.38 - 26.42	0.9992 - 1.0402	1	RDKL-210-02538	RDKL-110-02538	RDCL-011-00064	RDTL-031-00064	RDRY-701-00265
		2	RDKL-220-02538	RDKL-120-02538	RDCL-011-00064	RDTL-031-00064	
		3	RDKL-230-02538	RDKL-130-02538	RDCL-011-00064	RDTL-031-00064	
26.16 - 27.20	1.0299 - 1.0709	1	RDKL-210-02616	RDKL-110-02616	RDCL-011-00066	RDTL-031-00066	RDRY-701-00265
		2	RDKL-220-02616	RDKL-120-02616	RDCL-011-00066	RDTL-031-00066	
		3	RDKL-230-02616	RDKL-130-02616	RDCL-011-00066	RDTL-031-00066	
26.95 - 28.00	1.0610 - 1.1024	1	RDKL-210-02695	RDKL-110-02695	RDCL-011-00068	RDTL-031-00068	RDRY-701-00265
		2	RDKL-220-02695	RDKL-120-02695	RDCL-011-00068	RDTL-031-00068	
		3	RDKL-230-02695	RDKL-130-02695	RDCL-011-00068	RDTL-031-00068	
27.73 - 28.77	1.0917 - 1.1327	1	RDKL-210-02773	RDKL-110-02773	RDCL-011-00070	RDTL-031-00070	RDRY-701-00265
		2	RDKL-220-02773	RDKL-120-02773	RDCL-011-00070	RDTL-031-00070	
		3	RDKL-230-02773	RDKL-130-02773	RDCL-011-00070	RDTL-031-00070	
28.55 - 29.59	1.1240 - 1.1650	1	RDKL-210-02855	RDKL-110-02855	RDCL-011-00072	RDTL-031-00066	RDRY-701-00312
		2	RDKL-220-02855	RDKL-120-02855	RDCL-011-00072	RDTL-031-00066	
		3	RDKL-230-02855	RDKL-130-02855	RDCL-011-00072	RDTL-031-00066	
29.34 - 30.39	1.1551 - 1.1965	1	RDKL-210-02934	RDKL-110-02934	RDCL-011-00074	RDTL-031-00068	RDRY-701-00312
		2	RDKL-220-02934	RDKL-120-02934	RDCL-011-00074	RDTL-031-00068	
		3	RDKL-230-02934	RDKL-130-02934	RDCL-011-00074	RDTL-031-00068	
30.12 - 31.16	1.1858 - 1.2268	1	RDKL-210-03012	RDKL-110-03012	RDCL-011-00076	RDTL-031-00070	RDRY-701-00312
		2	RDKL-220-03012	RDKL-120-03012	RDCL-011-00076	RDTL-031-00070	
		3	RDKL-230-03012	RDKL-130-03012	RDCL-011-00076	RDTL-031-00070	

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

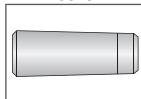
D00: 39 - 40



D00: 41 - 44



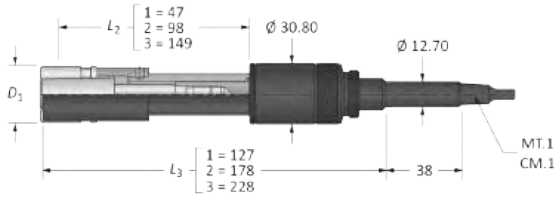
D00: 37





L Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")

Blind Holes



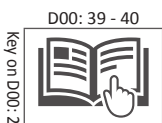
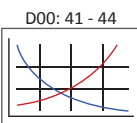
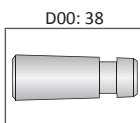
D00

D_1		L	Part No.*		Spare Parts		Rolls Part No.	Qty
Metric (mm)	Imperial (in)		Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**		
24.54 - 25.59	0.9661 - 1.0075	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00062	RSTL-03x-00062	RSRY-708-00265	5
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00062	RSTL-03x-00062		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00062	RSTL-03x-00062		
25.38 - 26.42	0.9992 - 1.0402	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00064	RSTL-03x-00064	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00064	RSTL-03x-00064		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00064	RSTL-03x-00064		
26.16 - 27.20	1.0299 - 1.0709	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00066	RSTL-03x-00066	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00066	RSTL-03x-00066		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00066	RSTL-03x-00066		
26.95 - 28.00	1.0610 - 1.1024	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00068	RSTL-03x-00068	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00068	RSTL-03x-00068		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00068	RSTL-03x-00068		
27.73 - 28.77	1.0917 - 1.1327	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00070	RSTL-03x-00070	RSRY-708-00265	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00070	RSTL-03x-00070		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00070	RSTL-03x-00070		
28.55 - 29.59	1.1240 - 1.1650	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00072	RSTL-03x-00066	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00072	RSTL-03x-00066		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00072	RSTL-03x-00066		
29.34 - 30.39	1.1551 - 1.1965	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00074	RSTL-03x-00068	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00074	RSTL-03x-00068		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00074	RSTL-03x-00068		
30.12 - 31.16	1.1858 - 1.2268	1	RSKL-210-xxxxx	RSKL-110-xxxxx	RSCL-015-00076	RSTL-03x-00070	RSRY-708-00312	7
		2	RSKL-220-xxxxx	RSKL-120-xxxxx	RSCL-015-00076	RSTL-03x-00070		
		3	RSKL-230-xxxxx	RSKL-130-xxxxx	RSCL-015-00076	RSTL-03x-00070		

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. short series roller burnisher Ø 27.50 mm with MT.1 shank: RSKL-210-02750).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page **D00: 7** for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



Key on D00: 2

**F Series: 24.54 mm - 31.16 mm (0.9661" - 1.2268")**

D00

**Through Holes**

D ₁		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	RDKF-200-02454	RDKF-100-02454	RDCL-011-00062	RDTF-031-00062	RDRY-701-00265	5
25.38 - 26.42	0.9992 - 1.0402	RDKF-200-02538	RDKF-100-02538	RDCL-011-00064	RDTF-031-00064	RDRY-701-00265	7
26.16 - 27.20	1.0299 - 1.0709	RDKF-200-02616	RDKF-100-02616	RDCL-011-00066	RDTF-031-00066	RDRY-701-00265	7
26.95 - 28.00	1.0610 - 1.1024	RDKF-200-02695	RDKF-100-02695	RDCL-011-00068	RDTF-031-00068	RDRY-701-00265	7
27.73 - 28.77	1.0917 - 1.1327	RDKF-200-02773	RDKF-100-02773	RDCL-011-00070	RDTF-031-00070	RDRY-701-00265	7
28.55 - 29.59	1.1240 - 1.1650	RDKF-200-02855	RDKF-100-02855	RDCL-011-00072	RDTF-031-00066	RDRY-701-00312	7
29.34 - 30.39	1.1551 - 1.1965	RDKF-200-02934	RDKF-100-02934	RDCL-011-00074	RDTF-031-00068	RDRY-701-00312	7
30.12 - 31.16	1.1858 - 1.2268	RDKF-200-03012	RDKF-100-03012	RDCL-011-00076	RDTF-031-00070	RDRY-701-00312	7

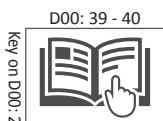
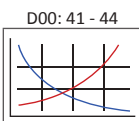
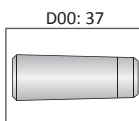
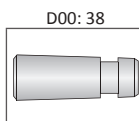
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.**Blind Holes**

D ₁		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
24.54 - 25.59	0.9661 - 1.0075	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00062	RSTF-03x-00062	RSRY-708-00265	5
25.38 - 26.42	0.9992 - 1.0402	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00064	RSTF-03x-00064	RSRY-708-00265	5
26.16 - 27.20	1.0299 - 1.0709	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00066	RSTF-03x-00066	RSRY-708-00265	5
26.95 - 28.00	1.0610 - 1.1024	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00068	RSTF-03x-00068	RSRY-708-00265	5
27.73 - 28.77	1.0917 - 1.1327	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00070	RSTF-03x-00070	RSRY-708-00265	5
28.55 - 29.59	1.1240 - 1.1650	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00072	RSTF-03x-00066	RSRY-708-00312	5
29.34 - 30.39	1.1551 - 1.1965	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00074	RSTF-03x-00068	RSRY-708-00312	5
30.12 - 31.16	1.1858 - 1.2268	RSKF-200-xxxxx	RSKF-100-xxxxx	RSCL-015-00076	RSTF-03x-00070	RSRY-708-00312	5

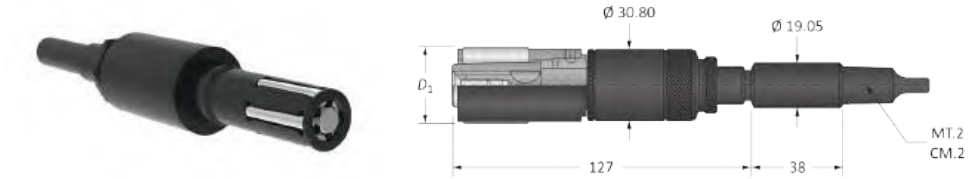
* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 27.00 mm with

MT.1 shank: RSKF-200-02700).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

M Series: 30.85 mm - 35.86 mm (1.2146" - 1.4118")

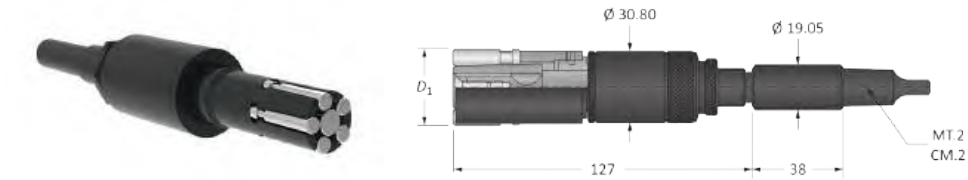


D00

Through Holes

D ₁		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
30.85 - 31.90	1.2146 - 1.2559	RDKM-200-03085	RDKM-100-03085	RDCM-011-00078	RDTM-031-00078	RDRY-701-00265	7
31.67 - 32.71	1.2469 - 1.2878	RDKM-200-03167	RDKM-100-03167	RDCM-011-00080	RDTM-031-00080	RDRY-701-00265	7
32.44 - 33.47	1.2772 - 1.3177	RDKM-200-03244	RDKM-100-03244	RDCM-011-00082	RDTM-031-00082	RDRY-701-00265	7
33.24 - 34.29	1.3087 - 1.3500	RDKM-200-03324	RDKM-100-03324	RDCM-011-00084	RDTM-031-00078	RDRY-701-00312	7
34.05 - 35.09	1.3406 - 1.3815	RDKM-200-03405	RDKM-100-03405	RDCM-011-00086	RDTM-031-00080	RDRY-701-00312	7
34.83 - 35.86	1.3713 - 1.4118	RDKM-200-03483	RDKM-100-03483	RDCM-011-00088	RDTM-031-00082	RDRY-701-00312	7

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



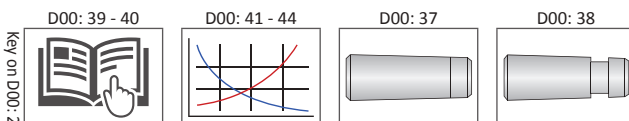
Blind Holes

D ₁		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
30.85 - 31.90	1.2146 - 1.2559	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00078	RSTM-03x-00078	RSRY-708-00265	5
31.67 - 32.71	1.2469 - 1.2878	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00080	RSTM-03x-00080	RSRY-708-00265	5
32.44 - 33.47	1.2772 - 1.3177	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00082	RSTM-03x-00082	RSRY-708-00265	5
33.24 - 34.29	1.3087 - 1.3500	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00084	RSTM-03x-00078	RSRY-708-00312	5
34.05 - 35.09	1.3406 - 1.3815	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00086	RSTM-03x-00080	RSRY-708-00312	5
34.83 - 35.86	1.3713 - 1.4118	RSKM-200-xxxxx	RSKM-100-xxxxx	RSCM-015-00088	RSTM-03x-00082	RSRY-708-00312	5

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 35.00 mm with MT.2 shank: RSKM-200-03500).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



**N Series: 35.61 mm - 46.97 mm (1.4020" - 1.8492")**

Through Holes

D00



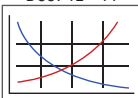
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
35.61 - 36.66	1.4020 - 1.4433	RDKN-200-03561	RDKN-100-03561	RDCN-011-00090	RDTN-031-00090	RDRY-701-00312	7
36.40 - 37.44	1.4331 - 1.4740	RDKN-200-03640	RDKN-100-03640	RDCN-011-00092	RDTN-031-00092	RDRY-701-00312	7
37.18 - 38.23	1.4638 - 1.5051	RDKN-200-03718	RDKN-100-03718	RDCN-011-00094	RDTN-031-00094	RDRY-701-00312	7
38.00 - 39.04	1.4961 - 1.5370	RDKN-200-03800	RDKN-100-03800	RDCN-011-00096	RDTN-031-00096	RDRY-701-00312	7
38.79 - 39.82	1.5272 - 1.5677	RDKN-200-03879	RDKN-100-03879	RDCN-011-00098	RDTM-031-00080	RDRY-701-00406	7
39.57 - 40.62	1.5579 - 1.5992	RDKN-200-03957	RDKN-100-03957	RDCN-011-00100	RDTM-031-00082	RDRY-701-00406	7
40.36 - 41.40	1.5890 - 1.6299	RDKN-200-04036	RDKN-100-04036	RDCN-011-00102	RDTN-031-00090	RDRY-701-00406	7
41.18 - 42.21	1.6213 - 1.6618	RDKN-200-04118	RDKN-100-04118	RDCN-011-00104	RDTN-031-00092	RDRY-701-00406	7
41.96 - 43.01	1.6520 - 1.6933	RDKN-200-04196	RDKN-100-04196	RDCN-011-00106	RDTN-031-00094	RDRY-701-00406	7
42.75 - 43.79	1.6831 - 1.7240	RDKN-200-04275	RDKN-100-04275	RDCN-011-00108	RDTM-031-00082	RDRY-701-00468	7
43.53 - 44.58	1.7138 - 1.7551	RDKN-200-04353	RDKN-100-04353	RDCN-011-00110	RDTN-031-00090	RDRY-701-00468	7
44.35 - 45.39	1.7461 - 1.7870	RDKN-200-04435	RDKN-100-04435	RDCN-011-00112	RDTN-031-00092	RDRY-701-00468	7
45.14 - 46.17	1.7772 - 1.8177	RDKN-200-04514	RDKN-100-04514	RDCN-011-00114	RDTN-031-00094	RDRY-701-00468	7
45.92 - 46.97	1.8079 - 1.8492	RDKN-200-04592	RDKN-100-04592	RDCN-011-00116	RDTN-031-00096	RDRY-701-00468	7

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

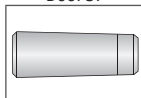
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D00: 41 - 44



D00: 37

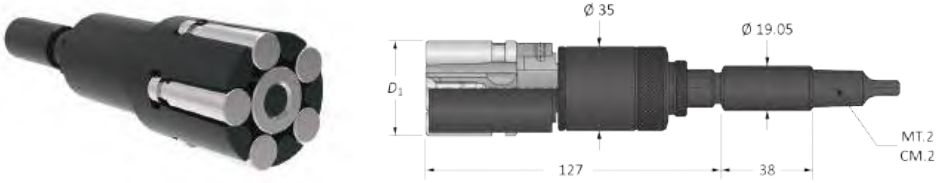




N Series: 35.61 mm - 46.97 mm (1.4020" - 1.8492")

Blind Holes

D00

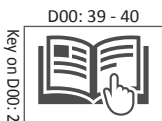
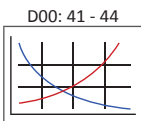
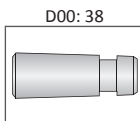


D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
35.61 - 36.66	1.4020 - 1.4433	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00090	RSTN-03x-00090	RSRY-708-00312	5
36.40 - 37.44	1.4331 - 1.4740	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00092	RSTN-03x-00092	RSRY-708-00312	5
37.18 - 38.23	1.4638 - 1.5051	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00094	RSTN-03x-00094	RSRY-708-00312	5
38.00 - 39.04	1.4961 - 1.5370	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00096	RSTN-03x-00096	RSRY-708-00312	5
38.79 - 39.82	1.5272 - 1.5677	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00098	RSTM-03x-00080	RSRY-708-00406	5
39.57 - 40.62	1.5579 - 1.5992	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00100	RSTM-03x-00082	RSRY-708-00406	5
40.36 - 41.40	1.5890 - 1.6299	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00102	RSTN-03x-00090	RSRY-708-00406	5
41.18 - 42.21	1.6213 - 1.6618	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00104	RSTN-03x-00092	RSRY-708-00406	5
41.96 - 43.01	1.6520 - 1.6933	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00106	RSTN-03x-00094	RSRY-708-00406	5
42.75 - 43.79	1.6831 - 1.7240	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00108	RSTM-03x-00082	RSRY-708-00468	5
43.53 - 44.58	1.7138 - 1.7551	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00110	RSTN-03x-00090	RSRY-708-00468	5
44.35 - 45.39	1.7461 - 1.7870	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00112	RSTN-03x-00092	RSRY-708-00468	5
45.14 - 46.17	1.7772 - 1.8177	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00114	RSTN-03x-00094	RSRY-708-00468	5
45.92 - 46.97	1.8079 - 1.8492	RSKN-200-xxxxx	RSKN-100-xxxxx	RSCN-015-00116	RSTN-03x-00096	RSRY-708-00468	5

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 40.00 mm with straight shank: RSKN-100-04000).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

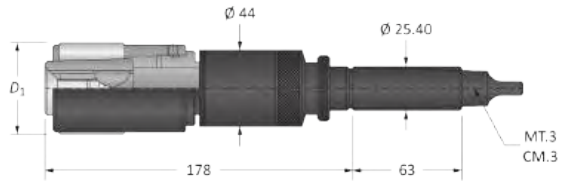
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



**O Series: 46.71 mm - 56.49 mm (1.8390" - 2.2240")**

Through Holes

D00



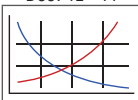
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
46.71 - 47.75	1.8390 - 1.8799	RDKO-200-04671	RDKO-100-04671	RDCO-011-00118	RDTO-031-00118	RDRY-701-00312	9
47.53 - 48.56	1.8713 - 1.9118	RDKO-200-04753	RDKO-100-04753	RDCO-011-00120	RDTO-031-00120	RDRY-701-00312	9
48.31 - 49.36	1.9020 - 1.9433	RDKO-200-04831	RDKO-100-04831	RDCO-011-00122	RDTO-031-00122	RDRY-701-00312	9
49.10 - 50.14	1.9331 - 1.9740	RDKO-200-04910	RDKO-100-04910	RDCO-011-00124	RDTO-031-00124	RDRY-701-00312	9
49.88 - 50.93	1.9638 - 2.0051	RDKO-200-04988	RDKO-100-04988	RDCO-011-00126	RDTO-031-00126	RDRY-701-00312	9
50.70 - 51.74	1.9961 - 2.0370	RDKO-200-05070	RDKO-100-05070	RDCO-011-00128	RDTO-031-00128	RDRY-701-00312	9
51.49 - 52.53	2.0272 - 2.0681	RDKO-200-05149	RDKO-100-05149	RDCO-011-00130	RDTO-031-00118	RDRY-701-00406	9
52.27 - 53.32	2.0579 - 2.0992	RDKO-200-05227	RDKO-100-05227	RDCO-011-00132	RDTO-031-00120	RDRY-701-00406	9
53.06 - 54.10	2.0890 - 2.1299	RDKO-200-05306	RDKO-100-05306	RDCO-011-00134	RDTO-031-00122	RDRY-701-00406	9
53.87 - 54.91	2.1209 - 2.1618	RDKO-200-05387	RDKO-100-05387	RDCO-011-00136	RDTO-031-00124	RDRY-701-00406	9
54.66 - 55.71	2.1520 - 2.1933	RDKO-200-05466	RDKO-100-05466	RDCO-011-00138	RDTO-031-00126	RDRY-701-00406	9
55.45 - 56.49	2.1831 - 2.2240	RDKO-200-05545	RDKO-100-05545	RDCO-011-00140	RDTO-031-00128	RDRY-701-00406	9

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

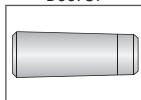
D00: 39 - 40



D00: 41 - 44



D00: 37

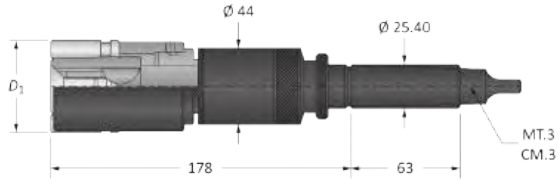




O Series: 46.71 mm - 56.49 mm (1.8390" - 2.2240")

Blind Holes

D00



D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
46.71 - 47.75	1.8390 - 1.8799	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00118	RSTO-03x-00118	RSRY-708-00312	7
47.53 - 48.56	1.8713 - 1.9118	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00120	RSTO-03x-00120	RSRY-708-00312	7
48.31 - 49.36	1.9020 - 1.9433	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00122	RSTO-03x-00122	RSRY-708-00312	7
49.10 - 50.14	1.9331 - 1.9740	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00124	RSTO-03x-00124	RSRY-708-00312	7
49.88 - 50.93	1.9638 - 2.0051	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00126	RSTO-03x-00126	RSRY-708-00312	7
50.70 - 51.74	1.9961 - 2.0370	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00128	RSTO-03x-00128	RSRY-708-00312	7
51.49 - 52.53	2.0272 - 2.0681	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00130	RSTO-03x-00118	RSRY-708-00406	7
52.27 - 53.32	2.0579 - 2.0992	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00132	RSTO-03x-00120	RSRY-708-00406	7
53.06 - 54.10	2.0890 - 2.1299	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00134	RSTO-03x-00122	RSRY-708-00406	7
53.87 - 54.91	2.1209 - 2.1618	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00136	RSTO-03x-00124	RSRY-708-00406	7
54.66 - 55.71	2.1520 - 2.1933	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00138	RSTO-03x-00126	RSRY-708-00406	7
55.45 - 56.49	2.1831 - 2.2240	RSKO-200-xxxxx	RSKO-100-xxxxx	RSCO-015-00140	RSTO-03x-00128	RSRY-708-00406	7

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 50.25 mm with MT.3 shank: RSKO-200-05025).

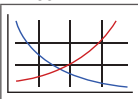
** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

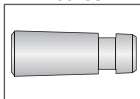
D00: 39 - 40



D00: 41 - 44



D00: 38

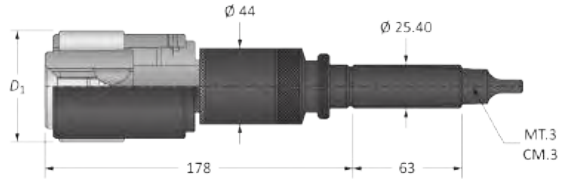


Key on D00: 2

**P Series: 56.23 mm - 69.19 mm (2.2138" - 2.7240")**

Through Holes

D00



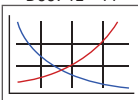
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
56.23 - 57.28	2.2138 - 2.2551	RDKP-200-05623	RDKP-100-05623	RDCP-011-00142	RDTP-031-00142	RDRY-701-00406	9
57.05 - 58.09	2.2461 - 2.2870	RDKP-200-05705	RDKP-100-05705	RDCP-011-00144	RDTP-031-00144	RDRY-701-00406	9
57.84 - 58.87	2.2772 - 2.3177	RDKP-200-05784	RDKP-100-05784	RDCP-011-00146	RDTP-031-00146	RDRY-701-00406	9
58.62 - 59.67	2.3079 - 2.3492	RDKP-200-05862	RDKP-100-05862	RDCP-011-00148	RDTP-031-00148	RDRY-701-00406	9
59.41 - 60.45	2.3390 - 2.3799	RDKP-200-05941	RDKP-100-05941	RDCP-011-00150	RDTP-031-00142	RDRY-701-00468	9
60.23 - 61.26	2.3713 - 2.4118	RDKP-200-06023	RDKP-100-06023	RDCP-011-00152	RDTP-031-00144	RDRY-701-00468	9
61.01 - 62.06	2.4020 - 2.4433	RDKP-200-06101	RDKP-100-06101	RDCP-011-00154	RDTP-031-00146	RDRY-701-00468	9
61.80 - 62.84	2.4330 - 2.4740	RDKP-200-06180	RDKP-100-06180	RDCP-011-00156	RDTP-031-00148	RDRY-701-00468	9
62.58 - 63.63	2.4638 - 2.5051	RDKP-200-06258	RDKP-100-06258	RDCP-011-00158	RDTP-031-00158	RDRY-701-00468	9
63.40 - 64.44	2.4961 - 2.5370	RDKP-200-06340	RDKP-100-06340	RDCP-011-00160	RDTP-031-00160	RDRY-701-00468	9
64.19 - 65.22	2.5272 - 2.5677	RDKP-200-06419	RDKP-100-06419	RDCP-011-00162	RDTP-031-00162	RDRY-701-00468	9
64.97 - 66.02	2.5579 - 2.5992	RDKP-200-06497	RDKP-100-06497	RDCP-011-00164	RDTP-031-00164	RDRY-701-00468	9
65.76 - 66.80	2.5890 - 2.6299	RDKP-200-06576	RDKP-100-06576	RDCP-011-00166	RDTP-031-00158	RDRY-701-00531	9
66.58 - 67.61	2.6213 - 2.6618	RDKP-200-06658	RDKP-100-06658	RDCP-011-00168	RDTP-031-00160	RDRY-701-00531	9
67.36 - 68.41	2.6520 - 2.6933	RDKP-200-06736	RDKP-100-06736	RDCP-011-00170	RDTP-031-00162	RDRY-701-00531	9
68.15 - 69.19	2.6830 - 2.7240	RDKP-200-06815	RDKP-100-06815	RDCP-011-00172	RDTP-031-00164	RDRY-701-00531	9

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

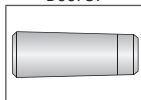
D00: 39 - 40



D00: 41 - 44



D00: 37

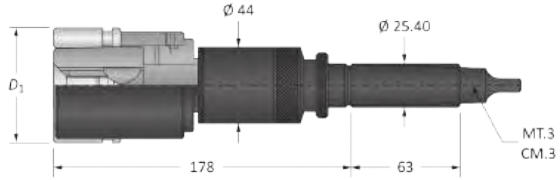




P Series: 56.23 mm - 69.19 mm (2.2138" - 2.7240")

Blind Holes

D00

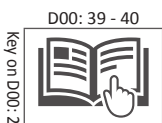
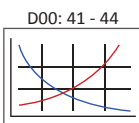
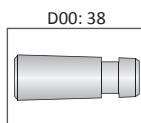


D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
56.23 - 57.28	2.2138 - 2.2551	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00142	RSTP-03x-00142	RSRY-708-00406	7
57.05 - 58.09	2.2461 - 2.2870	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00144	RSTP-03x-00144	RSRY-708-00406	7
57.84 - 58.87	2.2772 - 2.3177	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00146	RSTP-03x-00146	RSRY-708-00406	7
58.62 - 59.67	2.3079 - 2.3492	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00148	RSTP-03x-00148	RSRY-708-00406	7
59.41 - 60.45	2.3390 - 2.3799	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00150	RSTP-03x-00142	RSRY-708-00468	7
60.23 - 61.26	2.3713 - 2.4118	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00152	RSTP-03x-00144	RSRY-708-00468	7
61.01 - 62.06	2.4020 - 2.4433	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00154	RSTP-03x-00146	RSRY-708-00468	7
61.80 - 62.84	2.4330 - 2.4740	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00156	RSTP-03x-00148	RSRY-708-00468	7
62.58 - 63.63	2.4638 - 2.5051	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00158	RSTP-03x-00158	RSRY-708-00468	7
63.40 - 64.44	2.4961 - 2.5370	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00160	RSTP-03x-00160	RSRY-708-00468	7
64.19 - 65.22	2.5272 - 2.5677	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00162	RSTP-03x-00162	RSRY-708-00468	7
64.97 - 66.02	2.5579 - 2.5992	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00164	RSTP-03x-00164	RSRY-708-00468	7
65.76 - 66.80	2.5890 - 2.6299	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00166	RSTP-03x-00158	RSRY-708-00531	7
66.58 - 67.61	2.6213 - 2.6618	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00168	RSTP-03x-00160	RSRY-708-00531	7
67.36 - 68.41	2.6520 - 2.6933	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00170	RSTP-03x-00162	RSRY-708-00531	7
68.15 - 69.19	2.6830 - 2.7240	RSKP-200-xxxxx	RSKP-100-xxxxx	RSCP-015-00172	RSTP-03x-00164	RSRY-708-00531	7

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 60.05 mm with straight shank: RSKP-100-06005).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

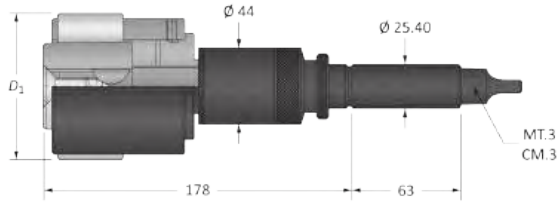
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



**Q Series: 68.93 mm - 85.07 mm (2.7138" - 3.3492")**

Through Holes

D00



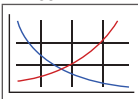
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
68.93 - 69.98	2.7138 - 2.7551	RDQ-200-06893	RDQ-100-06893	RDCQ-011-00174	RDTQ-031-00174	RDRY-701-00531	9
69.75 - 70.79	2.7461 - 2.7870	RDQ-200-06975	RDQ-100-06975	RDCQ-011-00176	RDTQ-031-00176	RDRY-701-00531	9
70.54 - 71.57	2.7772 - 2.8177	RDQ-200-07054	RDQ-100-07054	RDCQ-011-00178	RDTQ-031-00178	RDRY-701-00531	9
71.32 - 72.40	2.8079 - 2.8504	RDQ-200-07132	RDQ-100-07132	RDCQ-011-00180	RDTQ-031-00180	RDRY-701-00531	9
72.11 - 73.15	2.8390 - 2.8799	RDQ-200-07211	RDQ-100-07211	RDCQ-011-00182	RDTQ-031-00182	RDRY-701-00531	9
72.93 - 73.96	2.8713 - 2.9118	RDQ-200-07293	RDQ-100-07293	RDCQ-011-00184	RDTQ-031-00184	RDRY-701-00531	9
73.71 - 74.75	2.9020 - 2.9429	RDQ-200-07371	RDQ-100-07371	RDCQ-011-00186	RDTQ-031-00174	RDRY-701-00625	9
74.50 - 75.54	2.9331 - 2.9740	RDQ-200-07450	RDQ-100-07450	RDCQ-011-00188	RDTQ-031-00176	RDRY-701-00625	9
75.28 - 76.33	2.9638 - 3.0051	RDQ-200-07528	RDQ-100-07528	RDCQ-011-00190	RDTQ-031-00178	RDRY-701-00625	9
76.10 - 77.14	2.9961 - 3.0370	RDQ-200-07610	RDQ-100-07610	RDCQ-011-00192	RDTQ-031-00180	RDRY-701-00625	9
76.89 - 77.93	3.0272 - 3.0681	RDQ-200-07689	RDQ-100-07689	RDCQ-011-00194	RDTQ-031-00182	RDRY-701-00625	9
77.67 - 78.72	3.0579 - 3.0992	RDQ-200-07767	RDQ-100-07767	RDCQ-011-00196	RDTQ-031-00184	RDRY-701-00625	9
78.46 - 79.50	3.0890 - 3.1299	RDQ-200-07846	RDQ-100-07846	RDCQ-011-00198	RDTQ-031-00198	RDRY-701-00625	9
79.27 - 80.31	3.1209 - 3.1618	RDQ-200-07927	RDQ-100-07927	RDCQ-011-00200	RDTQ-031-00200	RDRY-701-00625	9
80.06 - 81.11	3.1520 - 3.1933	RDQ-200-08006	RDQ-100-08006	RDCQ-011-00202	RDTQ-031-00202	RDRY-701-00625	9
80.85 - 81.89	3.1831 - 3.2240	RDQ-200-08085	RDQ-100-08085	RDCQ-011-00204	RDTQ-031-00204	RDRY-701-00625	9
81.63 - 82.68	3.2138 - 3.2551	RDQ-200-08163	RDQ-100-08163	RDCQ-011-00206	RDTQ-031-00198	RDRY-701-00687	9
82.45 - 83.49	3.2461 - 3.2870	RDQ-200-08245	RDQ-100-08245	RDCQ-011-00208	RDTQ-031-00200	RDRY-701-00687	9
83.24 - 84.27	3.2772 - 3.3177	RDQ-200-08324	RDQ-100-08324	RDCQ-011-00210	RDTQ-031-00202	RDRY-701-00687	9
84.02 - 85.07	3.3079 - 3.3492	RDQ-200-08402	RDQ-100-08402	RDCQ-011-00212	RDTQ-031-00204	RDRY-701-00687	9

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

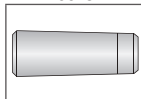
D00: 39 - 40



D00: 41 - 44



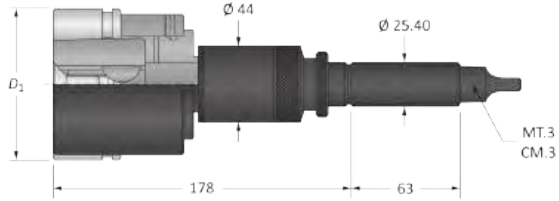
D00: 37





Q Series: 68.93 mm - 85.07 mm (2.7138" - 3.3492")

Blind Holes



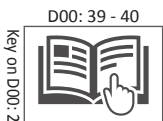
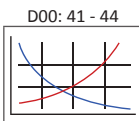
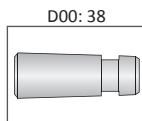
D00

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
68.93 - 69.98	2.7138 - 2.7551	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00174	RSTQ-03x-00174	RSRY-708-00531	7
69.75 - 70.79	2.7461 - 2.7870	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00176	RSTQ-03x-00176	RSRY-708-00531	7
70.54 - 71.57	2.7772 - 2.8177	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00178	RSTQ-03x-00178	RSRY-708-00531	7
71.32 - 72.40	2.8079 - 2.8504	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00180	RSTQ-03x-00180	RSRY-708-00531	7
72.11 - 73.15	2.8390 - 2.8799	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00182	RSTQ-03x-00182	RSRY-708-00531	7
72.93 - 73.96	2.8713 - 2.9118	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00184	RSTQ-03x-00184	RSRY-708-00531	7
73.71 - 74.75	2.9020 - 2.9429	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00186	RSTQ-03x-00174	RSRY-708-00625	7
74.50 - 75.54	2.9331 - 2.9740	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00188	RSTQ-03x-00176	RSRY-708-00625	7
75.28 - 76.33	2.9638 - 3.0051	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00190	RSTQ-03x-00178	RSRY-708-00625	7
76.10 - 77.14	2.9961 - 3.0370	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00192	RSTQ-03x-00180	RSRY-708-00625	7
76.89 - 77.93	3.0272 - 3.0681	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00194	RSTQ-03x-00182	RSRY-708-00625	7
77.67 - 78.72	3.0579 - 3.0992	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00196	RSTQ-03x-00184	RSRY-708-00625	7
78.46 - 79.50	3.0890 - 3.1299	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00198	RSTQ-03x-00198	RSRY-708-00625	7
79.27 - 80.31	3.1209 - 3.1618	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00200	RSTQ-03x-00200	RSRY-708-00625	7
80.06 - 81.11	3.1520 - 3.1933	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00202	RSTQ-03x-00202	RSRY-708-00625	7
80.85 - 81.89	3.1831 - 3.2240	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00204	RSTQ-03x-00204	RSRY-708-00625	7
81.63 - 82.68	3.2138 - 3.2551	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00206	RSTQ-03x-00198	RSRY-708-00687	7
82.45 - 83.49	3.2461 - 3.2870	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00208	RSTQ-03x-00200	RSRY-708-00687	7
83.24 - 84.27	3.2772 - 3.3177	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00210	RSTQ-03x-00202	RSRY-708-00687	7
84.02 - 85.07	3.3079 - 3.3492	RSKQ-200-xxxxxx	RSKQ-100-xxxxxx	RSCQ-015-00212	RSTQ-03x-00204	RSRY-708-00687	7

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher $\varnothing$ 75.00 mm with MT.3 shank: RSKQ-200-07500).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

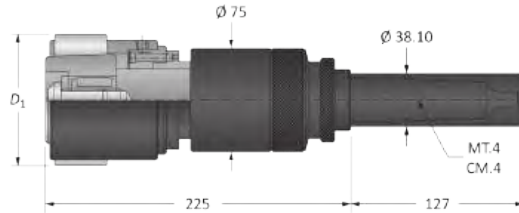


Key on D00: 2

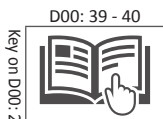
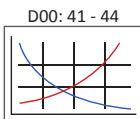
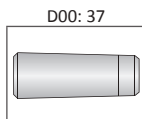
**R Series: 84.81 mm - 104.12 mm (3.3390" - 4.0992")**

Through Holes

D00



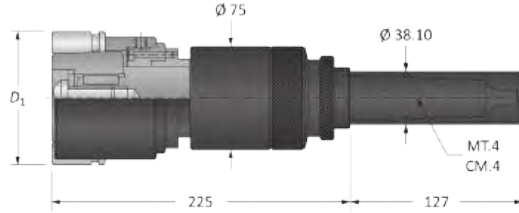
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
84.81 - 85.85	3.3390 - 3.3799	RDKR-200-08481	RDKR-100-08481	RDCR-011-00214	RDTR-073-00001	RDRY-701-00468	9
85.63 - 86.66	3.3713 - 3.4118	RDKR-200-08563	RDKR-100-08563	RDCR-011-00216	RDTR-074-00001	RDRY-701-00468	9
86.41 - 87.45	3.4020 - 3.4429	RDKR-200-08641	RDKR-100-08641	RDCR-011-00218	RDTR-071-00001	RDRY-701-00531	9
87.20 - 88.24	3.4331 - 3.4740	RDKR-200-08720	RDKR-100-08720	RDCR-011-00220	RDTR-072-00001	RDRY-701-00531	9
87.99 - 89.03	3.4642 - 3.5051	RDKR-200-08799	RDKR-100-08799	RDCR-011-00222	RDTR-073-00001	RDRY-701-00531	9
88.79 - 89.84	3.4957 - 3.5370	RDKR-200-08879	RDKR-100-08879	RDCR-011-00224	RDTR-074-00001	RDRY-701-00531	9
89.59 - 90.63	3.5272 - 3.5681	RDKR-200-08959	RDKR-100-08959	RDCR-011-00226	RDTR-075-00001	RDRY-701-00531	9
90.37 - 91.42	3.5579 - 3.5992	RDKR-200-09037	RDKR-100-09037	RDCR-011-00228	RDTR-076-00001	RDRY-701-00531	9
91.16 - 92.20	3.5890 - 3.6299	RDKR-200-09116	RDKR-100-09116	RDCR-011-00230	RDTR-071-00001	RDRY-701-00625	9
91.97 - 93.02	3.6209 - 3.6622	RDKR-200-09197	RDKR-100-09197	RDCR-011-00232	RDTR-072-00001	RDRY-701-00625	9
92.76 - 93.80	3.6520 - 3.6929	RDKR-200-09276	RDKR-100-09276	RDCR-011-00234	RDTR-073-00001	RDRY-701-00625	9
93.55 - 94.59	3.6831 - 3.7240	RDKR-200-09355	RDKR-100-09355	RDCR-011-00236	RDTR-074-00001	RDRY-701-00625	9
94.34 - 95.38	3.7142 - 3.7551	RDKR-200-09434	RDKR-100-09434	RDCR-011-00238	RDTR-075-00001	RDRY-701-00625	9
95.15 - 96.19	3.7461 - 3.7870	RDKR-200-09515	RDKR-100-09515	RDCR-011-00240	RDTR-076-00001	RDRY-701-00625	9
95.94 - 96.98	3.7772 - 3.8181	RDKR-200-09594	RDKR-100-09594	RDCR-011-00242	RDTR-077-00001	RDRY-701-00625	9
96.72 - 97.77	3.8079 - 3.8492	RDKR-200-09672	RDKR-100-09672	RDCR-011-00244	RDTR-078-00001	RDRY-701-00625	9
97.51 - 98.55	3.8390 - 3.8799	RDKR-200-09751	RDKR-100-09751	RDCR-011-00246	RDTR-075-00001	RDRY-701-00687	9
98.32 - 99.37	3.8709 - 3.9122	RDKR-200-09832	RDKR-100-09832	RDCR-011-00248	RDTR-076-00001	RDRY-701-00687	9
99.11 - 100.15	3.9020 - 3.9429	RDKR-200-09911	RDKR-100-09911	RDCR-011-00250	RDTR-077-00001	RDRY-701-00687	9
99.90 - 100.94	3.9331 - 3.9740	RDKR-200-09990	RDKR-100-09990	RDCR-011-00252	RDTR-078-00001	RDRY-701-00687	9
100.69 - 101.73	3.9642 - 4.0051	RDKR-200-10069	RDKR-100-10069	RDCR-011-00254	RDTR-079-00001	RDRY-701-00687	9
101.50 - 102.54	3.9961 - 4.0370	RDKR-200-10150	RDKR-100-10150	RDCR-011-00256	RDTR-080-00001	RDRY-701-00687	9
102.29 - 103.33	4.0272 - 4.0681	RDKR-200-10229	RDKR-100-10229	RDCR-011-00258	RDTR-081-00001	RDRY-701-00687	9
103.07 - 104.12	4.0579 - 4.0992	RDKR-200-10307	RDKR-100-10307	RDCR-011-00260	RDTR-082-00001	RDRY-701-00687	9

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.



R Series: 84.81 mm - 104.12 mm (3.3390" - 4.0992")

Blind Holes



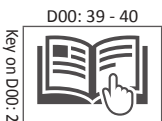
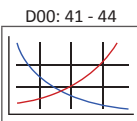
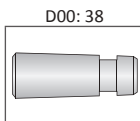
D00

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
84.81 - 85.85	3.3390 - 3.3799	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00214	RSTR-073-0000x	RSRY-708-00468	9
85.63 - 86.66	3.3713 - 3.4118	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00216	RSTR-074-0000x	RSRY-708-00468	9
86.41 - 87.45	3.4020 - 3.4429	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00218	RSTR-071-0000x	RSRY-708-00531	9
87.20 - 88.24	3.4331 - 3.4740	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00220	RSTR-072-0000x	RSRY-708-00531	9
87.99 - 89.03	3.4642 - 3.5051	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00222	RSTR-073-0000x	RSRY-708-00531	9
88.79 - 89.84	3.4957 - 3.5370	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00224	RSTR-074-0000x	RSRY-708-00531	9
89.59 - 90.63	3.5272 - 3.5681	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00226	RSTR-075-0000x	RSRY-708-00531	9
90.37 - 91.42	3.5579 - 3.5992	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00228	RSTR-076-0000x	RSRY-708-00531	9
91.16 - 92.20	3.5890 - 3.6299	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00230	RSTR-071-0000x	RSRY-708-00625	9
91.97 - 93.02	3.6209 - 3.6622	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00232	RSTR-072-0000x	RSRY-708-00625	9
92.76 - 93.80	3.6520 - 3.6929	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00234	RSTR-073-0000x	RSRY-708-00625	9
93.55 - 94.59	3.6831 - 3.7240	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00236	RSTR-074-0000x	RSRY-708-00625	9
94.34 - 95.38	3.7142 - 3.7551	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00238	RSTR-075-0000x	RSRY-708-00625	9
95.15 - 96.19	3.7461 - 3.7870	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00240	RSTR-076-0000x	RSRY-708-00625	9
95.94 - 96.98	3.7772 - 3.8181	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00242	RSTR-077-0000x	RSRY-708-00625	9
96.72 - 97.77	3.8079 - 3.8492	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00244	RSTR-078-0000x	RSRY-708-00625	9
97.51 - 98.55	3.8390 - 3.8799	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00246	RSTR-075-0000x	RSRY-708-00687	9
98.32 - 99.37	3.8709 - 3.9122	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00248	RSTR-076-0000x	RSRY-708-00687	9
99.11 - 100.15	3.9020 - 3.9429	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00250	RSTR-077-0000x	RSRY-708-00687	9
99.90 - 100.94	3.9331 - 3.9740	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00252	RSTR-078-0000x	RSRY-708-00687	9
100.69 - 101.73	3.9642 - 4.0051	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00254	RSTR-079-0000x	RSRY-708-00687	9
101.50 - 102.54	3.9961 - 4.0370	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00256	RSTR-080-0000x	RSRY-708-00687	9
102.29 - 103.33	4.0272 - 4.0681	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00258	RSTR-081-0000x	RSRY-708-00687	9
103.07 - 104.12	4.0579 - 4.0992	RSKR-200-xxxxx	RSKR-100-xxxxx	RSCR-015-00260	RSTR-082-0000x	RSRY-708-00687	9

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 100.00 mm with straight shank: RSKR-100-10000).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

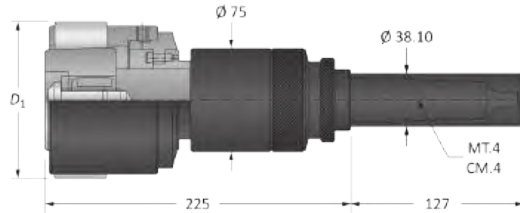


Key on D00: 2

**S Series: 103.86 mm - 127.94 mm (4.0890" - 5.0370")**

Through Holes

D00



D ₁		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
103.86 - 104.90	4.0890 - 4.1299	RDKS-200-10386	RDKS-100-10386	RDCS-011-00262	RDTs-083-00001	RDRY-701-00687	9
104.67 - 105.75	4.1209 - 4.1634	RDKS-200-10467	RDKS-100-10467	RDCS-011-00264	RDTs-084-00001	RDRY-701-00687	9
105.46 - 106.50	4.1520 - 4.1929	RDKS-200-10546	RDKS-100-10546	RDCS-011-00266	RDTs-085-00001	RDRY-701-00687	9
106.25 - 107.29	4.1831 - 4.2240	RDKS-200-10625	RDKS-100-10625	RDCS-011-00268	RDTs-086-00001	RDRY-701-00687	9
107.04 - 108.08	4.2142 - 4.2551	RDKS-200-10704	RDKS-100-10704	RDCS-011-00270	RDTs-087-00001	RDRY-701-00687	9
107.85 - 108.89	4.2461 - 4.2870	RDKS-200-10785	RDKS-100-10785	RDCS-011-00272	RDTs-088-00001	RDRY-701-00687	9
108.64 - 109.68	4.2772 - 4.3181	RDKS-200-10864	RDKS-100-10864	RDCS-011-00274	RDTs-089-00001	RDRY-701-00687	9
109.42 - 110.47	4.3079 - 4.3492	RDKS-200-10942	RDKS-100-10942	RDCS-011-00276	RDTs-090-00001	RDRY-701-00687	9
110.21 - 111.25	4.3390 - 4.3799	RDKS-200-11021	RDKS-100-11021	RDCS-011-00278	RDTs-083-00001	RDRY-701-00812	9
111.02 - 112.07	4.3709 - 4.4122	RDKS-200-11102	RDKS-100-11102	RDCS-011-00280	RDTs-084-00001	RDRY-701-00812	9
111.81 - 112.85	4.4020 - 4.4429	RDKS-200-11181	RDKS-100-11181	RDCS-011-00282	RDTs-085-00001	RDRY-701-00812	9
112.60 - 113.64	4.4331 - 4.4740	RDKS-200-11260	RDKS-100-11260	RDCS-011-00284	RDTs-086-00001	RDRY-701-00812	9
113.34 - 114.43	4.4622 - 4.5051	RDKS-200-11334	RDKS-100-11334	RDCS-011-00286	RDTs-087-00001	RDRY-701-00812	9
114.20 - 115.24	4.4961 - 4.5370	RDKS-200-11420	RDKS-100-11420	RDCS-011-00288	RDTs-088-00001	RDRY-701-00812	9
114.99 - 116.03	4.5272 - 4.5681	RDKS-200-11499	RDKS-100-11499	RDCS-011-00290	RDTs-089-00001	RDRY-701-00812	9
115.77 - 116.82	4.5579 - 4.5992	RDKS-200-11577	RDKS-100-11577	RDCS-011-00292	RDTs-090-00001	RDRY-701-00812	9
116.56 - 117.60	4.5890 - 4.6299	RDKS-200-11656	RDKS-100-11656	RDCS-011-00294	RDTs-091-00001	RDRY-701-00812	9
117.37 - 118.42	4.6209 - 4.6622	RDKS-200-11737	RDKS-100-11737	RDCS-011-00296	RDTs-092-00001	RDRY-701-00812	9
118.16 - 119.20	4.6520 - 4.6929	RDKS-200-11816	RDKS-100-11816	RDCS-011-00298	RDTs-093-00001	RDRY-701-00812	9
118.95 - 119.99	4.6831 - 4.7240	RDKS-200-11895	RDKS-100-11895	RDCS-011-00300	RDTs-094-00001	RDRY-701-00812	9
119.74 - 120.78	4.7142 - 4.7551	RDKS-200-11974	RDKS-100-11974	RDCS-011-00302	RDTs-095-00001	RDRY-701-00812	9
120.55 - 121.59	4.7461 - 4.7870	RDKS-200-12055	RDKS-100-12055	RDCS-011-00304	RDTs-096-00001	RDRY-701-00812	9
121.34 - 122.38	4.7772 - 4.8181	RDKS-200-12134	RDKS-100-12134	RDCS-011-00306	RDTs-097-00001	RDRY-701-00812	9
122.12 - 123.17	4.8079 - 4.8492	RDKS-200-12212	RDKS-100-12212	RDCS-011-00308	RDTs-098-00001	RDRY-701-00812	9
122.91 - 123.95	4.8390 - 4.8799	RDKS-200-12291	RDKS-100-12291	RDCS-011-00310	RDTs-099-00001	RDRY-701-00812	9
123.72 - 124.77	4.8709 - 4.9122	RDKS-200-12372	RDKS-100-12372	RDCS-011-00312	RDTs-100-00001	RDRY-701-00812	9
124.51 - 125.55	4.9020 - 4.9429	RDKS-200-12451	RDKS-100-12451	RDCS-011-01245	RDTs-031-01245	RDRY-701-00812	9
125.30 - 126.34	4.9331 - 4.9740	RDKS-200-12530	RDKS-100-12530	RDCS-011-01255	RDTs-031-01255	RDRY-701-00812	9
126.09 - 127.13	4.9642 - 5.0051	RDKS-200-12609	RDKS-100-12609	RDCS-011-01265	RDTs-031-01265	RDRY-701-00812	9
126.90 - 127.94	4.9961 - 5.0370	RDKS-200-12690	RDKS-100-12690	RDCS-011-01275	RDTs-031-01275	RDRY-701-00812	9

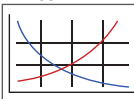
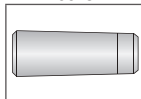
NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

D00: 39 - 40

D00: 41 - 44

D00: 37

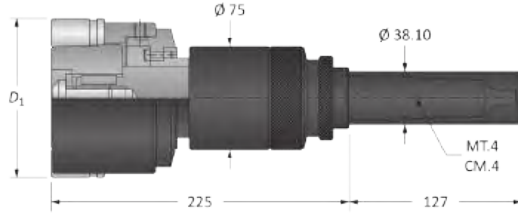
Key on D00: 2





S Series: 103.86 mm - 127.94 mm (4.0890" - 5.0370")

Blind Holes



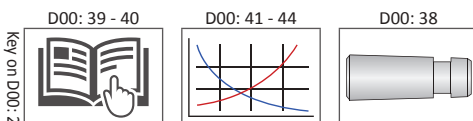
D00

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
103.86 - 104.90	4.0890 - 4.1299	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00262	RSTS-083-0000x	RSRY-708-00687	9
104.67 - 105.75	4.1209 - 4.1634	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00264	RSTS-084-0000x	RSRY-708-00687	9
105.46 - 106.50	4.1520 - 4.1929	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00266	RSTS-085-0000x	RSRY-708-00687	9
106.25 - 107.29	4.1831 - 4.2240	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00268	RSTS-086-0000x	RSRY-708-00687	9
107.04 - 108.08	4.2142 - 4.2551	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00270	RSTS-087-0000x	RSRY-708-00687	9
107.85 - 108.89	4.2461 - 4.2870	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00272	RSTS-088-0000x	RSRY-708-00687	9
108.64 - 109.68	4.2772 - 4.3181	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00274	RSTS-089-0000x	RSRY-708-00687	9
109.42 - 110.47	4.3079 - 4.3492	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00276	RSTS-090-0000x	RSRY-708-00687	9
110.21 - 111.25	4.3390 - 4.3799	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00278	RSTS-083-0000x	RSRY-708-00812	9
111.02 - 112.07	4.3709 - 4.4122	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00280	RSTS-084-0000x	RSRY-708-00812	9
111.81 - 112.85	4.4020 - 4.4429	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00282	RSTS-085-0000x	RSRY-708-00812	9
112.60 - 113.64	4.4331 - 4.4740	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00284	RSTS-086-0000x	RSRY-708-00812	9
113.34 - 114.43	4.4622 - 4.5051	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00286	RSTS-087-0000x	RSRY-708-00812	9
114.20 - 115.24	4.4961 - 4.5370	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00288	RSTS-088-0000x	RSRY-708-00812	9
114.99 - 116.03	4.5272 - 4.5681	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00290	RSTS-089-0000x	RSRY-708-00812	9
115.77 - 116.82	4.5579 - 4.5992	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00292	RSTS-090-0000x	RSRY-708-00812	9
116.56 - 117.60	4.5890 - 4.6299	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00294	RSTS-091-0000x	RSRY-708-00812	9
117.37 - 118.42	4.6209 - 4.6622	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00296	RSTS-092-0000x	RSRY-708-00812	9
118.16 - 119.20	4.6520 - 4.6929	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00298	RSTS-093-0000x	RSRY-708-00812	9
118.95 - 119.99	4.6831 - 4.7240	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00300	RSTS-094-0000x	RSRY-708-00812	9
119.74 - 120.78	4.7142 - 4.7551	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00302	RSTS-095-0000x	RSRY-708-00812	9
120.55 - 121.59	4.7461 - 4.7870	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00304	RSTS-096-0000x	RSRY-708-00812	9
121.34 - 122.38	4.7772 - 4.8181	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00306	RSTS-097-0000x	RSRY-708-00812	9
122.12 - 123.17	4.8079 - 4.8492	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00308	RSTS-098-0000x	RSRY-708-00812	9
122.91 - 123.95	4.8390 - 4.8799	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00310	RSTS-099-0000x	RSRY-708-00812	9
123.72 - 124.77	4.8709 - 4.9122	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-00312	RSTS-100-0000x	RSRY-708-00812	9
124.51 - 125.55	4.9020 - 4.9429	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-01245	RSTS-03x-01245	RSRY-708-00812	9
125.30 - 126.34	4.9331 - 4.9740	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-01255	RSTS-03x-01255	RSRY-708-00812	9
126.09 - 127.13	4.9642 - 5.0051	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-01265	RSTS-03x-01265	RSRY-708-00812	9
126.90 - 127.94	4.9961 - 5.0370	RSKS-200-xxxxx	RSKS-100-xxxxx	RSCS-015-01275	RSTS-03x-01275	RSRY-708-00812	9

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher $\varnothing$ 120.05 mm with MT.4 shank: RSKS-200-12005).

** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

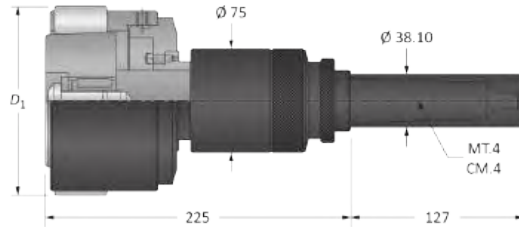


Key on D00: 2

**T Series: 127.90 mm - 149.90 mm (5.0354" - 5.9016")**

Through Holes

D00



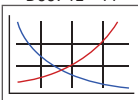
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
127.90 - 128.90	5.0354 - 5.0748	RDKT-200-12790	RDKT-100-12790	RDCT-011-01280	RDTT-031-01280	RDRY-701-00812	11
128.90 - 129.90	5.0748 - 5.1142	RDKT-200-12890	RDKT-100-12890	RDCT-011-01290	RDTT-031-01290	RDRY-701-00812	11
129.90 - 130.90	5.1142 - 5.1535	RDKT-200-12990	RDKT-100-12990	RDCT-011-01300	RDTT-031-01300	RDRY-701-00812	11
130.90 - 131.90	5.1535 - 5.1929	RDKT-200-13090	RDKT-100-13090	RDCT-011-01310	RDTT-031-01310	RDRY-701-00812	11
131.90 - 132.90	5.1929 - 5.2323	RDKT-200-13190	RDKT-100-13190	RDCT-011-01320	RDTT-031-01320	RDRY-701-00812	11
132.90 - 133.90	5.2323 - 5.2717	RDKT-200-13290	RDKT-100-13290	RDCT-011-01330	RDTT-031-01330	RDRY-701-00812	11
133.90 - 134.90	5.2717 - 5.3110	RDKT-200-13390	RDKT-100-13390	RDCT-011-01340	RDTT-031-01340	RDRY-701-00812	11
134.90 - 135.90	5.3110 - 5.3504	RDKT-200-13490	RDKT-100-13490	RDCT-011-01350	RDTT-031-01350	RDRY-701-00812	11
135.90 - 136.90	5.3504 - 5.3898	RDKT-200-13590	RDKT-100-13590	RDCT-011-01360	RDTT-031-01360	RDRY-701-00812	11
136.90 - 137.90	5.3898 - 5.4291	RDKT-200-13690	RDKT-100-13690	RDCT-011-01370	RDTT-031-01370	RDRY-701-00812	11
137.90 - 138.90	5.4291 - 5.4685	RDKT-200-13790	RDKT-100-13790	RDCT-011-01380	RDTT-031-01380	RDRY-701-00812	11
138.90 - 139.90	5.4685 - 5.5079	RDKT-200-13890	RDKT-100-13890	RDCT-011-01390	RDTT-031-01390	RDRY-701-00812	11
139.90 - 140.90	5.5079 - 5.5472	RDKT-200-13990	RDKT-100-13990	RDCT-011-01400	RDTT-031-01400	RDRY-701-00812	11
140.90 - 141.90	5.5472 - 5.5866	RDKT-200-14090	RDKT-100-14090	RDCT-011-01410	RDTT-031-01410	RDRY-701-00812	11
141.60 - 142.90	5.5866 - 5.6260	RDKT-200-14190	RDKT-100-14190	RDCT-011-01420	RDTT-031-01420	RDRY-701-00812	11
142.90 - 143.90	5.6260 - 5.6654	RDKT-200-14290	RDKT-100-14290	RDCT-011-01430	RDTT-031-01430	RDRY-701-00812	11
143.90 - 144.90	5.6654 - 5.7047	RDKT-200-14390	RDKT-100-14390	RDCT-011-01440	RDTT-031-01440	RDRY-701-00812	11
144.90 - 145.90	5.7047 - 5.7441	RDKT-200-14490	RDKT-100-14490	RDCT-011-01450	RDTT-031-01450	RDRY-701-00812	11
145.90 - 146.90	5.7441 - 5.7835	RDKT-200-14590	RDKT-100-14590	RDCT-011-01460	RDTT-031-01460	RDRY-701-00812	11
146.90 - 147.90	5.7835 - 5.8228	RDKT-200-14690	RDKT-100-14690	RDCT-011-01470	RDTT-031-01470	RDRY-701-00812	11
147.90 - 148.90	5.8228 - 5.8622	RDKT-200-14790	RDKT-100-14790	RDCT-011-01480	RDTT-031-01480	RDRY-701-00812	11
148.90 - 149.90	5.8622 - 5.9016	RDKT-200-14890	RDKT-100-14890	RDCT-011-01490	RDTT-031-01490	RDRY-701-00812	11

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

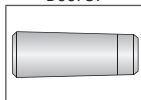
D00: 39 - 40



D00: 41 - 44



D00: 37

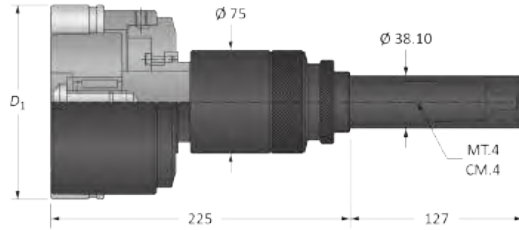


Key on D00: 2



T Series: 127.90 mm - 149.90 mm (5.0354" - 5.9016")

Blind Holes



D00

D ₁		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
127.90 - 128.90	5.0354 - 5.0748	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01280	RSTT-0xx-01280	RSRY-708-00812	11
128.90 - 129.90	5.0748 - 5.1142	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01290	RSTT-0xx-01290	RSRY-708-00812	11
129.90 - 130.90	5.1142 - 5.1535	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01300	RSTT-0xx-01300	RSRY-708-00812	11
130.90 - 131.90	5.1535 - 5.1929	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01310	RSTT-0xx-01310	RSRY-708-00812	11
131.90 - 132.90	5.1929 - 5.2323	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01320	RSTT-0xx-01320	RSRY-708-00812	11
132.90 - 133.90	5.2323 - 5.2717	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01330	RSTT-0xx-01330	RSRY-708-00812	11
133.90 - 134.90	5.2717 - 5.3110	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01340	RSTT-0xx-01340	RSRY-708-00812	11
134.90 - 135.90	5.3110 - 5.3504	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01350	RSTT-0xx-01350	RSRY-708-00812	11
135.90 - 136.90	5.3504 - 5.3898	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01360	RSTT-0xx-01360	RSRY-708-00812	11
136.90 - 137.90	5.3898 - 5.4291	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01370	RSTT-0xx-01370	RSRY-708-00812	11
137.90 - 138.90	5.4291 - 5.4685	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01380	RSTT-0xx-01380	RSRY-708-00812	11
138.90 - 139.90	5.4685 - 5.5079	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01390	RSTT-0xx-01390	RSRY-708-00812	11
139.90 - 140.90	5.5079 - 5.5472	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01400	RSTT-0xx-01400	RSRY-708-00812	11
140.90 - 141.90	5.5472 - 5.5866	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01410	RSTT-0xx-01410	RSRY-708-00812	11
141.60 - 142.90	5.5866 - 5.6260	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01420	RSTT-0xx-01420	RSRY-708-00812	11
142.90 - 143.90	5.6260 - 5.6654	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01430	RSTT-0xx-01430	RSRY-708-00812	11
143.90 - 144.90	5.6654 - 5.7047	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01440	RSTT-0xx-01440	RSRY-708-00812	11
144.90 - 145.90	5.7047 - 5.7441	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01450	RSTT-0xx-01450	RSRY-708-00812	11
145.90 - 146.90	5.7441 - 5.7835	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01460	RSTT-0xx-01460	RSRY-708-00812	11
146.90 - 147.90	5.7835 - 5.8228	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01470	RSTT-0xx-01470	RSRY-708-00812	11
147.90 - 148.90	5.8228 - 5.8622	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01480	RSTT-0xx-01480	RSRY-708-00812	11
148.90 - 149.90	5.8622 - 5.9016	RSKT-200-xxxxx	RSKT-100-xxxxx	RSCT-015-01490	RSTT-0xx-01490	RSRY-708-00812	11

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher Ø 140.00 mm with straight shank: RSKT-100-14000).

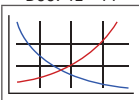
** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

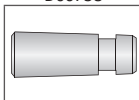
D00: 39 - 40



D00: 41 - 44



D00: 38

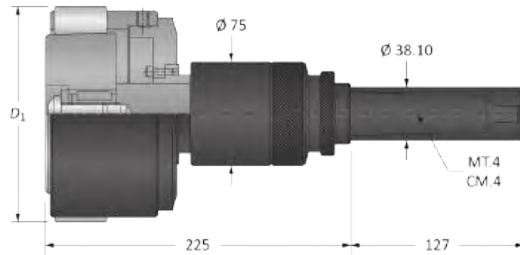


Key on D00: 2

**U Series: 149.90 mm - 165.90 mm (5.9016" - 6.5315")**

Through Holes

D00



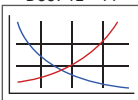
D_1		Part No.		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone	Rolls Part No.	Qty
5.9016 - 5.9409	149.90 - 150.90	RDKU-200-14990	RDKU-100-14990	RDCU-011-01500	RDTU-031-01500	RDRY-701-00812	13
5.9409 - 5.9803	150.90 - 151.90	RDKU-200-15090	RDKU-100-15090	RDCU-011-01510	RDTU-031-01510	RDRY-701-00812	13
5.9803 - 6.0197	151.90 - 152.90	RDKU-200-15190	RDKU-100-15190	RDCU-011-01520	RDTU-031-01520	RDRY-701-00812	13
6.0197 - 6.0591	152.90 - 153.90	RDKU-200-15290	RDKU-100-15290	RDCU-011-01530	RDTU-031-01530	RDRY-701-00812	13
6.0591 - 6.0984	153.90 - 154.90	RDKU-200-15390	RDKU-100-15390	RDCU-011-01540	RDTU-031-01540	RDRY-701-00812	13
6.0984 - 6.1378	154.90 - 155.90	RDKU-200-15490	RDKU-100-15490	RDCU-011-01550	RDTU-031-01550	RDRY-701-00812	13
6.1378 - 6.1772	155.90 - 156.90	RDKU-200-15590	RDKU-100-15590	RDCU-011-01560	RDTU-031-01560	RDRY-701-00812	13
6.1772 - 6.2165	156.90 - 157.90	RDKU-200-15690	RDKU-100-15690	RDCU-011-01570	RDTU-031-01570	RDRY-701-00812	13
6.2165 - 6.2559	157.90 - 158.90	RDKU-200-15790	RDKU-100-15790	RDCU-011-01580	RDTU-031-01580	RDRY-701-00812	13
6.2559 - 6.2953	158.90 - 159.90	RDKU-200-15890	RDKU-100-15890	RDCU-011-01590	RDTU-031-01590	RDRY-701-00812	13
6.2953 - 6.3346	159.90 - 160.90	RDKU-200-15990	RDKU-100-15990	RDCU-011-01600	RDTU-031-01600	RDRY-701-00812	13
6.3346 - 6.3740	160.90 - 161.90	RDKU-200-16090	RDKU-100-16090	RDCU-011-01610	RDTU-031-01610	RDRY-701-00812	13
6.3740 - 6.4134	161.90 - 162.90	RDKU-200-16190	RDKU-100-16190	RDCU-011-01620	RDTU-031-01620	RDRY-701-00812	13
6.4134 - 6.4528	162.90 - 163.90	RDKU-200-16290	RDKU-100-16290	RDCU-011-01630	RDTU-031-01630	RDRY-701-00812	13
6.4528 - 6.4921	163.90 - 164.90	RDKU-200-16390	RDKU-100-16390	RDCU-011-01640	RDTU-031-01640	RDRY-701-00812	13
6.4921 - 6.5315	164.90 - 165.90	RDKU-200-16490	RDKU-100-16490	RDCU-011-01650	RDTU-031-01650	RDRY-701-00812	13

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

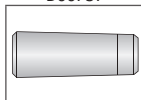
D00: 39 - 40



D00: 41 - 44



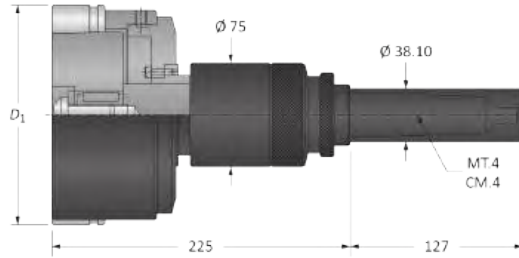
D00: 37





U Series: 149.90 mm - 165.90 mm (5.9016" - 6.5315")

Blind Holes



D00

D_1		Part No.*		Spare Parts			
Metric (mm)	Imperial (in)	Morse Taper Shank Assembly	Straight Shank Assembly	Cage	Cone**	Rolls Part No.	Qty
149.90 - 150.90	5.9016 - 5.9409	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01500	RSTU-0xx-01500	RSRY-708-00812	13
150.90 - 151.90	5.9409 - 5.9803	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01510	RSTU-0xx-01510	RSRY-708-00812	13
151.90 - 152.90	5.9803 - 6.0197	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01520	RSTU-0xx-01520	RSRY-708-00812	13
152.90 - 153.90	6.0197 - 6.0591	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01530	RSTU-0xx-01530	RSRY-708-00812	13
153.90 - 154.90	6.0591 - 6.0984	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01540	RSTU-0xx-01540	RSRY-708-00812	13
154.90 - 155.90	6.0984 - 6.1378	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01550	RSTU-0xx-01550	RSRY-708-00812	13
155.90 - 156.90	6.1378 - 6.1772	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01560	RSTU-0xx-01560	RSRY-708-00812	13
156.90 - 157.90	6.1772 - 6.2165	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01570	RSTU-0xx-01570	RSRY-708-00812	13
157.90 - 158.90	6.2165 - 6.2559	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01580	RSTU-0xx-01580	RSRY-708-00812	13
158.90 - 159.90	6.2559 - 6.2953	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01590	RSTU-0xx-01590	RSRY-708-00812	13
159.90 - 160.90	6.2953 - 6.3346	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01600	RSTU-0xx-01600	RSRY-708-00812	13
160.90 - 161.90	6.3346 - 6.3740	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01610	RSTU-0xx-01610	RSRY-708-00812	13
161.90 - 162.90	6.3740 - 6.4134	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01620	RSTU-0xx-01620	RSRY-708-00812	13
162.90 - 163.90	6.4134 - 6.4528	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01630	RSTU-0xx-01630	RSRY-708-00812	13
163.90 - 164.90	6.4528 - 6.4921	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01640	RSTU-0xx-01640	RSRY-708-00812	13
164.90 - 165.90	6.4921 - 6.5315	RSKU-200-xxxxx	RSKU-100-xxxxx	RSCU-015-01650	RSTU-0xx-01650	RSRY-708-00812	13

* xxxxx = Indicate to 2 metric decimal places the size to be burnished (e.g. roller burnisher $\varnothing$ 160.00 mm with MT.4 shank: RSKU-200-16000).

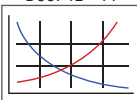
** x = A number that will vary from 2 to 8 depending upon the exact diameter to be burnished. See page D00: 7 for the correct identification of the "x" value.

NOTE: Each roller burnishing tool comes assembled complete with cage, cone, and rolls.

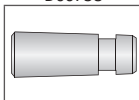
D00: 39 - 40



D00: 41 - 44



D00: 38



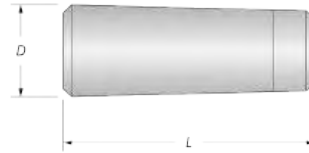
Key on D00: 2



Burnishing Rolls

Through Holes

D00



Rolls 704 and 707

Part No.	Metric (mm)		Imperial (in)	
	D	L	D	L
RDRY-704-00047	1.18	6.35	0.0465	0.2500
RDRY-704-00062	1.57	6.35	0.0618	0.2500
RDRY-704-00070	1.77	7.94	0.0697	0.3126
RDRY-704-00078	1.97	9.53	0.0776	0.3752
RDRY-704-00086	2.17	9.53	0.0854	0.3752
RDRY-704-00093	2.36	9.53	0.0929	0.3752
RDRY-704-00109	2.75	12.70	0.1083	0.5000
RDRY-704-00125	3.16	12.70	0.1244	0.5000
RDRY-704-00148	3.74	12.70	0.1472	0.5000
RDRY-704-00156	3.95	12.70	0.1555	0.5000
RDRY-704-00172	4.34	15.88	0.1709	0.6252
RDRY-704-00187	4.72	22.28	0.1858	0.8772
RDRY-707-00187	4.75	12.70	0.1870	0.5000
RDRY-704-00218	5.52	12.70	0.2173	0.5000
RDRY-707-00218	5.52	25.40	0.2173	1.0000
RDRY-704-00265	6.70	28.58	0.2638	1.1252
RDRY-704-00312	7.90	38.10	0.3110	1.5000
RDRY-707-00312	7.92	28.58	0.3118	1.1252
RDRY-704-00406	10.28	38.10	0.4047	1.5000
RDRY-704-00468	11.86	38.10	0.4669	1.5000
RDRY-704-00531	13.46	38.10	0.5299	1.5000
RDRY-704-00625	15.85	38.10	0.6240	1.5000
RDRY-704-00687	17.42	38.10	0.6858	1.5000
RDRY-704-00812	20.60	38.10	0.8110	1.5000

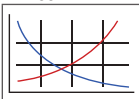
Rolls 701

Part No.	Metric (mm)		Imperial (in)	
	D	L	D	L
RDRY-701-00187	4.65	22.28	0.1831	0.8772
RDRY-701-00218	5.43	25.4	0.2138	1.0000
RDRY-701-00265	6.63	28.58	0.261	1.1252
RDRY-701-00312	7.72	38.1	0.3039	1.5000
RDRY-701-00406	10.11	38.1	0.398	1.5000
RDRY-701-00468	11.68	38.1	0.4598	1.5000
RDRY-701-00531	13.28	38.1	0.5228	1.5000
RDRY-701-00625	15.67	38.1	0.6169	1.5000
RDRY-701-00687	17.27	38.1	0.6799	1.5000
RDRY-701-00812	20.42	38.1	0.8039	1.5000

D00: 39 - 40

D00: 41 - 44

Key on D00:2





Burnishing Rolls

Blind Holes



D00

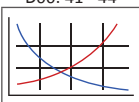
Rolls 708

Part No.	Metric (mm)		Imperial (in)	
	D	L	D	L
RSRY-708-00086	2.17	9.53	0.0854	0.3752
RSRY-708-00125	3.16	12.70	0.1244	0.5000
RSRY-708-00156	3.95	12.70	0.1555	0.5000
RSRY-708-00172	4.35	15.88	0.1709	0.6252
RSRY-708-00187	4.72	22.28	0.1858	0.8772
RSRY-708-00218	5.52	25.40	0.2173	0.5000
RSRY-708-00265	6.70	28.58	0.2638	1.1252
RSRY-708-00312	7.90	38.10	0.3110	1.5000
RSRY-708-00406	10.29	38.10	0.4047	1.5000
RSRY-708-00468	11.86	38.10	0.4669	1.5000
RSRY-708-00531	13.46	38.10	0.5299	1.5000
RSRY-708-00625	15.85	38.10	0.6240	1.5000
RSRY-708-00687	17.42	38.10	0.6858	1.5000
RSRY-708-00812	20.60	38.10	0.8110	1.5000

D00: 39 - 40

D00: 41 - 44

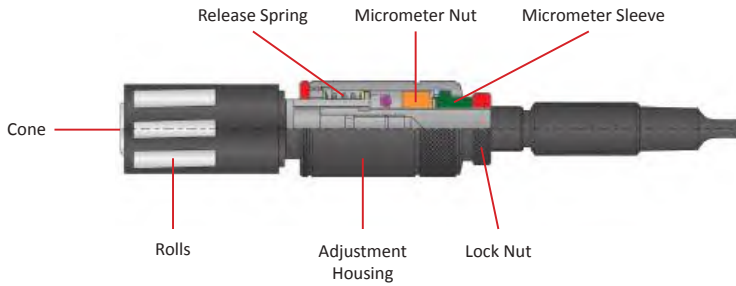
Key on D00: 2





Diameter Adjustment

D00



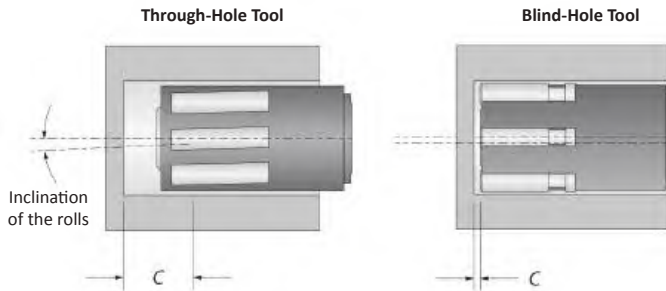
Adjustment

The roller burnishing tool incorporates a shank, a body, and a planetary system of conical rolls that are evenly spaced by a retaining cage.

1. Unscrew the lock nut.
2. Pull the housing toward the lock nut and rotate to increase or decrease the diameter.
3. Tighten the lock nut.

IMPORTANT: As you increase the diameter, the cone moves forward, pushing the rolls outward. Because of this, the cone will protrude from the end of the cage, decreasing the clearance available in blind holes (see Figures 1 and 2).

Refer to chart below for clearance values.

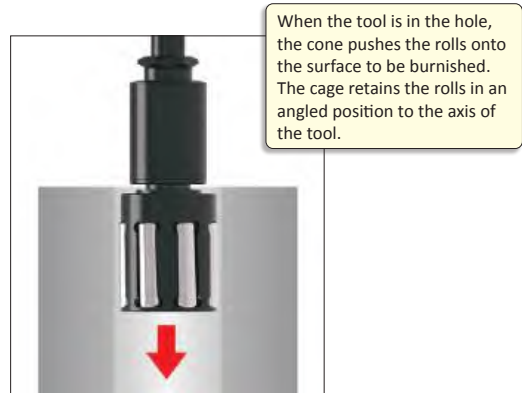
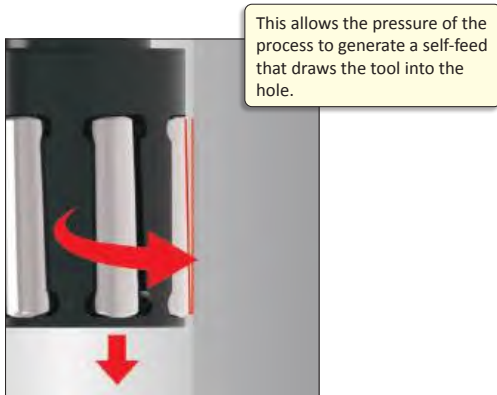
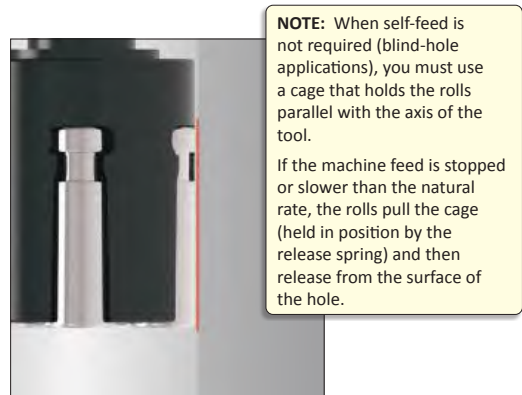
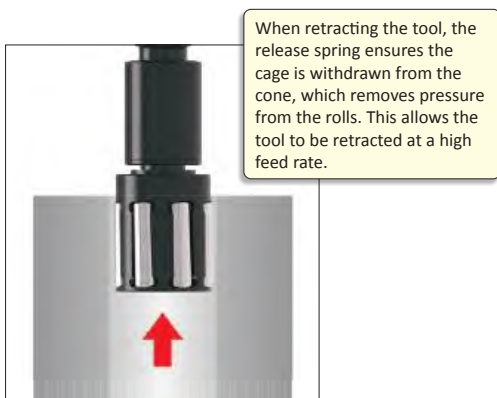
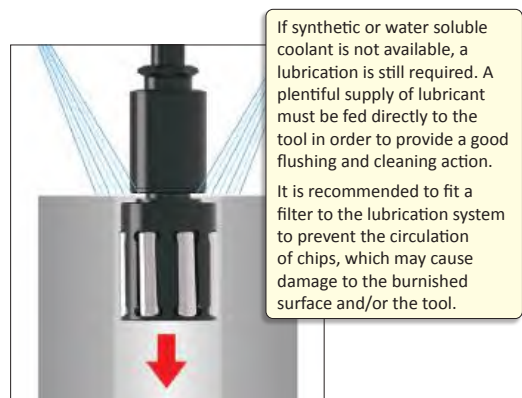
Figure 1**Figure 2**

Larger Diameter = Extruded Cone = Decreased Clearance

Adjustment Range		Clearance (C) (mm)		
		Through Holes		Blind Holes
Metric (mm)	Imperial (inch)	Rolls 701	Rolls 704 / 707	Rolls 708
4.70 - 5.88	0.1850 - 0.2315	-	2.40	-
5.89 - 9.47	0.2319 - 0.3728	-	2.40	0.60
9.48 - 15.84	0.3732 - 0.6236	-	2.40	0.60
15.85 - 28.54	0.6240 - 1.1236	5.40	3.20	1.00
28.55 - 46.70	1.1240 - 1.8385	9.50	3.20	1.00
46.71 - 84.80	1.8390 - 3.3386	9.50	4.00	1.00
84.81 - 165.90	3.3390 - 6.5315	10.30	4.70	1.00



How it Works



D00



Recommended Drilling Data | Metric (mm)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Speed (m/min)	Recommended Feed (mm/rev) by Diameter			
				4.70 mm - 12.00 mm	12.01 mm - 25.00 mm	25.01 mm - 50.00 mm	50.01 mm - 165.90 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 250	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 275	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 325	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		180 - 375	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Structural Steel A36, A285, A516, etc.	125 - 180	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
M		180 - 350	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		200 - 250	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	22 - 60	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	22 - 60	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
		> 200	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Spheroidal Cast Iron (Ferritic)	260 - 320	22 - 90	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Copper and Alloys, and Brass	< 500	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Bronze, and Bronze Phosphorous	< 180	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
N	Aluminum and Alloys	< 150	45 - 105	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	15 - 45	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07
	Titanium Alloy	140 - 310	15 - 45	0.13 - 0.51	0.36 - 0.94	0.81 - 2.18	1.78 - 3.07

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended speed and feeds.

Max RPM

Series	Max RPM
H	2000
I	1500
K	1200
L	1000
F	1000
M	900
N	900
O	700
P	600
Q	500
R	300
S	300
T	250
U	200

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.



Recommended Drilling Data | Imperial (in)

ROLLER BURNISHERS

ISO	Material	Hardness (BHN)	Speed (SFM)	Recommended Feed (IPR) by Diameter			
				0.1850" - 0.4724"	0.4725" - 0.9843"	0.9844" - 1.9685"	1.9686" - 6.5315"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	180 - 250	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	85 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Alloy Steel 4140, 5140, 8640, etc.	180 - 275	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	High-Strength Alloy 4340, 4330V, 300M, etc.	125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Structural Steel A36, A285, A516, etc.	180 - 325	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Tool Steel H-13, H-21, A-4, S-3, etc.	125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		180 - 375	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		240 - 450	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		125 - 180	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
M	Stainless Steel 400 Series 416, 420, etc.	180 - 350	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	75 - 200	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
K	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
		> 200	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Spheroidal Cast Iron (Ferritic)	260 - 320	75 - 300	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
N	Copper and Alloys, and Brass	< 500	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Bronze, and Bronze Phosphorous	< 180	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Aluminum and Alloys	< 150	150 - 350	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	50 - 150	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121
	Titanium Alloy	140 - 310	50 - 150	0.005 - 0.020	0.014 - 0.037	0.032 - 0.086	0.070 - 0.121

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended speed and feeds.

Max RPM

Series	Max RPM
H	2000
I	1500
K	1200
L	1000
F	1000
M	900
N	900
O	700
P	600
Q	500
R	300
S	300
T	250
U	200

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Factory technical assistance is available through our Application Engineering department.

**Stock Allowance | Metric (mm)****ROLLER BURNISHERS**

ISO	Material	Hardness (BHN)	Recommended Stock (mm) by Diameter			
			4.70 mm - 12.00 mm	12.01 mm - 25.00 mm	25.01 mm - 50.00 mm	50.01 mm - 165.90 mm
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 250	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 275	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 325	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		180 - 375	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Structural Steel A36, A285, A516, etc.	125 - 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
M		180 - 350	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
		200 - 250	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
		> 200	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Spheroidal Cast Iron (Ferritic)	260 - 320	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Copper and Alloys, and Brass	< 500	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	Bronze, and Bronze Phosphorous	< 180	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
N	Aluminum and Alloys	< 150	0.010 - 0.018	0.018 - 0.041	0.025 - 0.046	0.030 - 0.051
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036
	Titanium Alloy	140 - 310	0.010 - 0.018	0.012 - 0.018	0.012 - 0.025	0.020 - 0.036

*Stock value is on diameter.

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended stock allowance.



Stock Allowance | Imperial (in)

ROLLER BURNISHERS						
ISO	Material	Hardness (BHN)	Recommended Stock (in) by Diameter			
			0.1850" - 0.4724"	0.4725" - 0.9843"	0.9844" - 1.9685"	1.9686" - 6.5315"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 250	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 275	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 325	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Alloy Steel 4140, 5140, 8640, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		180 - 375	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	High-Strength Alloy 4340, 4330V, 300M, etc.	240 - 450	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Structural Steel A36, A285, A516, etc.	125 - 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
M		180 - 350	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
		200 - 250	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Stainless Steel 400 Series 416, 420, etc.	135 - 350	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 275	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Grey and Ductile Cast Iron, Spheroidal Cast Iron (Pearlitic)	< 200	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
		> 200	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Spheroidal Cast Iron (Ferritic)	260 - 320	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Copper and Alloys, and Brass	< 500	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	Bronze, and Bronze Phosphorous	< 180	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
N	Aluminum and Alloys	< 150	0.0004 - 0.0007	0.0007 - 0.0016	0.0010 - 0.0018	0.0012 - 0.0020
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 310	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014
	Titanium Alloy	140 - 310	0.0004 - 0.0007	0.0005 - 0.0007	0.0005 - 0.0010	0.0008 - 0.0014

*Stock value is on diameter.

NOTE: For diameters less than 4.70 mm (0.1850"), please contact application engineering for recommended stock allowance.

D00

THREAD MILLING

PRODUCT CATALOG



ALLIED MACHINE
& ENGINEERING

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Threading Overview

Thread Mill Types



THREAD MILLING DONE **RIGHT**



Solid Carbide Thread Mills		Notes
AccuThread® 856		<ul style="list-style-type: none"> Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products. Standard cutting lengths allow for multiple applications without the need for special thread mills. Helical flute offers increased strength and rigidity when cutting forces are applied.
ThreadMills USA®		<ul style="list-style-type: none"> Helical flute offers increased strength and rigidity when cutting forces are applied. High quality for consistent, predictable production. Coolant-through options available.  TiAlN coating improves tool life versus uncoated tools.
AccuThread® T3		<ul style="list-style-type: none"> Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products. Standard cutting lengths allow for multiple applications without the need for special thread mills. Helical flute offers increased strength and rigidity when cutting forces are applied.
Indexable Insert Thread Mills		Notes
AccuThread® 856 Bolt-in Style		<ul style="list-style-type: none"> Thread mill holders are manufactured from stainless steel that is engineered to dampen vibration during operation. Extensive range of thread forms with two thread lengths. Can produce left- or right-handed threads.
AccuThread® 856 Pin Style		<ul style="list-style-type: none"> Patented pin style locking system ensures unsurpassed repeatability. Thread mill holders are manufactured from stainless steel that is engineered to dampen vibration during operation. Extensive range of thread forms with two thread lengths.
AccuThread® 856 Indexable Inserts	  <div> <div>Bolt-in Style</div> <div>Pin Style</div> </div>	<ul style="list-style-type: none"> Full profiles present on all inserts allow 100% thread form against 65-75% for tapping. Allied Machine's premium carbide allows for extended tool life while providing high-quality thread forms. Allied Machine's proprietary AM210® coating yields a 25-50% increase in tool life over competitor products.

Threading Overview

Insta-Code®

Insta-Code®



Find your thread mill. Create your program.

The all new software lets you choose the best thread mill product for your application and create the program code for your machine. Insta-Code is available as a PC download app (that can be used offline) and an online web app available 24/7 at www.alliedmachine.com/InstaCode.

Eliminate the wait. Get your program now.



Insta-Code also has a
Cycle Time Calculator.



Online Version



- Generates thread mill G-code programs.
- Available online 24/7.
- No login required.
- No updates needed.
- Easily share the program code.
- Supported on all web browsers

Download Version



- Creates program code for multiple machine platforms.
- Suggests a thread mill based on application details.
- Provides estimated cycle time for improved production.
- Available for use offline.

Offline Version Updates



- Update your offline Insta-Code software.
- Download the updated .zip file, then transfer to the offline computer. Click "check for update" in your Insta-Code software and navigate to the downloaded zip file.
- This allows you to keep all your saved programs.

1

Download and open
Allied_Machine_Insta-Code.zip.

2

Click on **setup.exe**
to install the program.

3

One click updates are
available for online computers.

 Supported on all Windows OS.

www.alliedmachine.com/InstaCode

SECTION

E10-SCT

Solid Carbide Thread Mills

Solid Carbide Thread Mills



A solid choice for thread milling

Our solid carbide thread milling product line has been specifically designed to provide customers with a wide range of options. From the low cost, general production ThreadMills USA range to the high performance, high productivity AccuThread range, our solid carbide thread mills provide a comprehensive line of high-precision tooling that offers outstanding productivity with exceptional levels of tool life and thread accuracy.

- ▶ ThreadMills USA®
- ▶ AccuThread® 856
- ▶ AccuThread T3

Applicable Industries

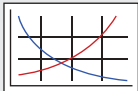
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

The following icons will appear throughout the catalog to help you navigate between products.



Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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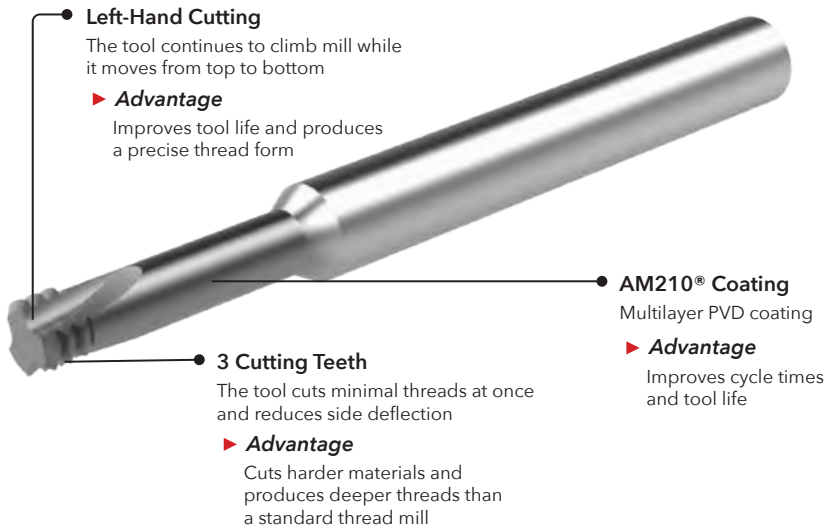


Solid Carbide Thread Mill Overview

Styles and Thread Forms

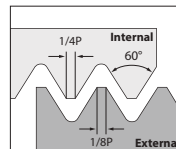
Straight BSW	Helical BSPP, NPS, NPSF, UN, ISO	Taper Helical BSPT, NPT, NPTF	Helical (3-Tooth Style) UN, ISO
 <p>AccuThread® 856</p>	 <p>AccuThread® 856</p>	 <p>AccuThread® 856</p>	 <p>AccuThread® T3</p>
 <p>ThreadMills USA® (coolant and noncoolant)</p>	 <p>ThreadMills USA® (coolant and noncoolant)</p>	 <p>ThreadMills USA® (coolant and noncoolant)</p>	

AccuThread® T3

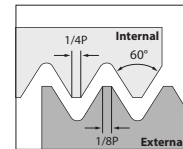


Additional Information

- Available in UN and ISO thread forms.
- Available in imperial and metric shanks.
- Available in 2xD and 3xD lengths.



UN Thread Form



ISO Thread Form



Solid Carbide Thread Mill Overview

Port and Thread Finishing Kits



WE HAVE A **KIT** FOR THAT

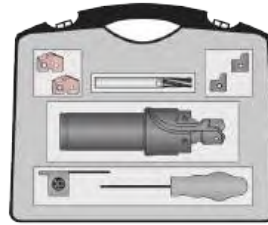
E10

Kits aren't for everyone, but if you work on different projects from day to day, you need to ***be prepared for the work tomorrow will bring.***

The Complete Package

Producing fully finished threaded hydraulic ports has never been easier. The Port and Thread Finishing Kit includes the AccuPort 432® port contour cutter with a dedicated AccuThread® 856 solid carbide thread mill in a single kit. You also receive the T-A® inserts and port form inserts needed to complete the assembly.

Port kits incorporate the AccuThread 856 solid carbide thread mills to increase the manufacturing flexibility by allowing hydraulic ports to be produced in just two operations. In addition, where a unique port profile is required, Allied Machine provides a dedicated special tooling solution using our extensive tool design and manufacturing experience to meet precise specifications.



NOTE: See our porting product catalog for the complete list of kits.



One Tool, **FOUR Operations**

- Spot Face
- Port Contour
- Tap Drill
- Spot Drill



NOTE: See our porting product catalog for all the AccuPort 432 product line information.

CHAMFER SOLUTIONS **MADE EASY.**

T-A PRO® DRILL AND CHAMFER HOLDERS



Provides a 1.0 mm (0.040") x 45° (minimum) chamfer for various thread specifications.



Large range of diameters with a single holder.



Preselected diameters for standard thread sizes offer easy user selection.



View the T-A Pro drill and chamfer holders along with convenient thread size charts in the T-A Pro Catalog.



Solid Carbide Thread Mill Overview

Product Nomenclature

AccuThread® 856 Solid Carbide Thread Mills

TM	U	K	0250	—	20	M
Thread Mill	Thread Class	Coating	Min Thread Diameter		Thread Pitch	Shank
TM = Standard HDTM = Heavy duty TW = Weldon flat	U = UN N = NPT, NPTF B = BSPP, BSPT, BSW M = ISO A = AccuPort® specific	K = AM210® U = Uncoated	0250 = 1/4 (Imperial) 0008 = #8 (Number Drill) 0450 = M4.5 (ISO)		20 = UN 20 TPI 075 = ISO 0.75 NPT = All pipe threads will show thread form	Blank = Imperial M = Metric

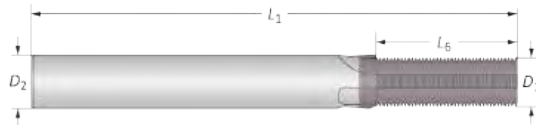
E10

ThreadMills USA® Solid Carbide Thread Mills

TM	250	20	CH	M
Thread Mill	Min Thread Diameter	Thread Pitch	Optional	Shank
TM = Standard (TiAlN) TMFT = Uncoated HDTM = Heavy duty (TiAlN) HDTMFT = Heavy duty uncoated	0250 = 1/4 (Imperial) 0008 = #8 (Number Drill) 0450 = M4.5 (ISO)	20 = UN 20 TPI 075 = ISO 0.75 NPT = All pipe threads will show thread form	CH = Coolant hole DE = Double end	Blank = Imperial M = Metric

Reference Key

Symbol	Attribute
D_1	Maximum cutter diameter
D_2	Shank diameter
L_1	Overall length
L_6	Length of cut

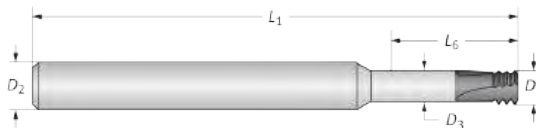


AccuThread® T3 Solid Carbide Thread Mills

TM	073	64	M	—	3T	2X
	Min Thread Diameter	Thread Pitch	Shank			Shank
	250 = 1/4 (Imperial) 45 = M4.5 (ISO)	20 = UN 20 TPI 075 = ISO 0.75	Blank = Imperial M = Metric			2X = 2xD 3X = 3xD

Reference Key

Symbol	Attribute
D_1	Maximum cutter diameter
D_2	Shank diameter
D_3	Undercut diameter
L_1	Overall length
L_6	Length of cut



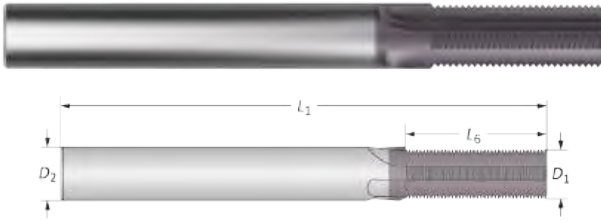
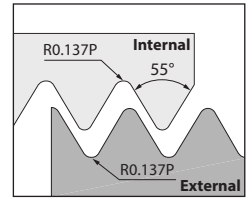


Solid Carbide Thread Mills

BSW



E10



Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D ₁	D ₂	L ₆	L ₁	ThreadMills USA®	AccuThread® 856
m	20	1/4	3	4.50	6.00	10.16	58.00	TM20BSWM	TMBK0250-20M
	18	5/16	3	5.00	6.00	11.29	58.00	TM18BSWM	TMBK0312-18M
	16	3/8	5	7.00	8.00	14.29	64.00	TM16BSWM	TMBK0375-16M
	14	7/16	5	7.90	8.00	18.15	64.00	TM14BSWM	TMBK0437-14M
	12	1/2	5	9.00	10.00	19.10	73.00	TM12BSWM	TMBK0500-12M
	11	5/8	5	11.90	12.00	23.10	84.00	TM11BSWM	TMBK0625-11M
	10	3/4	5	11.90	12.00	27.94	84.00	TM10BSWM	TMBK0750-10M
	9	7/8	6	15.90	16.00	28.23	93.00	TM9BSWM	TMBK0875-9M
	8	1	6	15.90	16.00	34.94	93.00	TM8BSWM	TMBK1000-8M

Imperial (in)

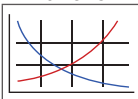
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D ₁	D ₂	L ₆	L ₁	ThreadMills USA®	AccuThread® 856
i	20	1/4	3	0.177	0.250	0.400	2.500	TM20BSW	—
	18	5/16	3	0.197	0.250	0.445	2.500	TM18BSW	—
	16	3/8	5	0.276	0.312	0.563	3.000	TM16BSW	—
	14	7/16	5	0.311	0.312	0.715	3.000	TM14BSW	—
	12	1/2	5	0.354	0.375	0.750	3.500	TM12BSW	—
	11	5/8	5	0.468	0.500	0.910	3.500	TM11BSW	—
	10	3/4	5	0.468	0.500	1.100	3.500	TM10BSW	—
	9	7/8	6	0.620	0.625	1.112	4.000	TM9BSW	—
	8	1	6	0.620	0.625	1.375	4.000	TM8BSW	—

E10: 3

E10: 29 - 34

Weldon Flat

Key on E10: 2



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)

Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

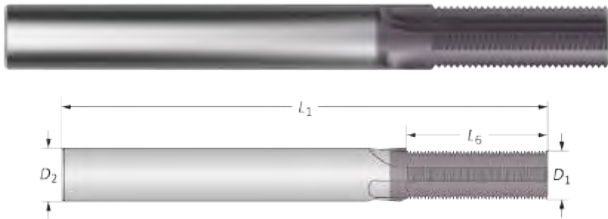
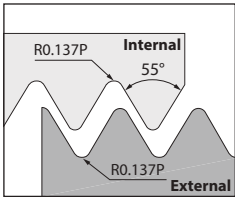
m = Metric (mm)

i = Imperial (in)



Solid Carbide Thread Mills

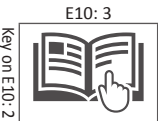
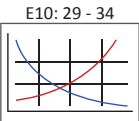
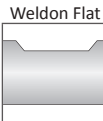
BSW



Coolant Through

Metric (mm)								Part No.
m	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				ThreadMills USA®
				D ₁	D ₂	L ₆	L ₁	
	20	1/4	3	4.50	6.00	10.16	58.00	TM20BSWCHM
	18	5/16	3	5.00	6.00	11.29	58.00	TM18BSWCHM
	16	3/8	5	7.00	8.00	14.29	64.00	TM16BSWCHM
	14	7/16	5	7.90	8.00	18.15	64.00	TM14BSWCHM
	12	1/2	5	9.00	10.00	19.10	84.00	TM12BSWCHM
	11	5/8	5	11.90	12.00	23.10	84.00	TM11BSWCHM
	10	3/4	5	11.90	12.00	27.94	84.00	TM10BSWCHM
	9	7/8	6	15.90	16.00	28.23	93.00	TM9BSWCHM
	8	1	6	15.90	16.00	34.94	93.00	TM8BSWCHM

Imperial (in)								Part No.
i	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				ThreadMills USA®
				D ₁	D ₂	L ₆	L ₁	
	20	1/4	3	0.177	0.250	0.400	2.375	TM20BSWCH
	18	5/16	3	0.197	0.250	0.445	2.375	TM18BSWCH
	16	3/8	5	0.276	0.312	0.563	3.000	TM16BSWCH
	14	7/16	5	0.311	0.312	0.715	3.000	TM14BSWCH
	12	1/2	5	0.354	0.375	0.750	3.000	TM12BSWCH
	11	5/8	5	0.468	0.500	0.910	3.500	TM11BSWCH
	10	3/4	5	0.468	0.500	1.100	3.500	TM10BSWCH
	9	7/8	6	0.620	0.625	1.112	4.000	TM9BSWCH
	8	1	6	0.620	0.625	1.375	4.000	TM8BSWCH



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

m = Metric (mm)
i = Imperial (in)

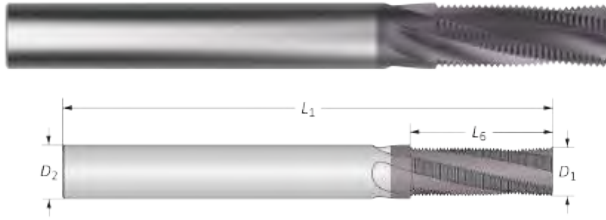
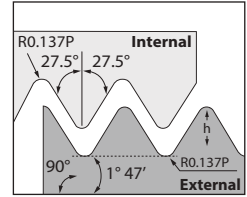


Solid Carbide Thread Mills

BSPT



E10



Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
m	28	1/16 and 1/8	3	5.97	6.00	9.98	58.00	TM28BSPTM	TMBK0063-BSPTM
	19	1/4 and 3/8	4	9.91	10.00	14.73	73.00	TM19BSPTM	TMBK0250-BSPTM
	14	1/2 and 3/4	4	11.94	12.00	20.00	84.00	TM14BSPTM	TMBK0500-BSPTM
	11	1	4	15.75	16.00	32.31	93.00	TM11BSPTM	TMBK1000-BSPTM

Imperial (in)

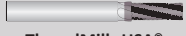
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
i	28	1/16 and 1/8	3	0.240	0.250	0.393	2.500	TM28BSPT	—
	19	1/4 and 3/8	4	0.310	0.312	0.580	3.000	TM19BSPT	—
	14	1/2 and 3/4	4	0.470	0.500	0.787	3.500	TM14BSPT	—
	11	1	4	0.620	0.625	1.546	4.000	TM11BSPT	—

Coolant Through

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	
m	28	1/16 and 1/8	3	5.97	6.00	9.98	58.00	TM28BSPTCHM	
	19	1/4 and 3/8	4	9.91	10.00	14.73	84.00	TM19BSPTCHM	
	14	1/2 and 3/4	4	11.94	12.00	20.00	84.00	TM14BSPTCHM	
	11	1	4	15.75	16.00	32.31	93.00	TM11BSPTCHM	

Imperial (in)

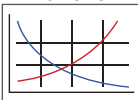
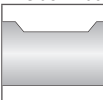
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	
i	28	1/16 and 1/8	3	0.240	0.250	0.393	2.375	TM28BSPTCH	
	19	1/4 and 3/8	4	0.310	0.312	0.580	3.000	TM19BSPTCH	
	14	1/2 and 3/4	4	0.470	0.500	0.787	3.500	TM14BSPTCH	
	11	1	4	0.620	0.625	1.546	4.000	TM11BSPTCH	

E10: 3

E10: 29 - 34

Weldon Flat

Key on E10: 2



Replace the leading TM designator with TW.
(For shanks 6 mm (**m**) or 3/8" (**i**) and above.)

Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

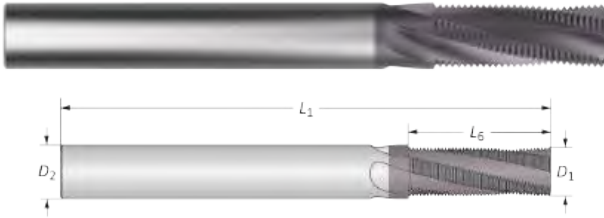
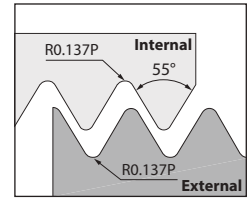
m = Metric (mm)

i = Imperial (in)



Solid Carbide Thread Mills

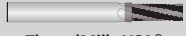
BSPP



E10

Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1		
m	28	1/16 and 1/8	3	5.97	6.00	14.53	58.00	TM28BSPPM	TMBK0063-BSPPM
	19	1/4 and 3/8	4	9.91	10.00	18.72	73.00	TM19BSPPM	TMBK0250-BSPPM
		3/8	4	11.94	12.00	28.41	84.00	HDTM19BSPPM	—
	14	1/2 and 3/4	4	11.94	12.00	29.03	84.00	TM14BSPPM	TMBK0500-BSPPM
		3/4	5	15.75	16.00	34.47	93.00	HDTM14BSPPM	—
	11	1	4	15.75	16.00	34.67	93.00	TM11BSPPM	TMBK1000-BSPPM

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1		
i	28	1/16 and 1/8	3	0.240	0.250	0.572	2.500	TM28BSPP	—
	19	1/4 and 3/8	4	0.310	0.312	0.737	3.000	TM19BSPP	—
	14	1/2 and 3/4	4	0.470	0.500	1.143	3.500	TM14BSPP	—
	11	1	4	0.620	0.625	1.365	4.000	TM11BSPP	—

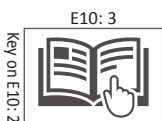
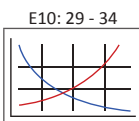
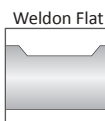
Coolant Through

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	
m	28	1/16 and 1/8	3	5.97	6.00	14.53	58.00	TM28BSPPCHM
	19	1/4 and 3/8	4	9.91	10.00	18.72	84.00	TM19BSPPCHM
	14	1/2 and 3/4	4	11.94	12.00	29.03	84.00	TM14BSPPCHM
	11	1	4	15.75	16.00	34.67	93.00	TM11BSPPCHM

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	
i	28	1/16 and 1/8	3	0.240	0.250	0.572	2.375	TM28BSPPCH
	19	1/4 and 3/8	4	0.310	0.312	0.737	3.000	TM19BSPPCH
	14	1/2 and 3/4	4	0.470	0.500	1.143	3.500	TM14BSPPCH
	11	1	4	0.620	0.625	1.365	4.000	TM11BSPPCH



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

m = Metric (mm)
i = Imperial (in)

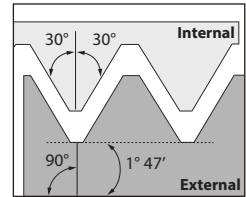


Solid Carbide Thread Mills

NPT

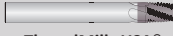
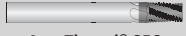


E10

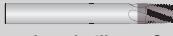


Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
m	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTM	TMNK0063-NPTM
		1/8	4	7.62	8.00	12.25	64.00	HDTM27NPTM	-
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTM	TMNK0250-NPTM
				9.22	10.00	17.25	84.00	HDTM18NPTM	-
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTM	TMNK0500-NPTM
		3/4	4	15.75	16.00	25.40	93.00	HDTM14NPTM	-
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTM	TMNK1000-NPTM
			5	18.92	20.00	30.95	105.00	HDTM11NPTM	-
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTM	TMNK2500-NPTM

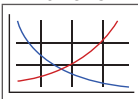
Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
i	27	1/16 and 1/8	3	0.245	0.250	0.437	2.500	TM27NPT	TMNK0063-NPT
		1/8	4	0.300	0.312	0.482	3.000	HDTM27NPT	HDTMKN0125-NPT
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPT	TMNK0250-NPT
				0.363	0.375	0.680	3.500	HDTM18NPT	HDTMKN0250-NPT
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPT	TMNK0500-NPT
		3/4	4	0.620	0.625	1.000	4.000	HDTM14NPT	HDTMKN0750-NPT
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPT	TMNK1000-NPT
			5	0.745	0.750	1.219	4.000	HDTM11NPT	HDTMKN1000-NPT
	8	2-1/2	4	0.745	0.750	1.500	5.000	TM8NPT	TMNK2500-NPT

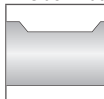
E10: 3



E10: 29 - 34



Weldon Flat



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

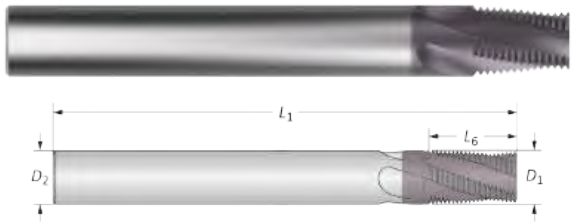
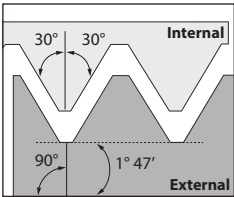
m = Metric (mm)

i = Imperial (in)



Solid Carbide Thread Mills

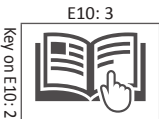
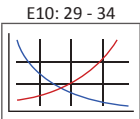
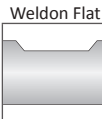
NPT



Coolant Through

Metric (mm)								Part No.
TPI (Pitch)	Min Thread ϕ	Flutes	Thread Mill					ThreadMills USA®
			D_1	D_2	L_6	L_1		
m	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTCHM
		1/8	4	7.62	8.00	12.25	64.00	HDTM27NPTCHM
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTCHM
				9.22	10.00	17.25	84.00	HDTM18NPTCHM
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTCHM
		3/4	4	15.75	16.00	25.40	93.00	HDTM14NPTCHM
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTCHM
			5	18.92	20.00	30.95	105.00	HDTM11NPTCHM
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTCHM

Imperial (in)								Part No.
TPI (Pitch)	Min Thread ϕ	Flutes	Thread Mill					ThreadMills USA®
			D_1	D_2	L_6	L_1		
i	27	1/16 and 1/8	3	0.245	0.250	0.437	2.375	TM27NPTCH
		1/8	4	0.300	0.312	0.482	3.000	HDTM27NPTCH
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPTCH
				0.363	0.375	0.680	3.000	HDTM18NPTCH
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPTCH
		3/4	4	0.620	0.625	1.000	4.000	HDTM14NPTCH
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPTCH
			5	0.745	0.750	1.219	4.000	HDTM11NPTCH
	8	2-1/2	5	0.745	0.750	1.500	5.000	TM8NPTCH



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)
Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

m = Metric (mm)
i = Imperial (in)

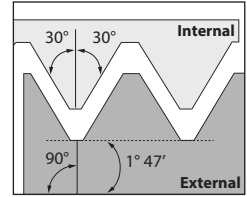


Solid Carbide Thread Mills

NPTF



E10



Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
m	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTFM	TMNK0063-NPTFM
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTFM	TMNK0250-NPTFM
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTFM	TMNK0500-NPTFM
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTFM	TMNK1000-NPTFM
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTFM	TMNK2500-NPTFM

Imperial (in)

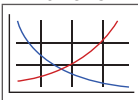
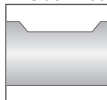
	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
				D_1	D_2	L_6	L_1	 ThreadMills USA®	 AccuThread® 856
i	27	1/16 and 1/8	3	0.245	0.250	0.437	2.500	TM27NPTF	TMNK0063-NPTF
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPTF	TMNK0250-NPTF
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPTF	TMNK0500-NPTF
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPTF	TMNK1000-NPTF
	8	2-1/2	4	0.745	0.750	1.500	5.000	TM8NPTF	TMNK2500-NPTF

E10: 3

E10: 29 - 34

Weldon Flat

Key on E10: 2



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)

Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

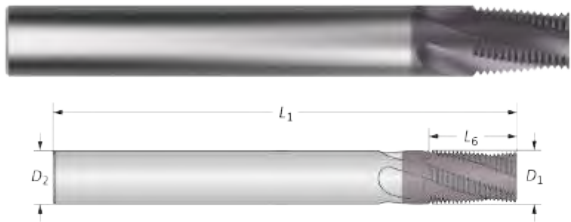
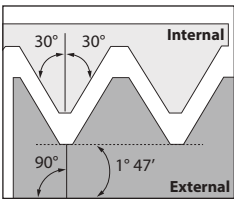
m = Metric (mm)

i = Imperial (in)



Solid Carbide Thread Mills

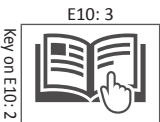
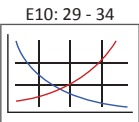
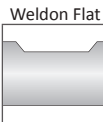
NPTF



Coolant Through

Metric (mm)								Part No.
TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill					ThreadMills USA®
			D ₁	D ₂	L ₆	L ₁		
m	27	1/16 and 1/8	3	5.95	6.00	11.30	58.00	TM27NPTFCHM
	18	1/4 and 3/8	4	7.75	8.00	15.70	64.00	TM18NPTFCHM
	14	1/2 and 3/4	4	11.95	12.00	23.70	84.00	TM14NPTFCHM
	11.5	1	4	15.75	16.00	28.75	93.00	TM11NPTFCHM
	8	2-1/2	5	19.75	20.00	38.10	115.00	TM8NPTFCHM

Imperial (in)								Part No.
TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill					ThreadMills USA®
			D ₁	D ₂	L ₆	L ₁		
i	27	1/16 and 1/8	3	0.245	0.250	0.437	2.375	TM27NPTFCH
	18	1/4 and 3/8	4	0.305	0.312	0.625	3.000	TM18NPTFCH
	14	1/2 and 3/4	4	0.495	0.500	0.875	3.500	TM14NPTFCH
	11.5	1	4	0.620	0.625	1.125	4.000	TM11NPTFCH
	8	2-1/2	4	0.745	0.750	1.500	5.000	TM8NPTFCH



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

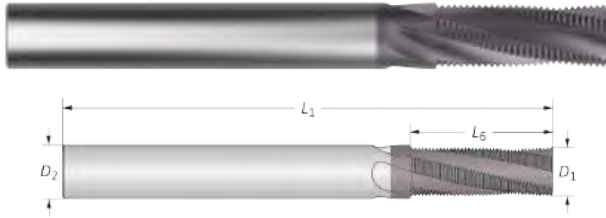
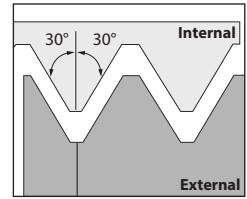
m = Metric (mm)
i = Imperial (in)



Solid Carbide Thread Mills

NPS

E10



Noncoolant

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	ThreadMills USA®
m	27	1/8	3	5.95	6.00	16.00	58.00	TM27NPSM
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	TM18NPSM
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	TM14NPSM
	11.5	1	4	15.75	16.00	35.35	93.00	TM11NPSM

Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	ThreadMills USA®
i	27	1/8	3	0.245	0.250	0.630	2.500	TM27NPS
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.500	TM18NPS
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	TM14NPS
	11.5	1	4	0.620	0.625	1.392	4.000	TM11NPS

Coolant Through

Metric (mm)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	ThreadMills USA®
m	27	1/8	3	5.95	6.00	16.00	58.00	TM27NPSCHM
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	TM18NPSCHM
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	TM14NPSCHM
	11.5	1	4	15.75	16.00	35.35	93.00	TM11NPSCHM

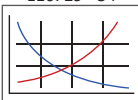
Imperial (in)

	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
				D_1	D_2	L_6	L_1	ThreadMills USA®
i	27	1/8	3	0.245	0.250	0.630	2.375	TM27NPSC
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.000	TM18NPSC
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	TM14NPSC
	11.5	1	4	0.620	0.625	1.392	4.000	TM11NPSC

E10: 3

E10: 29 - 34

Weldon Flat



Replace the leading TM designer with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

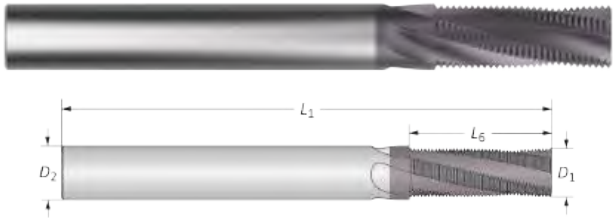
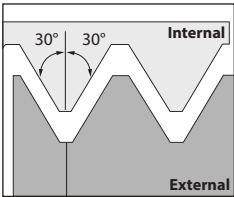
m = Metric (mm)

i = Imperial (in)



Solid Carbide Thread Mills

NPSF



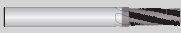
Noncoolant

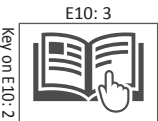
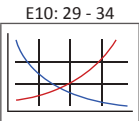
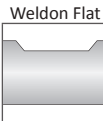
Metric (mm)								Part No.  ThreadMills USA®
	TPI (Pitch)	Min Thread Ø	Flutes	D ₁	D ₂	L ₆	L ₁	
m	27	1/8	3	5.95	6.00	16.00	58.00	TM27NPSFM
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	TM18NPSFM
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	TM14NPSFM
	11.5	1	4	15.75	16.00	35.35	93.00	TM11NPSFM

Imperial (in)								Part No.  ThreadMills USA®
	TPI (Pitch)	Min Thread Ø	Flutes	D ₁	D ₂	L ₆	L ₁	
i	27	1/8	3	0.245	0.250	0.630	2.500	TM27NPSF
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.500	TM18NPSF
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	TM14NPSF
	11.5	1	4	0.620	0.625	1.392	4.000	TM11NPSF

Coolant Through

Metric (mm)								Part No.  ThreadMills USA®
	TPI (Pitch)	Min Thread Ø	Flutes	D ₁	D ₂	L ₆	L ₁	
m	27	1/8	3	5.95	6.00	16.00	58.00	TM27NPSFCHM
	18	1/4 and 3/8	4	9.40	10.00	22.60	84.00	TM18NPSFCHM
	14	1/2 and 3/4	4	11.94	12.00	32.70	84.00	TM14NPSFCHM
	11.5	1	4	15.75	16.00	35.35	93.00	TM11NPSFCHM

Imperial (in)								Part No.  ThreadMills USA®
	TPI (Pitch)	Min Thread Ø	Flutes	D ₁	D ₂	L ₆	L ₁	
i	27	1/8	3	0.245	0.250	0.630	2.375	TM27NPSFCH
	18	1/4 and 3/8	4	0.370	0.375	0.889	3.000	TM18NPSFCH
	14	1/2 and 3/4	4	0.490	0.500	1.288	3.500	TM14NPSFCH
	11.5	1	4	0.620	0.625	1.392	4.000	TM11NPSFCH



Replace the leading TM designator with TW.
(For shanks 6 mm (m) or 3/8" (i) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

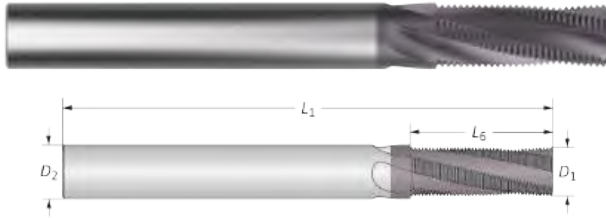
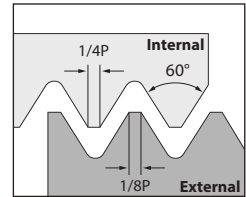
m = Metric (mm)
i = Imperial (in)



Solid Carbide Thread Mills

UN

E10

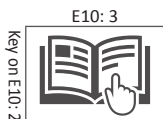
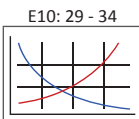
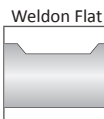


Noncoolant

Metric (mm)

TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
			D ₁	D ₂	L ₆	L ₁	 ThreadMills USA®	 AccuThread® 856
64	#2	3*	1.65	3.00	3.20	39.00	TM08664M	TMUK0002-64M
56	#2	3*	1.65	3.00	3.20	39.00	TM08656M	TMUK0002-56M
48	#3	3*	1.80	3.00	3.75	39.00	TM09948M	TMUK0003-48M
44	#5	3	2.40	3.00	4.65	39.00	TM12544M	TMUK0005-44M
40	#4	3*	2.20	3.00	4.45	39.00	TM12540M	TMUK0004-40M
36	#8	3	3.00	4.00	6.35	51.00	TM16436M	TMUK0008-36M
32	#6	3	2.50	3.00	5.55	39.00	TM13832M	TMUK0006-32M
	#8	3	3.20	4.00	6.35	51.00	TM16432M	TMUK0008-32M
	#10	3	3.80	4.00	7.95	51.00	TM19032M	TMUK0010-32M
			3.80	4.00	7.95	51.00	HDTM19032M	—
	1/2	6	9.40	10.00	25.40	84.00	TM50032M	—
28	#10	3	3.80	4.00	8.20	51.00	TM19028M	TMUK0010-28M
	1/4	3	4.75	6.00	12.70	58.00	TM25028M	TMUK0250-28M
	7/16	4	7.90	8.00	19.95	64.00	TM43828M	TMUK0438-28M
	1/2	6	9.40	10.00	25.40	84.00	TM50028M	—
24	#10	3	3.70	4.00	8.50	51.00	TM19024M	TMUK0010-24M
		3	3.70	4.00	8.50	51.00	HDTM19024M	—
	5/16	3	5.95	6.00	16.00	58.00	TM31224M	TMUK0313-24M
	3/8	4	7.25	8.00	19.00	64.00	TM37524M	TMUK0375-24M
	1/2	6	9.40	10.00	25.40	84.00	TM50024M	—
20	1/4	3	4.75	6.00	12.70	58.00	TM25020M	TMUK0250-20M
	7/16	4	4.95	6.00	12.70	58.00	HDTM25020M	—
		4	8.75	10.00	22.85	73.00	TM43720M	TMUK0438-20M
	1/2	6	9.40	10.00	25.40	84.00	TM50020M	—
18	5/16	3	5.95	6.00	17.00	58.00	TM31218M	TMUK0313-18M
		3	6.22	8.00	15.87	64.00	HDTM31218M	—
	9/16	4	9.90	10.00	22.65	73.00	TM56218M	TMUK0563-18M
16	3/8	4	7.25	8.00	19.05	64.00	TM37516M	TMUK0375-16M
		4	7.62	10.00	19.05	84.00	HDTM37516M	—
	3/4	4	11.95	12.00	31.75	84.00	TM75016M	TMUK0750-16M
14	7/16	4	7.75	8.00	20.00	64.00	TM43714M	TMUK0438-14M
	7/8	4	11.95	12.00	32.70	84.00	TM87514M	TMUK0875-14M
13	1/2	4	9.40	10.00	23.50	73.00	TM50013M	TMUK0500-13M
			10.16	12.00	23.50	84.00	HDTM50013M	—
12	9/16	4	9.90	10.00	23.35	73.00	TM56212M	TMUK0563-12M
	3/4	4	11.95	12.00	31.75	84.00	TM75012M	TMUK0750-12M
	1	6	18.92	20.00	38.10	105.00	TM10012M	—
11	5/8	4	11.95	12.00	32.40	84.00	TM62511M	TMUK0625-11M
			11.95	12.00	37.00	100.00	TM62511M-XL	TMUK0625-11XLM
10	3/4	4	11.95	12.00	33.00	84.00	TM75010M	TMUK0750-10M
			11.95	12.00	40.70	100.00	TM75010M-XL	TMUK0750-10XLM
9	7/8	4	15.75	16.00	36.75	93.00	TM87509M	TMUK0875-9M
			15.75	16.00	45.20	100.00	TM87509M-XL	TMUK0875-9XLM
8	1	4	15.75	16.00	35.00	93.00	TM10008M	TMUK1000-8M
		6	19.90	20.00	50.80	115.00	TM10008M-XL	TMUK1000-8XLM
7	1-1/8	5	19.90	20.00	36.30	105.00	TM12507M	TMUK1125-7M
6	1-3/8	5	19.90	20.00	38.10	105.00	TM13706M	TMUK1375-6M

*Straight fluted.

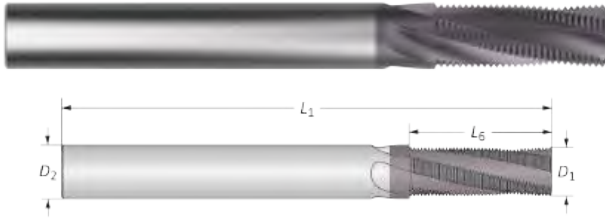
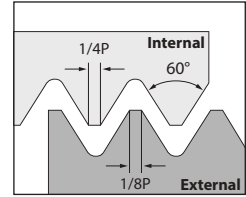
Replace the leading TM designator with TW.
(For shanks 6 mm (Ⓜ) or 3/8" (Ⓢ) and above.)Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

Ⓜ = Metric (mm)
Ⓢ = Imperial (in)

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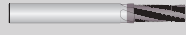
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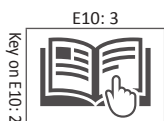
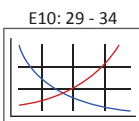
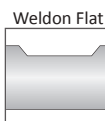
E10

 Coolant Through

Metric (mm)

TPI (Pitch)		Min Thread Ø	Flutes	Thread Mill				Part No.
				D ₁	D ₂	L ₆	L ₁	 ThreadMills USA®
	64	#2	3*	1.65	3.00	3.20	39.00	TM08664CHM
	56	#2	3*	1.65	3.00	3.20	39.00	TM08656CHM
	48	#3	3*	1.80	3.00	3.75	39.00	TM09948CHM
	44	#5	3	2.40	3.00	4.65	39.00	TM12544CHM
	40	#4	3*	2.20	3.00	4.45	39.00	TM12540CHM
	36	#8	3	3.00	4.00	6.35	51.00	TM16436CHM
	32	#6	3	2.50	3.00	5.55	39.00	TM13832CHM
		#8	3	3.20	4.00	6.35	51.00	TM16432CHM
		#10	3	3.80	4.00	7.95	51.00	TM19032CHM
				3.80	4.00	7.95	51.00	HDTM19032CHM
		1/2	6	9.40	10.00	25.40	84.00	TM50032CHM
	28	#10	3	3.80	4.00	8.20	51.00	TM19028CHM
		1/4	3	4.75	6.00	12.70	58.00	TM25028CHM
		1/2	6	9.40	10.00	25.40	84.00	TM50028CHM
	24	#10	3	3.68	4.00	8.50	51.00	TM19024CHM
				3.70	4.00	8.50	51.00	HDTM19024CHM
		5/16	3	5.95	6.00	16.00	58.00	TM31224CHM
		3/8	4	7.25	8.00	19.00	64.00	TM37524CHM
		1/2	6	9.40	10.00	25.40	84.00	TM50024CHM
				4.75	6.00	12.70	58.00	TM25020CHM
	20	1/4	3	4.95	6.00	12.70	58.00	HDTM25020CHM
				8.75	10.00	22.85	84.00	TM43720CHM
				1/2	6	9.40	10.00	25.40
	18	5/16	3	5.95	6.00	17.00	58.00	TM31218CHM
				6.22	8.00	15.87	64.00	HDTM31218CHM
				9/16	4	9.90	10.00	22.65
	16	3/8	4	7.25	8.00	19.05	64.00	TM37516CHM
				7.62	10.00	19.05	84.00	HDTM37516CHM
				3/4	4	11.95	12.00	31.75
	14	7/16	4	7.75	8.00	20.00	64.00	TM43714CHM
		7/8	4	11.95	12.00	32.70	84.00	TM87514CHM
	13	1/2	4	9.40	10.00	23.50	84.00	TM50013CHM
				10.16	12.00	23.50	84.00	HDTM50013CHM
	12	9/16	4	9.90	10.00	23.35	84.00	TM56212CHM
		3/4	4	11.95	12.00	31.75	84.00	TM75012CHM
		1	6	18.92	20.00	38.10	105.00	TM10012CHM
	11	5/8	4	11.95	12.00	32.40	84.00	TM62511CHM
				11.95	12.00	37.00	100.00	TM62511CHM-XL
	10	3/4	4	11.95	12.00	33.00	84.00	TM75010CHM
				11.95	12.00	40.70	100.00	TM75010CHM-XL
	9	7/8	4	15.75	16.00	36.75	93.00	TM87509CHM
				15.75	16.00	45.20	100.00	TM87509CHM-XL
	8	1	4	15.75	16.00	35.00	93.00	TM10008CHM
				19.90	20.00	50.80	115.00	TM10008CHM-XL
	7	1-1/8	5	19.90	20.00	36.10	105.00	TM12507CHM
	6	1-3/8	5	19.90	20.00	38.10	105.00	TM13706CHM

*Straight fluted.



Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

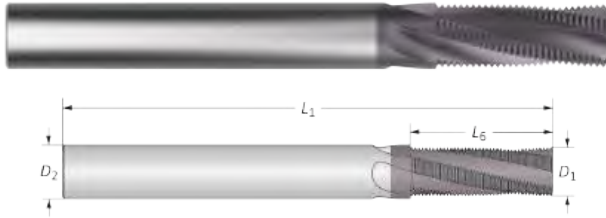
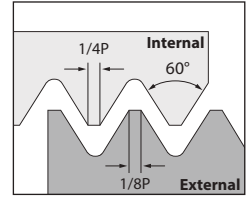
M = Metric (mm)
I = Imperial (in)



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UN

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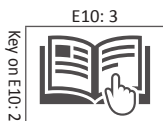
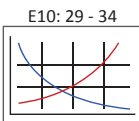
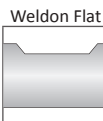


Noncoolant

Imperial (in)

TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.	
			D ₁	D ₂	L ₆	L ₁	 ThreadMills USA®	 AccuThread® 856
64	#2	3*	0.065	0.125	0.125	2.000	TM08664	—
56	#2	3*	0.065	0.125	0.125	2.000	TM08656	TMUK0002-56
48	#3	3*	0.075	0.125	0.167	2.000	TM09948	—
44	#5	3	0.095	0.125	0.228	2.000	TM12544	—
40	#4	3*	0.085	0.125	0.175	2.000	TM12540	TMUK0004-40
36	#8	3	0.115	0.125	0.250	2.000	TM16436	—
32	#6	3	0.100	0.125	0.218	2.000	TM13832	TMUK0006-32
	#8	3	0.115	0.125	0.250	2.000	TM16432	TMUK0008-32
	#10	3	0.120	0.125	0.312	2.000	TM19032	TMUK0010-32
	1/2	6	0.150	0.187	0.312	2.500	HDTM19032	—
			0.370	0.375	1.000	3.500	TM50032	—
28	#10	3	0.120	0.125	0.312	2.000	TM19028	TMUK0010-28
	1/4	3	0.180	0.187	0.500	2.500	TM25028	TMUK0250-28
	7/16	4	0.310	0.312	0.790	3.000	TM43828	TMUK0438-28
	1/2	6	0.370	0.375	1.000	3.500	TM50028	—
24	#10	3	0.120	0.125	0.312	2.000	TM19024	TMUK0010-24
		3	0.145	0.187	0.312	2.500	HDTM19024	—
	5/16	3	0.235	0.250	0.625	2.500	TM31224	TMUK0313-24
	3/8	4	0.285	0.312	0.750	3.000	TM37524	TMUK0375-24
	1/2	6	0.370	0.375	1.000	3.500	TM50024	—
20	1/4	3	0.180	0.187	0.500	2.500	TM25020	TMUK0250-20
	7/16	4	0.195	0.250	0.500	2.500	HDTM25020	—
			0.335	0.375	0.875	3.500	TM43720	TMUK0438-20
	1/2	6	0.370	0.375	1.000	3.500	TM50020	—
18	5/16	3	0.235	0.250	0.625	2.500	TM31218	TMUK0313-18
			0.245	0.312	0.625	3.000	HDTM31218	—
	9/16	4	0.370	0.375	0.875	3.500	TM56218	TMUK0563-18
16	3/8	4	0.285	0.312	0.750	3.000	TM37516	TMUK0375-16
	3/4	4	0.300	0.375	0.750	3.500	HDTM37516	—
			0.490	0.500	1.250	3.500	TM75016	TMUK0750-16
14	7/16	4	0.305	0.312	0.750	3.000	TM43714	TMUK0438-14
	7/8	4	0.490	0.500	1.250	3.500	TM87514	TMUK0875-14
13	1/2	4	0.350	0.375	0.875	3.500	TM50013	TMUK0500-13
			0.400	0.500	0.875	3.500	HDTM50013	—
12	9/16	4	0.370	0.375	0.875	3.500	TM56212	TMUK0563-12
	3/4	4	0.495	0.500	1.250	3.500	TM75012	TMUK0750-12
	1	6	0.745	0.750	1.500	4.000	TM10012	—
11	5/8	4	0.470	0.500	1.250	3.500	TM62511	TMUK0625-11
			0.470	0.500	1.455	3.500	TM62511-XL	TMUK0625-11XL
10	3/4	4	0.495	0.500	1.250	3.500	TM75010	TMUK0750-10
			0.495	0.500	1.600	4.000	TM75010-XL	TMUK0750-10XL
9	7/8	4	0.620	0.625	1.375	4.000	TM87509	TMUK0875-9
			0.620	0.625	1.778	4.000	TM87509-XL	TMUK0875-9XL
8	1	4	0.620	0.625	1.375	4.000	TM10008	TMUK1000-8
7	1-1/8	6	0.745	0.750	2.000	4.500	TM10008-XL	TMUK1000-8XL
		5	0.745	0.750	1.572	4.500	TM12507	—
6	1-3/8	5	0.745	0.750	1.500	4.500	TM13706	—

*Straight fluted.

Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

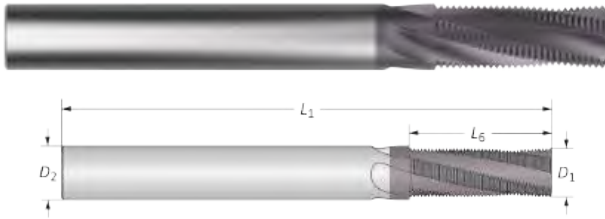
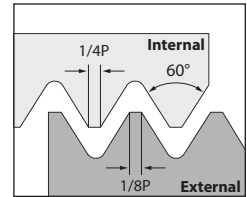
M = Metric (mm)

I = Imperial (in)



Solid Carbide Thread Mills

UN



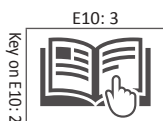
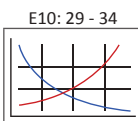
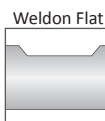
E10

Coolant Through

Imperial (in)

TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill				Part No.
			D ₁	D ₂	L ₆	L ₁	
							
64	#2	3*	0.065	0.125	0.125	1.500	TM08664CH
56	#2	3*	0.065	0.125	0.125	1.500	TM08656CH
48	#3	3*	0.075	0.125	0.167	1.500	TM09948CH
44	#5	3	0.095	0.125	0.228	1.500	TM12544CH
40	#4	3*	0.085	0.125	0.175	1.500	TM12540CH
36	#8	3	0.115	0.125	0.250	1.500	TM16436CH
	#6	3	0.100	0.125	0.218	1.500	TM13832CH
	#8	3	0.115	0.125	0.250	1.500	TM16432CH
32	#10	3	0.150	0.187	0.312	2.375	TM19032CH
			0.150	0.187	0.312	2.375	HDTM19032CH
	1/2	6	0.370	0.375	1.000	3.500	TM50032CH
			0.370	0.375	1.000	3.500	TM50032CH
28	#10	3	0.120	0.125	0.312	1.500	TM19028CH
	1/4	3	0.180	0.187	0.500	2.375	TM25028CH
	1/2	6	0.370	0.375	1.000	3.500	TM50028CH
24	#10	3	0.145	0.187	0.312	2.375	TM19024CH
			0.145	0.187	0.312	2.375	HDTM19024CH
	5/16	3	0.235	0.250	0.625	2.375	TM31224CH
	3/8	4	0.285	0.312	0.750	3.000	TM37524CH
	1/2	6	0.370	0.375	1.000	3.500	TM50024CH
20	1/4	3	0.180	0.187	0.500	2.375	TM25020CH
			0.195	0.250	0.500	2.375	HDTM25020CH
	7/16	4	0.335	0.375	0.875	3.000	TM43720CH
	1/2	6	0.370	0.375	1.000	3.500	TM50020CH
18	5/16	3	0.235	0.250	0.625	2.375	TM31218CH
			0.245	0.312	0.625	3.000	HDTM31218CH
	9/16	4	0.370	0.375	0.875	3.000	TM56218CH
16	3/8	4	0.285	0.312	0.750	3.000	TM37516CH
			0.300	0.375	0.750	3.000	HDTM37516CH
	3/4	4	0.490	0.500	1.250	3.500	TM75016CH
14	7/16	4	0.305	0.312	0.750	3.000	TM43714CH
	7/8	4	0.490	0.500	1.250	3.500	TM87514CH
13	1/2	4	0.350	0.375	0.875	3.000	TM50013CH
			0.400	0.500	0.875	3.500	HDTM50013CH
12	9/16	4	0.370	0.375	0.875	3.500	TM56212CH
	3/4	4	0.495	0.500	1.250	3.500	TM75012CH
	1	6	0.745	0.750	1.500	4.000	TM10012CH
11	5/8	4	0.470	0.500	1.250	3.500	TM62511CH
			0.470	0.500	1.455	3.500	TM62511CH-XL
10	3/4	4	0.495	0.500	1.250	3.500	TM75010CH
			0.495	0.500	1.600	4.000	TM75010CH-XL
			0.620	0.625	1.375	4.000	TM87509CH
9	7/8	4	0.620	0.625	1.778	4.000	TM87509CH-XL
8	1	4	0.620	0.625	1.375	4.000	TM10008CH
		6	0.745	0.750	2.000	4.500	TM10008CH-XL
7	1-1/8	5	0.745	0.750	1.572	4.500	TM12507CH
6	1-3/8	5	0.745	0.750	1.500	4.500	TM13706CH

*Straight fluted.



Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

M = Metric (mm)

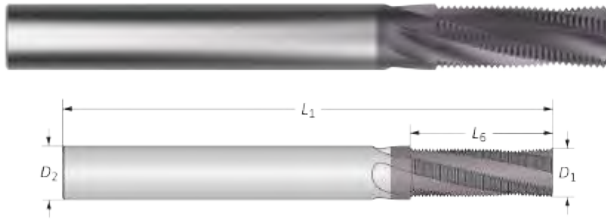
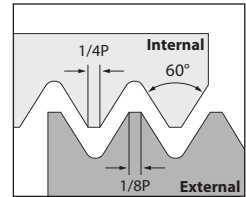
I = Imperial (in)



Solid Carbide Thread Mills

ISO

E10

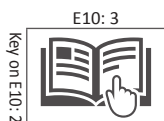


Noncoolant

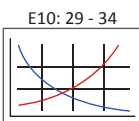
Metric (mm)

Pitch	Min Thread Ø	Flutes	Thread Mill				Part No.	
			D ₁	D ₂	L ₆	L ₁	 ThreadMills USA®	 AccuThread® 856
0.40	M2	3*	1.50	3.00	3.20	39.00	TM20040M	TMMK0200-040M
	M2.5	3*	1.50	3.00	3.60	39.00	TM25045M	TMMK0250-045M
	M3	3*	2.15	3.00	4.50	39.00	TM30050M	TMMK0300-050M
0.50	M6	3	4.60	6.00	12.00	58.00	TM60050M	TMMK0600-050M
	M10	4	7.95	8.00	15.00	64.00	TM10050M	TMMK1000-050M
0.70	M4	3	2.90	3.00	8.00	39.00	TM40070M	TMMK0400-070M
0.75	M4.5	3	3.00	4.00	6.75	51.00	TM45075M	TMMK0450-075M
	M6	3	4.60	6.00	12.00	58.00	TM60075M	TMMK0600-075M
	M10	4	7.95	8.00	15.00	64.00	TM10075M	TMMK1000-075M
0.80	M5	3	3.60	4.00	8.00	51.00	TM50080M	TMMK0500-080M
1.00	M6	3	4.60	6.00	12.00	58.00	TM60100M	TMMK0600-100M
	M12	4	9.40	10.00	20.00	73.00	TM12100M	TMMK1200-100M
1.25	M8	3	5.90	6.00	16.25	58.00	TM80125M	TMMK0800-125M
1.50	M10	4	7.40	8.00	19.50	64.00	TM10150M	TMMK1000-150M
	M14	4	10.90	12.00	27.00	84.00	TM14150M	TMMK1400-150M
	M18	4	11.90	12.00	31.50	84.00	TM18150M	TMMK1800-150M
	M20	5	15.75	16.00	36.00	93.00	TM20150M	—
1.75	M12	4	9.40	10.00	22.71	73.00	TM12175M	TMMK1200-175M
2.00	M14	4	10.90	12.00	28.00	84.00	TM14200M	TMMK1400-200M
	M16	4	11.95	12.00	30.00	84.00	TM16200M	—
2.50	M20	4	11.90	12.00	30.00	84.00	TM20250M	TMMK2000-250M
3.00	M24	4	15.90	16.00	36.00	93.00	TM24300M	TMMK2400-300M
3.50	M30	4	15.75	16.00	38.50	100.00	TM30350M	TMMK3000-350M
4.00	M36	5	19.90	20.00	40.00	105.00	TM36400M	TMMK3600-400M

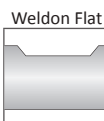
*Straight fluted.



E10: 3



E10: 29 - 34



Weldon Flat

Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)

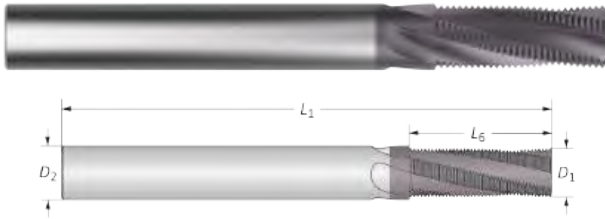
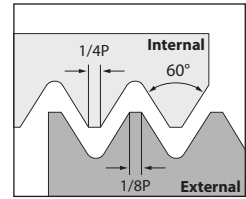
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

M = Metric (mm)
I = Imperial (in)

Solid Carbide Thread Mills

ISO



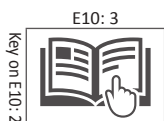
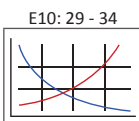
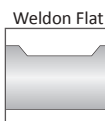
E10

 Coolant Through

Metric (mm)

Pitch	Min Thread Ø	Flutes	Thread Mill				Part No.
			D_1	D_2	L_6	L_1	
0.40	M2	3*	1.50	3.00	3.20	39.00	TM20040CHM
	M2.5	3*	1.50	3.00	3.60	39.00	TM25045CHM
0.45	M3	3*	2.15	3.00	4.50	39.00	TM30050CHM
	M6	3	4.60	6.00	12.00	58.00	TM60050CHM
0.50	M10	4	7.95	8.00	15.00	64.00	TM10050CHM
	M4	3	2.90	3.00	8.00	39.00	TM40070CHM
0.70	M4.5	3	3.00	4.00	6.75	51.00	TM45075CHM
	M6	3	4.60	6.00	12.00	58.00	TM60075CHM
0.75	M10	4	7.95	8.00	15.00	64.00	TM10075CHM
	M5	3	3.60	4.00	8.00	51.00	TM50080CHM
0.80	M6	3	4.60	6.00	12.00	58.00	TM60100CHM
	M12	4	9.40	10.00	20.00	84.00	TM12100CHM
1.00	M8	3	5.90	6.00	16.25	58.00	TM80125CHM
	M10	4	7.40	8.00	19.50	64.00	TM10150CHM
1.25	M14	4	10.90	12.00	27.00	84.00	TM14150CHM
	M18	4	11.90	12.00	31.50	84.00	TM18150CHM
1.50	M20	5	15.75	16.00	36.00	93.00	TM20150CHM
	M12	4	9.40	10.00	22.71	84.00	TM12175CHM
1.75	M14	4	10.90	12.00	28.00	84.00	TM14200CHM
	M16	4	11.95	12.00	30.00	84.00	TM16200CHM
2.00	M20	4	11.90	12.00	30.00	84.00	TM20250CHM
	M24	4	15.90	16.00	36.00	93.00	TM24300CHM
2.50	M30	4	15.75	16.00	38.50	100.00	TM30350CHM
	M36	5	19.90	20.00	40.00	105.00	TM36400CHM

*Straight fluted.



Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

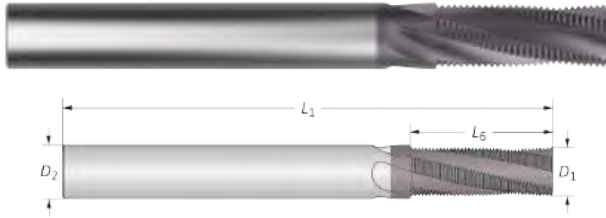
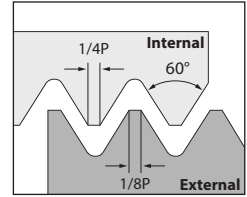
M = Metric (mm)
I = Imperial (in)



Solid Carbide Thread Mills

ISO

E10

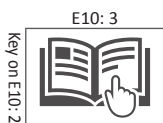


Noncoolant

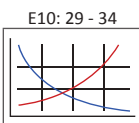
Imperial (in)

Pitch	Min Thread Ø	Flutes	Thread Mill				Part No.	
			D ₁	D ₂	L ₆	L ₁	 ThreadMills USA®	 AccuThread® 856
0.40	M2	3*	0.059	0.125	0.126	2.000	TM20040	—
	M2.5	3*	0.059	0.125	0.142	2.000	TM25045	—
0.50	M3	3*	0.085	0.125	0.178	2.000	TM30050	—
	M6	3	0.181	0.187	0.473	2.500	TM60050	—
0.70	M10	4	0.310	0.312	0.591	3.000	TM10050	—
	M4	3	0.115	0.125	0.276	2.000	TM40070	—
0.75	M4.5	3	0.120	0.125	0.266	2.000	TM45075	TMMK0450-075
	M8	3	0.235	0.250	0.625	2.500	TM80075	TMMK0800-075
0.80	M10	4	0.310	0.312	0.591	3.000	TM10075	—
	M5	3	0.120	0.125	0.312	2.000	TM50080	TMMK0500-080
1.00	M6	3	0.170	0.187	0.500	2.500	TM60100	TMMK0600-100
	M12	4	0.360	0.375	0.875	3.500	TM12100	TMMK1200-100
1.25	M8	3	0.235	0.250	0.625	2.500	TM80125	TMMK0800-125
	M10	4	0.300	0.312	0.750	3.000	TM10150	TMMK1000-150
1.50	M14	4	0.370	0.375	0.875	3.500	TM14150	TMMK1400-150
	M18	4	0.490	0.500	1.250	3.500	TM18150	TMMK1800-150
1.75	M20	5	0.620	0.625	1.418	4.000	TM20150	—
	M12	4	0.360	0.375	0.875	3.500	TM12175	TMMK1200-175
2.00	M14	4	0.429	0.500	1.103	3.500	TM14200	—
	M16	4	0.470	0.500	1.250	3.500	TM16200	TMMK1600-200
2.50	M20	4	0.495	0.500	1.250	3.500	TM20250	TMMK2000-250
3.00	M24	4	0.620	0.625	1.375	4.000	TM24300	TMMK2400-300
3.50	M30	4	0.620	0.625	1.516	4.000	TM30350	—
4.00	M36	5	0.745	0.750	1.575	4.500	TM36400	—

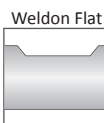
*Straight fluted.



E10: 3



E10: 29 - 34



Weldon Flat

Replace the leading TM designator with TW.
(For shanks 6 mm (E10: 2) or 3/8" (E10: 3) and above.)

Ex: Cylindrical = TMNK0500-NPT | Weldon = TWNK0500-NPT

NOTE: Minimum order quantity is 2 pieces.

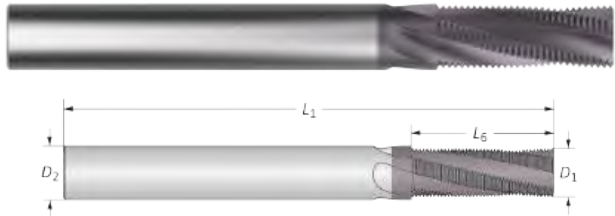
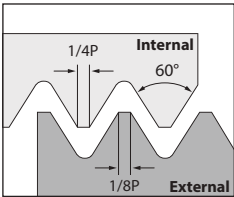
E10: 2 = Metric (mm)

E10: 3 = Imperial (in)



Solid Carbide Thread Mills

ISO

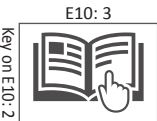
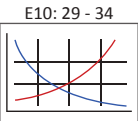
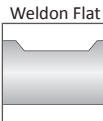


Coolant Through

Imperial (in)

Pitch	Min Thread Ø	Flutes	Thread Mill				Part No.
			D ₁	D ₂	L ₆	L ₁	
0.40	M2	3*	0.059	0.125	0.126	1.500	TM20040CH
	M2.5	3*	0.059	0.125	0.142	1.500	TM25045CH
0.45	M3	3*	0.085	0.125	0.178	1.500	TM30050CH
	M6	3	0.181	0.187	0.473	2.375	TM60050CH
0.50	M10	4	0.310	0.312	0.591	3.000	TM10050CH
	M4	3	0.115	0.125	0.276	1.500	TM40070CH
0.70	M4.5	3	0.120	0.125	0.266	1.500	TM45075CH
	M8	3	0.235	0.250	0.625	2.375	TM80075CH
0.75	M10	4	0.310	0.312	0.591	3.000	TM10075CH
	M5	3	0.120	0.125	0.312	1.500	TM50080CH
0.80	M6	3	0.170	0.187	0.500	2.375	TM60100CH
	M12	4	0.360	0.375	0.875	3.000	TM12100CH
1.00	M8	3	0.235	0.250	0.625	2.375	TM80125CH
	M10	4	0.300	0.312	0.750	3.000	TM10150CH
1.25	M14	4	0.370	0.375	0.875	3.000	TM14150CH
	M18	4	0.490	0.500	1.250	3.500	TM18150CH
1.50	M20	5	0.620	0.625	1.418	4.000	TM20150CH
	M12	4	0.360	0.375	0.875	3.000	TM12175CH
1.75	M14	4	0.429	0.500	1.103	3.500	TM14200CH
	M16	4	0.470	0.500	1.250	3.500	TM16200CH
2.00	M20	4	0.495	0.500	1.250	3.500	TM20250CH
	M24	4	0.620	0.625	1.375	4.000	TM24300CH
2.50	M30	4	0.620	0.625	1.516	4.000	TM30350CH
	M36	5	0.745	0.750	1.575	4.500	TM36400CH

*Straight fluted.



Replace the leading TM designator with TW.
(For shanks 6 mm (M) or 3/8" (I) and above.)
Ex: Cylindrical = **TM**NK0500-NPT | Weldon = **TW**NK0500-NPT
NOTE: Minimum order quantity is 2 pieces.

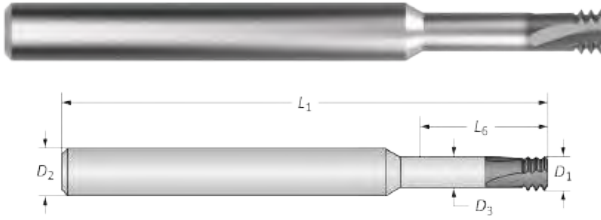
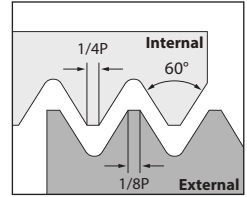
M = Metric (mm)
I = Imperial (in)



3-Tooth Solid Carbide Thread Mills

UN

E10



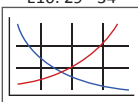
Noncoolant

Metric (mm)

Depth	TPI (Pitch)	Min Thread ϕ	Flutes	Thread Mill					Part No. 
				D_1	D_3	D_2	L_6	L_1	
2xD	64	#1	3	1.40	0.89	6.00	3.81	63.00	TM07364M-3T2X
	56	#2	3	1.65	1.08	6.00	4.32	63.00	TM08656M-3T2X
	48	#3	3	1.91	1.24	6.00	5.08	63.00	TM09948M-3T2X
	40	#4	3	2.16	1.36	6.00	6.35	63.00	TM11240M-3T2X
	36	#8	3	3.30	2.42	6.00	8.89	63.00	TM16436M-3T2X
	32	#6	3	2.54	1.55	6.00	7.11	63.00	TM13832M-3T2X
		#8	3	3.20	2.21	6.00	9.40	63.00	TM16432M-3T2X
		#10	3	3.68	2.70	6.00	10.41	63.00	TM19032M-3T2X
	28	1/4	3	5.00	3.88	6.00	14.48	63.00	TM25028M-3T2X
	24	#10	3	3.51	2.20	6.00	10.67	63.00	TM19024M-3T2X
		5/16	3	6.60	5.30	8.00	17.02	64.00	TM31224M-3T2X
	20	1/4	3	4.75	3.18	6.00	13.97	63.00	TM25020M-3T2X
		7/16	4	7.92	6.36	8.00	24.89	64.00	TM43720M-3T2X
	18	5/16	3	5.94	4.26	6.00	17.02	63.00	TM31218M-3T2X
	16	3/8	3	6.71	4.76	8.00	22.10	64.00	TM37516M-3T2X
		3/4	4	11.94	9.88	12.00	38.10	88.90	TM75016M-3T2X
	14	7/16	4	7.62	5.39	8.00	24.89	64.00	TM43714M-3T2X
		7/8	4	15.75	13.42	16.00	44.45	100.00	TM87514M-3T2X
	13	1/2	4	9.14	6.76	10.00	27.43	88.90	TM50013M-3T2X
	12	9/16	4	10.41	7.82	12.00	31.50	88.90	TM56212M-3T2X
		3/4	4	11.94	9.24	12.00	38.10	88.90	TM75012M-3T2X
	11	5/8	4	11.94	9.01	12.00	31.75	88.90	TM62511M-3T2X
	10	3/4	4	11.94	8.73	12.00	38.10	88.90	TM75010M-3T2X
	9	7/8	4	15.75	12.20	16.00	44.45	100.00	TM87509M-3T2X
	8	1	4	15.75	11.77	16.00	50.80	100.00	TM10008M-3T2X
3xD	40	#4	3	2.16	1.36	6.00	7.87	63.00	TM11240M-3T3X
	32	#6	3	2.54	1.55	6.00	10.41	63.00	TM13832M-3T3X
		#8	3	3.20	2.21	6.00	12.45	63.00	TM16432M-3T3X
		#10	3	3.68	2.70	6.00	14.99	63.00	TM19032M-3T3X
	28	1/4	3	5.00	3.88	6.00	19.05	63.00	TM25028M-3T3X
	24	#10	3	3.51	2.20	6.00	14.99	63.00	TM19024M-3T3X
		5/16	3	6.60	5.30	8.00	23.88	64.00	TM31224M-3T3X
	20	1/4	3	4.75	3.18	6.00	19.05	63.00	TM25020M-3T3X
		7/16	4	7.92	6.36	8.00	33.53	76.00	TM43720M-3T3X
	18	5/16	3	5.94	4.21	6.00	23.11	63.00	TM31218M-3T3X
	16	3/8	3	6.71	4.76	8.00	29.21	76.00	TM37516M-3T3X
		3/4	4	11.94	9.88	12.00	57.15	88.90	TM75016M-3T3X
	14	7/16	4	7.62	5.39	8.00	33.52	76.00	TM43714M-3T3X
		7/8	4	15.75	13.42	16.00	66.68	100.00	TM87514M-3T3X
	13	1/2	4	9.14	6.76	10.00	40.64	88.90	TM50013M-3T3X
	12	9/16	4	10.41	7.82	12.00	43.18	100.00	TM56212M-3T3X
		3/4	4	11.94	9.24	12.00	57.15	88.90	TM75012M-3T3X
	11	5/8	4	11.94	9.01	12.00	47.63	88.90	TM62511M-3T3X
	10	3/4	4	11.94	8.73	12.00	57.15	88.90	TM75010M-3T3X
	9	7/8	4	15.75	12.20	16.00	66.68	100.00	TM87509M-3T3X
	8	1	4	15.75	11.77	16.00	76.20	114.30	TM10008M-3T3X

E10: 3

E10: 29 - 34

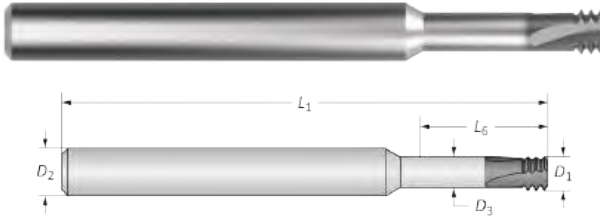
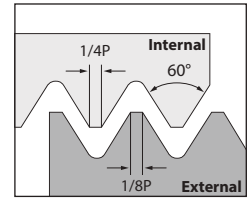


 = Metric (mm)
 = Imperial (in)



3-Tooth Solid Carbide Thread Mills

UN

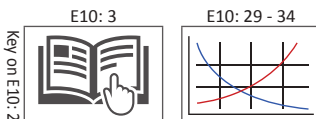


E10

Noncoolant

Imperial (in)

Depth	TPI (Pitch)	Min Thread Ø	Flutes	Thread Mill					Part No. 
				D_1	D_3	D_2	L_6	L_1	
2xD	64	#1	3	0.055	0.035	0.250	0.150	2.500	TM07364-3T2X
	56	#2	3	0.065	0.042	0.250	0.170	2.500	TM08656-3T2X
	48	#3	3	0.075	0.049	0.250	0.200	2.500	TM09948-3T2X
	40	#4	3	0.085	0.054	0.250	0.250	2.500	TM11240-3T2X
	36	#8	3	0.130	0.095	0.250	0.350	2.500	TM16436-3T2X
	32	#6	3	0.100	0.061	0.250	0.280	2.500	TM13832-3T2X
		#8	3	0.126	0.087	0.250	0.370	2.500	TM16432-3T2X
		#10	3	0.145	0.106	0.250	0.410	2.500	TM19032-3T2X
	28	1/4	3	0.197	0.153	0.250	0.570	2.500	TM25028-3T2X
	24	#10	3	0.138	0.086	0.250	0.420	2.500	TM19024-3T2X
		5/16	3	0.260	0.208	0.312	0.670	2.500	TM31224-3T2X
	20	1/4	3	0.187	0.125	0.250	0.550	2.500	TM25020-3T2X
		7/16	4	0.312	0.250	0.312	0.980	2.500	TM43720-3T2X
	18	5/16	3	0.236	0.168	0.250	0.670	2.500	TM31218-3T2X
	16	3/8	3	0.264	0.187	0.312	0.870	2.500	TM37516-3T2X
		3/4	4	0.495	0.414	0.500	1.500	3.500	TM75016-3T2X
	14	7/16	4	0.300	0.212	0.312	0.980	2.500	TM43714-3T2X
		7/8	4	0.620	0.528	0.625	1.750	4.000	TM87514-3T2X
	13	1/2	4	0.360	0.266	0.375	1.080	3.000	TM50013-3T2X
	12	9/16	4	0.410	0.308	0.500	1.240	3.500	TM56212-3T2X
		3/4	4	0.495	0.389	0.500	1.500	3.500	TM75012-3T2X
	11	5/8	4	0.470	0.355	0.500	1.250	3.500	TM62511-3T2X
	10	3/4	4	0.495	0.369	0.500	1.500	3.500	TM75010-3T2X
	9	7/8	4	0.620	0.480	0.625	1.750	4.000	TM87509-3T2X
	8	1	4	0.620	0.463	0.625	2.000	4.000	TM10008-3T2X
3xD	40	#4	3	0.085	0.054	0.250	0.310	2.500	TM11240-3T3X
	32	#6	3	0.100	0.061	0.250	0.410	2.500	TM13832-3T3X
		#8	3	0.126	0.087	0.250	0.490	2.500	TM16432-3T3X
		#10	3	0.145	0.106	0.250	0.590	2.500	TM19032-3T3X
	28	1/4	3	0.197	0.153	0.250	0.750	2.500	TM25028-3T3X
	24	#10	3	0.138	0.086	0.250	0.590	2.500	TM19024-3T3X
		5/16	3	0.260	0.208	0.312	0.940	2.500	TM31224-3T3X
	20	1/4	3	0.187	0.125	0.250	0.750	2.500	TM25020-3T3X
		7/16	4	0.312	0.250	0.312	1.320	3.000	TM43720-3T3X
	18	5/16	3	0.236	0.168	0.250	0.910	2.500	TM31218-3T3X
	16	3/8	3	0.264	0.187	0.312	1.150	3.000	TM37516-3T3X
		3/4	4	0.495	0.414	0.500	2.250	4.000	TM75016-3T3X
	14	7/16	4	0.300	0.212	0.312	1.320	3.000	TM43714-3T3X
		7/8	4	0.620	0.528	0.625	2.625	4.000	TM87514-3T3X
	13	1/2	4	0.360	0.266	0.375	1.600	3.500	TM50013-3T3X
	12	9/16	4	0.410	0.308	0.500	1.700	4.000	TM56212-3T3X
		3/4	4	0.495	0.389	0.500	2.250	4.000	TM75012-3T3X
	11	5/8	4	0.470	0.355	0.500	1.875	4.000	TM62511-3T3X
	10	3/4	4	0.495	0.369	0.500	2.250	4.000	TM75010-3T3X
	9	7/8	4	0.620	0.480	0.625	2.625	4.000	TM87509-3T3X
	8	1	4	0.620	0.463	0.625	3.000	4.500	TM10008-3T3X



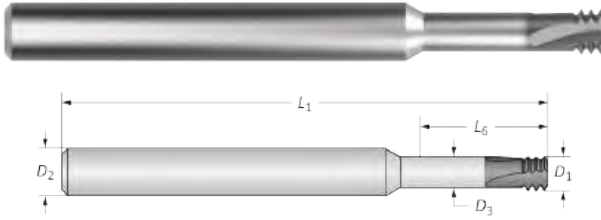
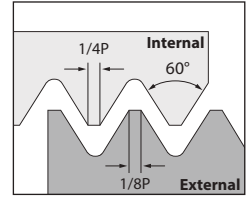
 = Metric (mm)
 = Imperial (in)



3-Tooth Solid Carbide Thread Mills

ISO

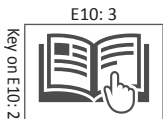
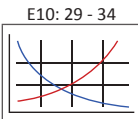
E10



Noncoolant

Metric (mm)

Depth	Pitch	Min Thread ϕ	Flutes	Thread Mill					Part No.
				D_1	D_3	D_2	L_6	L_1	
2xD	0.35	M1.8	3	1.35	0.84	6.00	4.32	63.00	TM18035M-3T2X
	0.40	M2	3	1.55	1.04	6.00	4.60	63.00	TM20040M-3T2X
	0.45	M2.5	3	1.96	1.38	6.00	5.60	63.00	TM25045M-3T2X
	0.50	M3	3	2.36	1.73	6.00	6.60	63.00	TM30050M-3T2X
	0.60	M3.5	3	2.74	1.99	6.00	7.60	63.00	TM35060M-3T2X
	0.70	M4	3	3.10	2.22	6.00	8.90	63.00	TM40070M-3T2X
	0.75	M4.5	3	3.38	2.41	6.00	10.92	63.00	TM45075M-3T2X
	0.80	M5	3	3.81	2.81	6.00	12.40	63.00	TM50080M-3T2X
	1.00	M6	3	4.65	3.41	6.00	14.00	63.00	TM60100M-3T2X
	1.25	M8	3	5.94	4.40	6.00	18.00	63.00	TM80125M-3T2X
	1.50	M10	4	7.80	5.95	8.00	23.10	64.00	TM10150M-3T2X
		M14	4	9.40	7.45	10.00	27.94	88.90	TM14150M-3T2X
		M18	4	11.94	9.98	12.00	36.07	88.90	TM18150M-3T2X
	1.75	M12	4	7.92	5.78	8.00	24.00	64.00	TM12175M-3T2X
	2.00	M16	4	11.94	9.40	12.00	32.00	88.90	TM16200M-3T2X
3xD	2.50	M20	4	14.99	11.83	16.00	39.88	100.00	TM20250M-3T2X
	3.00	M24	4	15.75	11.98	16.00	48.01	100.00	TM24300M-3T2X
	0.45	M2.5	3	1.96	1.38	6.00	7.60	63.00	TM25045M-3T3X
	0.50	M3	3	2.36	1.73	6.00	9.40	63.00	TM30050M-3T3X
	0.60	M3.5	3	2.74	1.99	6.00	11.40	63.00	TM35060M-3T3X
	0.70	M4	3	3.10	2.22	6.00	12.40	63.00	TM40070M-3T3X
	0.75	M4.5	3	3.38	2.41	6.00	13.97	63.00	TM45075M-3T3X
	0.80	M5	3	3.81	2.81	6.00	16.00	63.00	TM50080M-3T3X
	1.00	M6	3	4.65	3.41	6.00	20.10	63.00	TM60100M-3T3X
	1.25	M8	3	5.94	4.40	6.00	23.90	63.00	TM80125M-3T3X
	1.50	M10	4	7.80	5.95	8.00	28.40	64.00	TM10150M-3T3X
		M14	4	9.40	7.45	10.00	41.91	88.90	TM14150M-3T3X
		M18	4	11.94	9.98	12.00	53.85	88.90	TM18150M-3T3X
	1.75	M12	4	7.92	5.78	8.00	36.00	64.00	TM12175M-3T3X
	2.00	M16	4	11.94	9.40	12.00	49.53	88.90	TM16200M-3T3X
	2.50	M20	4	14.99	11.83	16.00	59.94	100.00	TM20250M-3T3X
	3.00	M24	4	15.75	11.98	16.00	71.88	100.00	TM24300M-3T3X

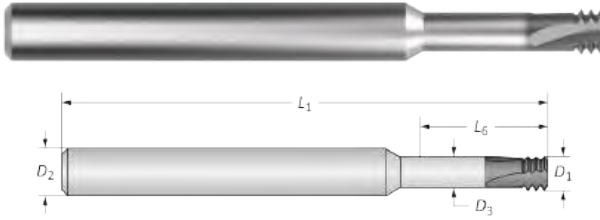
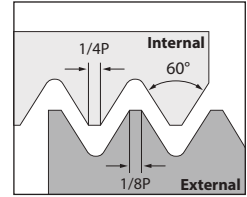


= Metric (mm)
 = Imperial (in)



3-Tooth Solid Carbide Thread Mills

ISO

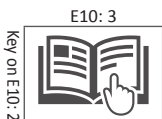
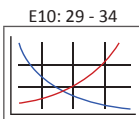


E10

Noncoolant

Imperial (in)

Depth	Pitch	Min Thread Ø	Flutes	Thread Mill					Part No.
				D_1	D_3	D_2	L_6	L_1	
2xD	0.35	M1.8	3	0.053	0.033	0.250	0.170	2.500	TM18035-3T2X
	0.40	M2	3	0.061	0.041	0.250	0.180	2.500	TM20040-3T2X
	0.45	M2.5	3	0.077	0.055	0.250	0.220	2.500	TM25045-3T2X
	0.50	M3	3	0.093	0.068	0.250	0.260	2.500	TM30050-3T2X
	0.60	M3.5	3	0.108	0.078	0.250	0.300	2.500	TM35060-3T2X
	0.70	M4	3	0.122	0.088	0.250	0.350	2.500	TM40070-3T2X
	0.75	M4.5	3	0.133	0.095	0.250	0.430	2.500	TM45075-3T2X
	0.80	M5	3	0.150	0.111	0.250	0.490	2.500	TM50080-3T2X
	1.00	M6	3	0.183	0.134	0.250	0.550	2.500	TM60100-3T2X
	1.25	M8	3	0.234	0.173	0.250	0.710	2.500	TM80125-3T2X
	1.50	M10	4	0.307	0.234	0.312	0.910	2.500	TM10150-3T2X
		M14	4	0.370	0.293	0.375	1.100	3.500	TM14150-3T2X
		M18	4	0.495	0.418	0.500	1.420	3.500	TM18150-3T2X
	1.75	M12	4	0.310	0.225	0.312	0.945	2.500	TM12175-3T2X
	2.00	M16	4	0.470	0.370	0.500	1.260	3.500	TM16200-3T2X
	2.50	M20	4	0.590	0.466	0.625	1.570	4.000	TM20250-3T2X
	3.00	M24	4	0.620	0.472	0.625	1.890	4.000	TM24300-3T2X
3xD	0.45	M2.5	3	0.077	0.055	0.250	0.300	2.500	TM25045-3T3X
	0.50	M3	3	0.093	0.068	0.250	0.370	2.500	TM30050-3T3X
	0.60	M3.5	3	0.108	0.078	0.250	0.450	2.500	TM35060-3T3X
	0.70	M4	3	0.122	0.088	0.250	0.490	2.500	TM40070-3T3X
	0.75	M4.5	3	0.133	0.095	0.250	0.550	2.500	TM45075-3T3X
	0.80	M5	3	0.150	0.111	0.250	0.630	2.500	TM50080-3T3X
	1.00	M6	3	0.183	0.134	0.250	0.790	2.500	TM60100-3T3X
	1.25	M8	3	0.234	0.173	0.250	0.940	2.500	TM80125-3T3X
	1.50	M10	4	0.307	0.234	0.312	1.120	2.500	TM10150-3T3X
		M14	4	0.370	0.293	0.375	1.650	3.500	TM14150-3T3X
		M18	4	0.495	0.418	0.500	2.120	4.000	TM18150-3T3X
	1.75	M12	4	0.310	0.225	0.312	1.418	2.500	TM12175-3T3X
	2.00	M16	4	0.470	0.370	0.500	1.950	4.000	TM16200-3T3X
	2.50	M20	4	0.590	0.466	0.625	2.360	4.000	TM20250-3T3X
	3.00	M24	4	0.620	0.472	0.625	2.830	4.000	TM24300-3T3X



Key on E10: 2

m = Metric (mm)
i = Imperial (in)



Recommended Drilling Data | Metric (mm)

ACCUThread® 856

E10

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter							
					1.50 to 3.18	3.19 to 4.76	4.77 to 6.35	6.36 to 7.94	7.95 to 9.53	9.54 to 12.70	12.71 to 15.88	15.89 to 19.05
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	213	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Easy	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		125 - 175	Average	213	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		175 - 225	Average	183	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		225 - 275	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		175 - 225	Average	152	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		225 - 275	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		275 - 325	Average	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		175 - 225	Average	152	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		225 - 275	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		275 - 325	Difficult	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		325 - 375	Difficult	114	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		300 - 350	Difficult	122	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
		350 - 400	Difficult	107	0.010	0.013	0.015	0.020	0.025	0.033	0.046	0.051
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 250	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		250 - 350	Difficult	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
M	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	160	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		185 - 275	Difficult	152	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
		275 - 325	Difficult	46	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 250	Difficult	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
K	Cast Iron Grey, Ductile, Nodular	120 - 150	Easy	206	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		150 - 200	Easy	191	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		200 - 220	Easy	175	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		220 - 260	Average	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
		260 - 320	Average	145	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
N	Wrought Aluminum 6061 T6	30	Easy	335	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
		180	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
		30 - 125	Easy	335	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038
		220 - 310	Difficult	27	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on page xiv when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Imperial (in)

ACCUThread® 856

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter							
					0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.625"	0.626" to 0.750"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	900	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	700	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Easy	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	900	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		125 - 175	Average	700	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		175 - 225	Average	600	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		225 - 275	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	575	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	500	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	575	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	500	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Difficult	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		325 - 375	Difficult	375	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		300 - 350	Difficult	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		350 - 400	Difficult	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	600	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 250	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		250 - 350	Difficult	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
M	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	525	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		185 - 275	Difficult	500	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	300	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		275 - 325	Difficult	150	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	575	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Difficult	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
K	Cast Iron Grey, Ductile, Nodular	120 - 150	Easy	675	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	625	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 220	Easy	575	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		220 - 260	Average	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		260 - 320	Average	475	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
N	Wrought Aluminum 6061 T6	30	Easy	1100	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
		180	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Cast Aluminum** up to 10% silicon	120	Easy	625	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Brass	30 - 125	Easy	1100	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	120	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015
		220 - 310	Difficult	90	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Metric (mm)

THREADMILLS USA®

E10

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter								
					1.50 to 3.18	3.19 to 4.76	4.77 to 6.35	6.36 to 7.94	7.95 to 9.53	9.54 to 12.70	12.71 to 15.88	15.89 to 19.05	
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	221	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		150 - 200	Easy	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		200 - 250	Easy	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	221	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		125 - 175	Average	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		175 - 225	Average	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		125 - 175	Average	137	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		175 - 225	Average	122	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		225 - 275	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
	Alloy Steel 4140, 5140, 8640, etc.	275 - 325	Average	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		125 - 175	Average	137	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		175 - 225	Average	122	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		225 - 275	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
	High-Strength Alloy 4340, 4330V, 300M, etc.	275 - 325	Difficult	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		325 - 375	Difficult	76	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		225 - 300	Average	107	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
	Structural Steel A36, A285, A516, etc.	300 - 350	Difficult	91	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		350 - 400	Difficult	76	0.010	0.013	0.015	0.020	0.025	0.038	0.046	0.051	
		100 - 150	Average	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
	M	Stainless Steel 303, 416, 420, etc.	150 - 250	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
			250 - 350	Difficult	91	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064
Stainless Steel PH 17-4, etc.		100 - 150	Average	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
	185 - 275	Difficult	76	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051		
Tool Steel H-13, H21, A-4, etc.	275 - 325	Difficult	38	0.010	0.013	0.015	0.020	0.023	0.025	0.038	0.051		
	150 - 200	Difficult	99	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064		
K	Cast Iron Grey, Ductile, Nodular	200 - 250	Difficult	69	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		120 - 150	Easy	168	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		150 - 200	Easy	152	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		200 - 220	Easy	137	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		220 - 260	Average	122	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
N	Wrought Aluminum 6061 T6	260 - 320	Average	114	0.010	0.013	0.018	0.023	0.025	0.038	0.051	0.064	
		30	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076	
		180	Easy	274	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076	
		120	Easy	152	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076	
	Brass	30 - 125	Easy	305	0.013	0.015	0.023	0.025	0.038	0.051	0.064	0.076	
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	30	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038	
		220 - 310	Difficult	23	0.008	0.010	0.015	0.020	0.023	0.025	0.030	0.038	

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on page xiv when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Imperial (in)

THREADMILLS USA®

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter							
					0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.625"	0.626" to 0.750"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	725	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 250	Easy	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	725	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		125 - 175	Average	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		175 - 225	Average	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	Average	400	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		125 - 175	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		175 - 225	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Alloy Steel 4140, 5140, 8640, etc.	225 - 275	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Average	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		125 - 175	Average	450	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	High-Strength Alloy 4340, 4330V, 300M, etc.	175 - 225	Average	400	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		225 - 275	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		275 - 325	Average	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Structural Steel A36, A285, A516, etc.	325 - 375	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
M	Stainless Steel 303, 416, 420, etc.	225 - 300	Average	350	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		300 - 350	Difficult	300	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
	Stainless Steel PH 17-4, etc.	350 - 400	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0010	0.0013	0.0018	0.0020
		135 - 185	Difficult	425	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
	Tool Steel H-13, H21, A-4, etc.	185 - 275	Difficult	250	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
		275 - 325	Difficult	125	0.0004	0.0005	0.0006	0.0008	0.0009	0.0010	0.0015	0.0020
K	Cast Iron Grey, Ductile, Nodular	150 - 200	Difficult	325	0.0004	0.0005	0.0007	0.0008	0.0010	0.0015	0.0020	0.0025
		200 - 250	Difficult	225	0.0004	0.0005	0.0007	0.0008	0.0010	0.0015	0.0020	0.0025
		120 - 150	Easy	550	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		150 - 200	Easy	500	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		200 - 220	Easy	450	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
N	Wrought Aluminum 6061 T6	220 - 260	Average	400	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		260 - 320	Average	375	0.0004	0.0005	0.0007	0.0009	0.0010	0.0015	0.0020	0.0025
		30	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	Cast Aluminum** up to 10% silicon	180	Easy	900	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
S	Brass	120	Easy	500	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
		30 - 125	Easy	1000	0.0005	0.0006	0.0009	0.0010	0.0015	0.0020	0.0025	0.0030
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	100	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015
		220 - 310	Difficult	75	0.0003	0.0004	0.0006	0.0008	0.0009	0.0010	0.0012	0.0015

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Metric (mm)

ACCUThread® T3

E10

ISO	Material	Hardness (BHN)	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter						
				1.40 to 3.17	3.18 to 4.77	4.78 to 6.35	6.36 to 7.92	7.93 to 9.52	9.53 to 12.70	12.71 to 19.05
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	115	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 200	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		200 - 250	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	115	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		125 - 175	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		175 - 225	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		225 - 275	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	70	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		175 - 225	60	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		225 - 275	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		275 - 325	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	70	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		175 - 225	60	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		225 - 275	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		275 - 325	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		325 - 375	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		300 - 350	45	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		350 - 400	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
	Structural Steel A36, A285, A516, etc.	100 - 150	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 250	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		250 - 350	45	0.020	0.025	0.035	0.045	0.050	0.075	0.090
	Tool Steel H-13, H21, A-4, etc.	150 - 200	50	0.020	0.025	0.030	0.040	0.050	0.065	0.080
		200 - 250	38	0.020	0.025	0.030	0.040	0.050	0.065	0.080
M	Stainless Steel 416, 420, etc.	185 - 275	70	0.020	0.025	0.030	0.040	0.045	0.050	0.065
		275 - 350	60	0.020	0.025	0.030	0.040	0.045	0.050	0.065
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	38	0.020	0.025	0.030	0.040	0.045	0.050	0.065
		185 - 275	23	0.020	0.025	0.030	0.040	0.045	0.050	0.065
	Super Duplex Stainless Steel	135 - 185	38	0.015	0.020	0.030	0.040	0.045	0.050	0.065
K	Cast Iron Grey, Ductile, Nodular	185 - 275	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		120 - 150	85	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		150 - 200	75	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		200 - 220	70	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		220 - 260	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
N	Wrought Aluminum 6061 T6	120 - 320	60	0.020	0.025	0.035	0.045	0.050	0.075	0.090
		30 - 180	75	0.025	0.030	0.045	0.050	0.075	0.100	0.120
	Cast Aluminum*	30 - 180	75	0.025	0.030	0.045	0.050	0.075	0.100	0.120
	Brass	30 - 100	150	0.025	0.030	0.045	0.050	0.075	0.100	0.120
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		220 - 310	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
	Titanium Alloy	140 - 220	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		220 - 310	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
	Aerospace Alloy S82	185 - 275	30	0.015	0.020	0.030	0.040	0.045	0.050	0.065
H	Hardened Steels	275 - 350	23	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		450 - 500	50	0.015	0.020	0.030	0.040	0.045	0.050	0.065
		500 - 550	38	0.015	0.020	0.030	0.040	0.045	0.050	0.065

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Uncoated thread mills are recommended for cast aluminum applications.



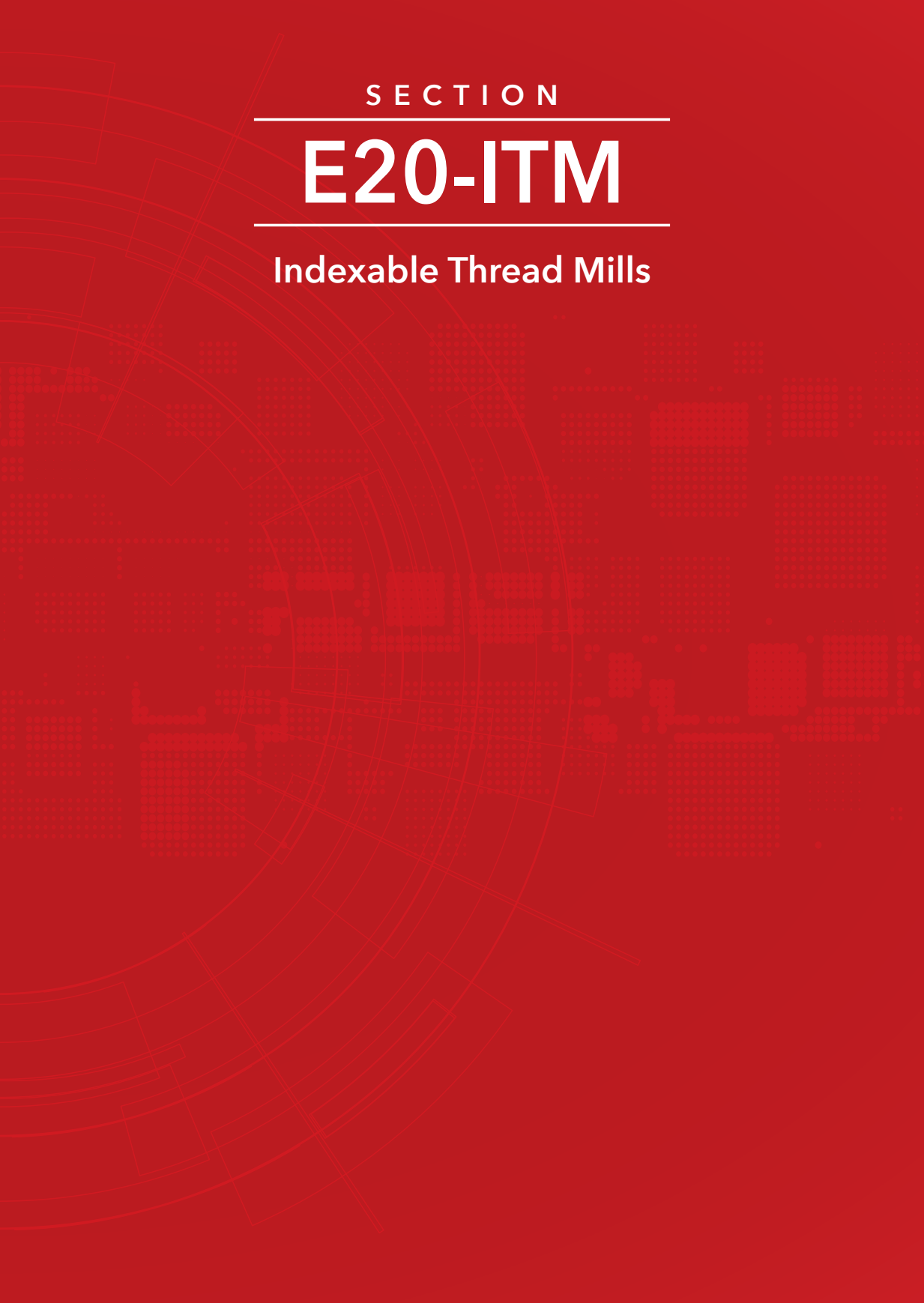
Recommended Drilling Data | Imperial (in)

ACCUTHREAD® T3

ISO	Material	Hardness (BHN)	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter						
				0.060" to 0.125"	0.126" to 0.188"	0.189" to 0.250"	0.251" to 0.312"	0.313" to 0.375"	0.376" to 0.500"	0.501" to 0.750"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	375	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 200	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		200 - 250	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	375	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		125 - 175	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		175 - 225	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		225 - 275	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	225	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		175 - 225	200	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		225 - 275	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		275 - 325	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	225	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		175 - 225	200	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		225 - 275	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		275 - 325	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		325 - 375	125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		300 - 350	150	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
		350 - 400	125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
	Structural Steel A36, A285, A516, etc.	100 - 150	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 250	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		250 - 350	150	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
	Tool Steel H-13, H21, A-4, etc.	150 - 200	175	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031
200 - 250		125	0.0008	0.0010	0.0012	0.0016	0.0020	0.0026	0.0031	
M	Stainless Steel 416, 420, etc.	185 - 275	225	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
		275 - 350	200	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135 - 185	125	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
		185 - 275	75	0.0008	0.0010	0.0012	0.0016	0.0018	0.0020	0.0025
	Super Duplex Stainless Steel	135 - 185	125	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
185 - 275	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025		
K	Cast Iron Grey, Ductile, Nodular	120 - 150	275	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		150 - 200	250	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		200 - 220	225	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		220 - 260	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
		260 - 320	200	0.0008	0.0010	0.0014	0.0018	0.0020	0.0030	0.0035
N	Wrought Aluminum 6061 T6	30	500	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
		180	450	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
	Cast Aluminum**	30 - 180	250	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
	Brass	30 - 100	500	0.0010	0.0012	0.0018	0.0020	0.0030	0.0040	0.0048
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		220 - 310	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
	Titanium Alloy	140 - 220	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		220 - 310	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
	Aerospace Alloy S82	185 - 275	100	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
275 - 350	75	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025		
H	Hardened Steels	450 - 500	175	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025
		500 - 550	125	0.0006	0.0008	0.0012	0.0016	0.0018	0.0020	0.0025

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Uncoated thread mills are recommended for cast aluminum applications.



SECTION

E20-ITM

Indexable Thread Mills

Indexable Thread Mills



Designed to change | Built to perform

With holders manufactured from stainless steel and engineered to dampen vibration, our indexable thread milling product line provides customers with a versatile and cost-effective range of solutions for demanding applications. Combining the flexibility of replaceable inserts with high-precision performance, these indexable thread mills deliver reduced tooling costs and consistent thread quality across an extensive range of thread forms.

- ▶ Bolt-in Style
- ▶ Pin Style

Applicable Industries

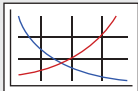
-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

Reference Icons

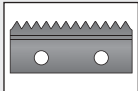
The following icons will appear throughout the catalog to help you navigate between products.



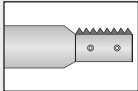
Setup / Assembly Information
Detailed instructions and information regarding the corresponding part(s).



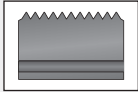
Recommended Cutting Data
Speed and feed recommendations for optimum and safe drilling.



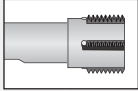
Bolt-in Style Inserts
Refers to the available bolt-in style thread mill insert options.



Bolt-in Style Insert Holders
Refers to the range of holder options available for bolt-in style inserts.



Pin Style Inserts
Refers to the available pin style thread mill insert options.



Pin Style Insert Holders
Refers to the range of holder options available for pin style inserts.



Coolant-Through Option
Indicates that the product is coolant through.

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	

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Indexable Thread Mill Overview

Styles and Thread Forms

E20



Bolt-in Style

- Replaceable inserts allow for quick setups and tool changes to keep the production process moving smoothly.
- Inserts are available with AM210® coating, which increases tool life.
- Available with 1 flute only.
- Multiple thread form styles are available.
- Tapered thread forms: NPT, NPTF, BSPT.
- Straight thread forms: BSPP, UN, UNJ, ISO.

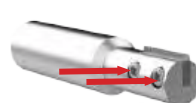
Bolt-in Style Indexable Thread Mill Assembly



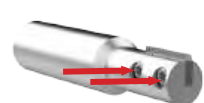
Step 1:
Slide the thread mill insert into the insert holder slot.



Step 2:
Hand tighten insert screws to hold insert in place.



Step 3:
Tighten each screw to 1.5 N-m (1.1 ft-lbs).



Step 4:
Tighten each screw to 3.5 N-m (2.6 ft-lbs).



Pin Style

- Replaceable inserts allow for quick setups and tool changes to keep the production process moving smoothly.
- Inserts are available with AM210® coating, which increases tool life.
- Holders available in 2 styles: Weldon shank and shell mill.
- Weldon shank holders available with 1, 2, 3, and 5 flutes.
- Shell mill holders available with 6, 7, and 8 flutes.
- Thread forms available: NPT, NPTF, BSPT, BSPP, API-ROUND, ACME, UN, UNJ, ISO.

Pin Style Indexable Thread Mill Assembly



Step 1:
Slide the thread mill insert into the insert holder slot.



Step 2:
Slide the pin into the pin holder slot to hold the insert in place.



Step 3:
Hand tighten insert screws to hold insert in place. If there are three insert screws, start tightening the middle screw, then the two outer screws. Repeat for each insert.



Step 4:
Following the order from step three, tighten each screw to 1.5 N-m (1.1 ft-lbs).



Step 5:
Following the order from step three, tighten each screw to 3.5 N-m (2.6 ft-lbs).



Indexable Thread Mill Overview

Product Nomenclature

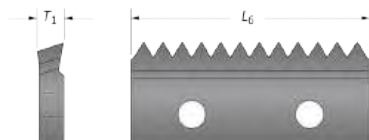
AccuThread® 856 Indexable Inserts

TP	075	K	-	UN	32	I
Insert Style	Insert Length	Coating		Thread Class	Thread Pitch	Thread Style
TP = Bolt-in TN = Pin style	075 = 0.75" 100 = 1.00" 150 = 1.50"	K = AM210® A = TiAlN U = Uncoated		UN = UN UNJ = UNJ NPT = NPT NPTF = NPTF BSPP = BSPP	BSPT = BSPT M = ISO FA = Full ACME AP = API Round	20 = UN 1.0 = ISO I = Internal E = External



Reference Key

Symbol	Attribute
T_1	Insert Thickness
L_6	Length of insert

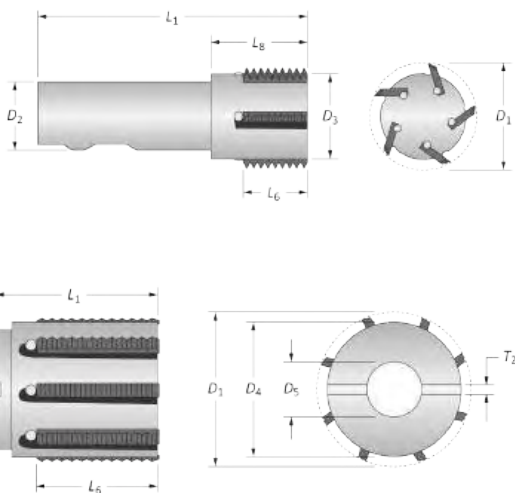


AccuThread® 856 Indexable Holders

THT	-	0400	-	1F	075	M
Holder Style		Diameter		Flute Designation	Insert Length	Shank Designation
Bolt-in Style THT = Tapered head THN = Straight head	Pin Style THP = Weldon (positive) TNR = Weldon (neutral) TSN = Shell mill (positive) TSR = Shell mill (neutral)	0400 = 0.400"		1F = 1 flute 2F = 2 flutes 3F = 3 flutes 5F = 5 flutes 6F = 6 flutes 7F = 7 flutes 8F = 8 flutes	075 = 0.75" 100 = 1.00" 150 = 1.50"	Blank = Imperial M = Metric

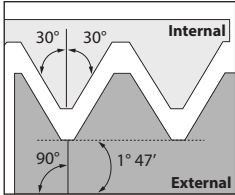
Reference Key

Symbol	Attribute
D_1	Maximum cutter diameter
D_1^*	Oversized cutter diameter
D_2	Shank diameter
D_3	Pilot diameter
D_4	Body diameter (shell mill)
D_5	Bore diameter (shell mill)
L_1	Overall length
L_6	Length of insert
L_8	Flute Length
T_2	Slot width (shell mill)

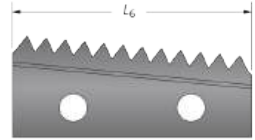


**AccuThread® 856 Bolt-in Style**

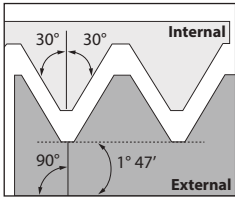
Inserts

E20**NPT**

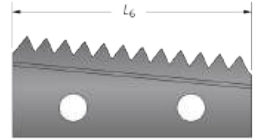
Internal/External



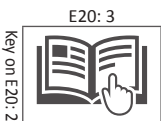
TPI (Pitch)	Metric (mm)	Insert		Metric (mm)	Imperial (in)	Part No.
		L_6	Imperial (in)	T_1	Imperial (in)	
18	19.05		0.750	2.03	0.080	TP075K-NPT18
14	25.40		1.000	3.56	0.140	TP100K-NPT14

**NPTF**

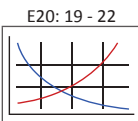
Internal/External



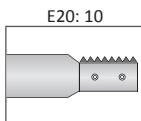
TPI (Pitch)	Metric (mm)	Insert		Metric (mm)	Imperial (in)	Part No.
		L_6	Imperial (in)	T_1	Imperial (in)	
18	19.05		0.750	2.03	0.080	TP075K-NPTF18
14	25.40		1.000	3.56	0.140	TP100K-NPTF14



E20: 3



E20: 19 - 22

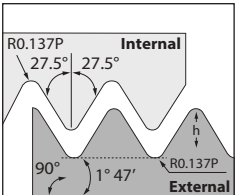


E20: 10

Inserts sold in quantities of 2.

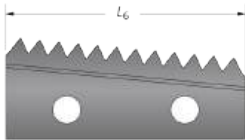
AccuThread® 856 Bolt-in Style

Inserts

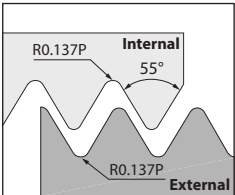


BSPT

Internal/External

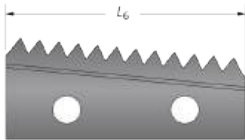


TPI (Pitch)	Insert				Part No. BSPT Internal/External
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	
19	19.05	0.750	2.03	0.080	TP075K-BSPT19
	25.40	1.000	3.56	0.140	TP100K-BSPT19
14	25.40	1.000	3.56	0.140	TP100K-BSPT14

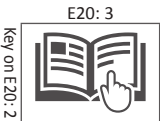
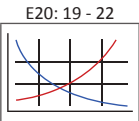
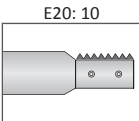


BSPP

Internal/External



TPI (Pitch)	Insert				Part No. BSPP Internal/External
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	
19	19.05	0.750	2.03	0.080	TP075K-BSPP19
	25.40	1.000	3.56	0.140	TP100K-BSPP19
14	25.40	1.000	3.56	0.140	TP100K-BSPP14

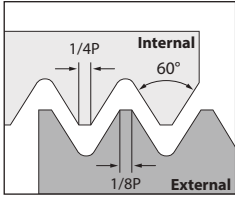


Key on E20: 2



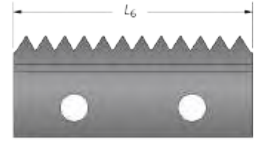
AccuThread® 856 Bolt-in Style

Inserts



UN

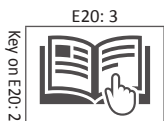
Internal & External



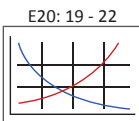
TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UN Internal
32	19.05	0.750	2.03	0.080	TP075K-UN32I
	25.40	1.000	3.56	0.140	TP100K-UN32I
24	19.05	0.750	2.03	0.080	TP075K-UN24I
	25.40	1.000	3.56	0.140	TP100K-UN24I
20	19.05	0.750	2.03	0.080	TP075K-UN20I
	25.40	1.000	3.56	0.140	TP100K-UN20I
18	19.05	0.750	2.03	0.080	TP075K-UN18I
	25.40	1.000	3.56	0.140	TP100K-UN18I
16	19.05	0.750	2.03	0.080	TP075K-UN16I
	25.40	1.000	3.56	0.140	TP100K-UN16I
14	25.40	1.000	3.56	0.140	TP100K-UN14I
13	25.40	1.000	3.56	0.140	TP100K-UN13I
12	25.40	1.000	3.56	0.140	TP100K-UN12I
10	25.40	1.000	3.56	0.140	TP100K-UN10I*

TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	NPT External
32	19.05	0.750	2.03	0.080	TP075K-UN32E
	25.40	1.000	3.56	0.140	TP100K-UN32E
24	19.05	0.750	2.03	0.080	TP075K-UN24E
	25.40	1.000	3.56	0.140	TP100K-UN24E
20	19.05	0.750	2.03	0.080	TP075K-UN20E
	25.40	1.000	3.56	0.140	TP100K-UN20E
18	19.05	0.750	2.03	0.080	TP075K-UN18E
	25.40	1.000	3.56	0.140	TP100K-UN18E
16	19.05	0.750	2.03	0.080	TP075K-UN16E
	25.40	1.000	3.56	0.140	TP100K-UN16E
14	25.40	1.000	3.56	0.140	TP100K-UN14E
13	25.40	1.000	3.56	0.140	TP100K-UN13E
12	25.40	1.000	3.56	0.140	TP100K-UN12E
10	1.000	25.40	3.56	0.140	TP100K-UN10E*

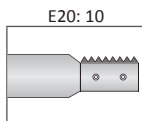
*This item is only used with THN-0611-1F100. The reduced body allows a 3/4"-10 UN/UNJ to be produced.



E20: 3



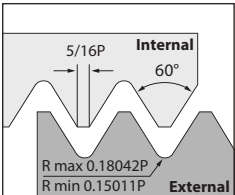
E20: 19 - 22



E20: 10

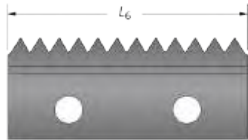
AccuThread® 856 Bolt-in Style

Inserts



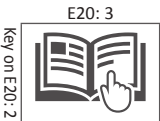
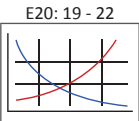
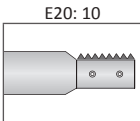
UNJ

Internal & External



TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UNJ Internal
32	19.05	0.750	2.03	0.080	TP075K-UNJ32I
	25.40	1.000	3.56	0.140	TP100K-UNJ32I
24	19.05	0.750	2.03	0.080	TP075K-UNJ24I
	25.40	1.000	3.56	0.140	TP100K-UNJ24I
20	19.05	0.750	2.03	0.080	TP075K-UNJ20I
	25.40	1.000	3.56	0.140	TP100K-UNJ20I
18	19.05	0.750	2.03	0.080	TP075K-UNJ18I
	25.40	1.000	3.56	0.140	TP100K-UNJ18I
16	19.05	0.750	2.03	0.080	TP075K-UNJ16I
	25.40	1.000	3.56	0.140	TP100K-UNJ16I
14	25.40	1.000	3.56	0.140	TP100K-UNJ14I
12	25.40	1.000	3.56	0.140	TP100K-UNJ12I

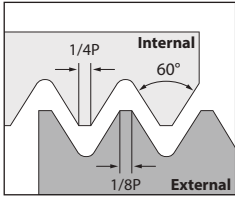
TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UNJ External
32	19.05	0.750	2.03	0.080	TP075K-UNJ32E
	25.40	1.000	3.56	0.140	TP100K-UNJ32E
24	19.05	0.750	2.03	0.080	TP075K-UNJ24E
	25.40	1.000	3.56	0.140	TP100K-UNJ24E
20	19.05	0.750	2.03	0.080	TP075K-UNJ20E
	25.40	1.000	3.56	0.140	TP100K-UNJ20E
18	19.05	0.750	2.03	0.080	TP075K-UNJ18E
	25.40	1.000	3.56	0.140	TP100K-UNJ18E
16	19.05	0.750	2.03	0.080	TP075K-UNJ16E
	25.40	1.000	3.56	0.140	TP100K-UNJ16E
12	25.40	1.000	3.56	0.140	TP100K-UNJ12E



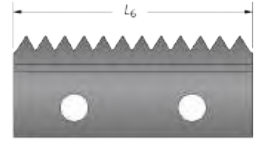
Inserts sold in quantities of 2.

**AccuThread® 856 Bolt-in Style**

Inserts

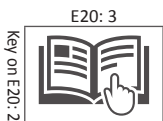
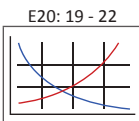
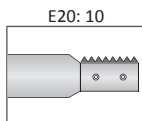
**ISO**

Internal & External



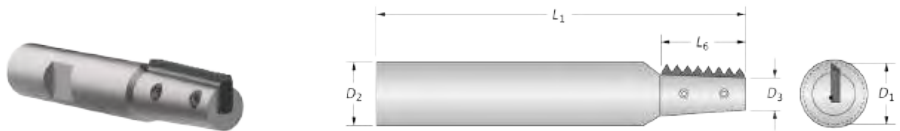
Pitch	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	ISO Internal
0.5	19.05	0.750	2.03	0.080	TP075K-M0.5I
1.0	19.05	0.750	2.03	0.080	TP075K-M1.0I
	24.40	1.000	3.56	0.140	TP100K-M1.0I
1.25	19.05	0.750	2.03	0.080	TP075K-M1.25I
1.5	19.05	0.750	2.03	0.080	TP075K-M1.5I
	25.40	1.000	3.56	0.140	TP100K-M1.5I
2.0	25.40	1.000	3.56	0.140	TP100K-M2.0I

Pitch	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	ISO External
1.0	24.40	1.000	3.56	0.140	TP100K-M1.0E
1.5	25.40	1.000	3.56	0.140	TP100K-M1.5E
2.0	25.40	1.000	3.56	0.140	TP100K-M2.0E



AccuThread® 856 Bolt-in Style

Insert Holders



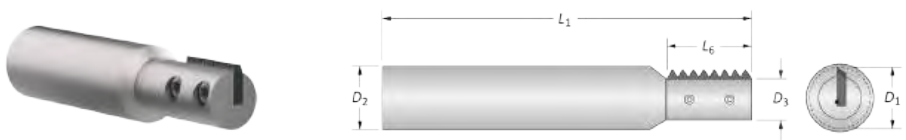
Tapered Insert Holders | NPT / NPTF / BSPT

Metric (mm)

	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
	10.16	5.82	13.00	19.05	76.20	1	THT-0400-1F075M	TP075K...	TMS-250	8T-8
	16.74	9.65	13.00	25.40	76.20	1	THT-0659-1F100M	TP100K...	TMS-45	8T-9

Imperial (in)

	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
	0.400	0.229	0.500	0.750	3.000	1	THT-0400-1F075	TP075K...	TMS-250	8T-8
	0.659	0.379	0.500	1.000	3.000	1	THT-0659-1F100	TP100K...	TMS-45	8T-9



Straight Insert Holders | BSPP / UN / UNJ / ISO

Metric (mm)

	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
	10.01	6.35	13.00	19.05	76.20	1	THN-0394-1F075M	TP075K...	TMS-250	8T-8
	15.88	11.58	20.00	25.40	88.90	1	THN-0625-1F100M	TP100K...	TMS-40	8T-9

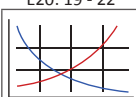
Imperial (in)

	D_1	D_3	D_2	L_6	L_1	Flutes	Part No.	Inserts	Screw	Wrench
	0.394	0.250	0.500	0.750	3.000	1	THN-0394-1F075	TP075K...	TMS-250	8T-8
	0.611	0.383	0.750	1.000	3.500	1	THN-0611-1F100	*	TMS-40	8T-9
	0.625	0.454	0.750	1.000	3.500	1	THN-0625-1F100	TP100K...	TMS-40	8T-9

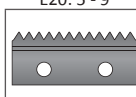
*Only UN/UNJ 10 TPI inserts can be used in this holder. Please refer to inserts on page E20: 7.



E20: 3
key on E20: 2



E20: 19 - 22

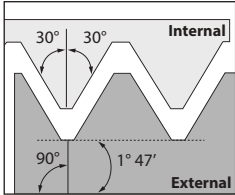


E20: 5 - 9

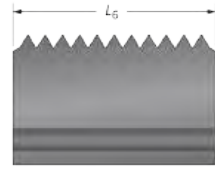
 = Metric (mm)
 = Imperial (in)

**AccuThread® 856 Pin Style**

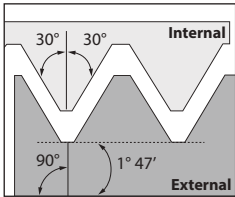
Inserts

E20**NPT**

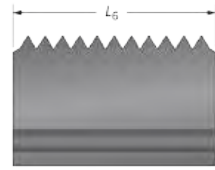
Internal/External



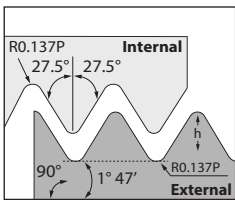
TPI (Pitch)	Metric (mm)	Insert		Metric (mm)	Imperial (in)	Part No.
		L_6	T_1			
11.5	38.10	1.500	3.56	0.140		NPT Internal/External TN150K-NPT11.5
8	38.10	1.500	3.56	0.140		TN150K-NPT8

**NPTF**

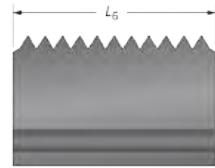
Internal/External



TPI (Pitch)	Metric (mm)	Insert		Metric (mm)	Imperial (in)	Part No.
		L_6	T_1			
11.5	38.10	1.500	3.56	0.140		NPTF Internal/External TN150K-NPTF11.5
8	38.10	1.500	3.56	0.140		TN150K-NPTF8

**BSPT**

Internal/External

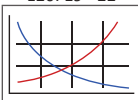


TPI (Pitch)	Metric (mm)	Insert		Metric (mm)	Imperial (in)	Part No.
		L_6	T_1			
11	38.10	1.500	3.56	0.140		BSPT Internal/External TN150K-BSPT11

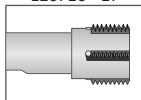
E20: 3



E20: 19 - 22



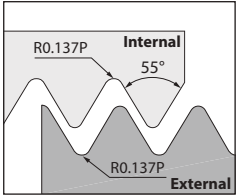
E20: 16 - 17



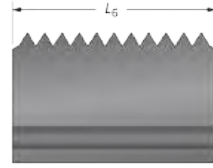
Key on E20: 2

AccuThread® 856 Pin Style

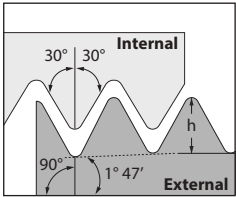
Inserts



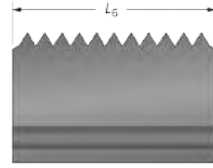
BSPP
Internal/External



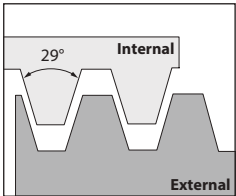
TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	BSPP Internal/External
11	38.10	1.500	3.56	0.140	TN150K-BSPP11



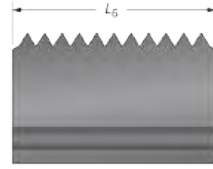
API-ROUND
Internal/External



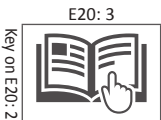
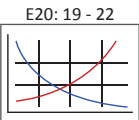
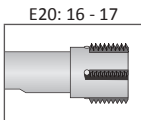
TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	API-ROUND Internal/External
10	38.10	1.500	3.56	0.140	TN150K-API10
8	38.10	1.500	3.56	0.140	TN150K-AP8



ACME
Full Profile



TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	ACME Full Profile
12	25.40	1.000	3.56	0.140	TN100K-FA12
	38.10	1.500	3.56	0.140	TN150K-FA12
10	25.40	1.000	3.56	0.140	TN100K-FA10
	38.10	1.500	3.56	0.140	TN150K-FA10
8	25.40	1.000	3.56	0.140	TN100K-FA8
	38.10	1.500	3.56	0.140	TN150K-FA8
6	38.10	1.500	3.56	0.140	TN150K-FA6
5	38.10	1.500	3.56	0.140	TN150K-FA5



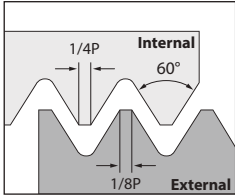
Key on E20: 2

Inserts sold in quantities of 2.



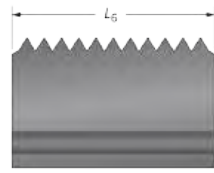
AccuThread® 856 Pin Style

Inserts



UN

Internal & External



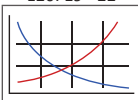
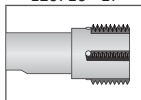
TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UN Internal
32	25.40	1.000	3.56	0.140	TN100K-UN32I
24	25.40	1.000	3.56	0.140	TN100K-UN24I
	38.10	1.500	3.56	0.140	TN150K-UN24I
20	25.40	1.000	3.56	0.140	TN100K-UN20I
	38.10	1.500	3.56	0.140	TN150K-UN20I
18	25.40	1.000	3.56	0.140	TN100K-UN18I
	38.10	1.500	3.56	0.140	TN150K-UN18I
16	25.40	1.000	3.56	0.140	TN100K-UN16I
	38.10	1.500	3.56	0.140	TN150K-UN16I
14	38.10	1.500	3.56	0.140	TN150K-UN14I
	25.40	1.000	3.56	0.140	TN100K-UN12I
12	38.10	1.500	3.56	0.140	TN150K-UN12I
	25.40	1.000	3.56	0.140	TN100K-UN10I
10	38.10	1.500	3.56	0.140	TN150K-UN10I
	25.40	1.000	3.56	0.140	TN100K-UN8I
8	38.10	1.500	3.56	0.140	TN150K-UN8I
	25.40	1.000	3.56	0.140	TN100K-UN7I
7	38.10	1.500	3.56	0.140	TN150K-UN7I
	25.40	1.000	3.56	0.140	TN100K-UN6I
6	38.10	1.500	3.56	0.140	TN150K-UN6I

TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UN External
32	25.40	1.000	3.56	0.140	TN100K-UN32E
24	25.40	1.000	3.56	0.140	TN100K-UN24E
20	25.40	1.000	3.56	0.140	TN100K-UN20E
	38.10	1.500	3.56	0.140	TN150K-UN20E
18	25.40	1.000	3.56	0.140	TN100K-UN18E
	38.10	1.500	3.56	0.140	TN150K-UN18E
16	25.40	1.000	3.56	0.140	TN100K-UN16E
	38.10	1.500	3.56	0.140	TN150K-UN16E
12	25.40	1.000	3.56	0.140	TN100K-UN12E
	38.10	1.500	3.56	0.140	TN150K-UN12E
10	25.40	1.000	3.56	0.140	TN100K-UN10E
	38.10	1.500	3.56	0.140	TN150K-UN10E
8	25.40	1.000	3.56	0.140	TN100K-UN8E
	38.10	1.500	3.56	0.140	TN150K-UN8E
6	38.10	1.500	3.56	0.140	TN150K-UN6E

E20: 3

E20: 19 - 22

E20: 16 - 17

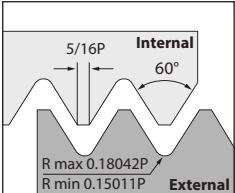


Inserts sold in quantities of 2.



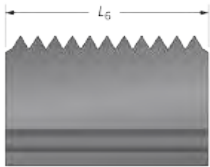
AccuThread® 856 Pin Style

Inserts



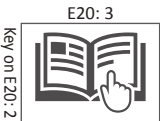
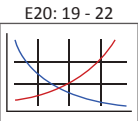
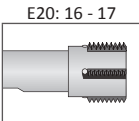
UNJ

Internal & External



TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UNJ Internal
32	25.40	1.000	3.56	0.140	TN100K-UNJ32I
24	25.40	1.000	3.56	0.140	TN100K-UNJ24I
	38.10	1.500	3.56	0.140	TN150K-UNJ24I
20	25.40	1.000	3.56	0.140	TN100K-UNJ20I
	38.10	1.500	3.56	0.140	TN150K-UNJ20I
18	25.40	1.000	3.56	0.140	TN100K-UNJ18I
	38.10	1.500	3.56	0.140	TN150K-UNJ18I
16	25.40	1.000	3.56	0.140	TN100K-UNJ16I
	38.10	1.500	3.56	0.140	TN150K-UNJ16I
12	25.40	1.000	3.56	0.140	TN100K-UNJ12I
	38.10	1.500	3.56	0.140	TN150K-UNJ12I
8	38.10	1.500	3.56	0.140	TN150K-UNJ8I

TPI (Pitch)	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	UNJ External
32	25.40	1.000	3.56	0.140	TN100K-UNJ32E
24	25.40	1.000	3.56	0.140	TN100K-UNJ24E
	38.10	1.500	3.56	0.140	TN150K-UNJ24E
20	25.40	1.000	3.56	0.140	TN100K-UNJ20E
	38.10	1.500	3.56	0.140	TN150K-UNJ20E
18	25.40	1.000	3.56	0.140	TN100K-UNJ18E
	38.10	1.500	3.56	0.140	TN150K-UNJ18E
16	25.40	1.000	3.56	0.140	TN100K-UNJ16E
	38.10	1.500	3.56	0.140	TN150K-UNJ16E
12	25.40	1.000	3.56	0.140	TN100K-UNJ12E
	38.10	1.500	3.56	0.140	TN150K-UNJ12E
8	38.10	1.500	3.56	0.140	TN150K-UNJ8E

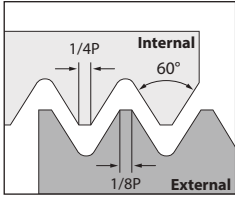


Inserts sold in quantities of 2.



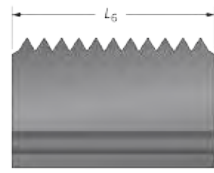
AccuThread® 856 Pin Style

Inserts



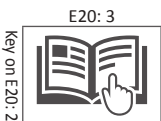
ISO

Internal & External

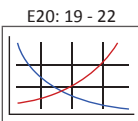


Pitch	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	ISO Internal
1.5	38.10	1.500	3.56	0.140	TN150K-M1.5I
2.0	38.10	1.500	3.56	0.140	TN150K-M2.0I
2.5	38.10	1.500	3.56	0.140	TN150K-M2.5I
3.0	38.10	1.500	3.56	0.140	TN150K-M3.0I
3.5	38.10	1.500	3.56	0.140	TN150K-M3.5I
4.0	38.10	1.500	3.56	0.140	TN150K-M4.0I
4.5	38.10	1.500	3.56	0.140	TN150K-M4.5I
5.0	38.10	1.500	3.56	0.140	TN150K-M5.0I
6.0	38.10	1.500	3.56	0.140	TN150K-M6.0I

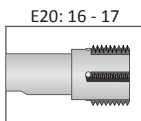
Pitch	Insert				Part No.
	Metric (mm)	Imperial (in)	Metric (mm)	Imperial (in)	ISO External
2.0	38.10	1.500	3.56	0.140	TN150K-M2.0E
4.0	38.10	1.500	3.56	0.140	TN150K-M4.0E
4.5	38.10	1.500	3.56	0.140	TN150K-M4.5E
5.0	38.10	1.500	3.56	0.140	TN150K-M5.0E
6.0	38.10	1.500	3.56	0.140	TN150K-M6.0E



E20: 3



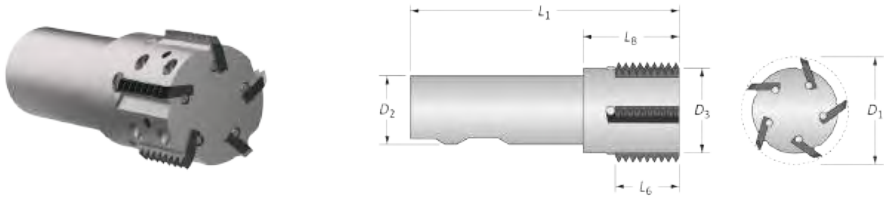
E20: 19 - 22



E20: 16 - 17

AccuThread® 856 Pin Style

Weldon Shank Holders



Positive Rake

Metric (mm)

	D_1		Holder					Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
	Standard	Override*	D_3	L_8	L_6	L_1	D_2							
m	24.61	—	19.05	35.05	25.40	114.30	25.00	N	2	THP-0969-2F100M	TN100K...	TMSS-3	3/32	TMP-1
	44.58	—	38.10	57.15	25.40	101.60	32.00	Y	5	THP-1755-5F100M	TN100K...	TMSS-2	3/32	TMP-1
	23.67	27.00	18.34	48.44	38.10	114.30	25.00	N	1	THP-0932-1F150M	TN150K...	TMSS-2	3/32	TMP-2
	24.61	27.94	19.05	50.80	38.10	114.30	25.00	N	2	THP-0969-2F150M	TN150K...	TMSS-3	3/32	TMP-2
	28.35	31.67	20.63	50.80	38.10	114.30	25.00	Y	3	THP-1116-3F150M	TN150K...	TMSS-3	3/32	TMP-2
	44.58	47.93	38.10	57.15	38.10	114.30	32.00	Y	5	THP-1755-5F150M	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

	D_1		Holder					Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
	Standard	Override*	D_3	L_8	L_6	L_1	D_2							
i	0.969	—	0.750	1.38	1.000	4.500	1.000	N	2	THP-0969-2F100	TN100K...	TMSS-3	3/32	TMP-1
	1.755	—	1.500	2.25	1.000	4.000	1.250	Y	5	THP-1755-5F100	TN100K...	TMSS-2	3/32	TMP-1
	0.932	1.063	0.722	1.90	1.500	4.500	1.000	N	1	THP-0932-1F150	TN150K...	TMSS-2	3/32	TMP-2
	0.969	1.100	0.750	2.00	1.500	4.500	1.000	N	2	THP-0969-2F150	TN150K...	TMSS-3	3/32	TMP-2
	1.116	1.247	0.812	2.00	1.500	4.500	1.000	Y	3	THP-1116-3F150	TN150K...	TMSS-3	3/32	TMP-2
	1.755	1.887	1.500	2.25	1.500	4.500	1.250	Y	5	THP-1755-5F150	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

Neutral Rake

Metric (mm)

	D_1		Holder					Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
	Standard	Override*	D_3	L_8	L_6	L_1	D_2							
m	28.35	31.67	20.63	50.80	38.10	114.30	25.00	Y	3	TNR-1116-3F150M	TN150K...	TMSS-3	3/32	TMP-2
	44.58	47.93	38.10	57.15	38.10	114.30	32.00	Y	5	TNR-1755-5F150M	TN150K...	TMSS-2	3/32	TMP-2

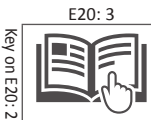
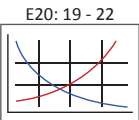
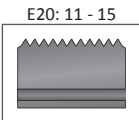
Imperial (in)

	D_1		Holder					Coolant	Flutes	Part No.	Inserts	Screw	Key Size	Pin
	Standard	Override*	D_3	L_8	L_6	L_1	D_2							
i	1.116	1.247	0.812	2.00	1.500	4.500	1.000	Y	3	TNR-1116-3F150	TN150K...	TMSS-3	3/32	TMP-2
	1.755	1.887	1.500	2.25	1.500	4.531	1.250	Y	5	TNR-1755-5F150	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

*Oversized cutter diameter occurs when assembled with the following pin style inserts:

NPT 8 NPTF 11.5 NPTF 8	API 8	Metric 6.0 Metric 5.0 Metric 4.5	ACME 5 ACME 6
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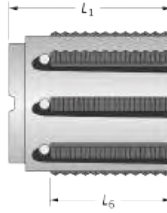
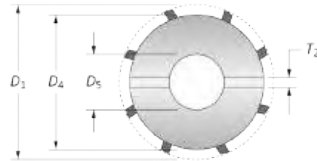
m = Metric (mm)
i = Imperial (in)



AccuThread® 856 Pin Style

Shell Mill Holders

E20



Positive Rake

Metric (mm)

D_1		Holder					Flutes	Part No.			Key Size	Pin	
Standard	Override*	D_4	D_5	L_6	L_1	T_2			Inserts	Screw			
	68.94	72.26	63.50	27.00	38.10	57.15	12	7	TSN-2846-7F150M	TN150K...	TMSS-2	3/32	TMP-2
	81.48	84.84	76.20	32.00	38.10	57.15	14	8	TSN-3341-8F150M	TN150K...	TMSS-2	3/32	TMP-2

Imperial (in)

D_1			Holder					Flutes	Part No.			Key Size	Pin
Standard	Override*	D_4	D_5	L_6	L_1	T_2	Inserts			Screw			
	2.714	2.845	2.500	1.000	1.500	2.250	0.375	7	TSN-2846-7F150	TN150K...	TMSS-2	3/32	TMP-2
	3.208	3.340	3.000	1.250	1.500	2.250	0.500	8	TSN-3341-8F150	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

Neutral Rake

Metric (mm)

D_1		Holder						Flutes	Part No.			Key Size	Pin
Standard	Override*	D_4	D_5	L_6	L_1	T_2							
	56.31	59.66	50.80	22.00	38.10	57.15	10.00	6	TSR-2217-6F150M	TN150K...	TMSS-2	3/32	TMP-2

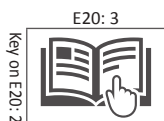
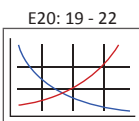
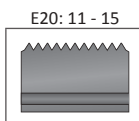
Imperial (in)

D_1			Holder										
Standard	Override*		D_4	D_5	L_6	L_1	T_2	Flutes	Part No.	Inserts	Screw	Key Size	Pin
	2.217	2.349	2.000	0.750	1.500	2.250	0.312	6	TSR-2217-6F150	TN150K...	TMSS-2	3/32	TMP-2

*See note at bottom of page.

*Oversized cutter diameter occurs when assembled with the following pin style inserts:

NPT 8 NPTF 11.5 NPTF 8	API 8	Metric 6.0 Metric 5.0 Metric 4.5	ACME 5 ACME 6
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= Metric (mm)
 = Imperial (in)

[illegible]



Recommended Drilling Data | Metric (mm)

POSITIVE RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter						
					1 flute		1-2 flutes	3 flutes	5 flutes	7 flutes	8 flutes
					9.53 to 12.70	12.71 to 19.05	19.06 to 25.40	25.41 to 38.10	38.11 to 50.80	50.81 to 69.85	69.86 to 88.90
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		150 - 200	Easy	213	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		200 - 250	Easy	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		125 - 175	Average	213	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		175 - 225	Average	183	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		225 - 275	Average	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076
		125 - 175	Average	175	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		175 - 225	Average	152	0.020	0.023	0.025	0.030	0.038	0.051	0.064
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	225 - 275	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		275 - 325	Average	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		125 - 175	Average	175	0.020	0.023	0.025	0.030	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	175 - 225	Average	152	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		225 - 275	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		275 - 325	Difficult	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		325 - 375	Difficult	114	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		225 - 300	Average	137	0.020	0.023	0.025	0.030	0.038	0.051	0.064
		300 - 350	Difficult	122	0.020	0.023	0.025	0.030	0.038	0.051	0.064
High-Strength Alloy 4340, 4330V, 300M, etc.	350 - 400	Difficult	107	0.020	0.023	0.025	0.030	0.038	0.051	0.064	
	100 - 150	Average	183	0.020	0.025	0.030	0.038	0.051	0.064	0.076	
	150 - 250	Average	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076	
Structural Steel A36, A285, A516, etc.	250 - 350	Difficult	137	0.020	0.025	0.030	0.038	0.051	0.064	0.076	
	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	160	0.013	0.018	0.023	0.038	0.051	0.064	0.076
		185 - 275	Difficult	152	0.013	0.018	0.023	0.038	0.051	0.064	0.076
Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.013	0.018	0.023	0.038	0.051	0.064	0.076	
	275 - 325	Difficult	46	0.013	0.018	0.023	0.038	0.051	0.064	0.076	
Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.020	0.025	0.030	0.038	0.051	0.064	0.076	
	200 - 250	Difficult	152	0.020	0.025	0.030	0.038	0.051	0.064	0.076	
K	Cast Iron Grey, Ductile, Nodular	120 - 150	Easy	206	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		150 - 200	Easy	191	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		200 - 220	Easy	175	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		220 - 260	Average	152	0.020	0.030	0.038	0.051	0.076	0.102	0.127
		260 - 320	Average	145	0.020	0.030	0.038	0.051	0.076	0.102	0.127
N	Wrought Aluminum 6061 T6	30	Easy	335	0.038	0.051	0.064	0.076	0.102	0.127	0.152
		180	Easy	305	0.038	0.051	0.064	0.076	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.038	0.051	0.064	0.076	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.051	0.064	0.076	0.102	0.114	0.140	0.165
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.013	0.015	0.020	0.025	0.038	0.051	0.064
		220 - 310	Difficult	27	0.013	0.015	0.020	0.025	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Metric (mm)

NEUTRAL RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (m/min)	Recommended Feed (mm/tooth) by Cutter Diameter		
					3 flutes 25.41 to 38.09	5 flutes 38.10 to 50.77	6 flutes 50.78 to 69.85
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.051	0.064	0.076
		150 - 200	Easy	213	0.051	0.064	0.076
		200 - 250	Easy	152	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.051	0.064	0.076
		125 - 175	Average	213	0.051	0.064	0.076
		175 - 225	Average	183	0.051	0.064	0.076
		225 - 275	Average	152	0.051	0.064	0.076
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Average	122	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Difficult	122	0.038	0.051	0.064
		325 - 375	Difficult	114	0.038	0.051	0.064
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.038	0.051	0.064
		300 - 350	Difficult	122	0.038	0.051	0.064
		350 - 400	Difficult	107	0.038	0.051	0.064
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.051	0.064	0.076
		150 - 250	Average	152	0.051	0.064	0.076
		250 - 350	Difficult	137	0.051	0.064	0.076
M	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	160	0.051	0.064	0.076
		185 - 275	Difficult	152	0.051	0.064	0.076
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.051	0.064	0.076
		275 - 325	Difficult	46	0.051	0.064	0.076
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.051	0.064	0.076
K	Cast Iron Grey, Ductile, Nodular	200 - 250	Difficult	152	0.051	0.064	0.076
		120 - 150	Easy	206	0.076	0.102	0.127
		150 - 200	Easy	191	0.076	0.102	0.127
		200 - 220	Easy	175	0.076	0.102	0.127
		220 - 260	Average	152	0.076	0.102	0.127
N	Wrought Aluminum 6061 T6	260 - 320	Average	145	0.076	0.102	0.127
		30	Easy	335	0.102	0.127	0.152
		180	Easy	305	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.114	0.140	0.165
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.038	0.051	0.064
		220 - 310	Difficult	27	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.





Recommended Drilling Data | Imperial (in)

POSITIVE RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter						
					1 flute		1-2 flutes	3 flutes	5 flutes	7 flutes	8 flutes
					0.375" to 0.500"	0.501" to 0.750"	0.751" to 1.000"	1.001" to 1.500"	1.501" to 2.000"	2.001" to 2.750"	2.751" to 3.500"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	900	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		150 - 200	Easy	700	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		200 - 250	Easy	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	900	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		125 - 175	Average	700	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
		175 - 225	Average	600	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
	225 - 275	Average	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030	
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	575	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		175 - 225	Average	500	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		225 - 275	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	275 - 325	Average	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025	
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	575	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		175 - 225	Average	500	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		225 - 275	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	275 - 325	Difficult	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025	
	325 - 375	Difficult	375	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025	
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	450	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		300 - 350	Difficult	400	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
		350 - 400	Difficult	350	0.0008	0.0009	0.0010	0.0012	0.0015	0.0020	0.0025
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	600	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
150 - 250		Average	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030	
250 - 350		Difficult	450	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030	
M	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	525	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
		185 - 275	Difficult	500	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	300	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
		275 - 325	Difficult	150	0.0005	0.0007	0.0009	0.0015	0.0020	0.0025	0.0030
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	575	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030
200 - 250		Difficult	500	0.0008	0.0010	0.0012	0.0015	0.0020	0.0025	0.0030	
K	Cast Iron Grey, Ductile, Nodular	120 - 150	Easy	675	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		150 - 200	Easy	625	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		200 - 220	Easy	575	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		220 - 260	Average	500	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
		260 - 320	Average	475	0.0008	0.0012	0.0015	0.0020	0.0030	0.0040	0.0050
N	Wrought Aluminum 6061 T6	30	Easy	1100	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
		180	Easy	1000	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
	Cast Aluminum** up to 10% silicon	120	Easy	625	0.0015	0.0020	0.0025	0.0030	0.0040	0.0050	0.0060
		Brass	30 - 125	Easy	1100	0.0020	0.0025	0.0030	0.0040	0.0045	0.0055
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	120	0.0005	0.0006	0.0008	0.0010	0.0015	0.0020	0.0025
		220 - 310	Difficult	90	0.0005	0.0006	0.0008	0.0010	0.0015	0.0020	0.0025

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.



Recommended Drilling Data | Imperial (in)

NEUTRAL RAKE

ISO	Material	Hardness (BHN)	Machinability*	Speed (SFM)	Recommended Feed (inch/tooth) by Cutter Diameter		
					3 flutes 1.000" to 1.499"	5 flutes 1.500" to 1.999"	6 flutes 2.000" to 2.750"
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	Easy	274	0.051	0.064	0.076
		150 - 200	Easy	213	0.051	0.064	0.076
		200 - 250	Easy	152	0.051	0.064	0.076
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	Average	274	0.051	0.064	0.076
		125 - 175	Average	213	0.051	0.064	0.076
		175 - 225	Average	183	0.051	0.064	0.076
		225 - 275	Average	152	0.051	0.064	0.076
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Average	122	0.038	0.051	0.064
	Alloy Steel 4140, 5140, 8640, etc.	125 - 175	Average	175	0.038	0.051	0.064
		175 - 225	Average	152	0.038	0.051	0.064
		225 - 275	Average	137	0.038	0.051	0.064
		275 - 325	Difficult	122	0.038	0.051	0.064
		325 - 375	Difficult	114	0.038	0.051	0.064
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	Average	137	0.038	0.051	0.064
		300 - 350	Difficult	122	0.038	0.051	0.064
		350 - 400	Difficult	107	0.038	0.051	0.064
	Structural Steel A36, A285, A516, etc.	100 - 150	Average	183	0.051	0.064	0.076
		150 - 250	Average	152	0.051	0.064	0.076
		250 - 350	Difficult	137	0.051	0.064	0.076
M	Stainless Steel 303, 416, 420, etc.	135 - 185	Difficult	160	0.051	0.064	0.076
		185 - 275	Difficult	152	0.051	0.064	0.076
	Stainless Steel PH 17-4, etc.	185 - 275	Difficult	91	0.051	0.064	0.076
		275 - 325	Difficult	46	0.051	0.064	0.076
	Tool Steel H-13, H21, A-4, etc.	150 - 200	Difficult	175	0.051	0.064	0.076
		200 - 250	Difficult	152	0.051	0.064	0.076
K	Cast Iron Grey, Ductile, Nodular	120 - 150	Easy	206	0.076	0.102	0.127
		150 - 200	Easy	191	0.076	0.102	0.127
		200 - 220	Easy	175	0.076	0.102	0.127
		220 - 260	Average	152	0.076	0.102	0.127
		260 - 320	Average	145	0.076	0.102	0.127
N	Wrought Aluminum 6061 T6	30	Easy	335	0.102	0.127	0.152
		180	Easy	305	0.102	0.127	0.152
	Cast Aluminum** up to 10% silicon	120	Easy	191	0.102	0.127	0.152
	Brass	30 - 125	Easy	335	0.114	0.140	0.165
S	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140 - 220	Difficult	37	0.038	0.051	0.064
		220 - 310	Difficult	27	0.038	0.051	0.064

NOTICE: Reduce feed and speed by 30% for tapered thread forms due to additional material removal.

*Refer to recommended pass chart on **page xiv** when referencing material machinability.

**Uncoated thread mills are recommended for cast aluminum applications.





Thread Mill Pre-Drill Information

Formula	Metric	Imperial
Velocity	$m/min = RPM \cdot 0.003 \cdot \text{Cutter Diameter}$	$SFM = RPM \cdot 0.262 \cdot \text{Cutter Diameter}$
Speed	$RPM = \frac{(m/min \cdot 318.47)}{\text{Cutter Diameter}}$	$RPM = \frac{(SFM \cdot 3.82)}{\text{Cutter Diameter}}$
Linear Feed Rate (LFR)	$mm/min = RPM \cdot (mm/tooth \cdot \text{Number of Flutes})$	$IPM = RPM \cdot (IPT \cdot \text{Number of Flutes})$
Adjusted Feed Rate (AFR) <i>See Note Below</i>	$AFR = \left(\frac{(\text{Major Diameter} - \text{Cutter Diameter})}{\text{Major Diameter}} \right) \cdot LFR$	

NOTE: The above formula on an internal thread program adjusts the linear feed rate to be applied to the outer diameter instead of the center of the cutting tool. If the feed rate is not adjusted, the excessive feed rate will cause the thread mill cutting edges to fail.

Example of an Internal Adjusted Feed Rate Calculation:

Free machining steel at 125 BHN with a M16x2 2B thread using ThreadMills USA® solid carbide thread mill (TM16200) running at 221 m/min and 0.038 mm/tooth			
STEP 1:	$RPM = \frac{(m/min \cdot 318.47)}{\text{Cutter Diameter}}$	$RPM = \frac{(221 \cdot 318.47)}{11.94}$	$RPM = 5895$
STEP 2:	$LFR = RPM \cdot (mm/tooth \cdot \text{Number of flutes})$	$LFR = 5895 \cdot (0.038 \cdot 4)$	$LFR = 896.04 \text{ mm/min}$
STEP 3:	$AFR = \left(\frac{(\text{Major Diameter} - \text{Cutter Diameter})}{\text{Major Diameter}} \right) \cdot LFR$	$AFR = \left(\frac{(16.00 - 11.94)}{16.00} \right) \cdot 896.04$	$AFR = 227.37 \text{ mm/min}$

Unit Definitions

Velocity	m/min = meters per minute SFM = surface feet per minute
Speed	RPM = revolutions per minute
Feed	mm/rev = millimeters per revolution mm/tooth = millimeters per tooth <i>also known as</i> millimeters per flute IPR = inch per revolution IPT = inch per tooth <i>also known as</i> inch per flute mm/min = millimeters per minute IPM = inches per minute

Thread Mill Calculations and Recommended Passes

Thread Mill Drill Calculation
Based on nominal tap drill diameter. Based on 0.075 mm (0.003") probable mean oversize.

To calculate the percent of full thread for a given hole diameter:

IMPERIAL: % of thread = # of threads per inch • $\frac{\text{Basic major diameter of thread} - \text{Drill hole size}}{0.0130}$

METRIC: % of thread = $\frac{76.96}{\text{Pitch (mm)}}$ • [Basic major diameter of thread - Drill hole size]

Major Thread Diameter
for # Drills

Drill #	Thread Diameter
# 2	0.086
# 3	0.099
# 4	0.112
# 5	0.125
# 6	0.132
# 8	0.164
# 10	0.190
# 12	0.216

Recommended Passes

Pitch Size	NPT / NPTF / BSPT / API		
	Machinability		
	Easy	Average	Difficult
28	1	1	2
27	1	1	2
19	1	1	2
18	1	1	2
14	1	2	3
11.5	1	2	3
11	1	2	3
10	1	2	3
8	2	3	4

- 1 Pass
- 2 Passes
- 3 Passes
- 4 Passes

Pitch Size	ISO		
	Machinability		
	Easy	Average	Difficult
0.40	1	1	2
0.45	1	1	2
0.50	1	1	2
0.70	1	1	2
0.75	1	1	2
0.80	1	1	2
1.00	1	1	2
1.25	1	2	3
1.50	1	2	3
1.75	1	2	3
2.00	1	2	3
2.50	2	3	4
3.00	2	3	4
3.50	2	3	4
4.00	2	3	4
4.50	2	3	4
5.00	2	3	4
6.00	2	3	4

Pitch Size	UN / UNJ / BSPP / BSW / NPS / NPSF		
	Machinability		
	Easy	Average	Difficult
64	1	1	2
56	1	1	2
48	1	1	2
44	1	1	2
40	1	1	2
36	1	1	2
32	1	1	2
28	1	1	2
24	1	1	2
20	1	2	3
19	1	2	3
18	1	2	3
16	1	2	3
14	1	2	3
13	1	2	3
12	1	2	3
11	2	2	4
10	2	3	4
9	2	3	4
8	2	3	4
7	2	3	4
6	2	3	4



Thread Mill Programming Guide

What you need to know

- Thread milling can be easily accomplished with simple G code programming.
- If your machine is capable of 3 axis (helical) interpolation, you can and **should** be thread milling.
- Basic programming of a one pass thread mill can be achieved in six basic steps.

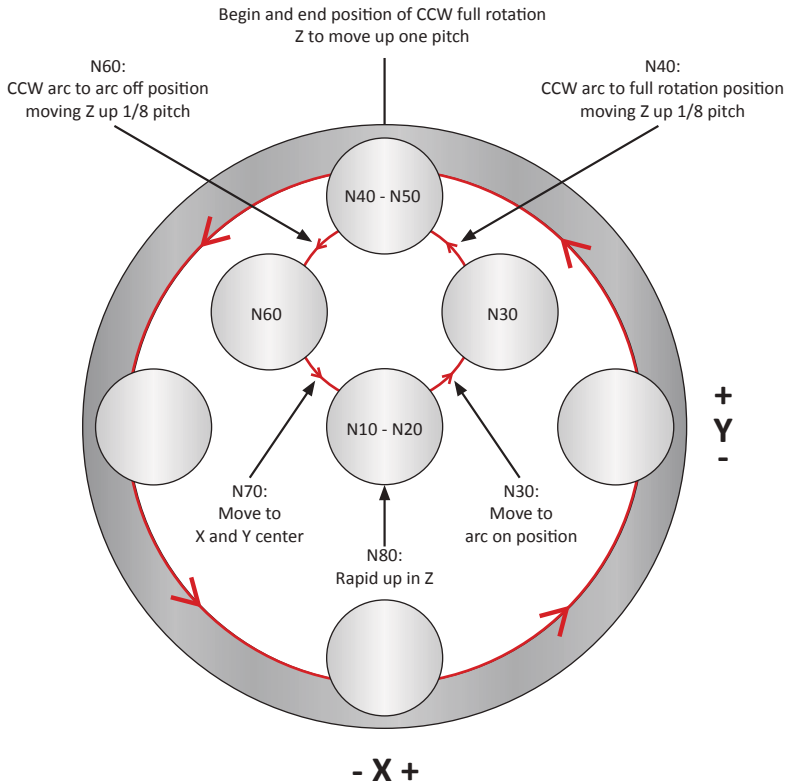
AVAILABLE ONLINE 24/7
or download **INSTA-CODE®**

visit www.alliedmachine.com

Examples for how to calculate and program a M16x2 right-hand thread that will be 10 mm deep produced in one pass:

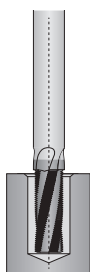
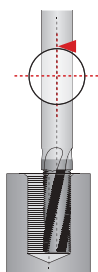
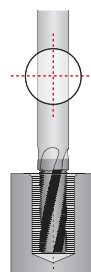
Major thread diameter	16 mm	Major diameter of thread
Threads per inch		(only applies to imperial threads)
Length of thread	10 mm	Desired length of cut
Velocity	221 m/min	Recommended velocity for material to be cut
Feed per flute	0.038 mm/tooth	Recommended feed rate per cutting edge
Number of flutes	4	Number of flutes on tool to be used
Cutter diameter	11.94 mm	Diameter of cutting tool
Using the information above, the values can be calculated:		
Pitch	2.0 mm	Use 1/ threads per inch for imperial
Speed	5895 RPM	$(318.47 \cdot \text{m/min}) / \text{cutter diameter or } (\text{SFM} \cdot 3.82) / \text{cutter diameter}$
Linear feed	896.04 mm/min	$\text{RPM} \cdot (\text{Feed per flute} \cdot \text{Number of flutes})$
Feed rate for thread milling	227.37 mm/min	$((\text{Major thread diameter} - \text{cutter diameter}) / \text{Major thread diameter}) \cdot \text{Linear feed}$
Z-axis travel on arc on	0.25 mm	$(\text{Pitch} / 8)$
Z-axis travel for full thread	10.25 mm	$(\text{Pitch} / 8) + \text{Length of cut}$
Arc on/off	1.015 mm	$(\text{Major thread diameter} - \text{cutter diameter}) / 4$
Full rotation value	2.030 mm	$(\text{Major thread diameter} - \text{cutter diameter}) / 2$

Major thread diameter	16 mm	Feed rate for thread milling	227.37 mm/min	Arc on/off value	1.015 mm
Cutter diameter	11.94 mm	Z-axis depth for full thread	10.25 mm	Full rotation value	2.030 mm
Length of thread	10.00 mm	Z-axis for arc on/off	0.25 mm	Pitch value	2.00 mm



Thread Mill Programming Guide

			5895	M03			
	S	Turn on spindle in the clockwise direction.					
1	N10						
		Lower tool the depth required plus an additional 1/8 pitch for the arc on. Tool remains in the center of the hole.					
2	N20	G91	G01	Z -10.250	F 1136.25		
		Position the tool for the arc on motion and turn on the cutter compensation.					
	N30	G41	X 1.015	Y 1.015	D1	F 681.75	
3		Arc on to engage the tool to the major thread diameter while moving the tool up in the Z-axis 1/8 pitch. NOTE: X and Y is the end point. I and J is the center point of the arc.					
	N40	G03	X -1.015	Y 1.015	Z 0.250	I -1.015 J0.000 F 227.37	
		Full pass. Interpolate the thread mill inside the major thread diameter while moving the tool up 1 pitch in the Z-axis.					
4	N50	G03	X 0.000	Y 0.000	Z 2.000	I 0.000 J -2.030	
		Arc off to disengage the tool from the major thread diameter while moving the tool up in the Z-axis 1/8 pitch.					
	N60	G03	X -1.015	Y -1.015	Z 0.250	I 0.000 J -1.015 F 909.00	
5		Return to center. Turn off cutter compensation and move the tool back to center.					
	N70	G40	G01	X 1.015	Y -1.015	F 1136.25	
		Return to top. Rapid the tool back to the top of the threaded hole.					
	N80	G00	Z 7.750				
6		Switch back to absolute positioning and rapid to a safe point in Z above part level (assumed to be 1 pitch above part level for demonstration purposes below).					
	N90	G90					



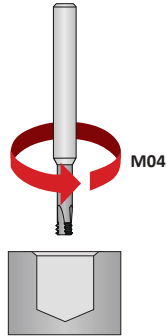
Step 1 N10	Step 2 N20	Step 3 N30 - N40	Step 4 N50	Step 5 N60 - N70	Step 6 N80 - N90
<ul style="list-style-type: none"> Preparatory commands. Positioning above hole center and at hole level in Z. In absolute position mode. 	<ul style="list-style-type: none"> Change to incremental. Feed to bottom of hole. Z-axis depth for full thread. 	<ul style="list-style-type: none"> Activate left cutter comp. Feed to arc on position. Arc to full rotation value while moving Z up 1/8 pitch. Z-axis move for arc on. 	<ul style="list-style-type: none"> One complete CCW rotation at full arc rotation value while moving Z up 1 pitch value. 	<ul style="list-style-type: none"> CCW arc from full rotation value to the arc on/off value while moving Z up 1/8 pitch (Z-axis move for arc off). 	<ul style="list-style-type: none"> Rapid up in Z.

Technical Information

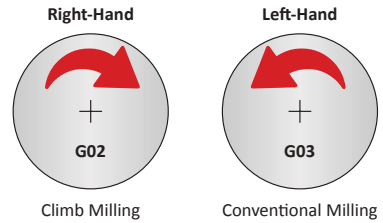
AccuThread® T3

Spindle Rotation

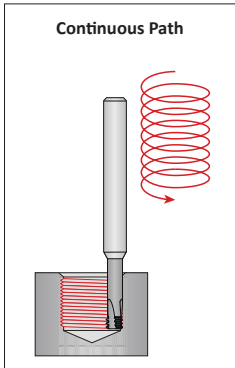
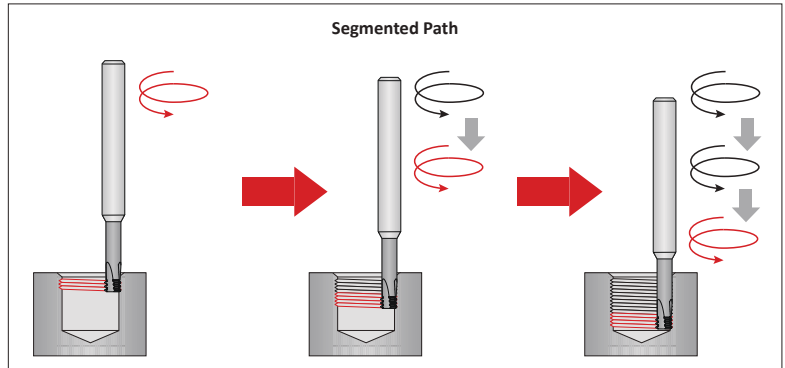
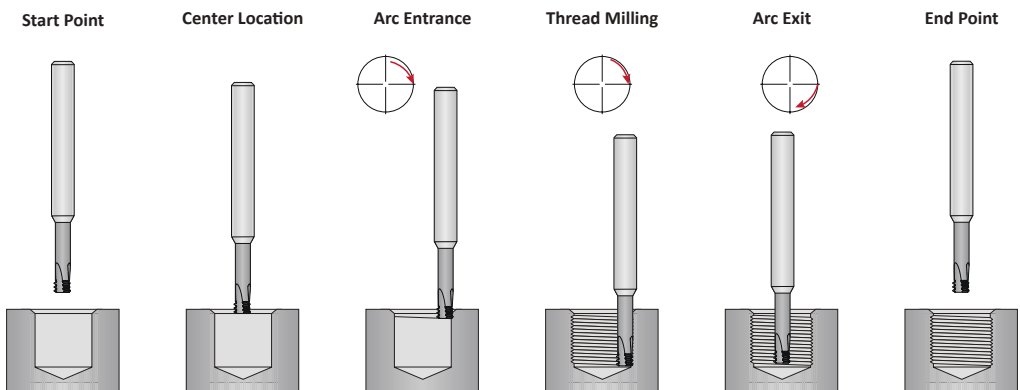
! Tools are left-hand cutting. The left-hand cut allows the tool to climb mill when creating a right-hand thread with an AccuThread T3. Climb milling reduces deflection and heat generated during the cut.



Direction of Helical Interpolation



Programming Z-Axis Cutting Path



Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.



Thread Mill Troubleshooting Guide

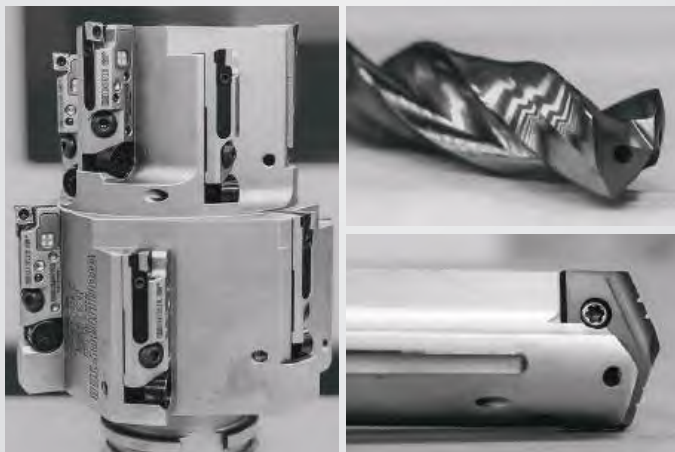
		Causes	Problem									
			Thread mill is showing accelerated or excessive wear	Cutting edges are chipping	Thread mill is breaking in the first hole of part	Thread mill is creating excessive chatter	Out of round thread is produced	Bell-mouthed thread form (small at bottom, big at top)	Part rejection because of rough flank finish	Steps in thread profile	Gauge difference from part to part	Machine not making correct paths to create thread profile
Catalog	Incorrect tool selection			1	1							
	Incorrect speed and feed selection	2, 3	2, 3		2, 3			2, 3				
Speed and Feed	RPM too high	5										
	RPM too low				4		4	4				
	Machine tool specifications restrict RPMs			5, 19								
	Feed rate too high		7	7			7	7	7			
	Feed rate too low	6										
	Incorrect adjusted feed rate adjustment ratio			12								
	Machine tool specification restricts feed rate					7, 19						
	Ramp-in is programmed as an axial move			20					20			
Tool	Thread mill moved or slipped in its holding device	13	13	13	13			13	13			
	Tool is sticking out of the holder too far	15	15	15	15			15	15	15		
	Runout between thread mill and holder				10			10				
	Incorrect coating creating built-up edge	8, 17								8, 17		
	Helix angle too low				9			9				
	Excessive thread mill wear								11	11		
	Excessive tool pressure	7, 11, 14					7, 11, 14					
Machine	Workpiece moving in its fixturing	16	16	16	16			16		16		
	Insufficient coolant pressure or flow	17	17									
	Lack of machine rigidity	16	16		16		16	16				
Programming	Incorrect number of passes			22			22					
	Incorrect program variables			18, 26							18, 26	
	Did not account for X/Y radial moves for tapered threads										24, 26	
	Incorrect cutter compensation variables			23, 26								23, 26
	Helical interpolation option not on machine or turned off										21, 26	21, 26
	Machine tool control is not formatted to standard EIA/ASCII/ISO Code											25, 26

Thread Mill Troubleshooting Guide

Troubleshooting Solutions

1. Refer to catalog to ensure proper tool selection.
2. Verify the correct speed was selected from the catalog speed and feed chart.
3. Verify the correct feed rate was selected from the catalog speed and feed chart.
4. Increase the spindle speed (RPM).
5. Decrease the spindle speed (RPM).
6. Increase feed per tooth.
7. Decrease feed per tooth.
8. Investigate other coatings.
9. Increase the tool helix.
10. Gauge runout between thread mill and tool holder.
11. Perform tool change at quicker intervals.
12. Adjust the feed rate ratio properly to the correct actual penetration rate for internal threads. Refer to speed and feed pages for formula.
13. Use hydraulic clamping chuck.
14. Check the tool for excessive wear. Beginning threads will wear the fastest.
15. Make the amount of overhang in the holding device as short as possible.
16. Verify the workpiece is properly clamped. Retighten or increase stability if necessary.
17. Increase the coolant flow and volume.
18. Check the milling program variables, especially the positive or negative value associated with I and J values.
19. Make sure the machine has the appropriate axis and path speed capabilities.
20. Make sure the thread mill is arcing in the major diameter instead of making a radial move.
21. Make sure the machine tool has a helical interpolation option that is on.
22. Increase the number of thread mill passes.
23. Make sure the cutter compensation variables are input into the G41 program line.
24. Adjust the program for pipe tap threads to taper out on diameter in X/Y directions to create proper form.
25. Request information from the machine tool builder regarding its programming formats.
26. Scan and email a copy of your program to the Application Engineering department at appeng@alliedmachine.com.

SPECIAL TOOLING CATALOG



**ALLIED MACHINE
& ENGINEERING**

www.alliedmachine.com

SECTION

X10-SUP

Superion® Solid Carbide and PCD Tools

Superion[®] Solid Carbide and PCD Tools



Out of the Box Solutions

Superion became a subsidiary of Allied Machine and Engineering in 2016. We share a common mission to provide product excellence, expert technical support, and innovative holemaking solutions to our metal-cutting partners. We have strengthened these roots while growing to serve the unique cutting tool needs of new industries such as aerospace, defense, equipment testing, material processing, and more.

With significant investment in technology, Superion has opened the door for our team to manufacture new solutions including several carbide and PCD configurations. We focus on providing solutions that reduce our customers' costs, increase throughput and assist in developing processes that allow for consistent and repeatable performance.

- ▶ Material-specific coatings / geometries.
- ▶ Reduce setup times.
- ▶ Decrease cost per hole.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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Deep Hole Drilling Guidelines 18
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Tooling Quote Form 21

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	



Superion Capabilities

WHAT IS SUPERION?

Superion capabilities provide cutting-edge solutions in both solid carbide and PCD tooling.

X10

WHY SHOULD YOU USE SUPERION?

- State-of-the-art manufacturing automation allows for high repeatability and consistency, regardless of the quantity you need.
- Superion provides application-specific solutions tailored to meet your toughest demands.
- Superion tooling excels in difficult and unique material applications.
- Our goal is to provide you a quality solution to exceed your need on a schedule that satisfies.

WHEN SHOULD YOU USE SUPERION?

- When finish is critical and dimensions are tight, Superion will deliver a tool to maintain your tolerances.
- When your tooling budget requires regrinds and the ability to remanufacture, Superion tackles your needs.
- If you're dealing with CFRP or other unique materials, Superion tooling is the right solution.

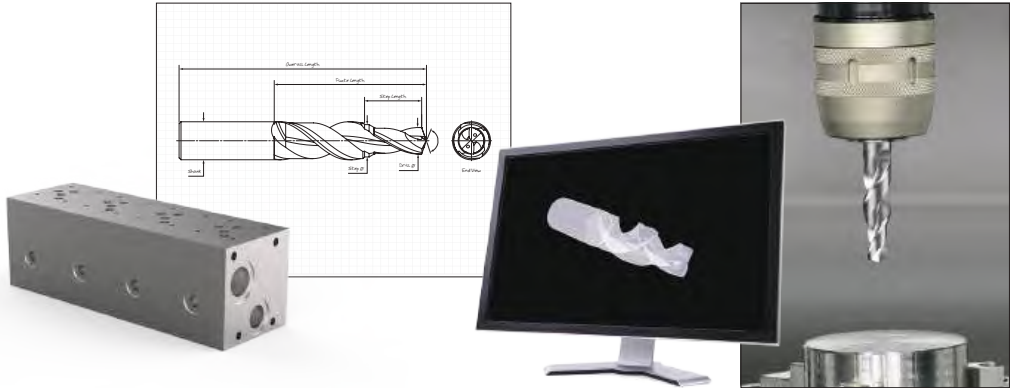




Tough Applications Solved

FROM CONCEPT TO REALITY

Allied's team of engineers is ready to assist you with your application. We'll gather all the information we need about your application and turn your concept into reality. Give us a call today to collaborate with you. We'll listen to your needs, formulate a concept, develop the model, and build the solution.



X10

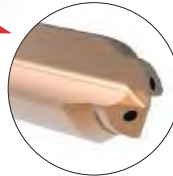
AEROSPACE / Landing Gear Components



DRILL BURNISH TOOLS

Reduce cycle time, increase throughput, and increase profitability by combining roughing and finishing operations using our burnishing geometry for applications in which surface finish and hole tolerance are critical.

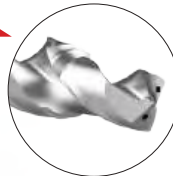
AUTOMOTIVE / Crankshafts



COMBINATION TOOLS

Combine multiple steps and various profile features to improve throughput. Combination tools reduce cost per hole and increase profit potential.

HEAVY EQUIPMENT / Manifolds



SOLID CARBIDE TOOLS WITH COOLANT

Solid carbide solutions optimize the manufacturing of manifolds. Most port specs call for at least 3 steps, and combining these features can reduce costs and increase throughput.

AUTOMOTIVE / Transmission Components

SOLID CARBIDE STEP TOOLS

You can rely on Superior's state-of-the-art manufacturing facility, built specifically to satisfy the customer's need whether it's 10 drills or 1,000 drills. Superior will provide consistent and effective solutions to your production needs.



Case Study

X10

If you need to hold a tight tolerance, we have the solution.

When an application requires you to hold a tight tolerance, it quickly eliminates many tooling options because those options aren't capable of holding the strict tolerance. Our customer was using a solid carbide drill to machine cylinder heads for the automotive industry. The cylinder blocks were made from A356 aluminum.

When the end user raised concerns over the hole tolerance created by our customer's previous tooling, our customer changed the required tolerance from ± 0.013 mm (0.0005") to ± 0.009 mm (0.0003"). However, the previous tooling couldn't achieve the new tolerance requirements.

The customer tested the **Superion Solid Carbide Step Burnishing Drill** in this application. The Superion drill did exactly what the customer needed and successfully held the new tolerance of ± 0.009 mm (0.0003"). It also held the new tolerance with a 1.66 CPK, which was higher than the previous tool's CPK even at the initial ± 0.013 mm (0.0005") tolerance.

Don't tolerate tolerance issues. **Call us to help you find the right tool for the job.**



		Measure	Superion® Step Burnishing Drill
Product:	Superion® Step Burnishing Drill	RPM	3490
Objectives:	Achieve required tolerance	Speed	160.1 m/min (528 SFM)
Industry:	Automotive	Feed	0.29 mm/rev (0.0115 IPR)
Part:	Cylinder head	Penetration Rate	1100 mm/min (43 IPM)
Material:	A356 aluminum	Cycle Time	4 sec
Hole Ø:	14.70 mm (0.579")	Tool Life	3000 parts
Hole Depth:	30.00 mm (1.181")	Tolerance	± 0.009 mm (± 0.0003 ")

► Superion
Superion Step Burnishing Drill



The Step Burnishing Drill provided:

- ✓ Required tolerance
- ✓ Increased CPK

Case Study: CS0503

Case Study

X10

Old adage, modern innovation: the right tool for the job.

Reduce costs and eliminate headaches by calling us to help solve your challenges. If your current process doesn't seem to be providing the results you want, you might be using the wrong tooling. Our customer was using a diamond-coated end mill to machine guide pads on frac pocket plugs used in down-hole oil drilling. The guide pads were made from fiberglass and glass wound filament material, which is very abrasive and shortens the life of cutting tools.



When the diamond coating wore off the end mill, the carbide substrate was exposed directly to the abrasive material, and the tool would quickly fail. The customer needed an optimized tool to extend tool life in this abrasive material and to solidify the repeatability of the process.

The customer tested the **Superion® PCD Flat Bottom Drill** in this application. The PCD substrate is more wear-resistant in the fiberglass material and provided more even wear of the tool throughout the process. Much to the customer's delight, the Superion drill ran at a higher penetration rate, which shortened cycle time. Most importantly, the Superion drill increased the customer's tool life from 7,500 holes to 50,000 holes (a 567% increase).

A costly application became effective and worry-free by finding the right tooling. The Superion drill didn't just increase the customer's tool life; it provided a repeatable, reliable process so the customer could "set it and forget it."

Don't tolerate unnecessary hassle and stress in your production. **Call us to help you find the right tool for the job.**

Product: Superion® PCD Flat Bottom Drill Objectives: Increase tool life Industry: Oil & gas/petrochemical Part: Frac pocket plug guide pads Material: Fiberglass and glass wound filament Hole Ø: 9.652 mm (0.380") Hole Depth: 6.985 mm (0.275")	Measure	Diamond Coated End Mill	Superion® PCD Flat Bottom Drill
	RPM	4500	7500
	Speed	136.55 m/min (448 SFM)	227.381 m/min (746 SFM)
	Feed Rate	0.203 mm/rev (0.008 IPR)	0.203 mm/rev (0.008 IPR)
	Penetration Rate	914.4 mm/min (36 IPM)	1524 mm/min (60 IPM)
	Cycle Time	0.46 sec	0.28 sec
	Tool Life	7,500 holes	50,000 holes

▸ Superion
PCD solid carbide flat bottom drill



The PCD substrate for wear resistance in abrasive materials provided:

- ✓ Increased tool life
- ✓ Increased penetration rate
- ✓ Repeatable/reliable machining process

Case Study: CS0502



Superion Geometries

There's a Geometry for That

Allied Machine knows there isn't a one-size-fits-all solution when it comes to holemaking. To better accommodate the countless holes our customers drill, we offer multiple options in material-specific geometries and material-specific coatings.

Superion geometries feature a unique edge prep tailored to specific material groups to optimize tool life and edge strength. Some geometries also offer solutions for rough and finish burnishing.

If you're unsure which geometry would be best for your application, give our Application Engineers a call. They're standing by, ready to help.

 **1.330.343.4283 ext: 7611**

 **1.800.321.5537 (toll free United States and Canada)**

 **appeng@alliedmachine.com**



X10

HPM

- Linear cutting edge aids in corner strength and improves chip formation in softer materials.
- Free cutting primary and secondary clearance.
- Ideal for drilling softer carbon, alloy and tool steel materials.
- AM420 coating for enhanced heat thresholds and tool life.
- TiCN coating for use in aluminum bronze.



HPM2M

- HPM geometry with a double margin.
- Recommended for improved hole tolerance and hole finish.
- Recommended for interrupted cuts and drill depths greater than 8xD.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- AM420 coating for enhanced heat thresholds and tool life.



HPS

- Radius cutting edge for improved chip formation.
- Cam ground clearance for added point strength and stability.
- Reduced bell mouth for longer drill depths.
- OD flute edge prep for added corner strength.
- Ideal for drilling harder steels, high-temp alloys, and stainless.
- AM420 coating for enhanced heat thresholds and tool life in steels.
- AM460 coating provides industry leading tool life in stainless and HRSA materials with our highest heat threshold coating available.



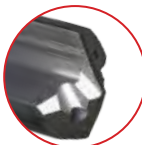
HPS2M

- HPS geometry with a double margin.
- Recommended for improved hole tolerance and hole finish.
- Recommended for interrupted cuts and drill depths greater than 8xD.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- Ideal for drilling gray/white and SG/nodular cast iron.
- AM420 coating for enhanced heat thresholds and tool life in steels.
- AM440 coating for reduced flank wear in cast irons.
- AM460 coating provides industry leading tool life in stainless and HRSA materials with our highest heat threshold coating available.



HP106

- Optimized core, point, and web features for increased strength.
- Utilizes a single margin design with straight flutes.
- Ideal for drilling hardened steels and wear plates.
- AM420 coating for enhanced heat thresholds and tool life.



HPF

- Unique open geometry for high penetration rates specifically tailored for aluminum.
- Double margins are optimized with a unique web for full engagement of all four margins at entry, leading to better stability.
- Reduced helix angle for increased chip evacuation.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- High lubricity TiCN coating for use in cast/wrought aluminum.



Superion Geometries

CIB (cast iron burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Ideal pre-drill when using carbide taps.
- Straight flute design ideal for use on lathes.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- AM440 coating for reduced flank wear in cast irons.



CAB (cast aluminum burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiCN coating to enhance lubricity when drilling in aluminum.



WAB (wrought aluminum burnishing drill)

- Unique point, web, and cutting edge designed to significantly improve hole finish and hole tolerance.
- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Geometry enhancements for drilling wrought aluminum.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiCN coating to enhance lubricity when drilling in aluminum.



BCB (brass copper burnishing drill)

- Straight flute design ideal for use on lathes.
- Double margins designed for enhanced stability.
- Minimized back taper to enhance straightness.
- Geometry enhancements for drilling brass and copper.
- Enhanced surface finish on tool to improve chip flow and reduce built-up edge.
- TiN coating.



FEATURES THAT WORK STEP DRILL DUB OFF

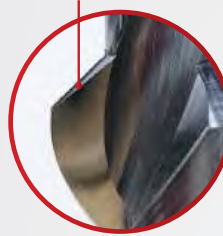
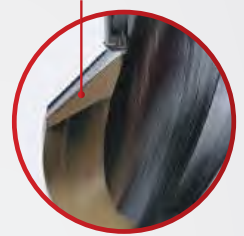
We have the solution when you have:

- Difficulties with chip formation on step tools.
- Chips wrapping around the tool even with peck cycles.
- To use multiple diameter drills.

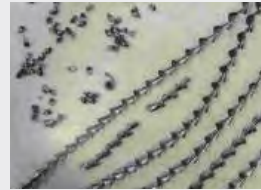
Superion solid carbide step drills *now* include dub off.

without dub off

with dub off



Hardened 4150



without dub off

with dub off

Ductile Iron



without dub off

with dub off

Soft 1018



without dub off

with dub off

X10



Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

X10

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (m/min)	Feed Rate (mm/rev) by Diameter	
							3.00 - 4.00	4.00 - 5.00
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100-150	HPM	● HPM2M	AM420	152	0.15	0.18
		150-200	HPM	● HPM2M	AM420	145	0.13	0.17
		200-250	HPS	▲ HPS2M	AM420	137	0.10	0.15
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85-125	HPM	● HPM2M	AM420	139	0.15	0.18
		125-175	HPM	● HPM2M	AM420	134	0.15	0.17
		175-225	HPM	● HPM2M	AM420	130	0.13	0.15
		225-275	HPS	▲ HPS2M	AM420	125	0.11	0.15
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125-175	HPM	● HPM2M	AM420	134	0.14	0.15
		175-225	HPM	● HPM2M	AM420	131	0.13	0.14
		225-275	HPS	▲ HPS2M	AM420	122	0.11	0.13
		275-325	HPS	▲ HPS2M	AM420	114	0.10	0.13
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPM	● HPM2M	AM420	123	0.14	0.15
		175-225	HPM	● HPM2M	AM420	116	0.13	0.14
		225-275	HPS	▲ HPS2M	AM420	111	0.10	0.13
		275-325	HPS	▲ HPS2M	AM420	104	0.10	0.13
		325-375	HP106	—	AM420	99	0.09	0.11
	High-Strength Alloy 4340, 4330V, 300M, etc.	225-300	HPS	▲ HPS2M	AM420	104	0.10	0.13
		300-350	HPS	▲ HPS2M	AM420	98	0.10	0.13
		350-400	HP106	—	AM420	76	0.09	0.10
	Structural Steel A36, A285, A516, etc.	100-150	HPS	▲ HPS2M	AM420	137	0.14	0.17
		150-250	HPS	▲ HPS2M	AM420	130	0.11	0.14
		250-350	HPS	▲ HPS2M	AM420	119	0.10	0.13
	Tool Steel H-13, H-21, A-4, S-3, etc.	150-200	HPM	● HPM2M	AM420	82	0.11	0.11
		200-250	HPS	▲ HPS2M	AM420	76	0.10	0.10
M	Stainless Steel 400 Series 416, 420, etc.	185-275	HPS	▲ HPS2M	AM460	76	0.10	0.11
		275-350	HPS	▲ HPS2M	AM460	59	0.09	0.10
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	▲ HPS2M	AM460	61	0.09	0.10
		185-275	HPS	▲ HPS2M	AM460	53	0.08	0.09
	Super Duplex Stainless Steel	135-185	HPS	▲ HPS2M	AM460	46	0.09	0.10
		185-275	HPS	▲ HPS2M	AM460	41	0.08	0.09

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

***Special Geometry**

- Use HPM2M for greater drill depths over 8xD. HPM2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPM.
- ▲ Use HPS2M for greater drill depths over 8xD. HPS2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPS.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X10: 18 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

**Recommended Drilling Data | Metric (mm)****SUPERION SOLID CARBIDE**

Feed Rate (mm/rev) by Diameter								
5.00 - 6.00	6.00 - 7.00	7.00 - 8.00	8.00 - 10.00	10.00 - 12.00	12.00 - 14.00	14.00 - 16.00	16.00 - 18.00	18.00 - 20.00
0.20	0.23	0.25	0.30	0.33	0.38	0.43	0.46	0.51
0.19	0.22	0.24	0.28	0.30	0.36	0.41	0.43	0.48
0.18	0.20	0.23	0.25	0.28	0.33	0.38	0.41	0.46
0.20	0.23	0.25	0.30	0.34	0.37	0.42	0.44	0.50
0.19	0.22	0.24	0.29	0.33	0.36	0.41	0.43	0.48
0.18	0.20	0.23	0.28	0.32	0.34	0.38	0.41	0.46
0.18	0.20	0.23	0.25	0.30	0.33	0.38	0.41	0.46
0.18	0.19	0.23	0.28	0.30	0.33	0.37	0.41	0.44
0.15	0.18	0.22	0.27	0.29	0.32	0.36	0.39	0.43
0.15	0.18	0.22	0.27	0.28	0.32	0.34	0.37	0.42
0.14	0.17	0.20	0.25	0.28	0.30	0.33	0.36	0.41
0.17	0.19	0.22	0.27	0.29	0.33	0.37	0.41	0.43
0.15	0.18	0.20	0.25	0.28	0.32	0.36	0.39	0.42
0.15	0.17	0.20	0.24	0.27	0.30	0.34	0.37	0.39
0.14	0.15	0.19	0.23	0.25	0.29	0.33	0.36	0.38
0.13	0.14	0.18	0.23	0.25	0.28	0.32	0.34	0.37
0.15	0.17	0.20	0.24	0.27	0.30	0.34	0.37	0.39
0.14	0.15	0.19	0.23	0.25	0.29	0.33	0.36	0.38
0.11	0.14	0.17	0.20	0.22	0.25	0.28	0.30	0.33
0.18	0.20	0.24	0.30	0.33	0.36	0.39	0.41	0.47
0.15	0.18	0.20	0.27	0.30	0.30	0.34	0.36	0.41
0.14	0.17	0.19	0.24	0.27	0.29	0.32	0.34	0.38
0.13	0.15	0.18	0.24	0.25	0.28	0.32	0.33	0.38
0.11	0.14	0.17	0.22	0.23	0.25	0.29	0.30	0.36
0.14	0.17	0.19	0.23	0.24	0.25	0.28	0.28	0.30
0.11	0.14	0.17	0.20	0.22	0.24	0.25	0.25	0.28
0.11	0.13	0.15	0.18	0.19	0.20	0.23	0.24	0.27
0.10	0.10	0.13	0.15	0.17	0.18	0.20	0.20	0.23
0.11	0.13	0.15	0.18	0.18	0.19	0.19	0.20	0.22
0.10	0.10	0.11	0.14	0.14	0.17	0.17	0.18	0.18

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

X10



Recommended Drilling Data | Metric (mm)

SUPERION SOLID CARBIDE

X10

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (m/min)	Feed Rate (mm/rev) by Diameter	
							3.00 - 4.00	4.00 - 5.00
K	SG / Nodular Cast Iron	120-150	HPS2M	◆ CIB	AM440	152	0.20	0.22
		150-200	HPS2M	◆ CIB	AM440	148	0.18	0.19
		200-220	HPS2M	◆ CIB	AM440	143	0.15	0.18
		220-260	HPS2M	◆ CIB	AM440	139	0.15	0.18
		260-320	HPS2M	◆ CIB	AM440	127	0.13	0.17
	Grey / White Iron	120-150	HPS2M	◆ CIB	AM440	166	0.23	0.24
		150-200	HPS2M	◆ CIB	AM440	162	0.20	0.22
		200-220	HPS2M	◆ CIB	AM440	157	0.18	0.20
		220-260	HPS2M	◆ CIB	AM440	145	0.18	0.20
		260-320	HPS2M	◆ CIB	AM440	137	0.15	0.19
N	Cast Aluminum	30	HPF	○ CAB	TiCN	290	0.19	0.22
		180	HPF	○ CAB	TiCN	230	0.17	0.19
	Wrought Aluminum	30	HPF	△ WAB	TiCN	335	0.19	0.22
		180	HPF	△ WAB	TiCN	290	0.17	0.19
	Aluminum Bronze	100-200	HPM	—	TiCN	113	0.10	0.13
		200-250	HPM	—	TiCN	95	0.09	0.11
S	Brass	100	BCB	—	TiN	229	0.13	0.15
	Copper	60	BCB	—	TiN	155	0.05	0.06
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140-220	HPS	—	AM460	34	0.08	0.08
		220-310	HPS	—	AM460	30	0.05	0.05
	Titanium Alloy	140-220	HPS	—	AM460	46	0.06	0.08
		220-310	HPS	—	AM460	37	0.05	0.06
H	Aerospace Alloy S82	185-275	HPS	—	AM460	49	0.08	0.08
		275-350	HPS	—	AM460	40	0.05	0.05
	Wear Plate Hardox®, AR400, T-1, etc.	400	HP106	—	AM420	52	0.05	0.05
		500	HP106	—	AM420	43	0.05	0.05
		600	HP106	—	AM420	30	0.05	0.05
	Hardened Steel	300-400	HP106	—	AM420	52	0.05	0.05
		400-500	HP106	—	AM420	43	0.05	0.05

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

◆ CIB (Cast Iron Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

○ CAB (Cast Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

△ WAB (Wrought Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

**Recommended Drilling Data | Metric (mm)****SUPERION SOLID CARBIDE**

Feed Rate (mm/rev) by Diameter								
5.00 - 6.00	6.00 - 7.00	7.00 - 8.00	8.00 - 10.00	10.00 - 12.00	12.00 - 14.00	14.00 - 16.00	16.00 - 18.00	18.00 - 20.00
0.23	0.28	0.30	0.36	0.39	0.43	0.47	0.52	0.56
0.22	0.25	0.29	0.33	0.36	0.39	0.42	0.47	0.53
0.20	0.23	0.28	0.30	0.33	0.36	0.38	0.43	0.47
0.20	0.23	0.28	0.30	0.33	0.36	0.38	0.43	0.47
0.19	0.22	0.25	0.29	0.32	0.34	0.37	0.39	0.43
0.25	0.30	0.33	0.39	0.42	0.47	0.51	0.56	0.61
0.24	0.28	0.32	0.37	0.39	0.42	0.44	0.50	0.56
0.23	0.25	0.30	0.33	0.36	0.38	0.41	0.46	0.51
0.23	0.25	0.30	0.33	0.36	0.38	0.41	0.46	0.51
0.22	0.24	0.29	0.32	0.34	0.37	0.39	0.42	0.48
0.23	0.25	0.32	0.37	0.41	0.46	0.50	0.51	0.56
0.22	0.23	0.29	0.34	0.39	0.43	0.47	0.48	0.53
0.24	0.28	0.32	0.37	0.43	0.47	0.51	0.53	0.58
0.22	0.25	0.29	0.34	0.39	0.44	0.48	0.51	0.56
0.15	0.18	0.20	0.23	0.25	0.30	0.33	0.36	0.38
0.13	0.15	0.17	0.18	0.20	0.25	0.28	0.30	0.36
0.18	0.23	0.25	0.29	0.32	0.36	0.41	0.43	0.46
0.08	0.08	0.08	0.10	0.10	0.10	0.13	0.15	0.18
0.09	0.10	0.11	0.14	0.15	0.17	0.18	0.19	0.22
0.08	0.09	0.09	0.11	0.13	0.15	0.17	0.17	0.19
0.09	0.10	0.11	0.15	0.15	0.18	0.19	0.20	0.23
0.08	0.09	0.10	0.13	0.14	0.15	0.18	0.18	0.20
0.09	0.10	0.10	0.11	0.14	0.15	0.17	0.18	0.20
0.08	0.09	0.09	0.10	0.11	0.14	0.15	0.15	0.18
0.05	0.08	0.08	0.10	0.13	0.14	0.18	0.20	0.23
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20
0.05	0.08	0.08	0.10	0.13	0.14	0.18	0.20	0.23
0.05	0.08	0.08	0.10	0.10	0.11	0.15	0.18	0.20

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

X10



Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

X10

ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (SFM)	Feed Rate (IPR) by Diameter	
							0.118 - 0.157	0.157 - 0.197
P	Free-Machining Steel 1118, 1215, 12L14, etc.	100 - 150	HPM	● HPM2M	AM420	500	0.0060	0.0070
		150 - 200	HPM	● HPM2M	AM420	475	0.0050	0.0065
		200 - 250	HPS	▲ HPS2M	AM420	450	0.0040	0.0060
	Low-Carbon Steel 1010, 1020, 1025, 1522, 1144, etc.	85 - 125	HPM	● HPM2M	AM420	455	0.0060	0.0070
		125 - 175	HPM	● HPM2M	AM420	440	0.0060	0.0065
		175 - 225	HPM	● HPM2M	AM420	425	0.0050	0.0060
		225 - 275	HPS	▲ HPS2M	AM420	410	0.0045	0.0060
	Medium-Carbon Steel 1030, 1040, 1050, 1527, 1140, 1151, etc.	125 - 175	HPM	● HPM2M	AM420	440	0.0055	0.0060
		175 - 225	HPM	● HPM2M	AM420	430	0.0050	0.0055
		225 - 275	HPS	▲ HPS2M	AM420	400	0.0045	0.0050
		275 - 325	HPS	▲ HPS2M	AM420	375	0.0040	0.0050
	Alloy Steel 4140, 5140, 8640, etc.	125-175	HPM	● HPM2M	AM420	405	0.0055	0.0060
		175-225	HPM	● HPM2M	AM420	380	0.0050	0.0055
		225-275	HPS	▲ HPS2M	AM420	365	0.0040	0.0050
		275-325	HPS	▲ HPS2M	AM420	340	0.0040	0.0050
		325-375	HP106	—	AM420	325	0.0035	0.0045
	High-Strength Alloy 4340, 4330V, 300M, etc.	225 - 300	HPS	▲ HPS2M	AM420	340	0.0040	0.0050
		300 - 350	HPS	▲ HPS2M	AM420	320	0.0040	0.0050
		350 - 400	HP106	—	AM420	250	0.0035	0.0040
	Structural Steel A36, A285, A516, etc.	100 - 150	HPS	▲ HPS2M	AM420	450	0.0055	0.0065
		150 - 250	HPS	▲ HPS2M	AM420	425	0.0045	0.0055
		250 - 350	HPS	▲ HPS2M	AM420	390	0.0040	0.0050
	Tool Steel H-13, H-21, A-4, S-3, etc.	150 - 200	HPM	● HPM2M	AM420	270	0.0045	0.0045
		200 - 250	HPS	▲ HPS2M	AM420	250	0.0040	0.0040
M	Stainless Steel 400 Series 416, 420, etc.	185-275	HPS	▲ HPS2M	AM460	250	0.0040	0.0045
		275-350	HPS	▲ HPS2M	AM460	195	0.0035	0.0040
	Stainless Steel 300 Series 304, 316, 17-4PH, etc.	135-185	HPS	▲ HPS2M	AM460	200	0.0035	0.0040
		185-275	HPS	▲ HPS2M	AM460	175	0.0030	0.0035
	Super Duplex Stainless Steel	135-185	HPS	▲ HPS2M	AM460	150	0.0035	0.0040
		185-275	HPS	▲ HPS2M	AM460	135	0.0030	0.0035

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

***Special Geometry**

- Use HPM2M for greater drill depths over 8xD. HPM2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPM.
- ▲ Use HPS2M for greater drill depths over 8xD. HPS2M is used for any interruptions and produces a better hole tolerance and finish in comparison to HPS.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
9xD	0.80 reduction for speed and feed adjustment
12xD	0.70 reduction for speed and feed adjustment
15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

Feed Rate (IPR) by Diameter								
0.197 - 0.236	0.236 - 0.276	0.276 - 0.315	0.315 - 0.394	0.394 - 0.472	0.472 - 0.551	0.551 - 0.630	0.630 - 0.709	0.709 - 0.787
0.0080	0.0090	0.0100	0.0120	0.0130	0.0150	0.0170	0.0180	0.0200
0.0075	0.0085	0.0095	0.0110	0.0120	0.0140	0.0160	0.0170	0.0190
0.0070	0.0080	0.0090	0.0100	0.0110	0.0130	0.0150	0.0160	0.0180
0.0080	0.0090	0.0100	0.0120	0.0135	0.0145	0.0165	0.0175	0.0195
0.0075	0.0085	0.0095	0.0115	0.0130	0.0140	0.0160	0.0170	0.0190
0.0070	0.0080	0.0090	0.0110	0.0125	0.0135	0.0150	0.0160	0.0180
0.0070	0.0080	0.0090	0.0100	0.0120	0.0130	0.0150	0.0160	0.0180
0.0070	0.0075	0.0090	0.0110	0.0120	0.0130	0.0145	0.0160	0.0175
0.0060	0.0070	0.0085	0.0105	0.0115	0.0125	0.0140	0.0155	0.0170
0.0060	0.0070	0.0085	0.0105	0.0110	0.0125	0.0135	0.0145	0.0165
0.0055	0.0065	0.0080	0.0100	0.0110	0.0120	0.0130	0.0140	0.0160
0.0065	0.0075	0.0085	0.0105	0.0115	0.0130	0.0145	0.0160	0.0170
0.0060	0.0070	0.0080	0.0100	0.0110	0.0125	0.0140	0.0155	0.0165
0.0060	0.0065	0.0080	0.0095	0.0105	0.0120	0.0135	0.0145	0.0155
0.0055	0.0060	0.0075	0.0090	0.0100	0.0115	0.0130	0.0140	0.0150
0.0050	0.0055	0.0070	0.0090	0.0100	0.0110	0.0125	0.0135	0.0145
0.0060	0.0065	0.0080	0.0095	0.0105	0.0120	0.0135	0.0145	0.0155
0.0055	0.0060	0.0075	0.0090	0.0100	0.0115	0.0130	0.0140	0.0150
0.0045	0.0055	0.0065	0.0080	0.0085	0.0100	0.0110	0.0120	0.0130
0.0070	0.0080	0.0095	0.0120	0.0130	0.0140	0.0155	0.0160	0.0185
0.0060	0.0070	0.0080	0.0110	0.0120	0.0120	0.0135	0.0140	0.0160
0.0055	0.0065	0.0075	0.0095	0.0105	0.0115	0.0125	0.0135	0.0150
0.0050	0.0060	0.0070	0.0095	0.0100	0.0110	0.0125	0.0130	0.0150
0.0045	0.0055	0.0065	0.0085	0.0090	0.0100	0.0115	0.0120	0.0140
0.0055	0.0065	0.0075	0.0090	0.0095	0.0100	0.0110	0.0110	0.0120
0.0045	0.0055	0.0065	0.0080	0.0085	0.0095	0.0100	0.0100	0.0110
0.0045	0.0050	0.0060	0.0070	0.0075	0.0080	0.0090	0.0095	0.0105
0.0040	0.0040	0.0050	0.0060	0.0065	0.0070	0.0080	0.0080	0.0090
0.0045	0.0050	0.0060	0.0070	0.0070	0.0075	0.0075	0.0080	0.0085
0.0040	0.0040	0.0045	0.0055	0.0055	0.0065	0.0065	0.0070	0.0070

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

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Recommended Drilling Data | Imperial (in)

SUPERION SOLID CARBIDE

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ISO	Material	Hardness (BHN)	General Application Geometry	Special Geometry*	Coating	Speed (SFM)	Feed Rate (IPR) by Diameter	
							0.118 - 0.157	0.157 - 0.197
K	SG / Nodular Cast Iron	120-150	HPS2M	◆ CIB	AM440	500	0.0080	0.0085
		150-200	HPS2M	◆ CIB	AM440	485	0.0070	0.0075
		200-220	HPS2M	◆ CIB	AM440	470	0.0060	0.0070
		220-260	HPS2M	◆ CIB	AM440	455	0.0060	0.0070
		260-320	HPS2M	◆ CIB	AM440	415	0.0050	0.0065
	Grey / White Iron	120-150	HPS2M	◆ CIB	AM440	545	0.0090	0.0095
		150-200	HPS2M	◆ CIB	AM440	530	0.0080	0.0085
		200-220	HPS2M	◆ CIB	AM440	515	0.0070	0.0080
		220-260	HPS2M	◆ CIB	AM440	475	0.0070	0.0080
		260-320	HPS2M	◆ CIB	AM440	450	0.0060	0.0075
N	Cast Aluminum	30	HPF	○ CAB	TiCN	950	0.0075	0.0085
		180	HPF	○ CAB	TiCN	755	0.0065	0.0075
	Wrought Aluminum	30	HPF	△ WAB	TiCN	1100	0.0075	0.0085
		180	HPF	△ WAB	TiCN	950	0.0065	0.0075
	Aluminum Bronze	100-200	HPM	—	TiCN	370	0.0040	0.0050
		200-250	HPM	—	TiCN	310	0.0035	0.0045
S	Brass	100	BCB	—	TiN	750	0.0050	0.0060
	Copper	60	BCB	—	TiN	510	0.0020	0.0025
	High-Temp Alloy Hastelloy® B, Inconel® 600, etc.	140-220	HPS	—	AM460	110	0.0030	0.0030
		220-310	HPS	—	AM460	100	0.0020	0.0020
	Titanium Alloy	140-220	HPS	—	AM460	150	0.0025	0.0030
		220-310	HPS	—	AM460	120	0.0020	0.0025
H	Aerospace Alloy S82	185-275	HPS	—	AM460	160	0.0030	0.0030
		275-350	HPS	—	AM460	130	0.0020	0.0020
	Wear Plate Hardox®, AR400, T-1, etc.	400	HP106	—	AM420	170	0.0020	0.0020
		500	HP106	—	AM420	140	0.0020	0.0020
		600	HP106	—	AM420	100	0.0020	0.0020
	Hardened Steel	300-400	HP106	—	AM420	170	0.0020	0.0020
		400-500	HP106	—	AM420	140	0.0020	0.0020

NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

*Special Geometry

◆ CIB (Cast Iron Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

○ CAB (Cast Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

△ WAB (Wrought Aluminum Burnish): Unique point, web, and cutting edge designed to significantly improve hole finish and tolerance.

NOTE: Reduce speed and feed parameters above from 40% - 50% reduction.

Parameter Reductions for Length to Diameter Relationships

6xD	0.90 reduction for speed and feed adjustment
▲ 9xD	0.80 reduction for speed and feed adjustment
▲ 12xD	0.70 reduction for speed and feed adjustment
▲ 15xD - 20xD	0.60 reduction for speed and feed adjustment

Flood Coolant Applications

Recommend if diameter to depth is less than or equal to three times the diameter. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

Parameter Recommendations for Step Drills

- Feed rate is based off the pilot diameter.
- Speed rate is based off the largest step diameter.

IMPORTANT: The speeds and feeds listed above are a general starting point for all applications. Refer to the Coolant Recommendation charts for coolant requirements to run at the recommended speeds and feeds. Factory technical assistance is also available through our Application Engineering team.

▲ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page **X10: 18** for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

**Recommended Drilling Data | Imperial (in)****SUPERION SOLID CARBIDE**

Feed Rate (IPR) by Diameter								
0.197 - 0.236	0.236 - 0.276	0.276 - 0.315	0.315 - 0.394	0.394 - 0.472	0.472 - 0.551	0.551 - 0.630	0.630 - 0.709	0.709 - 0.787
0.0090	0.0110	0.0120	0.0140	0.0155	0.0170	0.0190	0.0205	0.0220
0.0085	0.0100	0.0115	0.0130	0.0140	0.0155	0.0165	0.0185	0.0210
0.0080	0.0090	0.0110	0.0120	0.0130	0.0140	0.0150	0.0170	0.0190
0.0080	0.0090	0.0110	0.0120	0.0130	0.0140	0.0150	0.0170	0.0190
0.0075	0.0085	0.0100	0.0115	0.0125	0.0135	0.0145	0.0155	0.0170
0.0100	0.0120	0.0130	0.0155	0.0165	0.0185	0.0200	0.0220	0.0240
0.0095	0.0110	0.0125	0.0145	0.0155	0.0165	0.0175	0.0195	0.0220
0.0090	0.0100	0.0120	0.0130	0.0140	0.0150	0.0160	0.0180	0.0200
0.0090	0.0100	0.0120	0.0130	0.0140	0.0150	0.0160	0.0180	0.0200
0.0085	0.0095	0.0115	0.0125	0.0135	0.0145	0.0155	0.0165	0.0190
0.0090	0.0100	0.0125	0.0145	0.0160	0.0180	0.0195	0.0200	0.0220
0.0085	0.0090	0.0115	0.0135	0.0155	0.0170	0.0185	0.0190	0.0210
0.0095	0.0110	0.0125	0.0145	0.0170	0.0185	0.0200	0.0210	0.0230
0.0085	0.0100	0.0115	0.0135	0.0155	0.0175	0.0190	0.0200	0.0220
0.0060	0.0070	0.0080	0.0090	0.0100	0.0120	0.0130	0.0140	0.0150
0.0050	0.0060	0.0065	0.0070	0.0080	0.0100	0.0110	0.0120	0.0140
0.0070	0.0090	0.0100	0.0115	0.0125	0.0140	0.0160	0.0170	0.0180
0.0030	0.0030	0.0030	0.0040	0.0040	0.0040	0.0050	0.0060	0.0070
0.0035	0.0040	0.0045	0.0055	0.0060	0.0065	0.0070	0.0075	0.0085
0.0030	0.0035	0.0035	0.0045	0.0050	0.0060	0.0065	0.0065	0.0075
0.0035	0.0040	0.0045	0.0060	0.0060	0.0070	0.0075	0.0080	0.0090
0.0030	0.0035	0.0040	0.0050	0.0055	0.0060	0.0070	0.0070	0.0080
0.0035	0.0040	0.0040	0.0045	0.0055	0.0060	0.0065	0.0070	0.0080
0.0030	0.0035	0.0035	0.0040	0.0045	0.0055	0.0060	0.0060	0.0070
0.0020	0.0030	0.0030	0.0040	0.0050	0.0055	0.0070	0.0080	0.0090
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080
0.0020	0.0030	0.0030	0.0040	0.0050	0.0055	0.0070	0.0080	0.0090
0.0020	0.0030	0.0030	0.0040	0.0040	0.0045	0.0060	0.0070	0.0080

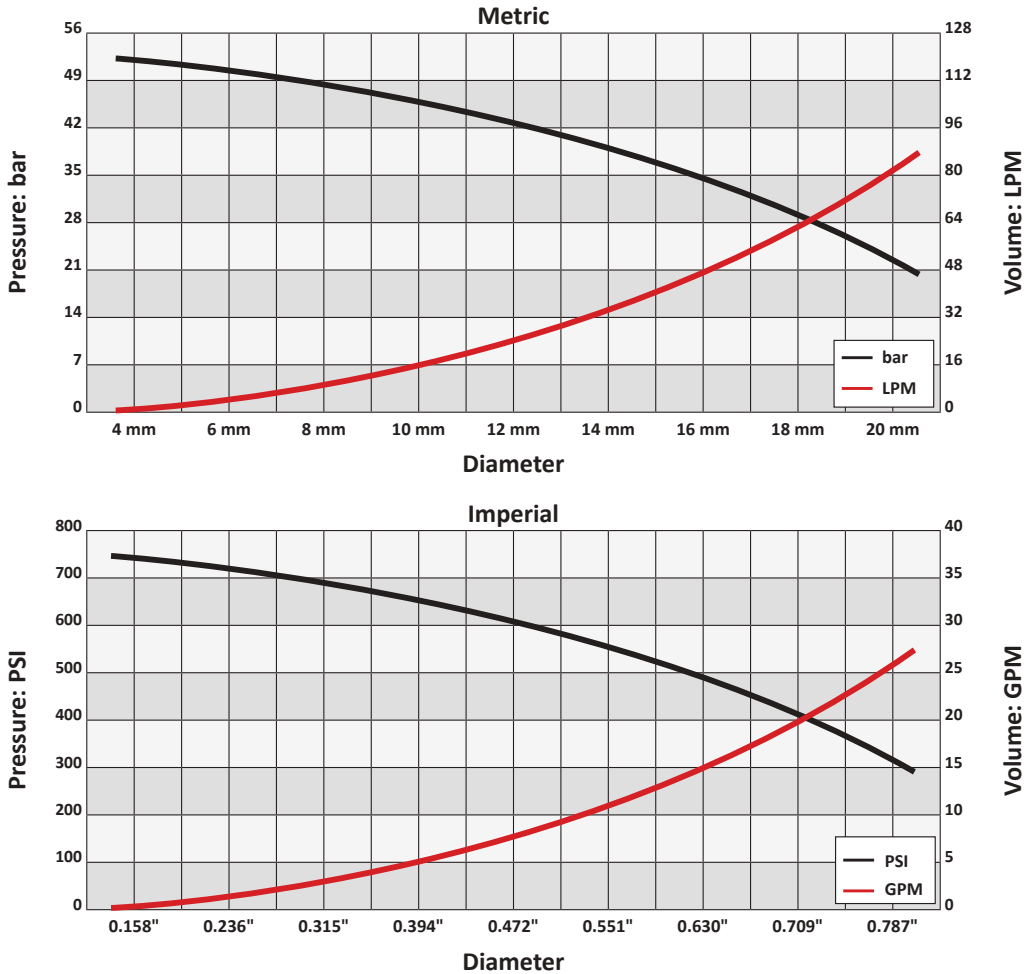
NOTE: The speeds and feeds listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

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Coolant Recommendations

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NOTE: The coolant recommendations listed above are for solid carbide tooling only. These are not recommendations for any polycrystalline diamond tools.

Coolant Adjustment

Drill Length	Pressure and Flow Multiplier
Up to 6xD	See above chart
>6 - 9xD	1.2
>9 - 12xD	1.4
>12 - 15xD	1.6
>15 - 20xD	2

Coolant Recommendation Example | Metric

If the recommended coolant pressure and flow is 42 bar and 32 LPM for a 3xD tool, the adjusted pressure and flow for a 9xD tool would be:

$$42 \times 1.2 = 50.4 \text{ bar}$$

$$32 \times 1.2 = 38.4 \text{ LPM}$$

Coolant Recommendation Example | Imperial

If the recommended coolant pressure and flow is 600 PSI and 12 GPM for a 3xD tool, the adjusted pressure and flow for a 9xD tool would be:

$$600 \times 1.2 = 720 \text{ PSI}$$

$$12 \times 1.2 = 14.4 \text{ GPM}$$

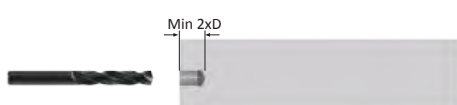
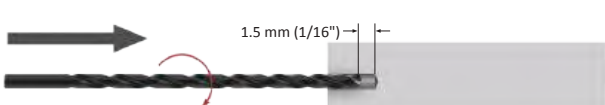
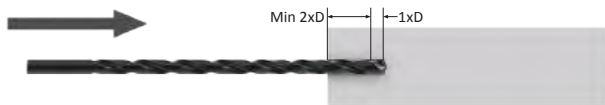
NOTES:

- Coolant must have proper additives to prevent excessive foaming during drilling cycle.
- Positive displacement coolant pump is recommended to maintain coolant flow at recommended values.
- The coolant filter must be less than 5µm. Fine filtration is necessary to prevent blockage of the smaller coolant holes.

WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X10: 18 for Deep Hole Drilling Guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

Deep Hole Drilling Guidelines

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1. Pilot Hole 100% RPM 100% mm/rev (IPR)	<p>Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.</p>  <p>Coolant ON</p> 
2. Feed-in  50 RPM max 300 mm/min (12 IPM)	<p>Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.</p>  <p>Coolant OFF</p> 
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	<p>Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.</p>  <p>Coolant ON</p> 
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	<p>Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.</p>  <p>Coolant ON</p> 
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	<p>For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.</p>  <p>Coolant ON</p> 
6. Drill Retract  50 RPM max	<p>Reduce speed to a maximum of 50 RPM before retracting from the hole.</p>  <p>Coolant OFF</p> 

⚠ WARNING Tool failure can cause serious injury. To prevent:

- When using drills greater than 9xD without support bushing, use a short Superion drill to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate drills more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

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Problem	Condition	Shorten Flute Length	Increase		Decrease		Increase		Use Through Tool Coolant ^B	Change Point Angle	Align / Repair Spindle
			Feed Rate ^A	Speed ^G	Feed Rate ^A	Speed ^G	Coolant Pressure	Coolant Flow			
Decrease Tool Life	Lack of drill rigidity	○									
	Improper cutting parameters		●		●	●					
	Excessive margin wear					●	○	○	○		●
	Cutting edge chipping				●						●
	Chattering/vibration	○	●			○					●
	Built-up edge ^D					●	○	○	●		
	Chipping of point				●	●				○	●
Poor Chip Evacuation ^C	Long chips		●			●	○	○			
	Chip packing				●	●	●	○	●		
	Blue chips				●	●	●	●	●		
Hole Form	Workpiece deflection				●					○	
	Bell mouth	○	●			●				○	
	Oversized hole	○		●	●						●
	Undersized hole		●			●	●	●			
	Hole leadoff	○			●	○				○	●
Performance	Workpiece burning				●	●	●	●	●		
	Tool deflection	○			●	●				○	●
	Harder materials				●	●			●		
	Retract spiral	●			●	●					●
	Exit burr			●	●					○	

●: Primary solution

○: Secondary solution

A: Do not reduce feed rates below threshold of good chip form.**B:** Run coolant through tool when drilling greater than 3xD.**C:** Add peck cycle to help clear chips.**D:** Ensure coolant quality with regular maintenance free of swarf.**G:** Refer to speed and feed chart.

IMPORTANT: Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Troubleshooting Guide

Problem	Condition	Different Coating	Different Geom.	Tool Clamping	Work-piece Fixturing	Regrind/Recond.	Check Tool Diameter ^E	Entry Speed & Feed ^F	TIR Verification	Exit Speed & Feed
Decrease Tool Life	Lack of drill rigidity			●	●					
	Improper cutting parameters									
	Excessive margin wear	○		●	●	○				
	Cutting edge chipping		○	●	●	○				
	Chattering/vibration			●	●					
	Built-up edge ^D	○	○							
	Chipping of point		○	●	●	○				
Poor Chip Evacuation ^C	Long chips		○							
	Chip packing		○							
	Blue chips									
Hole Form	Workpiece deflection		○		●					
	Bell mouth			●	●			●		
	Oversized hole			●	●	○			●	
	Undersized hole					●	●		●	
	Hole leadoff		○	●	●	○		●	●	
Performance	Workpiece burning									
	Tool deflection		○	●	●			●	○	
	Harder materials	○	○							
	Retract spiral		○	●					●	●
	Exit burr		○							

●: Primary solution

○: Secondary solution

C: Add peck cycle to help clear chips.**D:** Ensure coolant quality with regular maintenance free of swarf.**E:** Reduce entry speed and feed parameters 20%.**F:** TIR range of 0.000"-0.001" (prefer 0.0000"-0.0005").**Speed and Feed Reduction Table****Interruptions:**

Condition	Reduction Speed	Reduction Feed
Small Cross Hole (C.H)	0.90	0.85
Large Cross Hole(C.H)	0.75	0.70
Incline Angle Entry(I.A)	0.80	0.75
I.A + C.H	0.70	0.65

Coolant Type:

Condition	Reduction Speed	Reduction Feed
Flood**	See Note	See Note
Dry	0.50	0.50
Mist	0.70	0.85

Machine:

Machine Type	Reduction Speed	Reduction Feed
Lathe	0.90	0.85

Depth Ratio:

Condition	Reduction Speed	Reduction Feed
6xD	0.90	0.90
9xD	0.80	0.80
12xD	0.70	0.70
15-20xD	0.60	0.60

Example:

Recommended speed and feed is 365 SFM and 0.010 IPR for a 0.276" - 0.315" diameter drill at 12xD.

$$365 \text{ SFM} \times 0.70 = 255 \text{ SFM} \quad | \quad 0.010 \text{ IPR} \times 0.70 = 0.007 \text{ IPR}$$

**Flood coolant applications: Recommend if diameter to depth is less than or equal to 3xD. Reduce speed by 20%, and if needed, drop feed by 10% to maintain optimal chip formation.

IMPORTANT: Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Please email the completed form to:

your local FSE (if applicable) or appeng@alliedmachine.com.

Please include any prints for the part (specify the feature) and/or tool for this project. More information will help ensure proper tooling for this quote.

LOGIN TO DOWNLOAD AND
COMPLETE THIS FORM OFFLINE:

alliedmachine.com/SuperionQuoteForm

Name

FSE (if applicable)

Please fill in the fields below completely for a quote to be processed.

Distributor Information

Company Name:

Contact:

Account Number:

Phone:

Email:

End User Information

Company Name:

Contact:

Industry:

Phone:

Email:

Superion Objective What issue(s) are we solving? (i.e. penetration rate, finish, tool life, hole size, etc.)

Application Information

Hole Diameter:

in/mm

Tolerance:

Material:

(4150/A36/Cast Iron/etc.)

Pre-existing Diameter:

in/mm

Depth of Cut:

in/mm

Hardness:

(BHN/Rc)

Required Finish:

RMS

State:

(Casting/Hot rolled/Forging)

Machine Information

Machine Type:

(Lathe/Screw machine/Machine center/etc.)

Builder:

(Haas, Mori Seiki, etc.)

Model #:

Shank Required:

(Cylindrical/Whistle Notch/Tang/etc.)

Power:

HP/KW

Rigidity:

Orientation:

Tool Rotating:

Thrust:

lbs/N

☐ Excellent

☐ Vertical

☐ Yes

☐ Good

☐ Horizontal

☐ No

Max Spindle Speed:

RPM

☐ Poor

Current Process Is this a new project? Yes___ No___ (If selected no, please fill the box out below)

Current Tooling:

(Manufacturer/Item Number)

Current Tool Life:

Holes

Parts

Inches

Current Speeds and Feeds:

Current Coating/Substrate:

Notes:

[illegible]

X10

SECTION

X20-ESP

Special Tooling Solutions

Special Tooling Solutions



Specialty is Our Specialty

When it comes to designing and developing special solutions for customers, Allied Machine is the top choice. Our engineers see applications in ways many others don't, and that ability allows us to win situations that haven't been won before.

If you have a particularly unique or difficult application, give us a call. Most of our tooling can be tweaked as specials, and we can create entirely new concepts if alterations to standard product won't do the trick.

After all, everyone deserves some special attention.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	



Special Tooling Solutions

Options

Special Tooling is Our Specialty

We know standard tooling can't be the answer for everyone, and that's why we specialize in developing unique tooling to fit your needs.

Many of our products can be altered as specials. In fact, many of our standard items are results of frequently requested special features. Many times, one special design can end up solving problems for multiple customers across a variety of industries. Our specials capabilities truly set us apart from our competition.

Our Application Engineering team and Field Sales Engineers are trained and highly skilled to develop unique solutions that you won't find anywhere else. If you need special tooling, give us a call. Let us be the ones to tell you it can't be done. But don't expect us to.



X20



Insta-Quote®

Insta-Quote is an online custom tool designer. The program is available 24/7 and guides you through the steps as you create a special tool designed to meet the requirements of your application.

Products Available:

- T-A® Inserts.
- T-A® Holders.
- GEN3SYS® XT Holders.
- ALVAN® Reamers.



See pages X20: 5 - 12.



Engineered Specials

When the requirements of your application fall outside the limitations of Insta-Quote, your special tooling becomes an Engineered Special. These are tool designs that our engineers create and develop specifically for you.

Reasons to Call:

- Many standard products can be specially engineered.
- Allied Machine specials can save you time and increase tool life.
- Our engineers have the skills and knowledge to create designs that meet the challenge.



See pages X20: 13 - 22.



Special Tooling Solutions

Industry Solutions

Every Industry Needs Some Special Attention

Many specific industry applications can be tricky, and processes can change drastically from one sector to the next. Allied's Field Sales Engineers and Application Engineers work together to develop breakthrough solutions that help customers master processes that before seemed impossible to improve.

You know your parts. You know your materials. You know what works and what doesn't. All you need to do is let us know what you're dealing with, and we'll take it from there. Whether you're machining the wings of an airplane or the engine block in a new car, we'll develop the right design to solve the problem you're facing.

For more industry examples, see Allied Machine's case studies at www.alliedmachine.com/RealLifeResults.



X20



Automotive
Engine Block



Aerospace
Central Fuselage Wing Box



Heavy Machinery
Track Links



Oil and Gas
Heat Exchanger

COMPLEX SOLUTIONS



INNOVATIVE SOLUTIONS



LONG SOLUTIONS



EVERY PROBLEM
HAS A
SOLUTION



Insta-Quote

Design Your Custom Tooling



Design your custom tooling and receive a drawing and quote...all within *minutes*.

iq.alliedmachine.com

X20



Design Your Own Solutions

Insta-Quote is an online program that allows you to design and quote your own tooling in a matter of minutes. After you log in, Insta-Quote will guide you through the steps to gather all the necessary information and generate the solution you need. Within the system, you can choose from the following tools to design:

- T-A® Inserts.
- T-A® Holders.
- GEN3SYS® XT Holders.

Along with designing these products as specials, Insta-Quote can also help you create your item number for ALVAN® reamers. Because reamer item numbers do not follow the same method as Allied Machine's standard products, you must build your reamer item numbers. Insta-Quote can do that for you.

- Replaceable Head Style.
- Monobloc Style.
- Cutting Ring Style.



Design anytime from anywhere.

Available online 24/7.

Insta-Quote

User Guide



Where Do I Find Insta-Quote?

There are two ways to get to the Insta-Quote program. You can visit the Allied Machine homepage (www.alliedmachine.com) and find it under the Online Tools section of the upper navigation.

Or you can simply go to iq.alliedmachine.com to access Insta-Quote directly.



OR iq.alliedmachine.com

X20



1

Log In

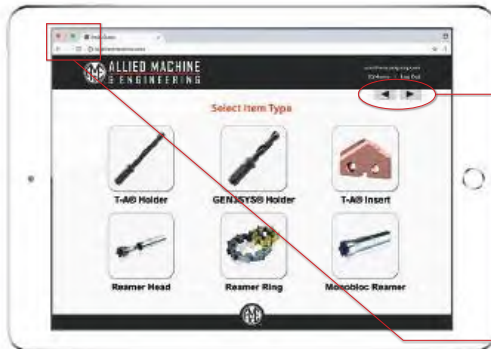
Fill in "User Name" and "Password" and click the login button. If you do not have a login, just click the "Registration Form" option beneath the login button and submit your registration.



2

Select Activity

On this screen, you can choose to create a new tool, edit a previous tool, update your quote, or copy a previous item.



3

Select Tool Type

Choose the type of special tool you would like to create. The options include T-A® inserts, T-A® holders, GEN3SYS® holders, replaceable head reamers, monobloc reamers, and cutting ring reamers.



IMPORTANT:

The right and left arrows will navigate you through each step. **DO NOT** use the web browser's back and forward buttons; doing so may result in loss of progress.



Do not use the web browser's back and forward arrows



Insta-Quote

User Guide

What Is My Item Number?

As soon as you select the type of product you want to design, Insta-Quote automatically generates the item number for your tool. The item number will appear at the top left-hand side of your screen.

170209-547

Year Month Day Reference No.

First Part of the Item Number:

This represents the date you began designing your tool (ex. 170209 = February 9, 2017).

Second Part of the Item Number:

This is the reference number for that specific item. If you begin designing another tool on the same day, the first part of the new item number would be the same, but the reference number would be unique to that new item.

**4**

Shank Selection

Select the shank type you require and then click the right arrow button ► to proceed.

**5**

Shank Options

After choosing the shank type, you will be provided with additional shank options (if applicable). Once your selections are made, click the right arrow button ► to proceed.

**6**

Select Body Style

Choose the holder style you need, and then click the right arrow button ► to proceed.

**7**

Body Options

After choosing the holder style, you will be provided with additional holder options (if applicable). Once your selections are made, click the right arrow button ► to proceed.

**8**

Coolant Options

On this screen you will select your coolant options. When finished, click the right arrow button ► to proceed.

Insta-Quote User Guide



X20

9 **Contact Information**
Complete the contact details and select a language for the drawing. Click the “Quote Item” button to proceed.

10 **Quote Your Item**
Once you have selected “Quote Item,” a box will appear to let you know the estimated time remaining before your quote and drawing are created (typical wait time is less than 1 minute).

NOTE: Your pop-up blocker must be disabled in order to view the downloaded files.

QTY.	UNIT PRICE	TOTAL
1	\$10.00	\$10.00
2	\$10.00	\$20.00
3	\$10.00	\$30.00
4	\$10.00	\$40.00
5	\$10.00	\$50.00
6	\$10.00	\$60.00
7	\$10.00	\$70.00
8	\$10.00	\$80.00
9	\$10.00	\$90.00
10	\$10.00	\$100.00

NOTES:
1. MARK : 170210-523 REV. 0
2. ALL DIMENSIONS NOT SPECIFIED ARE ALLIED MACHINE AND ENGINEERING CORP. STANDARDS.

TERMS:
THIS DRAWING IS PROVIDED TO ILLUSTRATE CONCEPT AND DIMENSIONS PRIOR TO ANY MANUFACTURING. IT IS NOT TO BE USED FOR MANUFACTURING. SPECIFICATIONS, DIMENSIONS, MATERIALS, AND FINISHES ARE THE PROPERTY OF ALLIED MACHINE & ENGINEERING CORP. IT IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS WITHOUT WRITTEN PERMISSION OF ALLIED MACHINE & ENGINEERING CORP.

CONTACT:
Job Title: _____
Company: _____
Address: _____
City: _____ State: _____ Zip: _____
Phone: _____ Fax: _____ Email: _____

ALLIED MACHINE & ENGINEERING
170210-547
SHEET OF 1
DWG. NO. 170210-547
REV. 0

The drawing contains all relevant dimensions. It must be signed before manufacturing can begin.
NOTE: The drawing is a generic representation and is not to scale.



Insta-Quote

T-A® Inserts

X20



Special Angle



Double Angle



Spur Point



Spot and Chamfer



Step Insert



Flat Bottom



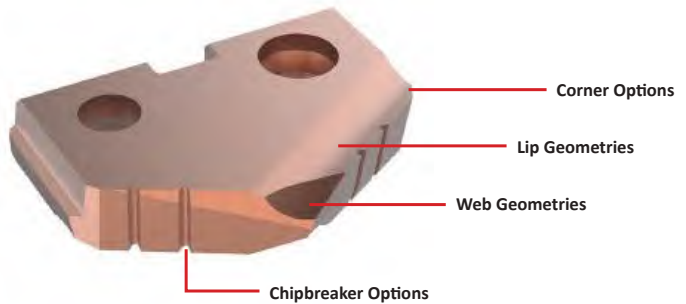
Ball Nose

Insta-Quote®



Additional Features

Insta-Quote provides multiple options to enhance different areas of the insert. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



Substrate Options

HSS:
HSS, Super Cobalt, Premium Cobalt

Carbide:
C1, C2, C3, C5

Coating Options

AM200®



TiN



TiAlN



TiCN



Insta-Quote

T-A® Holders

X20



Chrome Helix



Chrome Bushing



⚠ Guided Holder



One Step ICS



Two Step ICS



Three Step ICS



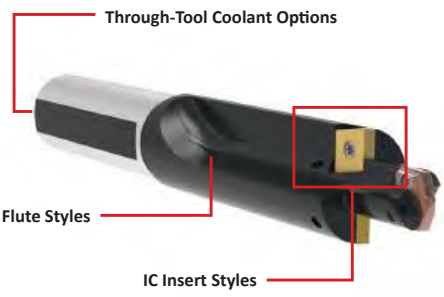
⚠ Special Length

Insta-Quote® 



Additional Features

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.



⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X20: 25 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.



Insta-Quote

GEN3SYS® XT Holders

X20



Chrome Helix



Chrome Bushing



⚠ Special Length



One Step ICS



Two Step ICS

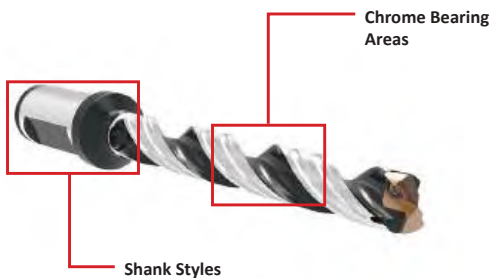
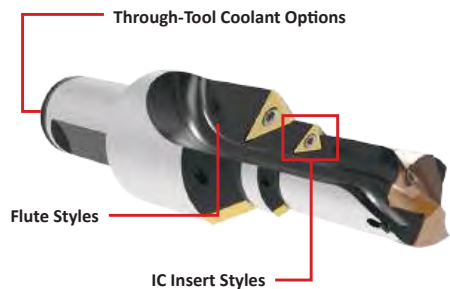


Three Step ICS

Additional Features

Insta-Quote provides multiple options to enhance different parts of the holder. If you have questions about which options would most benefit your application, just give us a call. We'll be happy to provide in-depth explanations about how certain options can optimize your results.

Insta-Quote®



Where are the Inserts?

Though Insta-Quote incorporates special designs for GEN3SYS XT holders, it does not include options for designing special GEN3SYS XT inserts. GEN3SYS XT holders utilize standard GEN3SYS XT inserts, which can be found in Section A20 of the product catalog.

If you need a special insert or would simply like to discuss options for designing one to fit your application, please contact us, and we can create a special design as an engineered special.



Engineered Special
GEN3SYS XT insert designed for
specific aerospace application

⚠ WARNING Refer to Speed and Feed charts for recommended adjustments to speeds and feeds. Refer to page X20: 25 for deep hole drilling guidelines in this section of the catalog. Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

Insta-Quote

ALVAN® Reamers by S.C.A.M.I.

Use Insta-Quote to Build Your Part Numbers

Insta-Quote can help you find or build the ALVAN® reamer item numbers you need along with the price and delivery of the items. It can also give you the recondition item and delivery. Just follow the steps, and Insta-Quote will guide you through the process.

Insta-Quote® 



Replaceable Head Style

Diameter/Series Options	Flute Options	Coating Options			
Expandable Diameter					
	 Straight				
5000 Series					
	 Right-Hand Helical				
7000 Series					
Fixed Diameter					
	 Left-Hand Helical				
7000 Series					
					
9000 Series					

Monobloc Style

Flute Options	Coating Options			
 Straight	Uncoated		Alcrona	
 Left-Hand Helical	TiN		Hardcut	
	TiCN		R coating	
	TiAlN		T coating	

Cutting Ring Style

Flute Options	Coating Options			
 Straight	Uncoated		TiN	
 Left-Hand Helical	Alcrona		TiCN	
	Hardcut		R coating	
			T coating	



Engineered Specials

Insert Designs

X20

OUR **SOLUTION**

T-A® PCD Drill Insert



- C3 carbide substrate increases tool life.
- PCD tip is specifically designed for carbon reinforced polymer (CFRP) material.
- Notch Point® geometry, special corner clip, and drill point angle help minimize delamination upon exiting the hole.

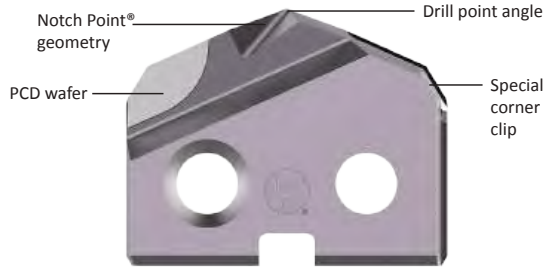
► YOUR **ADVANTAGE**

Take control of carbon fiber reinforced polymer applications. The T-A PCD drill insert can provide the hole quality you need to produce successful quality parts and reduce scrap.

Polycrystalline Diamond Insert

What allows the polycrystalline diamond (PCD) insert to generate such high success in aerospace carbon fiber is the sharp cutting edge that provides clearance cutting and reduces delamination. The PCD wafers improve the wear resistance.

While other tools encounter massive tearing when exiting the hole in carbon fiber, the PCD insert geometry, along with precise OD corner prep and Notch Point® technology, encounters minimal delamination. This produces a near-perfect, tight tolerance and smooth hole.



The Proof is in the Numbers

See the following results from a customer who was experiencing difficulty when drilling CFRP material:

INCREASED tool life by **700%**

Number of Holes Drilled: ONE Competing Insert



10

Number of Holes Drilled: ONE PCD Tipped T-A Insert



10



20



30



40



50



60



70



80

Infinite Solutions

Though Insta-Quote® and i-Form are incredible special tooling systems, some applications require a deeper level of engineering to accomplish the optimal results. No matter what the application may be, Allied Machine engineers have the knowledge, experience, and expertise to design and develop a special product to exceed your expectations.

Engineered Specials are not limited to T-A® or GEN3SYS® XT products. In fact, Engineered Specials can be created for most products offered by Allied Machine, including APX™ drill, Opening Drill®, AccuThread® 856, and many other product families.



Back Chamfer
without Chip Breakers



Back Chamfer
with Chip Breakers



Noncenter Cutting
and Chamfer



Special Inverted
Coring Geometry



Flat Bottom with Pilot,
Corner Radius, and Chamfer



Multiple Step



Special Step



Special Point



Special Counterbore
Step



Special Corner Radius



Engineered Specials

GEN3SYS® XT Vacuum Drill



The GEN3SYS XT® vacuum drill allows you to reap the productivity benefits of the GEN3SYS® XT outside of a fixed-position machine tool. The vacuum drill technology attaches to a hose to remove material that flows up through the internal flute of the drill. This versatile ability allows the drilling process to move from location to location, performing operations on large components.

The design of the GEN3SYS® XT insert increases penetration rates, which can lower your production time and decrease operation costs. Available in multiple material-specific geometries, the GEN3SYS® XT has a solution for most applications.

OUR **SOLUTION**

GEN3SYS® XT Vacuum Drill



- Spent coolant and chips are evacuated through an internal flute.
- Guided body diameter to run through a drill bushing.
- Replaceable tip for quick and easy insert change.

► YOUR **ADVANTAGE**

The sealed vacuum system lets you move your drilling operations outside the confines of a machine, allowing you to increase productivity on massive components.

MATERIAL TIPS

Drilling in CFRP (Carbon Fiber Reinforced Polymer)

- These applications are run with the vacuum only (no coolant).
- Can be run with or without a micro peck cycle.

Drilling in Metal

- These applications are run with the vacuum and coolant or mist.
- Recommended to be run with a micro peck cycle.



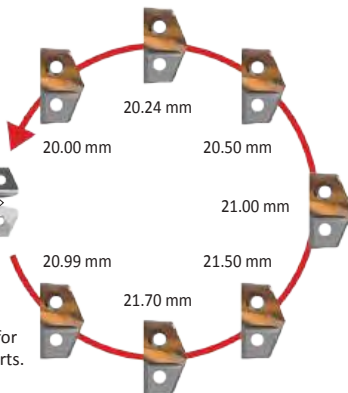
Materials remain contained in a sealed vacuum system.



The same holder can be used for a range of diameters.



The same holder can be used for different material-specific inserts.





Engineered Specials

Guided T-A®

X20



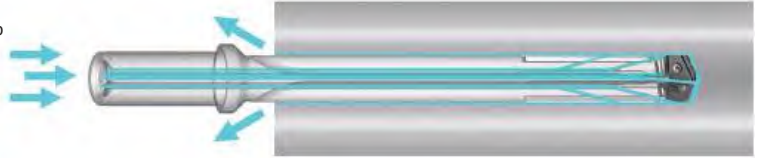
Guided T-A Highlights

- Two adjustable Torx® PLUS screw pins allow for diameter adjustment to reduce TIR.
- Provides improved tool life and hole finish.
- Guided wear pads improve hole straightness.
- Coolant-through design with multiple coolant outlets along the drill holder provides stability in deep hole drilling applications and also improves chip evacuation.

Industry Application
AutomotiveIndustry Application
Aerospace

Triple Coolant Outlets

- Additional coolant outlets help keep the holder straight and precise.
- Longer holders experience and maintain increased stability in deeper holes.



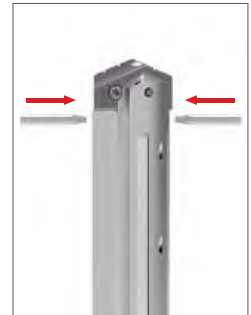
Locate the two adjustable Torx® PLUS screws (one on each side).



Loosen each screw.



Adjust insert position.



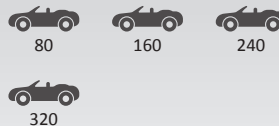
Tighten each screw.

The Proof is in the Numbers

The following results came from a real-life application that utilized the Guided T-A. The customer was experiencing a high scrap rate and needed to find a solution to eliminate the problem.



Number of Holes Drilled: ONE Competing Insert & Holder

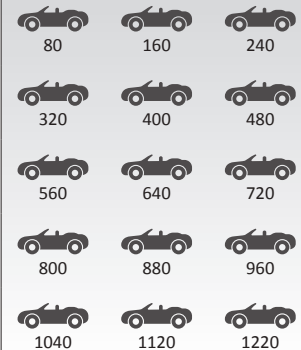


In this application, Allied Machine:

- Eliminated **\$240,000** in scrap per year.
- Optimized the chip formation.
- Enhanced the chip evacuation.
- Provided excellent surface finish.

INCREASED tool life by
280%

Number of Holes Drilled: ONE Allied Machine Special Insert & Holder





Engineered Specials

Success Stories

Real-Life Results

Below are five brief success stories. Each one provides an overview of specific situations when our special tooling achieved top-quality performance for our customers. For more in-depth case studies, go to www.alliedmachine.com/RealLifeResults.



Industry Application Oil & Gas

Special AccuPort 432° Port Contour Cutter Hydraulic Manifolds

- Eliminated multiple tools in the process.
- Eliminated regrinds.
- Improved performance in cross hole applications.



X20



Industry Application Heavy Equipment

Special T-A° Holder & Insert Axle Shafts

- 100% increase in tool life.
- \$7,500 reduction in setup costs.
- Eliminated scrap that was caused by setup issues.



Industry Application Defense

i-Form Drill Barrel Nut

- Eliminated three tools in the process.
- Reduced cycle time by 25%.
- Improved chip formation.



Industry Application Automotive

T-A° Rim Drill Aluminum Wheels

- 50% increase in penetration rates.
- 50% increase in tool life.
- Eliminated regrinds.



Industry Application Aerospace

Special Carbide Clad T-A° Holder with Diamond Coated Insert

Carbon Fiber Landing Arm

- Eliminated delamination of carbon fiber.
- 7x more tool life.
- Special shank threads directly into drill unit for easy tool change.





Engineered Specials

i-Form Custom Indexable Drill / Form Tool System

Any Way You Want It

What if you could utilize complex forms that only seem to be available as brazed or solid carbide tools? Allied Machine's i-Form custom indexable drill/form tool system allows for complex designs with a replaceable cutting edge. This will reduce setup times and eliminate regrinds, allowing you to increase your productivity and reduce costs. Don't settle for being good when the possibility of being great is right in front of you.

This is just a small sample of what you can do.

X20



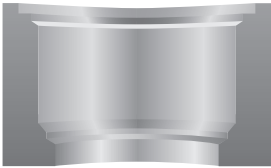
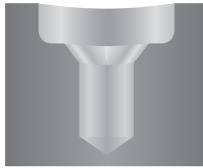
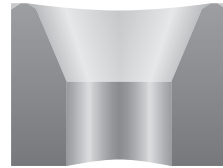
**i-Form Holder
with i-Form Inserts**



**Lug Hole T-A® Drill
with i-Form Inserts**



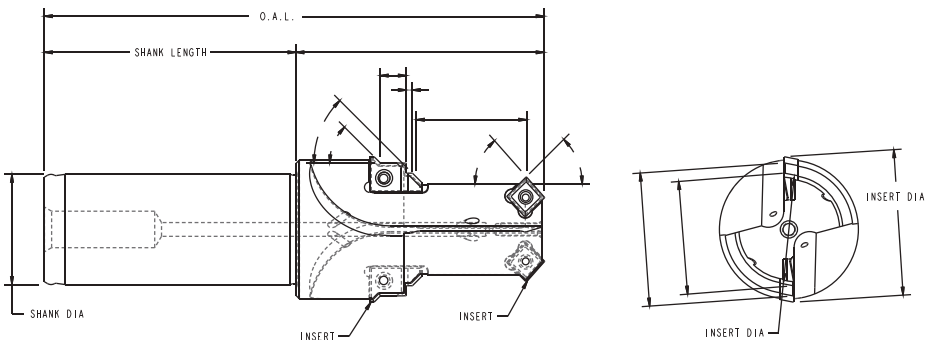
**i-Form Drill for Facing Operations
with ID-OD Chamfer**



Design Complex Forms for ANY Hole Style

i-Form allows you to design complex forms for any style hole with increased productivity. The i-Form product line - both pilot inserts and form inserts - creates custom engineered forms that provide complex designs with replaceable cutting edges and improved consistency, all while outperforming brazed and solid carbide tooling. i-Form tools will increase your productivity, minimize setup times, and eliminate regrind tool float and inconsistency.

- Holders have coolant-through capabilities.
- Holders can utilize standard inserts, Insta-Quote® inserts, and/or special insert designs.





Engineered Specials

i-Form Custom Indexable Drill / Form Tool System



**GEN3SYS® XT Pilot Insert
with i-Form Inserts**



**GEN3SYS® XT Pilot Insert
with i-Form Inserts**



**GEN3SYS® XT Back Chamfer
Insert with ISO Inserts**

X20



**T-A® Flat Bottom Form Drill
with i-Form Inserts**



**T-A® ICS Drill
with i-Form Inserts**



**T-A® Pilot Insert
with i-Form Inserts**



**Square QDSI 34™ Inserts
with i-Form Inserts**



**3-Flute IC Drill
with i-Form Inserts**



**i-Form Holder
with i-Form Inserts**



**AccuPort 432® Drill
with Special T-A® Form Insert**



**T-A® 2-Step IC Drill
with i-Form Inserts**



**Special Core Drill
with i-Form Inserts**



Engineered Specials

T-A® Products

X20



**T-A IC Drill
with Back Chamfer Insert**



T-A 1-Step Stub Length



T-A IC Drill



T-A 2-Step IC Drill



**T-A Counter Bore Tool
with Micro Adjustable Cartridge**



**T-A Form Drill
with Adjustable Cartridge**



**T-A Multiple Step Drill
with Adjustable Cartridge**



**T-A Large Diameter
Multiple Step IC Drill**



T-A Deburr Drill



**T-A IC Drill
with Customer Defined Shank**



**T-A Deep Hole Drill
with Customer Defined Design**



**T-A Chrome Bearing Drill
with Customer Defined Shank**



**T-A 1-Step IC Drill
with Flat Bottom Insert**



T-A Form Drill



**T-A Drill
with Special Holder and Insert Design**



Engineered Specials

Other Products



**Special BT-A Drill
with Internal Thread**



Special BT-A Drill



Special BT-A Drill

X20



**APX™ Drill
with Carbide Clad Guides**



**APX™ Drill
with 1-Step Design**



**APX™ Drill
with HSK Shank**



**Opening Drill®
with Special Diameter**



**Special Core Drill
with 2-Step Design**



**ICS Drill
with Adjustable Cartridge**



**Superion® Solid Carbide
with AM200® Coating**



**AccuThread® 856
with Through Coolant**



**AccuPort 432®
Special Length**



**ALVAN® Ring Style Reamer
with Special Length**



**GEN3SYS® XT
with Morse Taper Shank**



**GEN3SYS® XT
with IC Inserts and Special Body**



Engineered Specials

Design Form

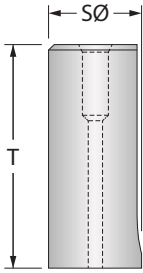
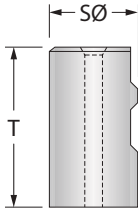
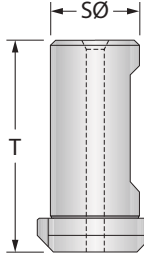
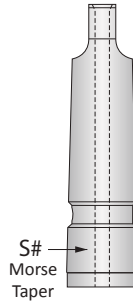
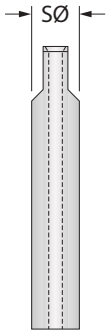
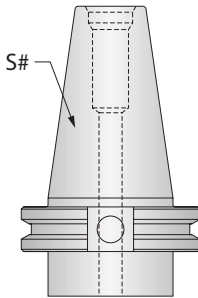
Show Us What You Need

These pages have been included so you can assist us with defining your special tooling requirements.

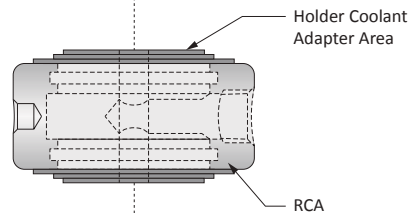
- Select a shank (1 - 6), or define shank 7.
- Indicate if the shank will be used with or without a rotary coolant adapter (RCA).

We ask that you define your hole profile and offer an example of a tool form to help us with the design process. Tools 1 - 5 cover only a small portion of our capabilities, so feel free to use your imagination. Please scan these pages, record your information in the boxes on the next page, and email the information for our quickest response.

X20

**Shank 1: Straight****Shank 2: Weldon****Shank 3: Flanged****Shank 4A:**
Coolant-Through
Tang End**Shank 4B:**
Through-Shank
Coolant**Shank 4C:**
No Coolant**Shank 5: Tang Shank****Shank 6: CAT50****Shank 7: Customer Defined Shank Information**

Shank	SØ	S#	T	RCA
4A (EXAMPLE)	—	4MT	—	YES / ☒ NO
				YES / NO
				YES / NO
				YES / NO

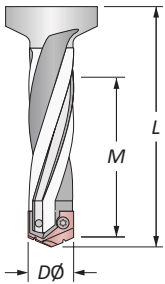




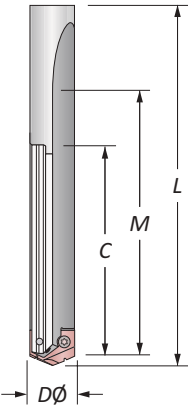
Engineered Specials

X20

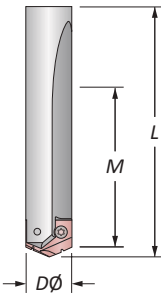
- Tool 1**
- ☐ Carbide Clad
 - ☐ Chrome Plate
 - ☐ Helical Flute
 - ☐ Straight Flute



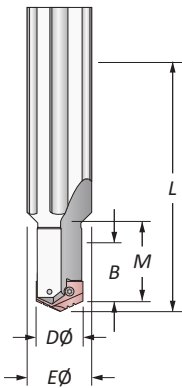
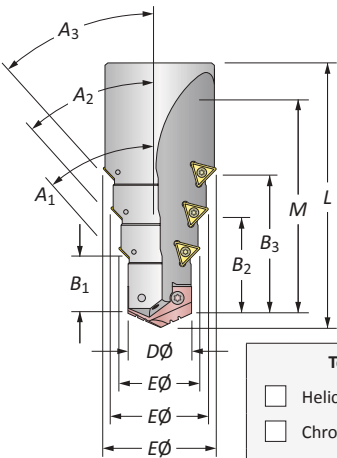
- Tool 2**
- ☐ Helical Pilot
 - ☐ Chrome Pilot



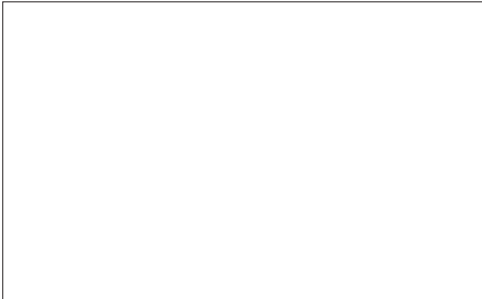
- Tool 3**
- ☐ Helical Flute
 - ☐ Straight Flute



- Tool 4**
- ☐ Helical Pilot
 - ☐ Chrome Pilot



- Tool 5**
- ☐ Helical Pilot
 - ☐ Chrome Pilot



Hole Profile

Please email or fax your design to:
Application Engineering Department -
appeng@alliedmachine.com

Item	Tool	A ₁	A ₂	A ₃	B ₁	B ₂	B ₃	C	D Ø	E Ø	F Ø	G	L	M
EXAMPLE	5	30°	-	-	1.00	-	-	0.25	0.620	1.25	-	-	4.50	3.00

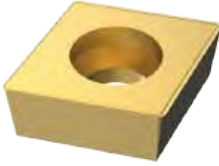
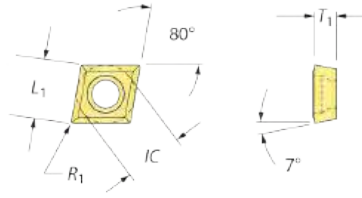
Name:		Company:	
Email:	Phone:	Distributor (if known):	
Customer Signature:		Date:	

Please be sure to include shank and coolant information from the previous page when sending tool designs.

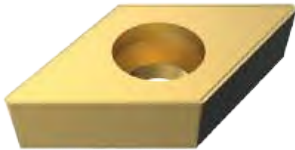
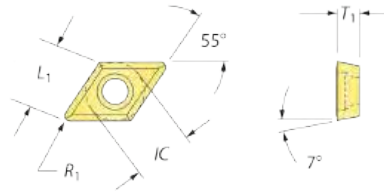
**QDSI 34™ Inserts**

80° Diamond | 55° Diamond

X20

**80° Diamond Inserts**

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L ₁	T ₁	R ₁	L ₁	T ₁	R ₁				
6.35	0.250	6.32	2.39	0.20	0.249	0.094	0.008	CCGT-060202	CCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		6.28	2.39	0.40	0.247	0.094	0.016	CCMT-060204	CCMT 2(1.5)1		
		6.21	2.39	0.79	0.244	0.094	0.031	CCMT-060208	CCMT 2(1.5)2		
		6.21	3.96	0.79	0.244	0.156	0.031	CCGT-06T308	CCGT 2(2.5)2		
9.53	0.375	9.49	3.96	0.20	0.374	0.156	0.008	CCGT-09T302	CCGT 3(2.5)0.5	7359-IP15-1	8IP-15
		9.46	3.96	0.40	0.372	0.156	0.016	CCMT-09T304	CCMT 3(2.5)1		
		9.39	3.96	0.79	0.369	0.156	0.031	CCMT-09T308	CCMT 3(2.5)2		
12.70	0.500	12.63	4.76	0.40	0.497	0.188	0.016	CCMT-120404	CCMT 431	745105-IP20-1	8IP-20
		12.56	4.76	0.79	0.494	0.188	0.031	CCMT-120408	CCMT 432		

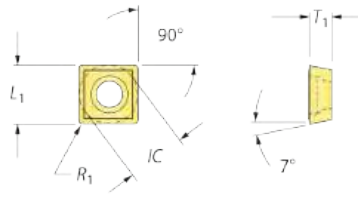
NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.**55° Diamond Inserts**

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L ₁	T ₁	R ₁	L ₁	T ₁	R ₁				
6.35	0.250	6.18	2.39	0.008	0.243	0.094	0.008	DCGT-070202	DCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		6.01	2.39	0.016	0.237	0.094	0.016	DCMT-070204	DCMT 2(1.5)1		
		5.67	2.39	0.031	0.223	0.094	0.031	DCMT-070208	DCMT 2(1.5)2		
9.53	0.375	9.19	3.96	0.016	0.362	0.156	0.016	DCMT-11T304	DCMT 3(2.5)1	7359-IP15-1	8IP-15
		8.85	3.96	0.031	0.348	0.156	0.031	DCMT-11T308	DCMT 3(2.5)2		

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.

QDSI 34™ Inserts

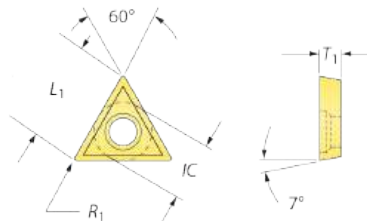
Square | 60° Triangle



Square Inserts

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L ₁	T ₁	R ₁	L ₁	T ₁	R ₁				
9.53	0.375	9.53	3.96	0.40	0.375	0.156	0.016	SCMT-09T304	SCMT 3(2.5)1	7359-IP15-1	8IP-15

NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.



80° Diamond Inserts

IC		Metric (mm)			Imperial (in)			Part No.	ANSI Designation	Torx Screw	Torx® Driver
mm	in	L ₁	T ₁	R ₁	L ₁	T ₁	R ₁				
3.97	0.156	6.58	1.98	0.20	0.259	0.078	0.008	TCGT-06T102	TCGT 1.2(1.2)0.5	724-IP6-1	8IP-6
		6.29	1.98	0.40	0.248	0.078	0.016	TCGT-06T104	TCGT 1.2(1.2)1		
		5.71	1.98	0.79	0.225	0.078	0.031	TCGT-06T108	TCGT 1.2(1.2)2		
5.65	0.219	9.33	2.39	0.20	0.367	0.094	0.008	TCGT-090202	TCGT 1.8(1.5)0.5	7225-IP7-1	8IP-7
		9.04	2.39	0.40	0.356	0.094	0.016	TCGT-090204	TCGT 1.8(1.5)1		
		8.46	2.39	0.79	0.333	0.094	0.031	TCGT-090208	TCGT 1.8(1.5)2		
6.35	0.250	10.71	2.39	0.20	0.422	0.094	0.008	TCGT-110202	TCGT 2(1.5)0.5	7256-IP8-1	8IP-8
		10.42	2.39	0.40	0.410	0.094	0.016	TCMT-110204	TCMT 2(1.5)1		
		9.84	2.39	0.79	0.387	0.094	0.031	TCMT-110208	TCMT 2(1.5)2		
9.53	0.375	15.92	3.96	0.40	0.627	0.156	0.016	TCMT-16T304	TCMT 3(2.5)1	7359-IP15-1	8IP-15
		15.34	3.96	0.79	0.604	0.156	0.031	TCMT-16T308	TCMT 3(2.5)2		
12.70	0.500	20.83	4.76	0.79	0.820	0.188	0.031	TCGT-220408	TCGT 432	745105-IP20-1	8IP-20

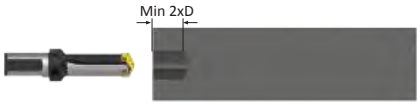
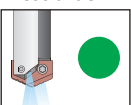
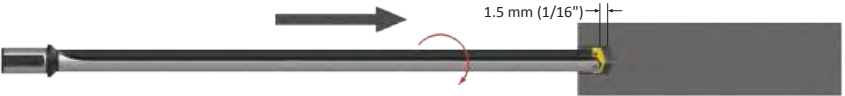
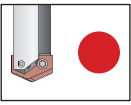
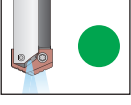
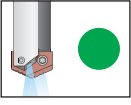
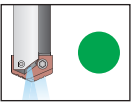
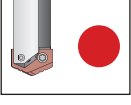
NOTE: QDSI 34 inserts are utilized only in special ICS holders. Speeds and feeds for QDSI 34 inserts are determined by drill insert.



Deep Hole Drilling Guidelines

For Lengths Greater Than 9xD (Standard Plus, Extended, Long, Long Plus, XL, 3XL, and Special Lengths)

X20

1. Pilot Hole 100% RPM 100% mm/rev (IPR)	Establish the pilot hole using the same diameter short drill to a depth of 2xD minimum. Utilize a pilot drill with the same or larger included point angle.	 
2. Feed-in 50 RPM max 300 mm/min (12 IPM)	Feed the longer drill within 1.5 mm (1/16") short of the established pilot hole bottom at a maximum of 50 RPM and 300 mm/min (12 IPM) feed rate.	 
3. Deep Hole Transition Drilling 50% RPM 75% mm/rev (IPR)	Drill additional 1xD past the bottom of the pilot hole at 50% reduction of recommended speed and 25% reduction of recommended feed. Minimum of one second dwell is required to meet full speed before feeding.	 
4. Deep Hole Drilling - Blind 100% RPM 100% mm/rev (IPR)	Drill to full depth at recommended speed and feed for longer drill according to Allied speed and feed charts. No peck cycle recommended.	 
5. Deep Hole Drilling - at Breakout 50% RPM 75% mm/rev (IPR)	For through holes only: Reduce speed by 50% and feed by 25% prior to breakout. Do not break out more than 3 mm (1/8") past the full diameter of the drill.	 
6. Drill Retract 50 RPM max	Reduce speed to a maximum of 50 RPM before retracting from the hole.	 

WARNING Tool failure can cause serious injury. To prevent:

- When using holders without support bushing, use a short T-A holder to establish an initial hole that is a minimum of 2 diameters deep.
- Do not rotate tool holders more than 50 RPM unless it is engaged with the workpiece or fixture.

Visit www.alliedmachine.com/DeepHoleGuidelines for the most up-to-date information and procedures. Factory technical assistance is available for your specific applications through our Application Engineering department: appeng@alliedmachine.com.

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin black lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The paper is otherwise completely blank, with no margins, text, or other markings.

X20

SECTION

X30-WBS

Wohlhaupter® Boring Specials

Wohlhaupter® Boring Specials



Special Design Tooling

When it comes to special solutions for customers, Wohlhaupter has unique capabilities to effectively design and develop special boring tools. Our special boring tools are designed for specific machines, processes, and materials to help save you time and money.

If you have a particularly unique or difficult application, reach out to our Application Engineering team:
appeng@alliedmachine.com.

Applicable Industries

-  Aerospace
-  Agriculture
-  Automotive
-  Defense
-  General Production
-  Heavy Equipment
-  Hydraulics
-  Marine
-  Medical
-  Oil and Gas
-  Renewable Energy/ Energy
-  Tool, Mold, and Die

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DigiBore Special Boring Tools.....	8
Combi-Line Special Boring Tool	9

Your safety and the safety of others is very important. This catalog contains important safety messages. Always read and follow all safety precautions.



This triangle is a safety hazard symbol. It alerts you to potential safety hazards that can cause tool failure and serious injury. When you see this symbol in the catalog, look for a related safety message that may be near this triangle or referred to in the nearby text.

There are safety signal words also used in the catalog. Safety messages follow these words:

 WARNING	means that failure to follow the precautions in this message could result in tool failure and serious injury.
NOTICE	means that failure to follow the precautions in this message could result in damage to the tool or machine but not result in personal injury.
NOTE and IMPORTANT	are also used. These are important that you read and follow but are not safety-related.
Visit www.alliedmachine.com for the most up-to-date information and procedures.	



Custom Boring Tools

ES-Bore Fine Boring Lay Down Cartridge

DIGITAL ES-BORE WITH ADAPTER PLATE



NOTE: ES-Bore digital fine boring cartridges must be used with the new 3E^{TECH+} and adapter plate. The ES-Bore cannot be used with 3E^{TECH}.

NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") on diameter.

ANALOG ES-BORE



LAY DOWN CARTRIDGES

ES-BORE

- ▶ Mounts to custom designed boring tools.
- ▶ Available with digital 3E^{TECH+} or analog adjustment.
- ▶ Accurate adjustments with easy-to-use settings.
- ▶ Versatility in many different application types over 28.00 mm (1.102") on diameter.

Custom Boring Tools

EK Groover | Lay Down Cartridge



X30

GROOVING TOOLS

EK GROOVER

- ▶ Create complex grooves faster and deeper than ever before.
- ▶ Eliminate chatter in hard-to-reach internal forms.
- ▶ The electronically-controlled insert release can be adapted to most machine tools.
- ▶ Single or double grooving in one operation.

ROUGH BORING TOOLS

LAY DOWN CARTRIDGE

- ▶ Increase the productivity of your roughing tool while protecting your investment.
- ▶ If the tool is ever damaged, simply replace a cartridge and resume making chips.



Custom Boring Tools

Anti-Vibration | Multistep Boring Tool

X30



SPECIAL BORING TOOLS

ANTI-VIBRATION

- ▶ Vibration dampening rings.
- ▶ Optimized tool weight.
- ▶ Used to reduce harmonic vibration in deeper boring applications.



SPECIAL BORING TOOLS

MULTISTEP BORING TOOL

- ▶ Fine adjustment tool for reverse machining.
- ▶ Combined with multidiameter fine adjustable cartridges for finish machining.

Custom Boring Tools

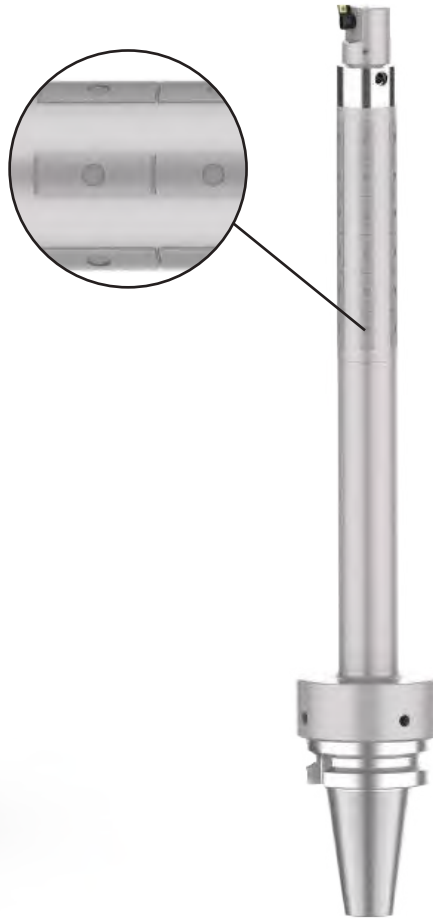
OD Turning | Padded Line Boring Tool



SPECIAL BORING TOOLS

OD TURNING TOOLS

- ▶ Multistep OD turning.
- ▶ Drastically reduce cycle time.
- ▶ Improve surface finish and feature concentricity.



SPECIAL BORING TOOLS

PADDED TOOLING

- ▶ Aids in stable part processing.
- ▶ Expands length-to-diameter capabilities.
- ▶ Improves surface finish.
- ▶ Pads are replaceable to extend tool life.

X30



Custom Boring Tools

Multistep Boring Tool | Line Boring Tool

X30



NOTE: 3E^{TECH+} adjustment accuracy of 0.001 mm (0.00005") on diameter.

3E^{TECH+} BORING TOOL

MULTISTEP BORING TOOL

- ▶ Easy diameter adjustments with 3E^{TECH+}.
- ▶ One digital readout module to use on all steps.

3E^{TECH+} BORING TOOL

LINE BORING TOOL

- ▶ One digital readout module used on all steps.
- ▶ Easy diameter adjustment at the machine spindle.

Custom Boring Tools

DigiBore Special Boring Tools

**X30**

NOTE: Imperial items pictured.
NOTE: Digital adjustment accuracy of
0.0001" or 0.002 mm on diameter.

FINISH BORING TOOLS

DIGIBORE WITH 248 (249)

- ▶ Standard DigiBore head, standard 248 (249) head, and special slide for precise two-step bore.
- ▶ MVS connection.

FINISH BORING TOOLS

DIGIBORE SPECIAL

- ▶ Standard DigiBore boring head with OD turn and OD chamfer insert holder.
- ▶ MVS connection.



Custom Boring Tools

Combi-Line Special Boring Tool



X30

ROUGH, FINISH, and CHAMFER BORING TOOLS

COMBI-LINE

- ▶ Standard Combi-Line tooling with added chamfer cartridge.
- ▶ MVS connection.

[illegible]

Guaranteed Test / Demo Application Form

Distributor PO #

The following must be filled out completely before your test will be considered.

IMPORTANT: For processing, send purchase order to your Allied Field Sales Engineer (FSE).
Please clearly mark the paperwork as "Test Order."

Distributor Information

Company Name: _____
Contact: _____
Account Number: _____
Phone: _____
Email: _____

End User Information

Company Name: _____
Contact: _____
Industry: _____
Phone: _____
Email: _____

Current Process List all tooling, coatings, substrates, speeds and feeds, tool life, and any problems you are experiencing.

Test Objective List what would make this a successful test (i.e. penetration rate, finish, tool life, hole size, etc.).

Application Information

Hole Diameter: _____ in/mm	Tolerance: _____	Material: _____ (4150, A36, cast iron, etc.)
Preexisting Diameter: _____ in/mm	Depth of Cut: _____ in/mm	Hardness: _____ (BHN, Rc)
Required Finish: _____ RMS	State: _____ (Casting, hot rolled, forging)	

Machine Information

Machine Type: _____ (Lathe, screw machine, machine center, etc.)	Builder: _____ (Haas, Mori Seiki, etc.)	Model #: _____
Shank Required: _____ (CAT50, Morse taper, etc.)	Power: _____ HP/KW	
Rigidity: _____ ☐ Excellent ☐ Good ☐ Poor	Orientation: _____ ☐ Vertical ☐ Horizontal	Tool Rotating: _____ ☐ Yes ☐ No
		Thrust: _____ lbs/N

Coolant Information

Coolant Delivery: _____ (Through tool, flood)	Coolant Pressure: _____ PSI / bar
Coolant Type: _____ (Air mist, oil, synthetic, water soluble, etc.)	Coolant Volume: _____ GPM / LPM

Requested Tooling

QTY	Item Number

QTY	Item Number



**ALLIED MACHINE
& ENGINEERING**

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120 Deeds Drive
Dover, OH 44622

Telephone: (330) 343-4283
Toll Free USA & Canada: (800) 321-5537
Email: info@alliedmachine.com



ALLIED MACHINE & ENGINEERING

Warranty Information



Allied Machine & Engineering ("Allied Machine") warrants to original equipment manufacturers, distributors, industrial and commercial users of its products for one year from the original date of sale that each new product manufactured or supplied by Allied Machine shall be free from defects in material and workmanship.

Allied Machine's sole and exclusive obligation under this warranty is limited to, at its option, without additional charge, replacing or repairing this product or issuing a credit. For this warranty to be applied, the product must be returned freight prepaid to the plant designated by an Allied Machine representative and which, upon inspection, is determined by Allied Machine to be defective in material and workmanship.

Complete information as to operating conditions, machine, setup, and the application of cutting fluid should accompany any product returned for inspection. This warranty shall not apply to any Allied Machine products which have been subjected to misuse, abuse, improper operating conditions, improper machine setup or improper application of cutting fluid or which have been repaired or altered if such repair or alteration, in the judgement of Allied Machine, would adversely affect the performance of the product.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Allied Machine shall have no liability or responsibility for any claim, whether in contract, tort or otherwise, for any loss or damage arising out of, connected with, or resulting from the manufacture, sale, delivery or use of any product sold hereunder, in excess of the cost of replacement or repair as provided herein.

Allied Machine shall not be liable in contract or in tort (including, without limitation, negligence, strict liability or otherwise) for economic losses of any kind or for any special, incidental, indirect, consequential, punitive or exemplary damages arising in any way out of the performance of, or failure to perform this agreement.

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