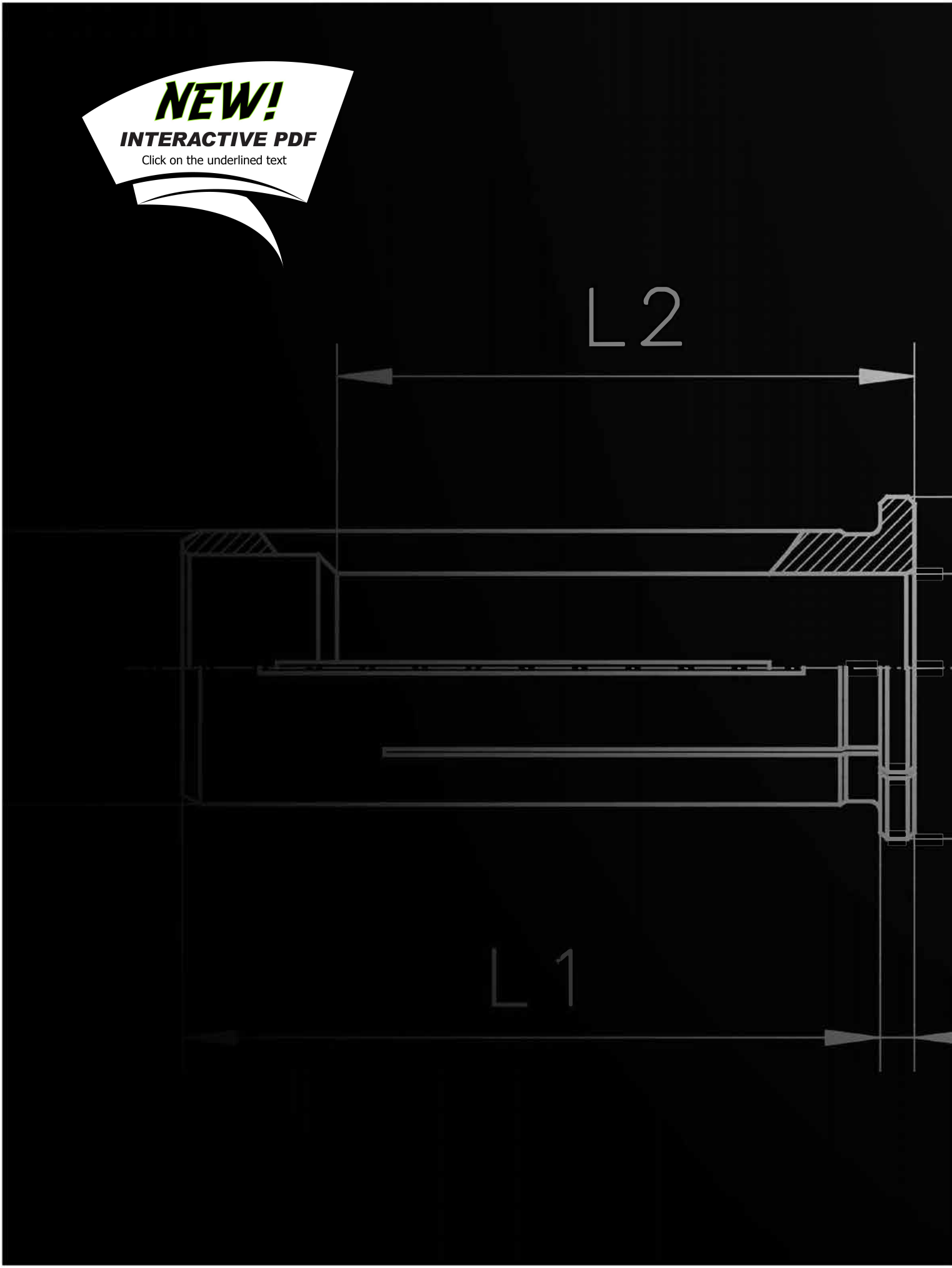
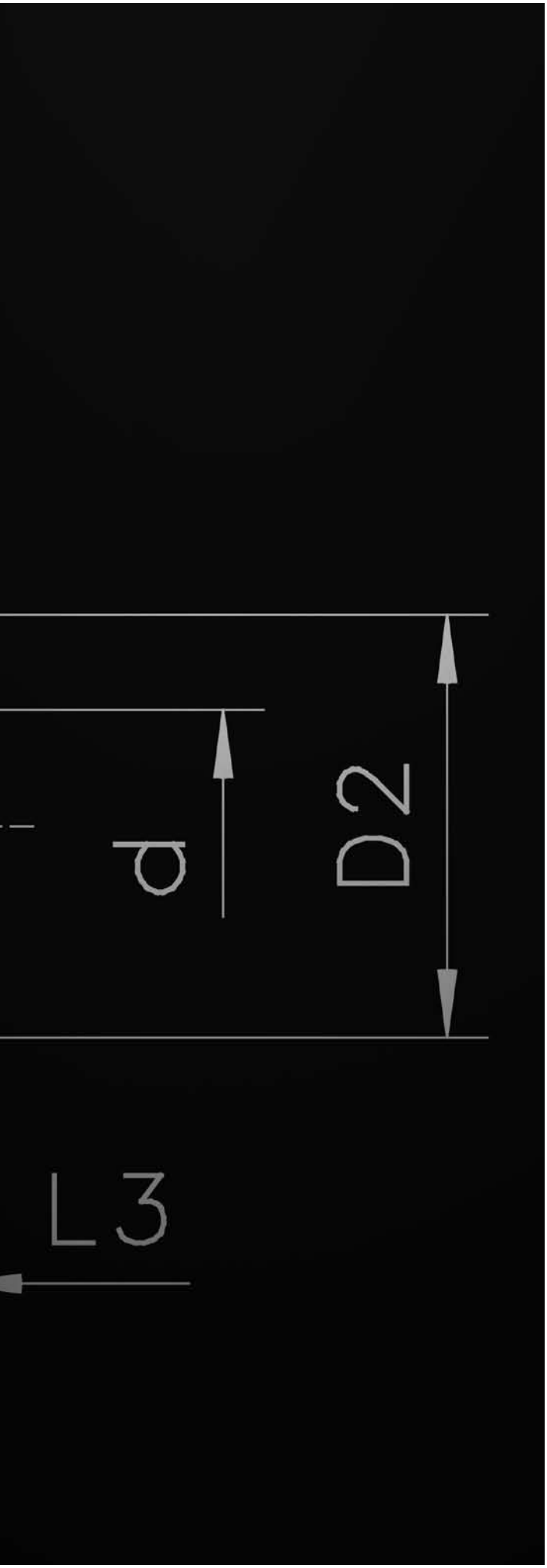
**NEW!**

***INTERACTIVE PDF***

Click on the underlined text






# Technical Information 14

## ER *SYSTEM*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## powRgrip *SYSTEM*


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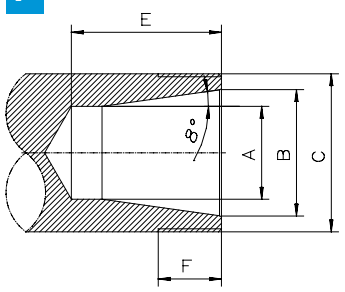
14.12 Legal Notices

# Collet Cavity Dimensions

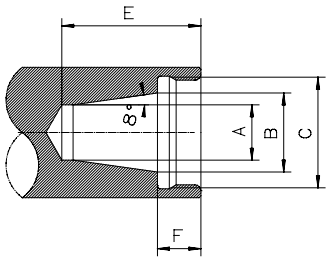
## Dimensions for ER Collet Cavities in Machine Spindles

| Size | Clamping Range | A [mm] | B [mm] | C [mm] | E [mm] | F [mm] | Drawing |
|---|---|---|---|---|---|---|---|
| **Standard Nut Threads** | | | | | | | |
| ER 11 | 0.5 – 07.00 | 7.5 | 11 | M14 x 0.75 | 17.0 | 10.0 | 1 |
| ER 16 | 0.5 – 10.00 | 10.5 | 16 | M22 x 1.50 | 22.0 | 13.0 | 1 |
| ER 20 | 0.5 – 13.00 | 13.5 | 20 | M25 x 1.50 | 26.5 | 13.5 | 1 |
| ER 25 | 0.5 – 16.00 | 18.0 | 25 | M32 x 1.50 | 29.0 | 14.0 | 1 |
| ER 32 | 1.0 – 20.00 | 23.5 | 32 | M40 x 1.50 | 34.0 | 16.0 | 1 |
| ER 40 | 2.0 – 30.00 | 30.5 | 40 | M50 x 1.50 | 38.0 | 17.0 | 1 |
| ER 50 | 4.0 – 34.00 | 38.0 | 50 | M64 x 2.00 | 48.0 | 24.0 | 1 |
| **Mini-Nut Threads** | | | | | | | |
| ER 8 | 0.5 – 05.00 | 5.2 | 8 | M10 x 0.75 | 13.0 | 8.0 | 1 |
| ER 11 | 0.5 – 07.00 | 7.5 | 11 | M13 x 0.75 | 17.0 | 8.5 | 1 |
| ER 16 | 0.5 – 10.00 | 10.5 | 16 | M19 x 1.00 | 22.0 | 13.0 | 1 |
| ER 20 | 0.5 – 13.00 | 13.5 | 20 | M24 x 1.00 | 26.5 | 13.5 | 1 |
| ER 25 | 0.5 – 16.00 | 18.0 | 25 | M30 x 1.00 | 29.0 | 14.0 | 1 |
| **Extrenally Threaded Nut Threads** | | | | | | | |
| ER 11 | 0.5 – 07.00 | 7.5 | 11 | M18 x 1.00 | 23.0 | 7.0 | 2 |
| ER 16 | 0.5 – 10.00 | 10.5 | 16 | M24 x 1.00 | 32.0 | 10.0 | 2 |
| ER 20 | 0.5 – 13.00 | 13.5 | 20 | M28 x 1.50 | 37.5 | 11.0 | 2 |
| ER 25 | 0.5 – 16.00 | 18.0 | 25 | M32 x 1.50 | 41.0 | 12.0 | 2 |
| ER 32 | 1.0 – 20.00 | 23.5 | 32 | M40 x 1.50 | 48.0 | 14.0 | 2 |
| ER 40 | 2.0 – 30.00 | 30.5 | 40 | M50 x 1.50 | 54.0 | 16.0 | 2 |

**1**




**2**

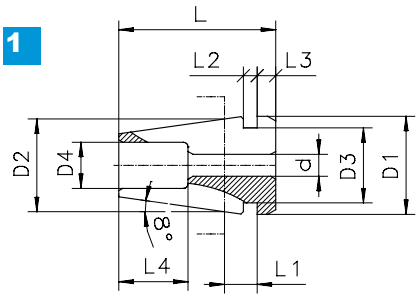


# Collets
DIN 6499/ISO15488

## Dimensions of ER Collets

| Size | d [mm] | D1 [mm] | D2 [mm] | D3 [mm] | D4 [mm] | L [mm] | L1 [mm] | L2 [mm] | L3 [mm] | L4 [mm] | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ER 8 | 1.0 – 2.50 | 8.5 | 8.0 | 6.5 | 4.0 | 13.6 | 2.98 | 1.2 | 1.5 | 6.0 | 1 |
| ER 8 | 3.0 – 5.00 | 8.5 | 8.0 | 6.5 | – | 13.6 | 2.98 | 1.2 | 1.5 | – | 2 |
| | | | | | | | | | | | |
| ER 11 | 1.0 – 2.50 | 11.5 | 11.0 | 9.5 | 5.0 | 18.0 | 3.80 | 2.0 | 2.5 | 9.0 | 3 |
| ER 11 | 3.0 – 7.00 | 11.5 | 11.0 | 9.5 | – | 18.0 | 3.80 | 2.0 | 2.5 | – | 4 |
| | | | | | | | | | | | |
| ER 16 | 1.0 – 1.59 | 17.0 | 16.0 | 13.8 | 7.5 | 27.5 | 6.26 | 2.7 | 4.0 | 13.0 | 3 |
| ER 16 | 2.0 – 4.76 | 17.0 | 16.0 | 13.8 | 7.5 | 27.5 | 6.26 | 2.7 | 4.0 | 10.0 | 3 |
| ER 16 | 5.0 – 10.00 | 17.0 | 16.0 | 13.8 | – | 27.5 | 6.26 | 2.7 | 4.0 | – | 4 |
| | | | | | | | | | | | |
| ER 20 | 1.0 – 1.59 | 21.0 | 20.0 | 17.4 | 9.0 | 31.5 | 6.36 | 2.8 | 4.8 | 16.0 | 3 |
| ER 20 | 2.0 – 6.50 | 21.0 | 20.0 | 17.4 | 9.0 | 31.5 | 6.36 | 2.8 | 4.8 | 13.0 | 3 |
| ER 20 | 7.0 – 13.00 | 21.0 | 20.0 | 17.4 | – | 31.5 | 6.36 | 2.8 | 4.8 | – | 4 |
| | | | | | | | | | | | |
| ER 25 | 1.0 – 1.59 | 26.0 | 25.0 | 22.0 | 12.0 | 34.0 | 6.66 | 3.1 | 5.0 | 18.0 | 3 |
| ER 25 | 2.0 – 7.50 | 26.0 | 25.0 | 22.0 | 12.0 | 34.0 | 6.66 | 3.1 | 5.0 | 15.0 | 3 |
| ER 25 | 8.0 – 16.00 | 26.0 | 25.0 | 22.0 | – | 34.0 | 6.66 | 3.1 | 5.0 | – | 4 |
| | | | | | | | | | | | |
| ER 32 | 2.0 – 4.76 | 33.0 | 32.0 | 29.2 | 15.0 | 40.0 | 7.16 | 3.6 | 5.5 | 20.0 | 3 |
| ER 32 | 5.0 – 7.50 | 33.0 | 32.0 | 29.2 | 15.0 | 40.0 | 7.16 | 3.6 | 5.5 | 15.0 | 3 |
| ER 32 | 8.0 – 20.00 | 33.0 | 32.0 | 29.2 | – | 40.0 | 7.16 | 3.6 | 5.5 | – | 4 |
| | | | | | | | | | | | |
| ER 40 | 3.0 – 4.76 | 41.0 | 40.0 | 36.2 | 20.0 | 46.0 | 7.66 | 4.1 | 7.0 | 24.0 | 3 |
| ER 40 | 5.0 – 8.50 | 41.0 | 40.0 | 36.2 | 20.0 | 46.0 | 7.66 | 4.1 | 7.0 | 18.0 | 3 |
| ER 40 | 9.0 – 30.00 | 41.0 | 40.0 | 36.2 | – | 46.0 | 7.66 | 4.1 | 7.0 | – | 4 |
| | | | | | | | | | | | |
| ER 50 | 6.0 – 10.00 | 52.0 | 50.0 | 46.0 | 20.0 | 60.0 | 12.60 | 5.5 | 8.5 | 32.0 | 3 |
| ER 50 | 12.0 – 34.00 | 52.0 | 50.0 | 46.0 | – | 60.0 | 12.60 | 5.5 | 8.5 | – | 4 |

1

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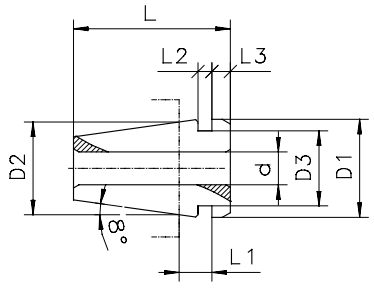


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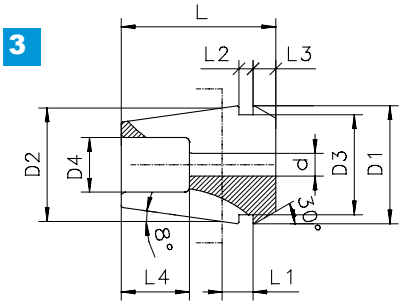


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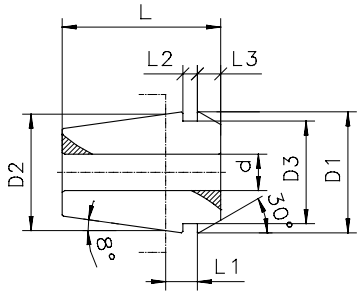


# Clamping Nuts Tightening Torque

## Recommended Tightening Torque

| Nut Torque (ft-lbs) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Collet Size | ø mm | ø inch | Hi-Q & Hi-QC | | Hi-QB & Hi-QBC | | AX & AXC | | Recommended Torque Wrench |
| | | | ER | ER-GB | ER | ER-GB | ER | ER-GB | |
| ER 11 MB | 0.2 – 0.9 | 0.0078 – 0.035 | 6 | | | | 6 | | Small |
| ER 11 | 1.0 – 2.5 | 0.0390 – 0.098 | 6 | 6 | | | 6 | 6 | |
| | 3.0 – 7.0 | 0.1180 – 0.256 | 20 | 12 | | | 20 | 15 | |
| ER 16 MB | 0.2 – 0.9 | 0.0078 – 0.035 | 6 | | | | 6 | | Small |
| ER 16 | 1 | 0.039 | 6 | | 5 | | 6 | | |
| | 1.5 – 3.5 | 0.059 – 0.138 | 15 | | 12 | | 15 | | |
| | 4.0 – 4.5 | 0.157 – 0.177 | 30 | 30 | 25 | 25 | 30 | 30 | |
| | 5.0 – 10.0 | 0.197 – 0.394 | 40 | 32 | 40 | 32 | 30 | 30 | |
| ER 20 | 1 | 0.039 | 12 | | 10 | | 12 | | Small |
| | 1.5 – 6.5 | 0.059 – 0.256 | 25 | 25 | 20 | 20 | 25 | 25 | Medium |
| | 7.0 – 13.0 | 0.276 – 0.512 | 60 | 26 | 60 | 60 | 40 | 26 | |
| ER 25 | 1.0 – 3.5 | 0.039 – 0.138 | 20 | | 15 | | 20 | | Medium |
| | 4.0 – 4.5 | 0.157 – 0.177 | 40 | 40 | 35 | 35 | 40 | 40 | |
| | 5.0 – 7.5 | 0.196 – 0.295 | 60 | 60 | 55 | 55 | 60 | 60 | |
| | 8.0 – 16.0 | 0.315 – 0.630 | 80 | 80 | 80 | 60 | 60 | 60 | |
| ER 32 | 2.0 – 2.5 | 0.078 – 0.098 | 20 | | 15 | | 20 | | Small |
| | 3.0 – 7.5 | 0.118 – 0.291 | 100 | 100 | 95 | 80 | 80 | 80 | Large |
| | 8.0 – 20.0 | 0.315 – 0.787 | 100 | 110 | 100 | 85 | 80 | 80 | |
| ER 40 | 3.0 – 8.5 | 0.118 – 0.335 | 130 | 130 | 130 | 130 | 95 | 95 | Large |
| | 9.0 – 26.0 | 0.354 – 1.023 | 130 | 130 | 130 | 140 | 95 | 95 | |
| ER 50 | 6.0 – 34.0 | 0.236 – 1.338 | 180 | 220 | 180 | 220 | | | Large |

**!** The maximum torque must not be more than 25% above the recommended tightening torque. Higher tightening torque may result in the damage of the toolholder.

**!** Higher clamping force of the clamping nut means higher stress on the toolholder. We recommend the use of REGO-FIX® torque wrench. REGO-FIX® will not be responsible for damage to toolholders or spindles of other manufacturers.

Torque wrenches and matching products see page 13.03/13.04

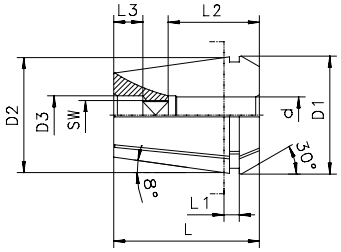
# Clamping Nuts Tightening Torque

## Recommended Tightening Torque

| Nut Torque (ft-lbs) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Collet Size | ø mm | ø inch | Hi-QM & Hi-QMC | | MS | | Recommended Torque Wrench |
| | | | ER | ER-GB | ER | ER-GB | |
| ER 8 MB | 0.2 – 0.9 | 0.0078 – 0.035 | 4 | | 4 | | Micro |
| ER 8 | 1.0 – 1.5 | 0.039 – 0.060 | 4 | | 4 | | |
| | 2.0 – 2.5 | 0.079 – 0.197 | 4 | | 4 | | |
| | 3.0 – 5.0 | 0.118 – 0.197 | 4 | | 4 | | |
| ER 11 MB | 0.2 – 0.9 | 0.0078 – 0.035 | 6 | | 6 | | Small |
| ER 11 | 1.0 – 2.5 | 0.039 – 0.098 | 6 | 6 | 7 | | |
| | 3.0 – 7.0 | 0.118 – 0.256 | 12 | 10 | 7 | | |
| ER 16 MB | 0.2 – 0.9 | 0.0078 – 0.035 | 9 | | 9 | | Small |
| ER 16 | 1 | 0.039 | 9 | | 9 | | |
| | 1.5 – 3.5 | 0.059 – 0.138 | 18 | | 15 | | |
| | 4.0 – 4.5 | 0.157 – 0.177 | 18 | 18 | 15 | | |
| | 5.0 – 10.0 | 0.197 – 0.394 | 18 | 18 | 15 | | |
| ER 20 | 1 | 0.039 | 12 | | 9 | | Small |
| | 1.5 – 6.5 | 0.059 – 0.256 | 21 | 21 | 14 | | |
| | 7.0 – 13.0 | 0.276 – 0.512 | 21 | 21 | 14 | | |
| ER 25 | 1.0 –3.5 | 0.039 – 0.138 | 18 | | | | Small |
| | 4.0 – 7.5 | 0.157 – 0.295 | 24 | 24 | | | |
| | 5.0 – 16.0 | 0.196 – 0.630 | 24 | 24 | | | |

! The maximum torque must not be more than 25% above the recommended tightening torque. Higher clamping force of the clamping nut at the same time means higher stress on the toolholder.

Torque wrenches and matching products see page 13.03/13.04




ER | GB
DIN 6499

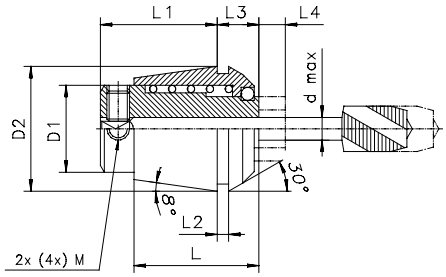
## Rigid Tap Collets

| d [mm] | SW [mm] | L2 [mm] | D3 [mm] | ER 11-GB L = 18.0 L1 = 2.0 D1 = 11.3 D2 = 11.0 L3 [mm] | ER 16-GB L = 27.5 L1 = 2.7 D1 = 16.8 D2 = 16.0 L3 [mm] | ER 20-GB L = 31.5 L1 = 2.8 D1 = 20.8 D2 = 20.0 L3 [mm] | ER 25-GB L = 34.0 L1 = 3.1 D1 = 25.8 D2 = 25.0 L3 [mm] | ER 32-GB L = 40.0 L1 = 3.6 D1 = 32.8 D2 = 32.0 L3 [mm] | ER 40-GB L = 46.0 L1 = 4.1 D1 = 40.8 D2 = 40.0 L3 [mm] | ER 50-GB L = 60.0 L1 = 8.75 D1 = 51.8 D2 = 51.0 L3 [mm] |
|---|---|---|---|---|---|---|---|---|---|---|
| 2.8 | 2.1 | 12 | – | 0 | – | – | – | – | – | – |
| 3.5 | 2.7 | 14 | – | 0 | – | – | – | – | – | – |
| 4 | 3 | 14 | – | 0 | – | – | – | – | – | – |
| 4 | 3.15 / 3.2 | ER 11 = 14<br>ER 16–32 = 18 | 4.5 | 0 | 5.5 | 9.5 | 12 | 18 | – | – |
| 4.5 | 3.4 | ER 11 = 14<br>ER 16–32 = 18 | ER 11 = N/A<br>ER 16–32 = 5.0 | 0 | 5.5 | 9.5 | 12 | 18 | – | – |
| 5 | 4 | ER 11 = 14<br>ER 16–32 = 18 | 5.5 | 0 | 5.5 | 9.5 | 12 | 18 | – | – |
| 5.5 | 4.3 | 18 | 6 | – | 5.5 | 9.5 | 12 | 18 | – | – |
| 5.5 | 4.5 | 18 | 6 | – | 5.5 | 9.5 | 12 | 18 | – | – |
| 6 | 4.5 | 18 | 6.5 | – | 4.5 | 8.5 | 11 | 18 | 23 | – |
| 6 | 4.9 | ER 11 = 14<br>ER 16–40 = 18 | ER 11 = N/A<br>ER 16–40 = 6.5 | 0 | 4.5 | 8.5 | 11 | 17 | 23 | – |
| 6.2 | 5 | 18 | 6.7 | – | 4.5 | 8.5 | 11 | 17 | 23 | – |
| 6.3 | 5 | 18 | 6.8 | – | 4.5 | 8.5 | 11 | 17 | 23 | – |
| 7 | 5.5 | 18 | 7.5 | – | 3.5 | 7.5 | 10 | 16 | 22 | – |
| 7.1 | 5.6 | 18 | 7.6 | – | 3.5 | 7.5 | 10 | 16 | 22 | – |
| 8 | 6.2 / 6.3 | 22 | 8.6 | – | – | 2.5 | 5 | 11 | 17 | – |
| 8.5 | 6.5 | 22 | 9 | – | – | 2.5 | 5 | 11 | 17 | – |
| 9 | 7.0 / 7.1 | 22 | 9.6 | – | – | 2.5 | 4 | 10 | 16 | – |
| 10 | 8 | 25 | 10.5 | – | – | – | – | 7 | 13 | – |
| 10.5 | 8 | 25 | 11 | – | – | – | – | 7 | 13 | – |
| 11 | 9 | 25 | 11.5 | – | – | – | – | 6 | 12 | – |
| 11.2 | 9 | 25 | 11.7 | – | – | – | – | 6 | 12 | – |
| 12 | 9 | 25 | 12.5 | – | – | – | – | 6 | 12 | – |
| 12.5 | 10 | 25 | 13 | – | – | – | – | 5 | 11 | – |
| 14 | 11.0 / 11.2 | 25 | 14.7 | – | – | – | – | 4 | 10 | – |
| 15 | 12 | 25 | 15.5 | – | – | – | – | 4 | 10 | – |
| 16 | 12 | 25 | 16.5 | – | – | – | – | 3 | 9 | – |
| 17 | 13 | 25 | 17.5 | – | – | – | – | 3 | 9 | – |
| 18 | 14.5 | 25 | 18.5 | – | – | – | – | 3 | 8 | – |
| 20 | 16 | 28 | 20.5 | – | – | – | – | 3 | 4 | – |
| 22 | 18 | ER 40 = 28<br>ER 50 = 41 | ER 40 = 22.5<br>ER 50 = 25.5 | – | – | – | – | – | 4 | – |
| 25 | 20 | 41 | 28.5 | – | – | – | – | – | – | – |
| 28 | 22 | 41 | 31.5 | – | – | – | – | – | – | – |
| 32 | 24 | 41 | 34.5 | – | – | – | – | – | – | – |

ET1

## PCM Axial Compensating Tapping Collets

| Type | Range | d [mm] | D1 [mm] | D2 [mm] | L [mm] | L1 [mm] | L2 [mm] | L3 [mm] | L4 [mm] | M [mm] |
|---|---|---|---|---|---|---|---|---|---|---|
| ET1-12 | M 0.5 – M 4 | 3.55 | 7 | 11.5 | 18 | 16.5 | 2.5 | 5 | 5.5 | 2 x M 2.5 |
| ET1-16 | M 0.7 – M 6 | 6.3 | 11 | 17 | 22 | 20 | 2.8 | 7 | 7 | 2 x M 4<br>4 x M 4 |
| ET1-20 | M 1 – M 8<br>(M 10) | 7.1 | 14 | 21 | 24 | 23 | 2.8 | 8 | 7 | 2 x M 4<br>4 x M 4<br>4 x M 5 |
| ET1-25 | M 1 – M 10<br>(M 12) | 10 | 19 | 26 | 26 | 24 | 3 | 10 | 8 | 2 x M 5<br>4 x M 5<br>4 x M 6 |
| ET1-32 | M 4 – M 12<br>(M 16) | 12.5 | 23 | 33 | 33 | 32 | 3 | 11 | 10 | 2 x M 5<br>4 x M 5<br>4 x M 6<br>4 x M 8 |
| ET1-40 | M 6 ... M 16<br>(M 20) | 17 | 28 | 41 | 42 | 42 | 3 | 12 | 13 | 4 x M 6<br>4 x M 6 |

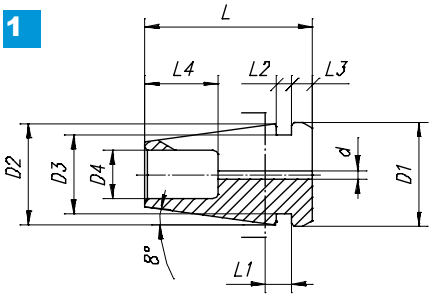



ER | MB
DIN 6499

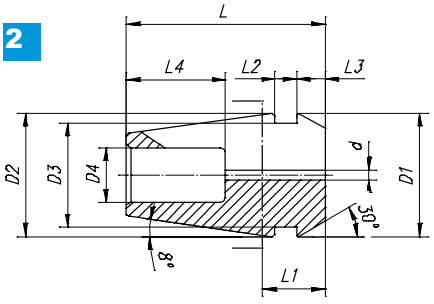
## Microbore Collets

| Size | d [mm] | D1 [mm] | D2 [mm] | D3 [mm] | D4 [mm] | L [mm] | L1 [mm] | L2 [mm] | L3 [mm] | L4 [mm] | Drawing |
|---|---|---|---|---|---|---|---|---|---|---|---|
| ER 8-MB | 0.2 – 0.9 | 8.5 | 8.0 | 6.5 | 4.0 | 13.5 | 1.2 | 1.2 | 1.5 | 6.0 | 1 |
| ER 11-MB | 0.2 – 0.9 | 11.5 | 11.0 | 9.5 | 5.0 | 18.0 | 2.0 | 2.0 | 2.5 | 9.0 | 2 |
| ER 16-MB | 0.2 – 0.9 | 17.0 | 16.0 | 13.8 | 7.5 | 27.5 | 6.3 | 2.7 | 4.0 | 13.0 | 2 |

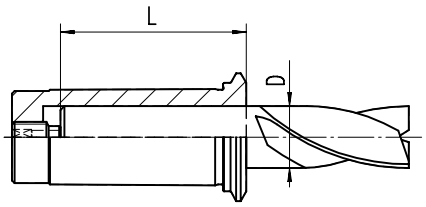
1




2




The ER-MB collets are only available in the above mentioned ER series. They do not have a clamping range! Only nominal diameters with h7 tolerance shanks can be clamped!



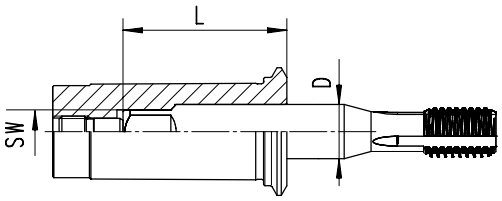

# Presetting Range

## Presetting Range of powRgrip® Collets

| D [mm] | PG 10 | | | PG 15 | | | PG 25 | | | PG 32 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | L* [mm] | L min. [mm] | L max. [mm] | L* [mm] | L min. [mm] | L max. [mm] | L* [mm] | L min. [mm] | L max. [mm] | L* [mm] | L min. [mm] | L max. [mm] |
| 0.20/1.00 | – | 19.0 | 22.0 | – | – | – | – | – | – | – | – | – |
| 1.50 | – | 15.0 | 18.0 | – | – | – | – | – | – | – | – | – |
| 2.00/2.50 | 28.0 | 24.0 | 30.0 | – | – | – | – | – | – | – | – | – |
| 3.00/4.00/5.00 | 28.0 | 24.0 | 30.0 | 28.0 | 25.0 | 32.0 | 28.0 | 25.0 | 32.0 | – | – | – |
| 6.00 | 33.5 | 30.0 | 35.5 | 36.0 | 33.0 | 40.0 | 36.0 | 33.0 | 40.0 | 36.0 | 33.6 | 42.5 |
| 7.00/8.00/9.00 | – | – | – | 36.0 | 33.0 | 40.0 | 36.0 | 33.0 | 40.0 | 36.0 | 33.6 | 42.5 |
| 10.00 | – | – | – | 40.0 | 37.0 | 40.5 | 40.0 | 37.0 | 44.0 | 40.0 | 37.6 | 46.5 |
| 11.00 | – | – | – | – | – | – | 40.0 | 37.0 | 44.0 | 40.0 | 37.6 | 46.5 |
| 12.00/14.00 | – | – | – | – | – | – | 45.0 | 42.0 | 49.0 | 45.0 | 42.6 | 51.5 |
| 16.00/18.00 | – | – | – | – | – | – | 48.0 | 45.0 | 50.0 | 48.0 | 45.6 | 54.5 |
| 20.00 | – | – | – | – | – | – | 50.0 | 47.0 | 50.0 | 50.0 | 47.6 | 56.5 |
| 22.00* | – | – | – | – | – | – | – | – | – | 50.0 | 47.6 | 56.5 |
| 25.00 | – | – | – | – | – | – | – | – | – | 56.0 | 53.6 | 62.5 |

L* : Please insure proper shank length of cutter

**!** Never clamp a powRgrip® collet without a tool. Collet will be damaged!



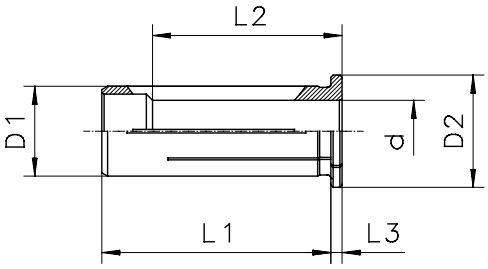

# Presetting Range TAP

## Presetting Range of powRgrip® Tapping Collets

| D [mm] | SW [mm] | PG 15 | | PG 25 | |
|---|---|---|---|---|---|
| | | L* [mm] | L min. [mm] | L* [mm] | L min. [mm] |
| 3.5 | 2.7 | 29 | 27 | – | – |
| 4.5 | 3.4 | 29 | 27 | – | – |
| 6 | 4.9 | 31 | 29 | – | – |
| 7 | 5.5 | 31 | 29 | – | – |
| 8 | 6.2 | 36 | 33.5 | 36 | 33.5 |
| 9 | 7 | 37 | 34.5 | 37 | 34.5 |
| 10 | 8 | 38 | 35.5 | 41 | 38.5 |
| 11 | 9 | – | – | 42 | 39.5 |
| 12 | 9 | – | – | 42 | 39.5 |
| 14 | 11 | – | – | 44 | 41.5 |
| 16 | 12 | – | – | 45 | 42.5 |

L* : Please insure proper shank length of tap

**!** Never clamp a powRgrip® tap collet without a tool. Collet will be damaged!




# HS 12 | HS 20

## Hydraulic Sleeves HS 12

| Type | d [mm] | d [Inch] | D1 [mm] | D2 [mm] | L1 [mm] | L2 [mm] | L3 [mm] |
|---|---|---|---|---|---|---|---|
| HS 12 / ∅ 3.00 | 3.000 | | 12 | 16 | 40 | 29 | 4 |
| HS 12 / ∅ 1/8" | 3.175 | 1/8" | 12 | 16 | 40 | 29 | 4 |
| HS 12 / ∅ 4.00 | 4.000 | | 12 | 16 | 40 | 29 | 4 |
| HS 12 / ∅ 3/16" | 4.763 | 3/16" | 12 | 16 | 40 | 29 | 4 |
| HS 12 / ∅ 5.00 | 5.000 | | 12 | 16 | 40 | 29 | 4 |
| HS 12 / ∅ 6.00 | 6.000 | | 12 | 16 | 40 | 36 | 4 |
| HS 12 / ∅ 1/4" | 6.350 | 1/4" | 12 | 16 | 40 | 36 | 4 |
| HS 12 / ∅ 7.00 | 7.000 | | 12 | 16 | 40 | 37 | 4 |
| HS 12 / ∅ 5/16" | 7.938 | 5/16" | 12 | 16 | 40 | 37 | 4 |
| HS 12 / ∅ 8.00 | 8.000 | | 12 | 16 | 40 | 37 | 4 |
| HS 12 / ∅ 9.00 | 9.000 | | 12 | 16 | 40 | 37 | 4 |
| HS 12 / ∅ 3/8" | 9.525 | 3/8" | 12 | 16 | 40 | 40 | 4 |
| HS 12 / ∅ 10.00 | 10.000 | | 12 | 16 | 40 | 40 | 4 |

## Hydraulic Sleeves HS 20

| Type | d [mm] | d [Inch] | D1 [mm] | D2 [mm] | L1 [mm] | L2 [mm] | L3 [mm] |
|---|---|---|---|---|---|---|---|
| HS 20 / ∅ 3.00 | 3.000 | | 20 | 25 | 50 | 28 | 4 |
| HS 20 / ∅ 1/8" | 3.175 | 1/8" | 20 | 25 | 50 | 28 | 4 |
| HS 20 / ∅ 4.00 | 4.000 | | 20 | 25 | 50 | 28 | 4 |
| HS 20 / ∅ 3/16" | 4.763 | 3/16" | 20 | 25 | 50 | 28 | 4 |
| HS 20 / ∅ 5.00 | 5.000 | | 20 | 25 | 50 | 28 | 4 |
| HS 20 / ∅ 6.00 | 6.000 | | 20 | 25 | 50 | 36 | 4 |
| HS 20 / ∅ 1/4" | 6.350 | 1/4" | 20 | 25 | 50 | 36 | 4 |
| HS 20 / ∅ 7.00 | 7.000 | | 20 | 25 | 50 | 38 | 4 |
| HS 20 / ∅ 5/16" | 7.938 | 5/16" | 20 | 25 | 50 | 37 | 4 |
| HS 20 / ∅ 8.00 | 8.000 | | 20 | 25 | 50 | 37 | 4 |
| HS 20 / ∅ 9.00 | 9.000 | | 20 | 25 | 50 | 38 | 4 |
| HS 20 / ∅ 3/8" | 9.525 | 3/8" | 20 | 25 | 50 | 38 | 4 |
| HS 20 / ∅ 10.00 | 10.000 | | 20 | 25 | 50 | 40 | 4 |
| HS 20 / ∅ 11.00 | 11.000 | | 20 | 25 | 50 | 40 | 4 |
| HS 20 / ∅ 12.00 | 12.000 | | 20 | 25 | 50 | 45 | 4 |
| HS 20 / ∅ 1/2" | 12.700 | 1/2" | 20 | 25 | 50 | 45 | 4 |
| HS 20 / ∅ 13.00 | 13.000 | | 20 | 25 | 50 | 45 | 4 |
| HS 20 / ∅ 14.00 | 14.000 | | 20 | 25 | 50 | 45 | 4 |
| HS 20 / ∅ 15.00 | 15.000 | | 20 | 25 | 50 | 45 | 4 |
| HS 20 / ∅ 5/8" | 15.875 | 5/8" | 20 | 25 | 50 | 48 | 4 |
| HS 20 / ∅ 16.00 | 16.000 | | 20 | 25 | 50 | 48 | 4 |

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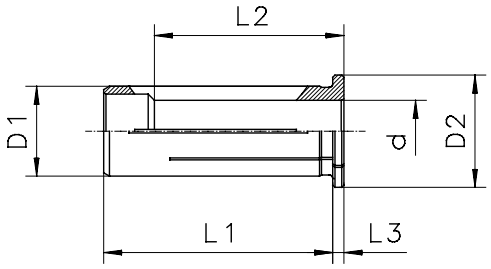
! Never clamp a reduction sleeve without a tool. Sleeve will be damaged!



Edition 9/2009




# HS 25 | HS 32

## Hydraulic Sleeves HS 25

| Type | d [mm] | d [Inch] | D1 [mm] | D2 [mm] | L1 [mm] | L2 [mm] | L3 [mm] |
|---|---|---|---|---|---|---|---|
| HS 25 / ∅ 3.00 | 3.000 | | 25 | 30 | 56 | 29 | 4 |
| HS 25 / ∅ 1/8" | 3.175 | 1/8" | 25 | 30 | 56 | 29 | 4 |
| HS 25 / ∅ 4.00 | 4.000 | | 25 | 30 | 56 | 29 | 4 |
| HS 25 / ∅ 3/16" | 4.763 | 3/16" | 25 | 30 | 56 | 29 | 4 |
| HS 25 / ∅ 5.00 | 5.000 | | 25 | 30 | 56 | 29 | 4 |
| HS 25 / ∅ 6.00 | 6.000 | | 25 | 30 | 56 | 37 | 4 |
| HS 25 / ∅ 1/4" | 6.350 | 1/4" | 25 | 30 | 56 | 37 | 4 |
| HS 25 / ∅ 7.00 | 7.000 | | 25 | 30 | 56 | 37 | 4 |
| HS 25 / ∅ 5/16" | 7.938 | 5/16" | 25 | 30 | 56 | 37 | 4 |
| HS 25 / ∅ 8.00 | 8.000 | | 25 | 30 | 56 | 37 | 4 |
| HS 25 / ∅ 9.00 | 9.000 | | 25 | 30 | 56 | 38 | 4 |
| HS 25 / ∅ 3/8" | 9.525 | 3/8" | 25 | 30 | 56 | 38 | 4 |
| HS 25 / ∅ 10.00 | 10.000 | | 25 | 30 | 56 | 40 | 4 |
| HS 25 / ∅ 7/16" | 11.112 | 7/16" | 25 | 30 | 56 | 40 | 4 |
| HS 25 / ∅ 12.00 | 12.000 | | 25 | 30 | 56 | 46 | 4 |
| HS 25 / ∅ 1/2" | 12.700 | 1/2" | 25 | 30 | 56 | 46 | 4 |
| HS 25 / ∅ 14.00 | 14.000 | | 25 | 30 | 56 | 47 | 4 |
| HS 25 / ∅ 9/16" | 14.288 | 9/16" | 25 | 30 | 56 | 47 | 4 |
| HS 25 / ∅ 5/8" | 15.875 | 5/8" | 25 | 30 | 56 | 48 | 4 |
| HS 25 / ∅ 16.00 | 16.000 | | 25 | 30 | 56 | 48 | 4 |
| HS 25 / ∅ 11/16" | 17.461 | 11/16" | 25 | 30 | 56 | 48 | 4 |
| HS 25 / ∅ 18.00 | 18.000 | | 25 | 30 | 56 | 48 | 4 |
| HS 25 / ∅ 3/4" | 19.050 | 3/4" | 25 | 30 | 56 | 48 | 4 |
| HS 25 / ∅ 20.00 | 20.000 | | 25 | 30 | 56 | 50 | 4 |
| HS 25 / ∅ 13/16" | 20.638 | 13/16" | 25 | 30 | 56 | 50 | 4 |

! Never clamp a reduction sleeve without a tool. Sleeve will be damaged!

## Hydraulic Sleeves HS 32

| Type | d [mm] | d [Inch] | D1 [mm] | D2 [mm] | L1 [mm] | L2 [mm] | L3 [mm] |
|---|---|---|---|---|---|---|---|
| HS 32 / ∅ 3/16" | 4.763 | 3/16" | 32 | 36 | 60 | 29 | 4 |
| HS 32 / ∅ 5.00 | 5.000 | | 32 | 36 | 60 | 29 | 4 |
| HS 32 / ∅ 6.00 | 6.000 | | 32 | 36 | 60 | 36 | 4 |
| HS 32 / ∅ 1/4" | 6.350 | 1/4" | 32 | 36 | 60 | 36 | 4 |
| HS 32 / ∅ 7.00 | 7.000 | | 32 | 36 | 60 | 37 | 4 |
| HS 32 / ∅ 5/16" | 7.938 | 5/16" | 32 | 36 | 60 | 36 | 4 |
| HS 32 / ∅ 8.00 | 8.000 | | 32 | 36 | 60 | 36 | 4 |
| HS 32 / ∅ 9.00 | 9.000 | | 32 | 36 | 60 | 37 | 4 |
| HS 32 / ∅ 3/8" | 9.525 | 3/8" | 32 | 36 | 60 | 37 | 4 |
| HS 32 / ∅ 10.00 | 10.000 | | 32 | 36 | 60 | 40 | 4 |
| HS 32 / ∅ 11.00 | 11.000 | | 32 | 36 | 60 | 40 | 4 |
| HS 32 / ∅ 7/16" | 11.112 | 7/16" | 32 | 36 | 60 | 45 | 4 |
| HS 32 / ∅ 12.00 | 12.000 | | 32 | 36 | 60 | 45 | 4 |
| HS 32 / ∅ 1/2" | 12.700 | 1/2" | 32 | 36 | 60 | 45 | 4 |
| HS 32 / ∅ 13.00 | 13.000 | | 32 | 36 | 60 | 45 | 4 |
| HS 32 / ∅ 14.00 | 14.000 | | 32 | 36 | 60 | 46 | 4 |
| HS 32 / ∅ 9/16" | 14.288 | 9/16" | 32 | 36 | 60 | 46 | 4 |
| HS 32 / ∅ 15.00 | 15.000 | | 32 | 36 | 60 | 46 | 4 |
| HS 32 / ∅ 5/8" | 15.875 | 5/8" | 32 | 36 | 60 | 46 | 4 |
| HS 32 / ∅ 16.00 | 16.000 | | 32 | 36 | 60 | 48 | 4 |
| HS 32 / ∅ 17.00 | 17.000 | | 32 | 36 | 60 | 48 | 4 |
| HS 32 / ∅ 11/16" | 17.461 | 11/16" | 32 | 36 | 60 | 48 | 4 |
| HS 32 / ∅ 18.00 | 18.000 | | 32 | 36 | 60 | 49 | 4 |
| HS 32 / ∅ 19.00 | 19.000 | | 32 | 36 | 60 | 49 | 4 |
| HS 32 / ∅ 3/4" | 19.050 | 3/4" | 32 | 36 | 60 | 50 | 4 |
| HS 32 / ∅ 20.00 | 20.000 | | 32 | 36 | 60 | 50 | 4 |
| HS 32 / ∅ 13/16" | 20.638 | 13/16" | 32 | 36 | 60 | 50 | 4 |
| HS 32 / ∅ 22.00 | 22.000 | | 32 | 36 | 60 | 50 | 4 |
| HS 32 / ∅ 7/8" | 22.225 | 7/8" | 32 | 36 | 60 | 50 | 4 |
| HS 32 / ∅ 15/16" | 23.813 | 15/16" | 32 | 36 | 60 | 52 | 4 |
| HS 32 / ∅ 25.00 | 25.000 | | 32 | 36 | 60 | 56 | 4 |
| HS 32 / ∅ 1" | 25.400 | 1" | 32 | 36 | 60 | 56 | 4 |

# TAP Dimensions

## Shank Diameter of Taps

| Thread | | ISO 529* | | ISO 2283 | | DIN 371 | | DIN 357 DIN 376 | | DIN 352 | | JIS B 4430 1998 Annex | | ANSI B 94.9 1999 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| [mm] | [Inch] | [Ø] | [→] | [Ø] | [→] | [Ø] | [→] | [Ø] | [→] | [Ø] | [→] | [Ø] | [→] | [Ø] | [→] |
| M 1.0 | | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | – | – |
| M 1.1 | | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | – | – |
| M 1.2 | | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | – | – |
| M 1.4 | #0-6 | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | – | – |
| M 1.6 | 1/16 | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | 0.141" | 0.110" |
| M 1.7 | | – | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | – | – |
| M 1.8 | | 2.50 | 2.00 | – | – | 2.50 | 2.10 | – | – | 2.50 | 2.10 | 3.00 | 2.50 | 0.141" | 0.110" |
| M 2.0 | | 2.50 | 2.00 | – | – | 2.80 | 2.10 | – | – | 2.80 | 2.10 | 3.00 | 2.50 | 0.141" | 0.110" |
| M 2.2 | | 2.80 | 2.24 | – | – | 2.80 | 2.10 | – | – | 2.80 | 2.10 | 3.00 | 2.50 | 0.141" | 0.110" |
| M 2.3 | | – | – | – | – | 2.80 | 2.10 | – | – | 2.80 | 2.10 | 3.00 | 2.50 | – | – |
| M 2.5 | 3/32 | 2.80 | 2.24 | – | – | 2.80 | 2.10 | – | – | 2.80 | 2.10 | 3.00 | 2.50 | 0.141" | 0.110" |
| M 2.6 | | – | – | – | – | 2.80 | 2.10 | – | – | 2.80 | 2.10 | 3.00 | 2.50 | – | – |
| M 3.0 | 1/8 | 3.15 | 2.50 | 2.24 | 1.80 | 3.50 | 2.70 | 2.20 | – | 3.50 | 2.70 | 4.00 | 3.20 | 0.141" | 0.110" |
| M 3.5 | | 3.55 | 2.80 | 2.50 | 2.00 | 4.00 | 3.00 | 2.50 | 2.10 | 4.00 | 3.00 | 4.00 | 3.20 | 0.141" | 0.110" |
| M 4.0 | 5/32 | 4.00 | 3.15 | 3.15 | 2.50 | 4.50 | 3.40 | 2.80 | 2.10 | 4.50 | 3.40 | 5.00 | 4.00 | 0.168" | 0.131" |
| M 4.5 | 3/16 | 4.50 | 3.55 | 3.55 | 2.80 | 6.00 | 4.90 | 3.50 | 2.70 | 6.00 | 4.90 | 5.00 | 4.00 | 0.194" | 0.152" |
| M 5.0 | | 5.00 | 4.00 | 4.00 | 3.15 | 6.00 | 4.90 | 3.50 | 2.70 | 6.00 | 4.90 | 5.50 | 4.50 | 0.194" | 0.152" |
| M 6.0 | 1/4 | 6.30 | 5.00 | 4.50 | 3.55 | 6.00 | 4.90 | 4.50 | 3.40 | 6.00 | 4.90 | 6.00 | 4.50 | 0.255" | 0.191" |
| M 7.0 | 5/16 | 7.10 | 5.60 | 5.60 | 4.50 | 7.00 | 5.50 | 5.50 | 4.30 | 6.00 | 4.90 | 6.20 | 5.00 | 0.318" | 0.238" |
| M 8.0 | | 8.00 | 6.30 | 6.30 | 5.00 | 8.00 | 6.20 | 6.00 | 4.90 | 6.00 | 4.90 | 6.20 | 5.00 | 0.318" | 0.238" |
| M 9.0 | | 9.00 | 7.10 | 7.10 | 5.60 | 9.00 | 7.00 | 7.00 | 5.50 | 7.00 | 5.50 | 7.00 | 5.50 | – | – |
| M 10.0 | 3/8 | 10.00 | 8.00 | 8.00 | 6.30 | 10.00 | 8.00 | 7.00 | 5.50 | 7.00 | 5.50 | 7.00 | 5.50 | 0.381" | 0.286" |
| M 11.0 | | 8.00 | 6.30 | 8.00 | 6.30 | – | – | 8.00 | 6.20 | 8.00 | 6.20 | 8.00 | 6.00 | – | – |
| M 12.0 | 1/2 | 9.00 | 7.10 | 9.00 | 7.10 | – | – | 9.00 | 7.00 | 9.00 | 7.00 | 8.50 | 6.50 | 0.367" | 0.275" |
| M 14.0 | 9/16 | 11.20 | 9.00 | 11.20 | 9.00 | – | – | 11.00 | 9.00 | 11.00 | 9.00 | 10.50 | 8.00 | 0.429" | 0.322" |
| M 16.0 | 5/8 | 12.50 | 10.00 | 12.50 | 10.00 | – | – | 12.00 | 9.00 | 12.00 | 9.00 | 12.50 | 10.00 | 0.480" | 0.360" |
| M 18.0 | 11/16 | 14.00 | 11.20 | 14.00 | 11.20 | – | – | 14.00 | 11.00 | 14.00 | 11.00 | 14.00 | 11.00 | 0.542" | 0.406" |
| M 20.0 | 13/16 | 14.00 | 11.20 | 14.00 | 11.20 | – | – | 16.00 | 12.00 | 16.00 | 12.00 | 15.00 | 12.00 | 0.652" | 0.489" |
| M 22.0 | 7/8 | 16.00 | 12.50 | 16.00 | 12.50 | – | – | 18.00 | 14.50 | 18.00 | 14.50 | 17.00 | 13.00 | 0.697" | 0.523" |
| M 24.0 | 15/16 | 18.00 | 14.00 | 18.00 | 14.00 | – | – | 18.00 | 14.50 | 18.00 | 14.50 | 19.00 | 15.00 | 0.760" | 0.570" |
| M 27.0 | 1/16 | 20.00 | 16.00 | – | – | – | – | 20.00 | 16.00 | 20.00 | 16.00 | 20.00 | 15.00 | 0.896" | 0.672" |
| M 30.0 | 3/16 | 20.00 | 16.00 | – | – | – | – | 22.00 | 18.00 | 22.00 | 18.00 | 23.00 | 17.00 | 1.021" | 0.766" |

*M3 - M10 with reinforced shank

All dimensions in mm (except US Standard ANSI B 94.9 in Inch)

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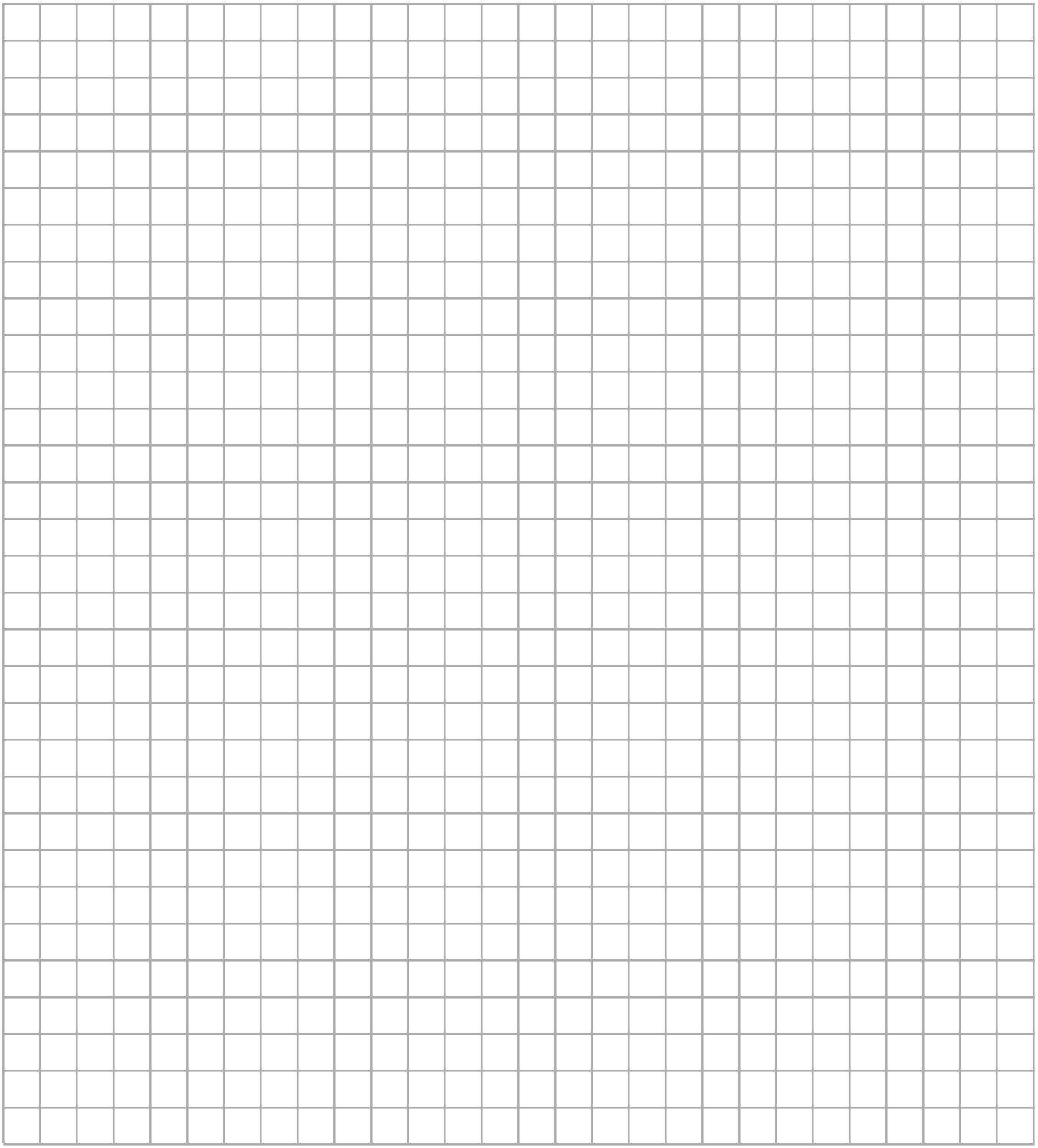
# Notes



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