

Zebra[®]

Cleans your coolant and saves you money using low cost solutions and world class expertise.

Coolant Maintenance Issues

HARDNESS

CONCENTRATION

pH

TRAMP OIL

CHIPS





















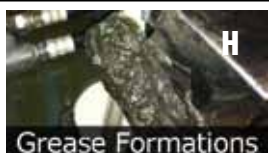





Volume 17b

Coolant Troubleshooting Guide

This chart will assist you in troubleshooting coolant failures and was designed to provide a visual reference to indicate these failures and how they may be traced to one or multiple sources for correction. You may also reference what other failures may arise if one or more of the preventative maintenance issues are mismanaged or entirely neglected.

For instance, your coolant emits a foul odor. This failure is traced to poor management of Tramp Oil and pH. You may need to skim tramp oil more frequently (every day is recommended), aerate the fluid (when not in use), and monitor pH levels (once a week) to prevent recurrence.

You may also be experiencing other problems that are caused by the same neglect, such as split emulsions, rust, and skin sensitivity.

Hardness (ppm)	Concentration (%)	pH (pH)	Tramp Oil (T/O)	Chips (Ch)
 Split Emulsions		 Split Emulsions	 Split Emulsions	 Split Emulsions
 Gummy Residues	 Gummy Residues		 Emulsified Oils	 Emulsified Oils
 Rust	 Poor Finishes	 Rust	 Rust	 Poor Finishes
 Foam	 Premature Tool Wear	 Foul Odor	 Foul Odor	 Premature Tool Wear
 Grease Formations	 Skin Sensitivity	 Skin Sensitivity	 Skin Sensitivity	 Grease Formations
				 Shop Mist

H = High Value
L = Low Value



Coolant Maintenance Courses

Our latest innovation for our reps and select outside sales people. An intense set of courses educates them on the latest in coolant maintenance technologies.

Ask about it today!

Testimonial - Refractometer

Woody is "pleased with the brightness" of his Basic Refractometer he purchased after visiting Zebra at IMTS 2004. Woody Smith, Founder, Smith's Machine, AL, Nov 2004

Contents

Managing Water Hardness



Hardness Testing Sticks p 4

Keeps your coolant from splitting or gumming up your machine. It's the least appreciated problem.

Managing Concentration



Refractometers p 5

Optical measurement of coolant concentration and oil content. Your most important measurement.



Economy Mixer p 6

This mixer uses inserts and is the most affordable.



Machinist Mixer p 6

This venturi mixes coolant efficiently. Built machinist tough. Comes with a lifetime warranty.



Proportioning Pumps p 7

Water powered proportioner pumps can mix any coolant and pump almost any distance.



Fill Station p 8

An automated coolant mixing and delivery system for industrial fluids. For the automated factory.



Sump Level Sensor p 9

A machine sump level sensor that reports sump levels continuously, preventing accidents and much more.



Managing pH

pH Test Strips p 10

For quick sampling. Early warning for sick sumps.



Odor Control Tablets p 10

Eliminate and prevent odors caused by bacterial decay.



Oxygenator Aerator p 11

Extend coolant life, reduce foul odors, and help keep oxygen levels high.



Circulation Pumps p 11

Keep your fluids flowing while the machine is down for prevention of bacterial contamination.

Managing Tramp Oil



Sidewinder p 12

The Sideways Skimmer™. Newest technology oil skimmer can remove oil from anywhere.



Belt Skimmer..... p 13

Our newest design has an easy to clean collection tray. Lifetime warranty on scrapers.



Diverter..... p 14

Upgrade your existing skimmer so it removes pure oil from your sump, saving your expensive coolant.



LockJaw..... p 14

The clamp that allows you to mount or move your oil skimmer anywhere in seconds.



Smart Disk Skimmer p 15

This smart disk-type oil skimmer removes only oil from your sump, even if on all day. Continuous duty motor. Disk and scrapers guaranteed for life.



Original Disk Skimmer p 15

The classic disk-type oil skimmer comes with a disk and scrapers with lifetime guarantees. Intermittent duty motor.



Muscle Oil Coalescer p 16-17

This coalescer skims, aerates, and filters continuously. Keeps your fluid moving to increase its life.



Oasis Portable Oil Coalescer p 18-19

Diaphragm pump powered, portable skimming system that separates oil first, small particles second.



Intake Attachments p 20-21

Greatest variety of intake attachments, skimming from almost any sump, using anyone's equipment.

Managing Chips



Z-Vac II p 22

Integrated vacuum filters solids from fluids, extending their life, and making sump changes easier.

Additional Products

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Uncle Earl's® Hand Healing Soap™ p 26



All natural, moisturizing soap to clean and heal hard working hands.



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We've been serving metalworking for almost twenty years, starting in a garage with one product. Today we provide the widest range of cost-saving preventive maintenance products along with world-class technical expertise.

Our focus has always been on one of the most unappreciated tools, metalworking fluids. Our central mission is assisting you in making it last. Like endmills and other hard tooling, it works best when kept sharp.

We don't solve coolant problems by ourselves. Our most important partner is you. You live and breathe your problem, and without your assistance we can't suggest the perfect solution. We have other partners as well: our dedicated distributors, their in-house coolant specialists, and a national network of reps. Without them we wouldn't be as strong, and you wouldn't get answers as quickly. You may joke with them when they visit, but remember to thank them the next time they visit. They're saving you money, and that's good for all of us.

Sincerely, Zebra Skimmers Corp.

HARDNESS ISSUES

Hardness Testing Sticks Monitor Coolant Chemical Condition

Why rely on your coolant guy to keep your coolant in its top chemical condition when it is so easy to do yourself, and *prevent* coolant problems?

Minerals in tap water adversely affect the chemical nature of the coolant emulsion. Each coolant works

within a specific range of hardness so it is important to check the initial water supply for its hardness level. Then monitor each sump weekly, as evaporation leads to a build up of minerals – like scale on plumbing, which can cause problems.

Problems Related to Hardness



Split Emulsions

When hardness level is too high, concentrate breaks from oil/water emulsion and floats on the fluid surface. It gets skimmed off like oil and can easily plug particle filters.



Premature Tool Wear

The rest is mostly water, providing insufficient lubrication and causes broken or prematurely worn tooling.



Rust

Rust preventative may be required since the natural lubricant of coolant is no longer part of the fluid pool. Machine interiors may also become affected.



Grease Formations

Grease may form as chips interact with the concentrate. Grease is not easily skimmed and can plug filters.



Foam

Lack of minerals cause foam, which prevent oil skimming as the surface tension changes. Foam also encourages tank overflow.

Part Number
Shown: XWT50



- Easy-to-use: Dip into fluid and compare your color reading to hardness (ppm) value color chart on bottle label
- Results in 3 seconds
- Range of 0-1000 ppm calcium and magnesium
- 50 sticks per bottle
- One bottle lasts a year per sump

Refractometers Measure Concentration

Coolant's primary purpose is to lubricate and cool the work surface and tooling.

Each coolant works best for a given application at a recommended concentration of it to water.

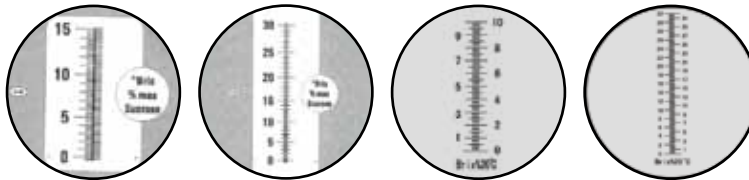
Monitor the initial coolant charge, then each day, as evaporation increases concentration at the sump level. Maintaining the recommended concentration is essential to prevent problems.

- Well-lit Scale (Specialist Only)
- Integrated drip feed (Specialist Only)
- Anti-roll support (Specialist Only)
- Comfortable eyepiece
- Easy to read, bright scale
- Adjustable focus for easy reading
- Textured sleeve for easy gripping
- Includes carrying case
- Locknut for calibration



Specialist

Basic



P/N:	OPT15	OPT30	OPT10	OPT32
Brix range:	0-15	0-30	0-10	0-32
Accuracy:	± 0.1%	± 0.2%	± 0.1%	± 0.2%

*Check your coolant's technical data sheet to determine where your coolant will read on the Brix Scale. Some have a "Refractometer Factor" which you multiply the scale reading by to obtain the value in percent.

Determining Coolant Refill Percentage

Let's say you want to maintain a 5% concentration in your sump. You currently measure 8%, and the 50 gallon sump is only half full. This means you have to add another 25 gallons. But if you add 25 gallons at 5%, your entire sump will then have a concentration of 6.5% - not 5. What do you do? The calculations are shown below. Please feel free to give us or one of our many knowledgeable distributors a call if you have any questions.

1. What's the real amount of concentrate in your ideal 5% sump? = 2.5 gallons
2. How much refill concentrate do you need? = 0.5 gallons
3. What is the concentration for the 25 gallons of refill? = 0.5 gal of concentrate ÷ 25 gallons of fluid required = .02, or 2% concentration.

Problems Related to Concentration

Low concentrations can lead to poor lubrication, causing broken or prematurely worn tooling, and poor surface finishes.



Premature Tool Wear



Poor Finishes

High concentrations can lead to skin irritation, and leaving residues on your parts.



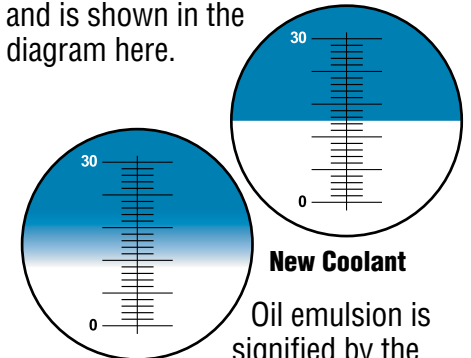
Skin Sensitivity



Gummy Residues

Refractometers Measure Concentration & Oil Emulsion

Concentration is the position of the horizontal line on the brix scale and is shown in the diagram here.



New Coolant

Old Coolant

Oil emulsion is signified by the blurriness of that line and

is shown in the diagram to the left. As tramp oils are beaten into the coolant, the line will become blurrier. When the line is so blurry that an actual line is not visible, it is time to change the coolant.

CONCENTRATION ISSUES

Venturi Mixers

Proper mixing provides better emulsions and saves on raw material costs
 Maintaining a consistent concentration increases sump and tool life



Machinist Mixer with Lifetime Warranty

- Separate water shut-off valve
- Machined from solid bronze casting with treated steel stand pipe
- Maximum viscosity of 500 SUS
- 40" discharge tube included (max length for delivery)
- Fits drums, pails, or totes (please specify "MIXU" option)
- Recommended Accessory: Lockout for tampering prevention (#MIXXLOCK)

3 POINT ACCURACY

- Machined needle valve
- Locknut below dial holds mixing reference
- Standpipe check valve keeps mixing chamber loaded



Mixer Lockout
#MIXXLock

Machinist Mixer

Part Number	GPM	Low	High	Max Mix Ratio	Range psi	In ³	Out
MIX0327	3	0	7	15:1	25-75	3/8"	1/2"
MIX03725	3	0	25	4:1	25-75	3/8"	1/2"
MIX1027	10	0	7	15:1	25-75	1/2"	3/4"
MIX10725	10	0	25	4:1	25-75	1/2"	3/4"

Machinist Mixer Accessories

- MIXXLOCK Lockout for Machinist Mixer to prevent tampering
- MIXSF3 Swivel Fitting for inlet garden hose for 3gpm machinist mixer
- MIXSF10 Swivel Fitting for inlet garden hose for 10gpm machinist mixer

Note: Above part numbers are to suit drums. For "Universal" mixer to suit all containers, use prefix MIXU.

Economy Mixer

Part Number	GPM	Mix Range % ¹		Max. Delivery ²	Range psi	Fittings	
		Low	High			In ³	Out
MIX05120	4.8	.25	22.2	48"	25-75	3/4" GHT	1/2" NPT
MIX05XMTK	Set of 14 metering tips ranging from 0.2 to 22.2 %. Color coded.						

Mixer Notations

- ¹Economy Mixer is supplied with 14 various size tips within above range
- ²For longer delivery needs, refer to the proportioning pump
- ³Connection fittings to water source not supplied

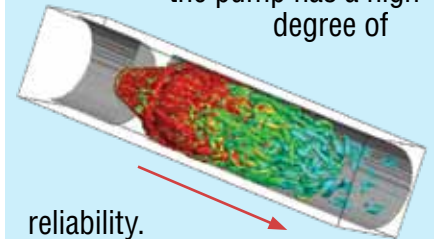


Economy Mixer

- 14 metering tips for specific ratios
- Maximum viscosity of 500 SUS
- 30 day warranty only
- 48" discharge tube included (max length for delivery)
- Fits all containers types

How They Work

Venturi pumps are commonly used for coolant mixers. The moving water across the orifice creates a vacuum, drawing coolant into the water stream. The combination of the two laminar flows creates a turbulent zone thoroughly mixing the two fluids. Since there are no moving parts, the pump has a high degree of



reliability. The needle valve allows for great precision in setting the proportion of coolant mixed with water.

Zebra Proportioning Pump Mixes & Delivers Over 800 Feet

When you need a accurate coolant proportion AND the ability to pump that fluid across your shop floor so it's near the point of use, then you're ready for the Proportioning Pump.

- Choose from various flow rates
- Choose from various concentration ranges
- Delivers fluid 20' vertically and 800' laterally
- Clear 6' plastic intake hose, for all containers, included
- Wall mount configuration available
- For use with concentrates to 700 SUS viscosity
- 10-70 psi incoming water pressure

Recommended Accessories

Water Filter

Protects pump's intricate internal components from wear due to scale.



Water Pressure Limiter

Protects pump components from damage due to excessive water pressure.



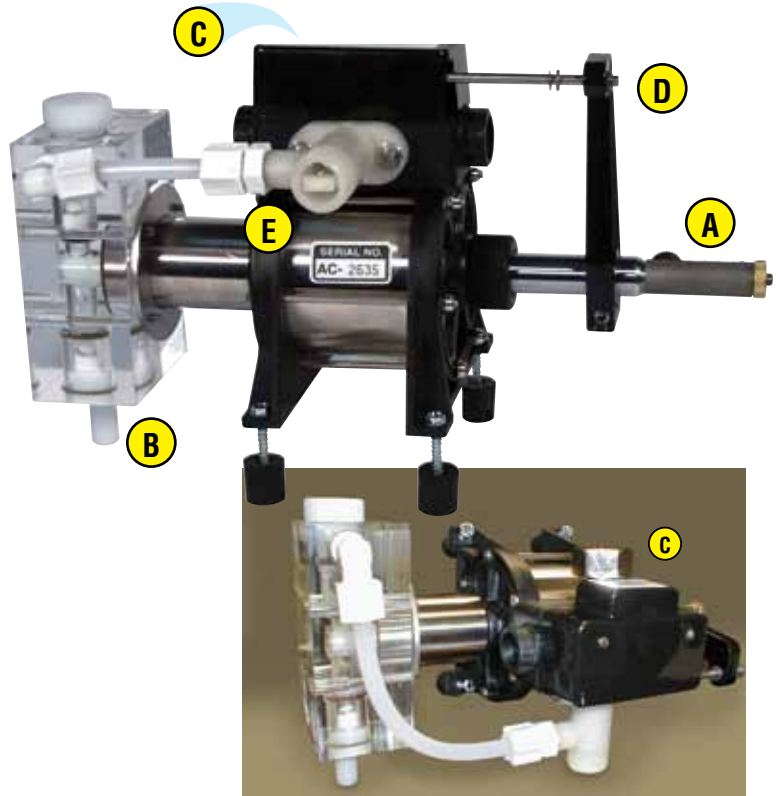
Back flow Checkvalve

Protects pump from back pressure and fluid returning through the pump.



Turbulence Tube

This accelerates the mixing of your coolant with water during transport, ensuring higher quality coolant at the machine.



Part Number	Max. GPM	Mix Range %		Mixing Ratios	
		Low	High	Low	High
MIXPP518	7	1.4	12.3	1:71	1:8
MIXPP520	7	1.6	13.5	1:62	1:7
MIXPP532	7	2.4	20	1:41	1:5

Notations

- MIXPP units all have 3/4 inch (NPT) inlets and outlets.
- PSI range for all MIXPP units is rated between 10 - 70 psi.
- Please contact us for a mixing range or flow capacity not shown here. All units can be mounted on a horizontal surface (default part numbers) or on a vertical surface like a wall (numbers have a -VM added to them.) For fluids that are thicker than 500 SUS inlet pressure should be reduced below 20 psi.

How It Works

The adjustable screw (A) is set for concentration output, and the concentrate intake hose is connected to its intake port (B). The incoming water (C, not shown) drives the actuating arm (D), which suctions an exact amount of concentrate and mixes it with the exact amount of water, per the desired output setting. The coolant and water flow through the discharge port (E).

This positive displacement process allows for the ability to push the fluid a greater distance than other types of mixers that use the water pressure to create a vacuum to draw the concentrate.

Now you can deliver mixed fluid through conduit (20' vertically and 800' laterally), and have drop line garden hoses, fitted with ball valves, so operators can easily access coolant at the point of use, as a decrease in pressure on the outlet activates the pump. No more hauling buckets across the shop floor!

Note that the position on the adjustable screw and concentrate viscosity (700 SUS max) will determine the concentration value at any given setting. A refractometer is necessary to check the concentration value, whereby further adjustment can be made to mix your desired concentration.

Testimonial - Proportioning Pump

Lloyd contacted Zebra for a solution to mix his water pulp solution in a paper preparation application. We provided him with a high volume Proportioning Pump to deliver the mixture through multiple sprayer

lines through a manifold system. During our yearly customer feedback survey, he comments "Product works well, your engineering is rated a 5, and I will buy Zebra in the future."

L Harvey, Engineer, Albany Int'l, Cowansville, QU, Feb 2006

Why Buy a Fill-Station?

Free your maintenance team and operators from unproductive chores. The Fill-Station takes guesswork out of coolant delivery. Automatic sump monitoring and delivery ensures that machines won't run out of coolant compromising production runs, tool life, and quality.

That's why you should buy a Fill-Station.



From the concentrate...

Electrical Panel

This enclosure contains the brains. A PLC with touch panel interface runs and monitors all the components continuously. Internally, the cabinet is Allen Bradley component tough, with easy access to all components and configurations.

Pump Panel

This enclosure contains the heart of the system. This water powered pump automatically proportions the correct amount of water with your specified

amount of concentrate. It's fully protected by a water filter (standard 10 μ) and control solenoid in case of shutdown.

There's a pressure regulator with dial indicator (future

versions will be visible in the window) and a mixing tube. Up to 25 gpm, 20 feet vertically and 800 feet lateral. Backflow check valve included.



Coolant Suction Stalk

This component is designed to easily fit into your drum or tote. From the stainless steel junction box on top to the tube spacers, to the bung hole adapter, to the level floats and one way valve on the bottom, this is one solid piece of equipment. The stalk signals the system when your coolant

concentrate needs to be changed, and when it is so dangerously low that it must shut down the entire system.

Zebra Fill-Station™ Automates Coolant Mixing & Delivery

Zebra's Fill-Station system automates monitoring, mixing, and moving coolant throughout your factory.

The FS system gives you these benefits:

- Reduces labor
- Reduces waste coolant
- Reduces waste in valuable work pieces and tooling
- Increases productivity of operators, maintenance, and other personnel
- Increases your environmental and OSHA safety margins
- Improves your confidence in lights-out operations
- Improves management reporting on coolant and water use
- Improves your bottom line

Mixing & Delivering Coolant in a Sensitive Machine Cell Operation

Zebra was contacted by a laser technology manufacturer who was interested in automating their coolant mixing and delivery among a few sumps in a sensitive machine cell operation.

Zebra equipped them with a Fill-Station which included a low volume proportioning pump and monitored the concentration container since preventing water only delivery was paramount.

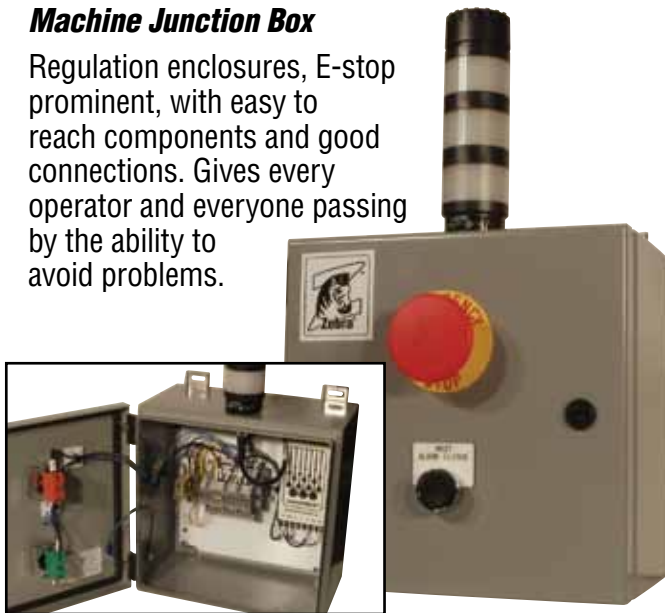
To the machine...

Machine Sump Level Sensors

Level sensors using guided wave radar or ultrasound. They handle dirt and chips.

Machine Junction Box

Regulation enclosures, E-stop prominent, with easy to reach components and good connections. Gives every operator and everyone passing by the ability to avoid problems.



Level sensor array shown here being tested on simulated sumps before installation.

Floor Spill Sensors

We don't believe anything is perfect, we've been around too long. But we can provide you backup and more backup, as much as you want. If a sump overflows, these devices will let you know.

Solenoids – 24v to 220v

They look small and unimportant, but they play the most critical role in the system – turning the flows on and off, and communicating with the controlling panel.



pH Strips Monitor Coolant Chemical Condition

Why rely on your coolant guy to keep your coolant in its top chemical condition when it is so easy to do yourself, and prevent coolant problems? Each coolant has its own chemical range, but all are between 8-10 pH. By monitoring each sump weekly, you can address other maintenance protocols that may be lacking.

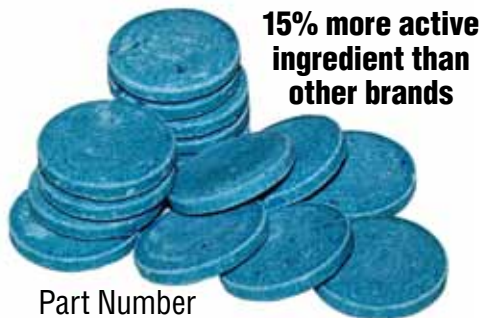
- Easy to use: Dip into fluid and compare your color reading to pH value color chart
- Results in less than a minute
- Range of 6.5-10.0 (for coolant)
- Accuracy ± 0.2 pH (for coolant)
- 100 sticks per package
- Lasts two years per sump



Part Number Shown: XPHPS09

Odor Control Tablets Cures Sump Hangover

Even with preventative coolant maintenance, some sumps still smell, especially after the weekend. The best short term solution is the Odor Control Tablet, which safely re-balances the coolant's pH-thus reducing the foul smell.



Part Number Shown: XOCT25

Should your tank configuration not lend itself to proper aeration or the coolant batch is rather old, the Odor Control Tablet may also be your best long term solution.

- Eliminates sump odors caused by bacterial emissions (hydrogen sulfide)
- Safe for most coolants when used as directed
- Recommended dosage is 1 tablet per 25 gallons every 2 weeks
- Safer and more economical than biocides (contains no formaldehyde or other harmful chemicals)
- Works best when used with Oxygenator™
- 15 tablets per tube
- Each tablet measures 2" \varnothing

Testimonial - Odor Control Tablets

"Zebra [Odor Control] Tablets are different from other products. It removes bacteria circumstance and prevents coolant odor. With tablets [left] clear as new coolant, no odor, and easier cleaning [of] stained parts. [The sample with] no tablets [right] has foul smells and hard cleaning [of] stained parts." Yong Lee, Greentec Co. Ltd. c/o B & G Steel Co., S Korea, Apr 2009



Problems Related to pH

Coolants are designed to be alkaline, to neutralize the acidic emissions of bacteria which enter the fluid pool via the water supply, work material, our skin, and a host of other sources.

Reduction of bacterial growth can be achieved by removing tramp oil, aerating the fluid, and filtering particles. When these protocols are not in place, coolant failures can occur.



Your sumps will emit foul odors, caused by sulfuric and hydrochloric acid emissions.



Bacterial growth encourages skin sensitivity as acids build up in the fluid pool.



When pH level is too low, concentrate breaks from oil/water emulsion and floats on the fluid surface. It gets skimmed off like oil and can easily plug particle filters.



The rest is mostly water, providing insufficient lubrication and causes broken or prematurely worn tooling.



Rust preventative may be required since the natural lubricant of coolant is no longer part of the fluid pool. Machine interiors may also become affected.

Oxygenator™ Reduces Coolant Rancidity

- Extends coolant life by maintaining high oxygen levels
- Prevents foul odors
- Fuel-grade tubing
- Industrial-grade diffuser



XBUB6000



XBUB8000

XBUB5000

XBUB1200



The bacteria we're fighting within the sump thrive best when their oxygen supply is gone. When the machine is shut down for the night, the pump stops circulating coolant, traces of tramp oil float to the surface, and the oxygen supply to the fluid is cut off. This is the best time for bacteria to grow.

Your coolant's health is dependent upon whether it can "breathe". Using an aeration device when the machine pump is shut down is a simple, yet very effective method of keeping bacteria at bay and your coolant healthy.

The Oxygenator is inexpensive and similar to aquarium pumps, but uses oil-rated tubing and diffusers that will not degrade in our coolant environment.

For sumps or tanks above 100 gallon, use the Zebra Circulation Pump or the airpowered Oxygenator.

Zebra Circulation Pumps Aerate Large Tanks

- Cost-effective method to circulate large fluid volumes
- Ideal for sumps or tanks over 100 gallons
- Directs coolant above fluid level to create waterfall/aeration pattern
- Includes pump, hose, and hose magnet



Part Number Shown: FXP11.1

Testimonials - Oxygenator

"Oxygenators are working great. My sumps are over two months old now and before they lasted only a couple of weeks!" Steve Dengler, Tool & Die Supervisor, Prison Industry Authority, Av- enal, CA, Oct 2001

Oxygenator

Part Number	Description	Application	Capacity	Electrical*	Dimensions (L, W, H)
XBUB1200	Small Oxygenator	1-25 gal sump	1000 cc/min	110v	3" x 2" x 1.5" (76 x 51 x 38 mm)
XBUB5000	Medium Oxygenator	26-50 gal sump	3000 cc/min	110v	5" x 3" x 2.5" (127 x 76 x 64 mm)
XBUB8000	Large Oxygenator	51-100 gal sump	5000 cc/min	110v	7" x 4" x 3" (178 x 102 x 76 mm)
XBUB6000	Air Oxygenator	100-1000 gal sump	air-regulated	compressed air	n/a

* 220v models available by adding "E" to the end of part number (except air-powered model)

Circulation Pumps

Part Number	Description	Application	Capacity	Electrical*	Dimensions (L, W, H)
FXP11.1	Centrifugal Pump	101-250 gal sump	3 gpm	110v	4" x 3" x 4" (100 x 76 x 100 mm)
FXP5.1	Centrifugal Pump	251-500 gal sump	11 gpm	110v	6.5" x 4.5" x 5.5" (165 x 114 x 140 mm)

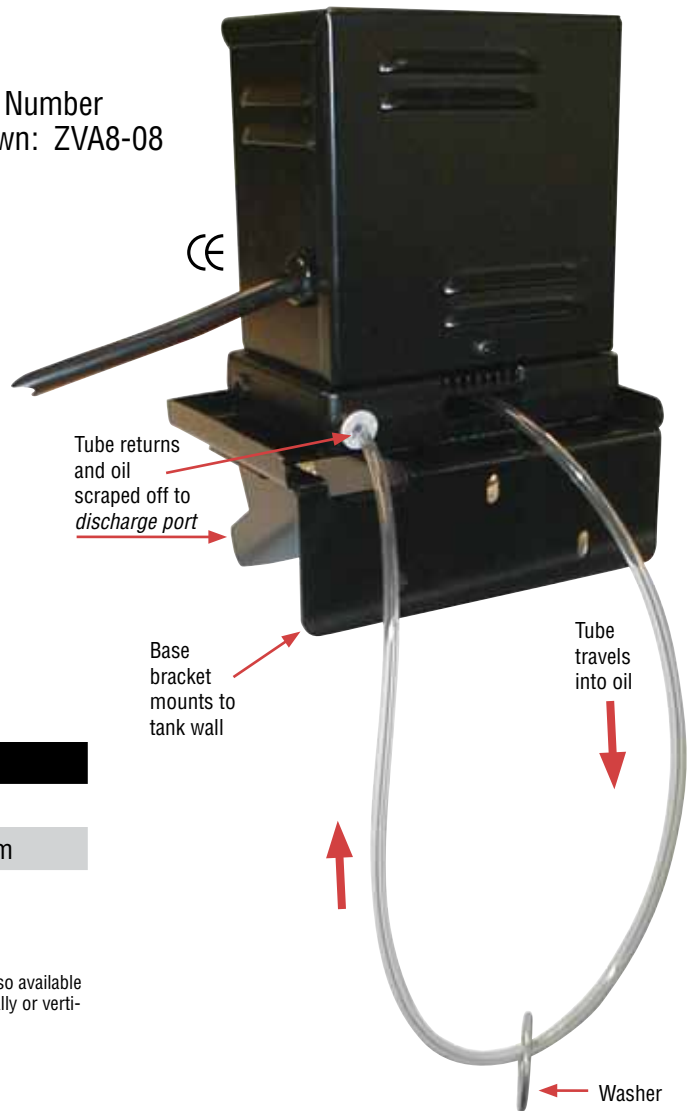
* 220v models available by adding "E" to the end of part number

Sidewinder® Tube Skimmer

Skims from Anywhere

- Compact and versatile design
- Installs in seconds
- Skims hard-to-access or enclosed sumps
- Rated at 1 quart per hour
- Skims underneath conveyors
- Skims across elongated surface areas
- Skims oil spills
- Industrial-grade oil pick up tubing
- Ceramic scraper wipes tube clean
- Ceramic scraper lasts forever
- Weighted tube keeps from walking
- Reach from 8 inches to 8 feet
- Large discharge port eliminates clogging
- Continuous-duty, fan-cooled motor
- One year warranty
- The Sideways Skimmer™

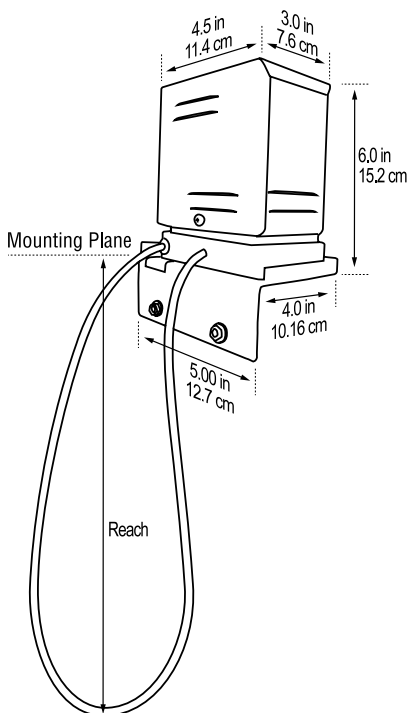
Part Number
Shown: ZVA8-08



Part Number	Rated Capacity	Motor
ZVA8-08	1 liter / hour	100-120v, 60Hz, 28 rpm
ZVA8-08E	1 liter / hour	208/220/240v, 50 Hz, 23/28 rpm
ZVA8.2-08	250 ml / hour	110v, 60Hz, 7 rpm

Notations

- All ZVA units with the -08 suffix have an 8 inch reach (defined on page 25). Longer reaches are also available up to 95 inches in 3 inch increments. ZVA requires access of 1/2 inch by 3 inches either horizontally or vertically. Maximum temperature for the tubing is ambient (no more than 90°F or 30°C).
- 220v, 50 Hz models available by adding "E" to the end of the part number



Options & Accessories

<p>Zebra Diverter™ (#BGST4) See page 14</p>	<p>Magnetic base option (#ZXB8-MAG) Not for use with Diverter.</p>	<p>Integrated timer for mechanical skimmers (#XETIMER-GSBZ)</p>
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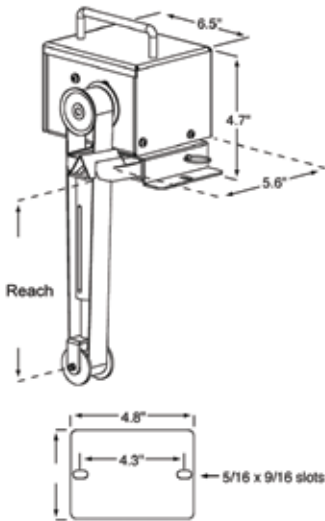
Testimonial - Sidewinder

"I received the Sidewinder you recommended and attached it to my CNC and this thing works great. Thank you for your help and a fine product."
 Jeff Miller, Tool Room Manager, EMG, Inc., Santa Rosa, CA,
 May 2010 (ZVA8-08)

Zebra Belt Skimmer

Simple, easy vertical access, rugged, reliable

- Heavy-duty, steel construction
- Removable collection tray
- 1" and 2" wide models
- Fixed lower pulley (on reaches to 24")
- Hanging lower pulley (on reaches 36" and up)
- Continuous-duty, fan-cooled motor
- Dual wiper set with lifetime warranty
- One year all other parts (steel belts 30 days)

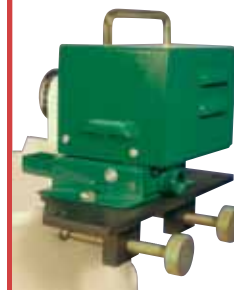


Options & Accessories:

Diverter: prevents wasted coolant – see page 14



Integrated Timer: saves motor life



Lockjaw: makes it easy to mount or transport between tanks – see page 14

Part Number	Reach
BPF1-08	8"
BPF1-12	12"
BPF1-18	18"
BPF1-24	24"

Notations

- Longer reach and wider belt skimmers are available, please call for quote.
- Warranties: 1 year on polyvinyl belts, 30 days on stainless belts
- 220v, 50 Hz models available by adding "E" to the end of the part number

Replacement Belts

Zebra offers cogged and flat polyurethane for coolant applications or flat stainless steel for harsher environments. Most are available in any width, and to your required circumference. Contact us today for a quote.



Testimonial - Belt Skimmers

"Attached is a photo of Zebra Skimmers from Tactair. It was relocated from the sump to the "Chip Blaster" sump and installed. The tramp oil was at least one inch deep. Zebra Skimmers and [our coolant], what a pair. What a great job it is doing. More orders coming!!"

Tom Callendar, Outside Sales, KB Page Co. c/o Tactair Fluid Controls, Liverpool, NY, Dec 2010



Mechanical Tramp Oil Skimmer Accessories

Diverter™ Reduces Coolant Waste

Good coolants can act like oil, which means a mechanical skimmer draws up some coolant along with the tramp oils. The Diverter saves your coolant by separating it from the tramp oils and returning it to the sump.

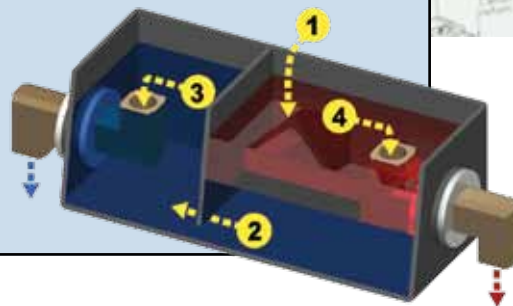
- Heavy-duty steel construction
- Brass outlet ports with discharge pipes
- Mounting hardware included
- Works with Sidewinder and Belt Skimmer and many other brand skimmers
- For oil volumes to 2 quarts per hour (larger unit available for high oil volumes)
- One year warranty
- Dims: 7"x3"x2.5"

Part Number Shown: BGST4



How the Diverter Works

- 1 Oils (tramp and coolant) enter here
- 2 Coolant sinks and passes under this weir
- 3 Clean coolant returns to your sump here
- 4 Tramp oils discharge to waste container here



Lockjaw™ Makes Installation a Snap

Hard-mounting a skimmer may be impractical for your operations due to machine maintenance. You may just want it to be portable. The Lockjaw mounts below the skimmer, allowing it to mount and be removed easily.

- Heavy-duty steel construction
- Fits open drums or pails and tank walls to 1/4" thick
- Mounts below Zebra Belt Skimmer with or without the Diverter
- Mounts below Sidewinder Tube Skimmer using Diverter only
- Not for use with disk skimmers

BGX2



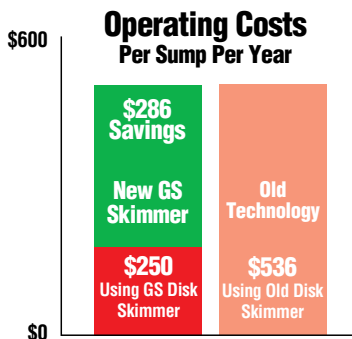
BPF1-XX with BGX2 on open drum.

Smart Disk Skimmer Reduces Coolant Waste

- Most economical disk skimmer available for coolant use
- Integrated Diverter™ knows the difference between tramp oil and oil in coolant
- Saves nearly \$300 versus other disk skimmers
- Heavy-duty steel construction
- Continuous-duty, fan-cooled motor
- Lifetime warranty on disk and wipers
- One year warranty on all other parts



GS4H300



Integrated timer for mechanical skimmers (#XETIMER-GSBZ)



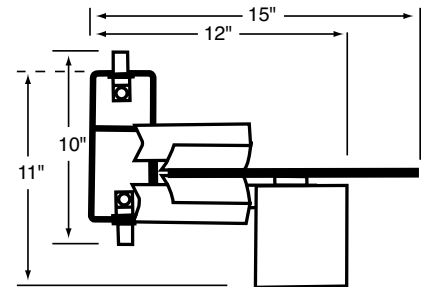
Zebra Original Disk Skimmer Tackles Heavy Oil Loads

- Handles heavy oil loads
- Heavy-duty steel construction
- Intermittent-duty motor standard
- Continuous-duty motor available
- Does not retrofit for use with Diverter
- Lifetime warranty on disk and wipers
- One year warranty on all other parts

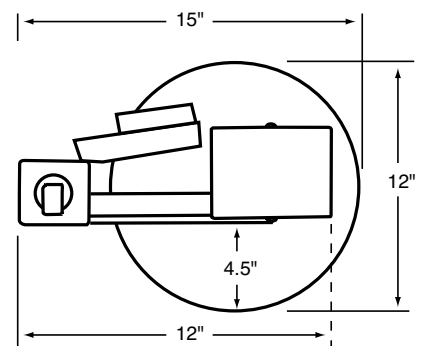


LH300

Top view of GS, 12" model



Side view of GS, 12" model



Smart (GS) and Original (L) Disk Skimmers

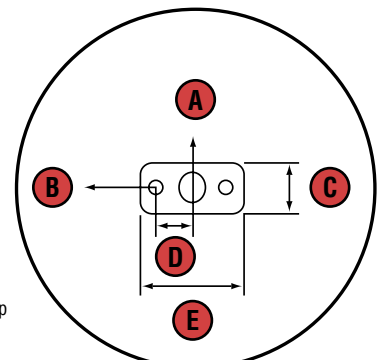
Part Number	Access	Reach
GS4H300	1" x 12"	4.5"
GS4H460	1" x 18"	7.5"
LH300	1" x 12"	4.5"
LH460	1" x 18"	7.5"
LH610	1" x 24"	10.5"

Notations

- Warranties: Lifetime on all disks and wipers
- 220v models available by adding "E" to the end of part number
- Continuous duty motors available for the Original Disk Skimmer by adding ".1" to the end of the part number

Mounting Pattern

- A. 21/64" (8.3mm)
- B. 3/16" (4.8mm)
- C. 23/32" (18.25mm)
- D. 1/2" (12.7mm)
- E. 5/32" (3.96mm)
9/64" (3.57mm) deep



Muscle™ Tramp Oil Coalescer for Water-based Fluids

Sump circulation is key to preventing excessive bacterial growth. Bacteria will break down your coolant and create problems like those shown in the Coolant Troubleshooting Guide on page 2 of this catalog.

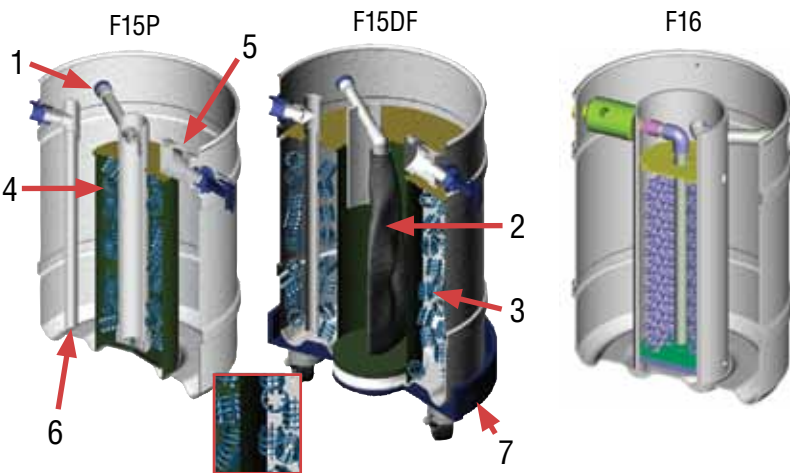
The Muscle is recommended for use on individual sumps, operating day and night. Tramp oil is removed and the sump circulates even if the machine's pump is off.

- Choose from three models
- Choose from four intake attachments (see page 20)
- Multiple pump options:
 - NEW & IMPROVED submersible centrifugal pump
 - Air diaphragm pump for tough jobs
- Permanent coalescing media accelerates oil collection
- 15 minute hold time
- Heavy-duty spin-welded fittings prevent leaks
- Fine Stopper (F15DF) captures fines. Five 100µ bags standard. Other sizes also available.
- Crush resistant hoses can be customized. 4 foot standard.
- Clean coolant returned back to sump via gravity.
- Built-in siphon makes the coalescer easy to empty.
- Drum dolly (standard on F15DF model only, order separately for others) allows easy movement between machine sumps
- Backup aeration (certain models only)



How It Works:

1. Dirty coolant is pulled from your sump surface (using an intake attachment, see page 20) into the coalescing tank.
2. The Fine-Stopper (on F15DF only) captures recirculating fines.
- 3 & 4. The oleophilic (oil attracting) coalescing media gathers tiny oil droplets that are too tiny to rise to the surface on their own. The surface area of our media collects enough of them together, until they become large enough to float. Muscle will remove all oils that float out within 15 minutes.
5. Oil accumulates in the Internal Oil Discharge Skimmer and is manually discharged, as needed, via the spigot.
6. Clean coolant is returned from the bottom of the tank back to your sump via gravity.
7. Optional drum dolly (standard on F15DF model only).



Coalescing media magnified.

Testimonial - Muscle

"We are currently changing filters about once a month. Our machines run about 50-60 hours a week. We are cutting mostly tool steel which is fairly clean. On a positive note, the air quality in

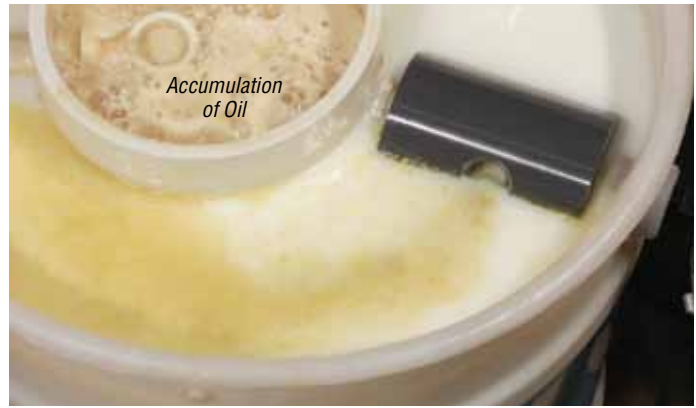
our die shop has improved since we started using your products. The stench of spoiled coolant and tramp oil is no longer an issue. Thanks for your help."

Greg Freeland, Programming Supervisor, Impact Forge, Remington, IN, Sep 2010

Flexor™ Tramp Oil Coalescer for Water-based Fluids

Tramp oil separation is further advanced with patent pending Flexor technology, the most advanced on the market today. In this Muscle model, a venturi at the fluid surface creates a turbulent zone to draw in perimeter oil and concentrates it within the central coalescing cartridge.

- F16 – Next generation technology active coalescer
- Featuring the first ever
 - Internal surface skimmer (pat. pending)
 - and more powerful pump
- Liberating 90% of the surface – giving you:
 - Visual confirmation that it's working
 - Easy access to the fluid for monitoring concentration
- Automatically freshens and aerates
- Internally, the F16 is similar to the F15P (see cross-section shown on page 16).



Flexor in action, with Sumpster, removing tramp oil (and a glob of biofilm), cleaning this neglected sump in under two hours.

How to Specify Your Muscle

Base	Intake	Pump
F15P	R = Recept	1 = 110v
F15DF	S = Sumpster	2 = 220v
F16	H = Hammerhead	3 = Air Diaphragm
	F = Floating Sumpster	

F15DF.R3



1) Choose the best base model

Plus (F15P):

- Low maintenance
- Very economical

Deluxe with Filter (F15DF):

- Filter recirculating chips
- (5) 100µ bags standard
- Includes drum dolly

Flexor (F16):

- Concentrates waste oil
- Monitor chemical parameters from cleaner surface
- Built-in aeration

2) Select intake attachment

Recept (R):

- Fits moderately tight areas
- Handles large fluid flux
- Moderate chip load

Sumpster (S):

- Fits moderately tight areas
- Handles low fluid flux
- Moderate chip load

Hammerhead (H):

- Fits tight areas
- Handles large fluid flux
- Low chip load

Floating Sumpster (F):

- Fits open access areas
- Handles large flux/turbulence
- Moderate chip load

3) Power the system

Centrifugal, 115v (1):

- Centrifugal, 115v
- Circulate coolant 24/7
- Improved 5 gpm unit (3 gpm with Floating Sumpster)
- 10' (or 7') lift

Centrifugal, 220v (2):

- Centrifugal, 220v
- Circulate coolant 24/7
- 3 gpm unit
- 10' lift

Air Diaphragm (3):

- Air Diaphragm

- Service multiple sumps
- Applications of 7'+ lift
- Recommended with #F15DF with 5µ bags
- Order Oxygenator separately

4) Options

- Fine-Stopper™ Filter Bags: F15DF model only (Note 5 or 50µ bags on order if preferred)
- Drum Dolly #FXDD
- Oxygenator™ #XBUB1200F (110v) #XBUB1200E (220v)
- Main Intake Hose #SK97, 4' standard, to 15' maximum (sold per foot, order additional length only)
- Discharge Hose #SK95, 4' standard, to 8' maximum (sold per foot, order additional length only)



Oasis™ Portable Tramp Oil Coalescer & Fines Filtration System

For Coolant and Other Water-based Fluids

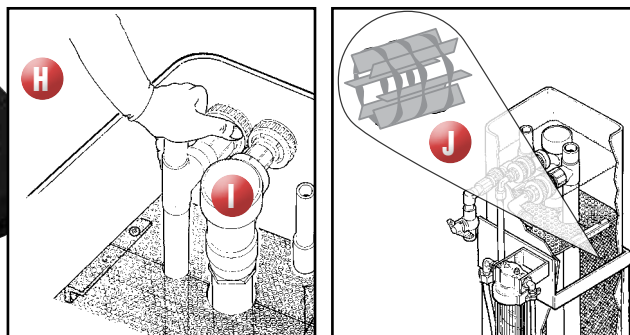
Removing tramp oil is key to the longevity of any coolant. It is a food source for bacteria and emulsifies into the coolant over time. Both of these conditions lead to the chemical breakdown of coolant and pose problems as shown in the Coolant Troubleshooting Guide.

The Oasis not only separates tramp oil, it includes the added benefits of suspended particle filtration and odor control. When shop floor space is at a premium or you prefer to utilize one piece of equipment over many, the Oasis™ Portable Tramp Oil Coalescer & Fines Filtration System may be right for you.



- A Hammerhead or Sumpster intake attachments included (see page 20 for details)
- B Crush resistant hoses with DOT-rated, leak-free fittings (not shown)
- C Durable, 1/2" air diaphragm pump handles multiple and below ground applications
- D ON/OFF switch controls the power to the pump
- E Pressure limiter protects pump from over-pressurization (underneath panel)
- F 500µ stainless steel (reusable) filter protects pump from large particle wear
- G Regulator provides for adjustable flow rate
- H Translucent tank with spin-weld fittings to prevent leaks
- I Zebra's unique Baffled, Anti-Turbulence System (BATS) removes entrained air to improve coalescing efficiency by 20%
- J Zebra's unique, non-consumable coalescing media increases oleophilic surface area to further improve coalescing efficiency
- K 5µ polishing filter captures recirculating fines to improve tool life and parts surface finish. Zebra incorporates this filter after oils are removed to prevent their emulsification. 25 or 50µ option available.
- L Odor Control Capsule eliminates foul odors (this capsule may also be used for staged filtration)
- M Pressurized clean fluid return delivers against gravity, allowing for servicing of high-walled tanks
- N All indicator gages located for easy viewing and indicate filter condition
- O Sidewinder® Tube Skimmer removes separated oil automatically from the coalescing tank

Handle and hose rack (not shown)





How It Works

Fluid is pulled from the surface of your sump and goes into the coalescing tank. The amount of tramp oil separated by the coalescer is the amount which would normally separate via gravity within the time that it is held in the coalescer. Since the pump allows for an adjustable flow rate of 1-3 gpm, the hold time is adjustable.

Operated at 1 gpm, fluid is held 20 minutes (20gal/1gpm=20min). Operated at 3 gpm, fluid is held 7 minutes (20gal/3gpm=6.6).

When your coolant is fresh, it should reject tramp oils readily- one of the reasons we recommend removing tramp oil daily. It is then no longer present to emulsify into the coolant itself, requiring excessive hold time to separate it. Note that because synthetic based coolants have none, or minimal, amounts of base oil, these separate tramp oil more readily than water soluble oil products having a heavy amount of natural base oil.

Testimonial - Oasis

"I use the [portable] coalescer every day and like the overall placement of all the components. I also use the Zvac and like it too! You have good products and can call me anytime for feedback," says Dave. He is using an older model coalescer – the ADAPT, which has since been improved upon and is now the Oasis!

Dave McDaniels, Machine Shop, Meyer Tool, Inc., Erlanger, KY, Oct 2008 (FM60-2105)



Intake Attachments for Zebra Coalescers, and Other Brands

Zebra offers a wide range of intake attachments meeting the needs of any sump. We have something to meet your needs, whether you're dealing with limited access, large flux, or heavy chip loads.



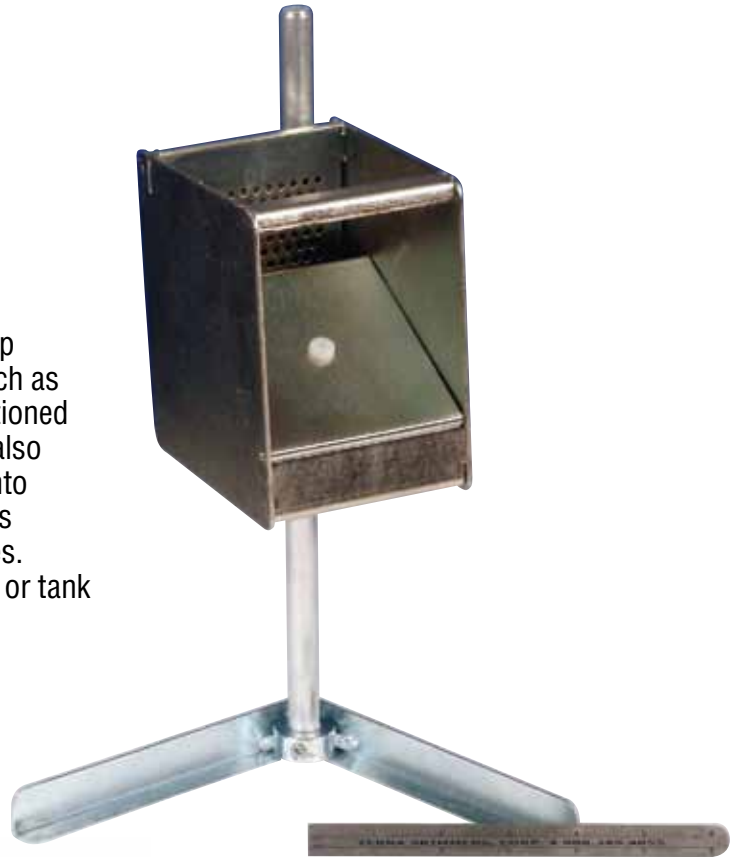
Hammerhead removes tramp oils in hard-to-reach areas. The head floats on the surface allowing oil to flow into the openings. It fits into the tightest areas and can handle a very large flux. Not recommended for large fluid surface areas, heavy suspended chip loads, or with fluids where the introduction of air can be an issue.

	Hammerhead™	Recept™	Sumpster™	Floating Sumpster™
Dimensions:	4.5 x 3.25 x 1.75"	3 x 4 x 4.5"	5 x 4.25 x 4.63"	13 x 11 x 7"
Flux in inches with submersible pump (external pump)	12 (24)	12 (24)	3 (3)	24 (36)
Floats on Surface:	Yes	Yes	No	Yes
Chip Screen:	No	Yes	Yes	Yes
Fluid Flow Specifications:	.5 – 1 gpm	.5 – 1 gpm	1 – 3 gpm	1 – 3 gpm
Construction:	PVC	HDPE	Galvanized Steel	Steel body. Aluminum backbone. Plastic floats (standard). Stainless steel optional.
Fluid Temp Range:	40°-90°F	40°-90°F	40°-140°F	40°-140°F
Recommendations:	Very tight access areas. Large fluid flux. Not for straight water. Not for chip loads. Not for fluids tending to foam.	Moderately tight access. Large fluid flux. Not for straight water.	Moderately open access. Minimal fluid flux. Harsh environments.	Very open access. Maximum fluid flux. Can handle turbulence. Harsh environments.
Order for Use with... Sub./Centrifugal Pump: Ext./ Diaphragm Pump:	# SK02D12F # SK02D24S	# SK07R1.2 # SK07R2.2	# SK10A7 # SK10A8	#SK10B2.3S #SK10B3.3S



Recept is the newest member of our intake attachment family. It's capable of handling large flux with a greater capacity for suspended chips, and preventing the introduction of air into the pump. It fits into moderately tight areas, but is not recommended for large surface areas or in heated solutions.

Sumpster handles heavier suspended chip loads and harsher fluid environments, such as heat or chemicals. Sumpster can be positioned on its rod or attached to the tank wall. It also minimizes the amount of air introduced into the suction line. Disadvantages are that its flux handling capability is roughly 3 inches. Recommended when there is good sump or tank access and low flux.



Floating Sumpster handles large fluid surface areas, large fluid flux, and even turbulence. This device has all the benefits of Sumpster technology, plus the ability to handle more extreme environments. Floating Sumpster can be configured to carry a submersible pump, reducing the need for an external pump, when fluid lift is not an issue. It can also be attached to an external air pump when greater power is essential.

Note when ordering with standard Muscle configurations, plastic floats are provided. Part number shown on page 20 indicates stainless steel.

Zebra ZVac™ II Vacuum System

The ZVac II is designed for mid to large size shops that have more than a handful of machines generating lots of chips that conveyors and augers cannot handle alone.

This powerful and rugged vacuum quickly removes and filters chips from any sump or central tank, saving valuable production time and labor. Thoroughly clean an entire sump each day or during a coolant recharge. It also works well to clean chips from machine interiors, clean up floor spills, or transport pre-mixed coolant to refill sumps!

- Clean chips from a 50 gallon tank in less than 2 minutes!
- Discharge pump can be used simultaneously to stir things up!
- Maneuvers easily around all shop areas
- For use with water, coolants, or straight oils
- Works well on dry chips or debris
- Many optional tools and accessories available



Features & Included Tools:

- 48 gallon liquid container with auto shut off
- 8 gallon, 500µ steel filter basket
- Hinged lid with leak free gasket
- 15' long, 2" diameter vacuum hose
- Curved metal intake tube with rubber cone
- 10' long, 1" diameter discharge hose
- Gas pump style discharge handle
- Ball valve to drain sediment
- 30' power cord reaches anywhere!
- Accessory tray stores tools

Models	Power (volts)	Phases	Power (HP)	Waterlift (in. water)	Airflow (CFM)	GMP, Vacuum & Discharge
V2-110.1	110-220	1	1.8	131	105	40
V2-220.1	220-240	1	1.8	131	105	40
V2-220.3	220-240	3	3	145	219	40
V2-440.3	440-480	3	3	145	219	40

Problems Related to Chips

The metals we machine are minerals and can adversely affect coolant's chemistry, leading to fluid failure.

Most damaging are iron, aluminum, and magnesium, which have highly positively charged molecules that can split the coolant emulsion.













As the oil distribution becomes unstable, your coolant can attract excessive amounts of tramp oil, leading to emulsified oil which may not gravity separate.

Recirculating particles tend to wear tooling prematurely and can affect parts surface finishes.

However, any chip pile acts as a nest for bacteria to grow and thrive.

Remove as much of your chip load as you can on a regular basis.

Optional Tools & Accessories

- Steel Bristle Brush #VXMCBA-S 
- Nylon Bristle Brush #VXMCBA-N 
- Metal Crevice Nozzle #VXMCA 
- Tapered Cone #VXTCA 
- Round Bristle Brush, 3" #VXBA-3 
- Flat Rubber Nozzle #VXFRNA 
- Continuous Suction Wand #VXCWSW 
- Wheeled Floor Nozzle with Squeegee & Brush #VXWFN 
- Curved Floor Wand, 54" #VXWAND 
- Accessory Coupler #VXAC 
- Extension Wand, 60" #VXEW-60 
- 100µ Filter Bag #VXF.2-100 
- 50µ Filter Bag #VXF.2-050 
- Oil Mist Filter #VXOMF 

Muscle™ Condensate Management System for Compressors, Lasts

The Zebra Muscle CMS is a superior alternative to more expensive condensate management systems. Simple design, no replacement elements, and robust materials make it an ideal solution for most air compressor systems.

Features

- Durable, translucent barrel
- Spin-welded fittings prevent leaks
- Permanent coalescing media collects gravity-separating oils
- Oil drain spigot
- Automatic air release vent
- Automatic de-oiled water drain port
- Overflow protection
- Limited three year warranty

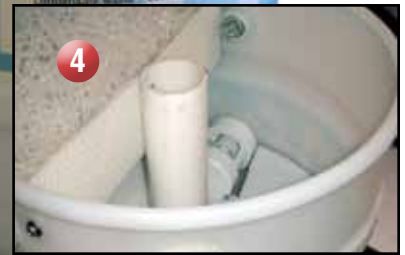
Operational Specifications

- Total Volume Capacity: 8 gallons
- Inlet Pressure: 150 psi
- Volume per release, max: 1 gallon
- Interval Hold Time, min: 5 minutes
- Oil Volume Capacity: 0.75 gallons

Muscle CMS Capacities: The Muscle CMS is designed for compressors between 5 and 50 horsepower, and is capable of handling a maximum flow of almost 300 gallons a day. However, if oils separate from your condensate in 10 minutes, then the effective daily flow is reduced to under 150 gallons per day. **IMPORTANT:** Some compressor oils contain compounds that make separation almost impossible. (See note below.)

Some compressor manufacturers sell private labeled lubricants that contain detergents, dissolving the oils into the water. If you use this type of compressor lubricant, you'll have to experiment with your waste condensate to determine your options, if any. Please call us or visit our website for more details.

Part Number	Inlet	Outlet	Temp. Rating	Hoses
F15AC	1/2"	1/2"	41-95°F	Not included



- 1 Condensate Inlet
- 2 Automatic Clean Water Discharge
- 3 Manual Waste Oil Discharge
- 4 Non-consumable Coalescing Media

Dealing with Compressor Wastewater

A compressed air system produces condensation, which is moisture that drops out of compressed air as it cools. This condensation will contain oil if the compressor uses lubrication in its compression chamber. This oily water is an environmental concern, as there are federal and local regulations limiting the amount of lubricants that can be drained into sewer systems.

What are your options?

1: Drain it, untreated, to your sewer. The downside is you risk a visit from your regulator.

2: Haul it away. The downside is that it's mostly water. You may pay 50 times more than you need.

3: Treat it yourself. Do some research, buy sensibly, and save lots of money.

Parts Washer Equipment

Zebra offers equipment specially designed to meet parts washing application requirements.

Stainless Steel Venturi Mixer with Lifetime Warranty

- Separate water shut-off valve
- Machined from stainless steel
- Maximum viscosity of 500 SUS
- 40" discharge tube included (max length for delivery)
- Mix range: 0-25% (100:1 to 4:1)
- Mixing ratios - low = 100:1, high = 4:1
- Maximum delivery is 40'
- PSI range is 25 - 75
- Machined needle valve
- Locknut below dial holds mixing reference
- Check valve keeps mixing chamber loaded



Part Number	GPM	Fittings, NPT		Application
		In	Out	
MIX03725SS	3	3/8"	1/2"	55 gal. barrel
MIXU03725SS	3	3/8"	1/2"	Pail, barrel, tote
MIX10725SS	10	1/2"	3/4"	55 gal. barrel
MIXU10725SS	10	1/2"	3/4"	Pail, barrel, tote

Belt Skimmer with Stainless Belt

- Steel, heavy-duty, rugged construction
- Removable, easy-to-clean collection tray
- Self-tensioning belt on fixed lower pulley for short reaches. Hanging pulley for long reaches
- Dual wiper set with lifetime warranty
- Continuous-duty, fan-cooled motor
- Outboard motor bearing available to maximize motor and belt life (BZ Option)
- Requires 2" diameter for access
- Capacity is 1 gallon per hour
- Maximum operating temperature is 212°F (100°C)
- Belt material is stainless steel
- Standard motor is 115v, 60 Hz
- One year warranty (except on steel belts)



Basic Refractometer

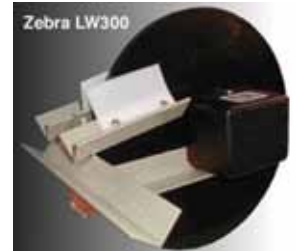
- Range 0-10 or 0-32 Brix
- Prism aperture lets in a lot of light
- Diamond-knurled sleeve for good gripping
- Comfortable eyepiece with adjustable focus
- Auto temperature compensation
- Average use accuracy range
- Carrying case with sampler included



Part Number	Brix Scale	Graduation	Dimensions
OPT10	0-10	Tenths	1.5" dia., 8" long
OPT32	0-32	Fifths	1.5" dia., 7" long
OPTX10	Replacement prism cover with pin for OPT10, OPT32		

Simple Disk Skimmer for High Heat

- Handles heavy oil loads
- Continuous-duty motor (except LW610E model)
- One year warranty (lifetime on disk and wipers)



Part Number	Access	Reach
LW300	1" x 12"	4.5"
LW460	1" x 18"	7.0"
LW610	1" x 24"	9.5"

Part Number	Access	Reach
BSF1-08	2" dia.	8"
BSF1-12	2" dia.	12"
BSF1-18	2" dia.	18"
BSF1-24	2" dia.	24"

Notations:

- Wider and longer units are also available. Call for quote.
- 220v 50Hz motors also available - add an E to the end of our part number.

BZ Option shown here, with an outboard motor bearing. Designed for harsh environments. Wider and longer belts are also available. Please call for a quote. 220v motors are also available by adding an "E" to the end of our part numbers.

Glossary

Aeration or oxygenation is the process of injecting air into your coolant sump. Just as every aquarium has something making bubbles, so should every machine sump. And the reasons are the same. Aerobic bacteria consume oxygen (O₂) so that the levels of O₂ will decrease, especially under floating oils. As the O₂ level drops, anaerobic bacterial activity rises. And it is these anaerobic bacteria that eat your coolant.

Bacteria comes in two types as far as coolant is concerned. Both are always present in our environment. Aerobic bacteria consume oxygen and organic materials. Anaerobic bacteria hate oxygen, and love to consume hydrocarbon based materials, like rust inhibitors and anti-emulsification agents in coolant.

Coalesce is a term indicating the collection of anything, from a water molecule to herding cows. Water vapor typically coalesces into clouds, while cows are coalesced into a barn. In our industry, we're interested in tramp oils. In many cases tramp oils are emulsified into droplets that are so small that they don't float any more. Forces acting upon them from turbulence and other molecules keep them from rising naturally to the surface. The coalescing media used in a typical coalescing unit is made of material that is very similar to the oils, so there is a strong attraction. Once a small droplet sticks to the coalescing media it creates a bump that makes it more likely to catch yet another droplet. Each captured droplet increases the size of the bump, and in turn increases the chances of catching another droplet. In time, the combined droplets become so large that they will float on their own, rising to the surface of the coalescing unit. This 'cleans' the surface of the coalescing media, allowing the process to begin again. If there were no media, these droplets would continue to circulate through the machine, never being captured.

Coolant is a soup of ingredients that have been specially blended by your coolant supplier. Two of the ingredients are rust inhibitors and anti-emulsion agents. It has been particularly designed to work with pure water at a specific concentration. It is, in fact, a type of oil.

Coolant Flux is the vertical change in fluid level in your machine's sump between its highest and lowest values. A sump with flux of 3 inches may vary from being 6 inches deep when the machine is running to 9 inches deep when everything is off and dripped into the sump.

Floating Oils are generally bad for coolant because they create oxy-dead zones where anaerobic bacteria grow. They should be removed as quickly as possible.

Intake Attachments (also known as passive skimmers) are devices designed to work in conjunction with a pump of some kind to draw surface fluids from a sump into a collection device.

Monday Morning Smells are caused by large numbers of anaerobic bacteria decaying. Because they consume hydrocarbon-based compounds, some of their decay bi-products are HCl and H₂S (hydrochloric acid and hydrogen sulfide). The HCl can appear as a greenish cloud when a machine is started after a long time of sitting idle.

Oleophilic is a term that means oil loving. Anything that attracts oil is therefore oleophilic. We know that some things attract oil better than others, especially materials made of polypropylene.

Reach is the vertical distance a skimmer must reach in order to touch the surface of your dirty coolant when your coolant is at its lowest point. The top of this vertical distance is the mounting plane of the skimmer.

Refractometer is a device that uses the properties of bending light to indicate the concentration of some material in water. Most refractometers are used to measure the amount of sugar in our beverages using a scale called Brix. In our industry, coolants are often designed to use the Brix scale, so that reading a 5 on our scale indicates a concentration of 5%.

Sump Lifetime is the time it takes for brand new coolant to 'die,' using your criteria for coolant death. Many continue to use coolant even after it has ceased functioning, because some components are still effective (such as lubricity). Eventually the smell, skin irritation, or something will get you to suck all the coolant from the sump, shovel out the chips, scrub the sides of the tank, clean the fluid lines, and fill it up with clean new coolant.

For these and more definitions in greater detail, please visit CoolantMaintenance.com.



Uncle Earl's® Hand Healing Soap™

Soap. Simple, yet representing technology older than the wheel. Until the 1900's soap was made naturally. Industrial chemists mass produced it by turning it into a powerful detergent, removing other ingredients that kept hands healthy.

Uncle Earl's was designed for those who really rely on their hands to get work done. If your hands get dry from work, then you should try Uncle Earl's.

Uncle Earl's provides 2x the cleaning power of other brand soaps. Made the old-fashioned way using only natural ingredients, it removes dirt and grime while hydrating the skin so that it can heal itself.

Skeptical? Put it to the test.

You'll feel the difference right away.

For one of the most important tools in your shop—your hands, think about a small change that can add up to big health benefits for you, your co-workers, and your employees.



"So our Customer Service person is in the shop today running parts. Given that her life is at a desk and her skin accordingly is pretty soft, an hour into her shift she complained of numerous small cuts from the aluminum she is machining. I told her to wash her hands with Uncle Earl's. She did and low and behold she now said her small cuts all closed up and that the coolant doesn't burn.

Awesome miracle stuff."

*Richard
September 2010*

"Honestly, we've used the pumice based hand cleaners for years. Between that stuff and machine coolant, everyone had dry, cracked skin. With your liquid soap, those problems are gone. Love it."

*Rich - Machine Shop Owner
January, 2010*

Randy M. has had many problems with his hands cracking and severe irritation, and had to wear gloves whenever he was around metalworking coolant. He decided to purchase 3 bars to see if it helped any. He said that he was using a hand cleaner called TKO which was a harsh abrasive with granules. He used Uncle Earl's soap and the condition completely cleared up. He now wants to purchase 2 - 6 packs.

As reported to us by Randy's distributor, Ken

*Machinist
September, 2009*

Strong cleaning agents without abrasives

Hydrating compounds put liquid into your skin

One bar lasts as long as a gallon of common liquid soap

Foam cleans without added water

100% natural ingredients...

All natural ingredients include vegetable oils (like soybean, canola, and corn), pure coconut oil, other fatty acids derived from nutmeg, palm, coconut, and butterfat, pure castor oil, and a selection of all natural fragrances and natural fragrance blending compounds.





Coolant Quality Log

– Download from CoolantMaintenance.com –

Machine Name/#: _____

Questions? Contact: _____

Coolant Name: _____

Refractometer Factor: _____

Fresh Charge Date: _____

Coolant Maintenance Protocols:

(Refer to the web sites below for more details)

Manage Hardness (ppm) 1x / week
 Manage Concentration (%) 1x / day
 Manage pH (pH) 1x / week
 Manage Tramp Oil (T/O) 1x / day
 Manage Chips (Ch) 1x / day

Target Operating Parameters:

(Refer to your coolant product data sheet for these parameters)

ppm: _____ ± _____

%: _____ ± _____
 (refractometer reading x factor above = %)

pH: _____ ± _____

Date	ppm	%	pH	T/O	Ch	Initial
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____

Date	ppm	%	pH	T/O	Ch	Initial
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____

Date	ppm	%	pH	T/O	Ch	Initial
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____

Date	ppm	%	pH	T/O	Ch	Initial
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____
_____	_____	_____	_____	Y/N	Y/N	_____

Zebra[®] Skimmers

Your source for coolant maintenance equipment, technical support, and expertise.

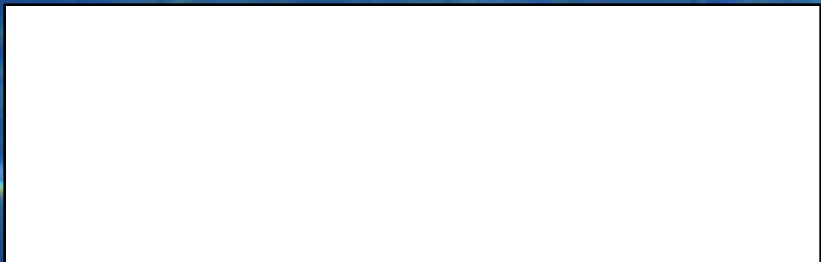
Saving you money by improving your productivity, quality, and health.

Access a technical library on metalworking fluid issues:
CoolantMaintenance.com

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For a distributor near you call 888.249.4855
Or this local distributor below:



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