



Zebra[®]

Extending the life of metalworking and industrial fluids



COOLANT MONITORING ISSUES

HARDNESS

CONCENTRATION

pH

TRAMP OIL

Sump Maintenance



Volume 20



We've been serving metalworking for 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 as well. They're saving you money, and that's good for all of us.

Sincerely, Zebra Skimmers Corp.

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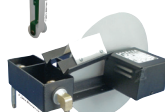


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MOTORS

Part Number	Description
MB23E2	Motor, 220v, 28rpm, RAW w/fan
MB28A2	Motor, long shaft 115v 28rpm RAW w/fan
MG02A1	Motor, 115v, 2rpm, Assembly w/fan
MG02A2	Motor, 115v, 2rpm, RAW w/fan
MG06E1	Motor, 220v, 6rpm, Assembly w/fan
MG06E2	Motor, 220v, 6rpm, RAW w/fan
MG07A1	Motor, 115v, 7rpm, Assembly w/fan
MG07A2	Motor, 115v, 7rpm, RAW w/fan
MZ07A1	Motor, 100-120v, 7rpm, Assembly, w/fan
MZ28E1	Motor, 240v, 23/28rpm, Assembly, w/fan
MZ28E2	Motor, short shaft 240v 23/28rpm RAW w/fan
MZ28J7	Motor, 100-120v, 28rpm, Assembly, w/fan
MZ28J8	Motor, short shaft 115v 28rpm RAW w/fan



HARDNESS ISSUES

HARDNESS TESTING 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?

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.

FEATURES

- > 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



Part Number Shown: XWT50



CONCENTRATION ISSUES

BRIX 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.



FEATURES

- > Comfortable eyepiece
- > Easy to read, bright scale
- > Adjustable focus for easy reading
- > Textured sleeve for easy gripping
- > Includes carrying case
- > Locknut for calibration

Part Number	Brix Scale	Accuracy	Graduation	Dimensions
OPT10	0-10	±0.1%	Tenths	1.5" dia, 8" long
OPT32	0-32	±0.2%	Fifths	1.5" dia, 7" long
OPTX10	Replacement prism cover with pin for OPT10, OPT32			
OPTXED	Refractometer Sample Dropper			

ECONOMY MIXER

FOR MIXING AND DELIVERING METALWORKING FLUIDS

FEATURES

- > 14 metering tips for specific ratios
- > Maximum viscosity of 500 SUS
- > [30 day warranty](#)
- > 48" discharge tube included (max length for delivery)



HOW TO SAVE MONEY NOW

We can teach you how to refill your sump with the EXACT amount of concentrate and water. Contact us today for more information at 888-249-4855 x115.

Part Number	GPM	Mix Range % ¹		Max. Delivery	Range PSI	Fittings	
		Low	High			In2	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.						

MACHINIST VENTURI MIXERS

FOR MIXING OF METALWORKING FLUIDS

Proper fluid mixing provides superior emulsions resulting in consistent concentration values. Maintaining consistent concentration values extends sump and tool life while improving machined surfaces. It also provides a savings for raw material usage.

Part Number	GPM	Low	High	Max Mix Ratio	Range PSI	In3	Out
MIX0327	3	0	7	14:1	25-75	3/8"	1/2"
MIX03725	3	0	25	4:1	25-75	3/8"	1/2"
STAINLESS STEEL							
MIX03725SS	3	0	25	4:1	25-75	3/8"	1/2"
MIX10725SS	10	0	25	4:1	25-75	1/2"	3/4"



Mixer Lockout
#MIXXLOCK



ACCESSORIES

Part Number	Description
MIXXLOCK	Lockout for Machinist Mixer to prevent tampering
MIXF3	Swivel Fitting for inlet garden hose for 3 gpm machinist mixer
MIXSF10	Swivel Fitting for inlet garden hose for 3 gpm machinist mixer

FEATURES

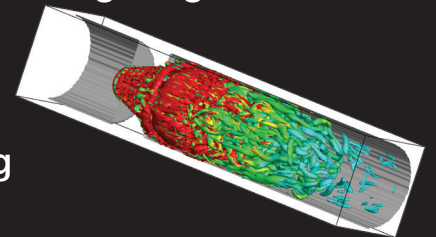
- > Separate water shut-off valve
- > Machined from solid bronze casting with treated steel stand pipe
- > Maximum viscosity of 500 SUS
- > 40" discharge tube included (max length for delivery)
- > Fits drums, pails, or totes



HOW IT WORKS

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.



3 POINT ACCURACY USING FORCE-FLO™ TECHNOLOGY

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

OXYGENATOR™

REDUCES COOLANT RANCIDITY



FEATURES

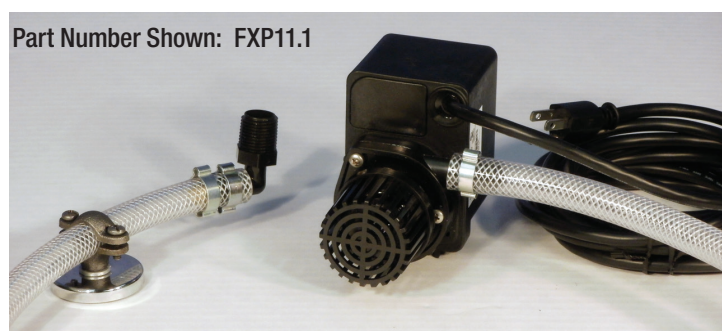
- > Extends coolant life by maintaining high oxygen levels
- > Prevents foul odors
- > Fuel-grade tubing
- > Industrial-grade diffuser
- > 30 day warranty



Part Number	Description	Application	Capacity	Electrical	Dimensions (L,W,H)
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)

CIRCULATING 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
- > 30 day warranty

Part Number	Description	Application	Capacity	Electrical	Dimensions (L,W,H)
FXP11.1	Centrifugal Pump	101-250 gal sump	5 gpm	110v	4" x 3" x 4" (100 x 76 x 100 mm)
FXP3.1E	Centrifugal Pump	101-250 gal sump	3 gpm	220v	4" x 3" x 4" (100 x 76 x 76 mm)

TECHNICAL INFORMATION page 26-28

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. 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.



**15% more active ingredient
than other brands**

FEATURES

- > 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" Ø

Part Number	Description
XOCT25	Odor control tablet, tube of 15
XOCT25-8	Odor control tablet case, 8-Pack of tubes
XOCT25-30	Odor control tablet case, 30-Pack of tubes

pH STRIPS MONITOR COOLANT CHEMICAL CONDITION

Why rely on your coolant guy to keep your metalworking fluid 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 at least weekly, you can address other maintenance issues.

FEATURES

- > 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



Part Number Shown:
XPHPS09



Q. Why is it important to check the pH of my coolant (and what is pH anyway)?

A. In basic terms, pH is an indication of the acidity or alkalinity of a fluid. Water has a pH of 7, which is neutral. An acidic fluid will range from 0-7 pH, and an alkaline fluid will have a range of 7-14 pH. pH levels in your coolant drop due to bacterial emissions. Since coolants have an operating range of 8-10 pH, even a .2 drop in pH level can cause a host of problems, ranging from rusty machines and parts to sump odor and skin irritations. With consistent pH monitoring and bacterial control methods, these problems can be prevented.



TRAMP OIL ISSUES – Tramp oil also emulsifies into coolant.

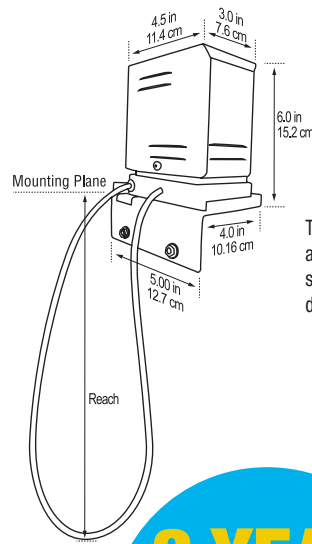
SIDEWINDER® TUBE SKIMMER

THE SIDEWAYS SKIMMER™ SKIMS FROM ANYWHERE

Sidewinder removes oil from the tightest places, even off the floor. It can snake around corners, enter through narrow slits, and be moved from machine to machine in a minute.

Combined with our new 2 year standard warranty it's the best solution for your tramp oil problems.

Test drive one today.



Part Number Shown:
ZVA8-08



Tube returns
and oil
scraped off to
discharge port

Base
bracket
mounts to
tank wall

Tube
travels
into oil

Washer

2 YEAR
WARRANTY



OPTIONAL ACCESSORIES



Diverter™ (#BGST4)



Magnetic base option (#ZXB8-MAG)
Not for use with Diverter™



Integrated timer for mechanical skimmers
(#XETIMER-GSBZ)



Sidewinder base plate
(#ZVA8)

FEATURES

- > Compact and versatile design
- > Installs in seconds
- > Skims hard-to-access or enclosed sumps
- > Rated at 1 liter 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

Notations

- All ZVA units with the -08 suffix have an 8 inch reach (defined on page 22). 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

Part Number	Reach
Rated Capacity: 1 liter / hour Motor: 100-120v, 60Hz, 28 rpm	
ZVA8-08	8"
ZVA8-11	11"
ZVA8-14	14"
ZVA8-17	17"
ZVA8-20	20"
ZVA8-23	23"
ZVA8-26	26"
ZVA8-29	29"
ZVA8-32	32"
ZVA8-35	35"
ZVA8-38	38"
ZVA8-41	41"
ZVA8-44	44"
ZVA8-47	47"
ZVA8-50	50"
ZVA8-53	53"
ZVA8-56	56"
ZVA8-59	59"
ZVA8-62	62"
ZVA8-65	65"
ZVA8-68	68"
ZVA8-71	71"
ZVA8-74	74"
ZVA8-77	77"
ZVA8-80	80"
ZVA8-83	83"
ZVA8-86	86"
ZVA8-89	89"
ZVA8-92	92"
ZVA8-95	95"
ZVA8-101	101"

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

Part Number	Reach
Tube & Gear Cartridge for Sidewinder	
ZXCART8-08	8"
ZXCART8-11	11"
ZXCART8-14	14"
ZXCART8-17	17"
ZXCART8-20	20"
ZXCART8-23	23"
ZXCART8-26	26"
ZXCART8-29	29"
ZXCART8-32	32"
ZXCART8-35	35"
ZXCART8-38	38"
ZXCART8-41	41"
ZXCART8-44	44"
ZXCART8-47	47"
ZXCART8-50	50"
ZXCART8-53	53"
ZXCART8-56	56"
ZXCART8-59	59"
ZXCART8-62	62"
ZXCART8-65	65"
ZXCART8-68	68"
ZXCART8-71	71"
ZXCART8-74	74"
ZXCART8-77	77"
ZXCART8-80	80"
ZXCART8-83	83"
ZXCART8-86	86"
ZXCART8-89	89"
ZXCART8-92	92"
ZXCART8-95	95"

Part Number	Reach
Tube assembly only for Sidewinder	
ZT8-08	8"
ZT8-11	11"
ZT8-116	116"
ZT8-14	14"
ZT8-165	165"
ZT8-17	17"
ZT8-20	20"
ZT8-216	216"
ZT8-23	23"
ZT8-26	26"
ZT8-29	29"
ZT8-32	32"
ZT8-35	35"
ZT8-38	38"
ZT8-41	41"
ZT8-44	44"
ZT8-47	47"
ZT8-50	50"
ZT8-53	53"
ZT8-56	56"
ZT8-59	59"
ZT8-62	62"
ZT8-65	65"
ZT8-68	68"
ZT8-71	71"
ZT8-74	74"
ZT8-77	77"
ZT8-80	80"
ZT8-83	83"
ZT8-86	86"
ZT8-89	89"
ZT8-92	92"
ZT8-95	95"



BELT OIL SKIMMER WITH POLY BELT

Simple, easy vertical access, rugged, reliable.

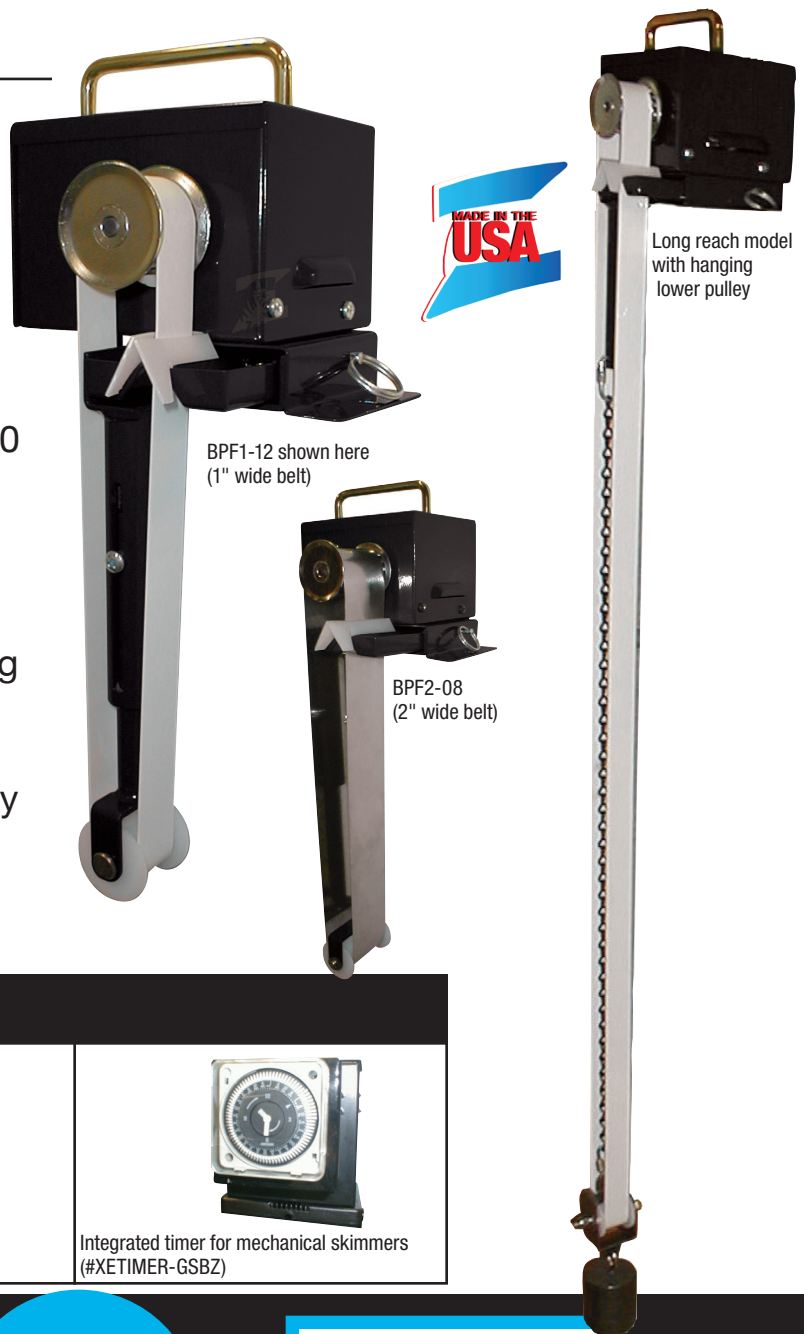
Longer reach and wider belt skimmers are available, please call for quote.

Warranties: 2 year on polyvinyl belts, 30 days on stainless belts

115v Standard Model

220v, 50 Hz models available by adding "E" to the end of the part number

Also available in 12/24 VDC versions by special request. These models can be directly powered and controlled by the backplane of your machining center.



OPTIONAL ACCESSORIES



Diverter™ (#BGST4)



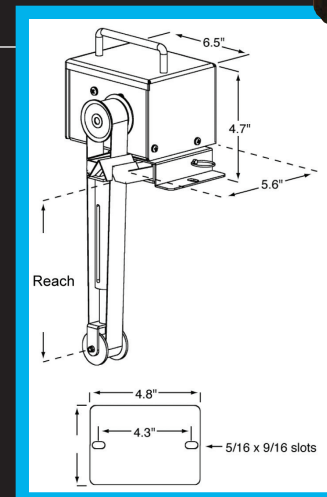
Lockjaw makes it easy to mount or transport between tanks (#BGX2)



Integrated timer for mechanical skimmers (#XETIMER-GSBZ)

FEATURES

- > 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
- > Two year all other parts (steel belts 30 days)



Part Number	Belt Dimensions
BPF1-08	1x8"
BPF1-12	1x12"
BPF1-18	1x18"
BPF1-20	1x20"
BPF1-24	1x24"
BPF1-36	1x36"
BPF1-48	1x48"
BPF1-60	1x60"
BPF1-72	1x72"
BPF1-84	1x84"
BPF1-96	1x96"
BPF1-144	1x144"
BPF1-180	1x180"
BPF1.4-08	1x8" with integrated timer
BPF1.4-12	1x12" with integrated timer
BPF1.4-24	1x24" with integrated timer
BPF2-08	2x8"
BPF2-12	2x12"
BPF2-18	2x18"
BPF2-24	2x24"
BPF2-36	2x36"
BPF2-48	2x48"
BPF2-60	2x60"
BPF2-72	2x72"
BPF2-84	2x84"
BPF2-96	2x96"
BPF2-132	2x132"
BPF2-180	2x180"

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

ACCESSORIES

Zebra offers 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.



Part Number	Size
Standard replacement poly belt	
BP-08	8" reach, 1" x 24.75" OAL
BP-12	12" reach, 1" x 32.75" OAL
BP-18	18" reach, 1" x 44.75" OAL
BP-24	24" reach, 1" x 56.75" OAL
BP-36	36" reach, 1" x 80.75" OAL
BP-48	48" reach, 1" x 104.75" OAL
BP-60	60" reach, 1" x 128.75" OAL
BP-72	72" reach, 1" x 152.75" OAL
BP-84	84" reach, 1" x 176.75" OAL
BP-96	96" reach, 1" x 200.75" OAL
BP2-08	8" reach, 2" x 24.75" OAL
BP2-12	12" reach, 2" x 32" OAL
BP2-18	18" reach, 2" x 44.75" OAL
BP2-24	24" reach, 2" x 56.75" OAL
BP2-36	36" reach, 2" x 80.75" OAL
BP2-48	48" reach, 2" x 104.75" OAL
BP2-60	60" reach, 2" x 128.75" OAL
BP2-72	72" reach, 2" x 152.75" OAL
BP2-84	84" reach, 2" x 176.75" OAL
BP2-96	96" reach, 2" x 200.75" OAL

Part Number	Description
Options for belt skimmer	
BGST4	Diverter for Sidewinder and Belt Skimmers
XETIMER	Timer, 24 hour, 48 settings per day, 110v
XETimer-GSBZ	Integrated Timer for GS, B, and ZVA, 120v
BGX2	Lockjaw Mounting Clamp, gen. 2
BXWIP	Wiper Set for Zebra Belt Skimmer, 1"
BXWIP-2	Wiper Set for Zebra Belt Skimmer, 2"
BXLP-12	12" x 1" Foot Assembly for Belt skimmer



BELT OIL SKIMMER

WITH STAINLESS BELT

Simple, easy vertical access, rugged, reliable.

Longer reach and wider belt skimmers are available, please call for quote.

Warranties: 2 year on polyvinyl belts, 30 days on stainless belts

115v Standard Model

220v, 50 Hz models available by adding "E" to the end of the part number

Also available in 12/24 VDC versions by special request. These models can be directly powered and controlled by the backplane of your machining center.



OPTIONAL ACCESSORIES



Diverter™ (#BGST4)



Lockjaw makes it easy to mount or transport between tanks (#BGX2)



Integrated timer for mechanical skimmers (#XETIMER-GSBZ)

FEATURES

- > 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
- > Two year warranty (except on steel belts)

Part Number	Belt Dimensions
BSF1-08	1x8" steel belt
BSF1-12	1x12" steel belt
BSF1-120	1x120" steel belt
BSF1-18	1x18" steel belt
BSF1-24	1x24" steel belt
BSF1-36	1x36" steel belt
BSF1-48	1x48" steel belt
BSF1-60	1x60" steel belt
BSF1-72	1x72" steel belt
BSF1-84	1x84" steel belt
BSF1-96	1x96" steel belt
BSF2-08	2x8" steel belt
BSF2-12	2x12" steel belt
BSF2-18	2x18" steel belt
BSF2-24	2x24" steel belt
BSF2-36	2x36" steel belt
BSF2-48	2x48" steel belt
BSF2-60	2x60" steel belt
BSF2-72	2x72" steel belt
BSF2-84	2x84" steel belt
BSF2-96	2x96" steel belt

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

ACCESSORIES

Zebra offers 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.



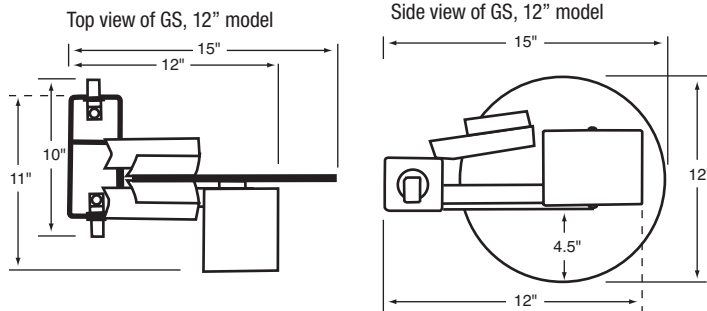
Part Number	Size
Standard replacement stainless belt	
BS-08	8" reach, 1" x 24.75" OAL
BS-12	12" reach, 1" x 32" OAL
BS-18	18" reach, 1" x 44.75" OAL
BS2-08	8" reach, 2" x 24.75" OAL
BS2-12	12" reach, 2" x 32" OAL
BS2-18	18" reach, 2" x 44.75" OAL
BS2-24	24" reach, 2" x 56.75" OAL
BS2-36	36" reach, 2" x 80.75" OAL
BS-24	24" reach, 1" x 56.75" OAL
BS2-60	60" reach, 2" x 128.75" OAL
BS-36	36" reach, 1" x 80.75" OAL
BS-48	48" reach, 1" x 104.75" OAL
BS-60	60" reach, 1" x 128.75" OAL
BS-96	96" reach, 1" x 200.75" OAL

Part Number	Description
Options for belt skimmer	
BGST4	Diverter for Sidewinder and Belt Skimmers
XETIMER	Timer, 24 hour, 48 settings per day, 110v
XETimer-GSBZ	Integrated Timer for GS, B, and ZVA, 120v
BGX2	Lockjaw Mounting Clamp, gen. 2
BXWIP	Wiper Set for Zebra Belt Skimmer, 1"
BXWIP-2	Wiper Set for Zebra Belt Skimmer, 2"
BXLPA-12	12" x 1" Foot Assembly for Belt skimmer



SMART DISK SKIMMER

REDUCES COOLANT WASTE



Part Number	Description
Smart Disk Skimmers	
GS4H300	12" dia disk 115v 7rpm
GS4H300.4	12" disk, 115v, w/timer
GS4H460	18" dia disk 115v 7rpm
GS4H460.2	18" dia 115v 2rpm
GS4W300	12" HT disk, 115v, 7rpm
GS4W460	18" HT disk, 115v, 7rpm

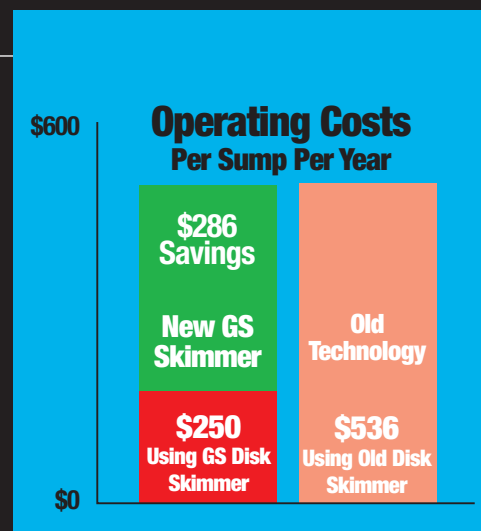
220v models available by adding "E" to the end of part number

ACCESSORIES

Part Number	Description
DISK-A300	Acrylic Disk, 12" dia., 3/16" thick
DISK-H300	High-Impact Disk, 12" dia, 1/4" thick
DISK-H460	High-Impact Disk, 18" dia, 1/4" thick
DISK-H610	High-Impact Disk, 24" dia, 1/4" thick
DISK-S300	High-Temp Disk, 12" dia, 14 gage, 304 SS
DISK-W300	High-Temp Disk, 12" dia, 1/2" thick
DISK-W460	High-Temp Disk, 18" dia, 1/2" thick
DISK-W610	High-Temp Disk, 24" dia, 1/2" thick
LXWIP	Wiper Set for disk skimmers, 2 per set

FEATURES

- > 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
- > Two year warranty on all other parts



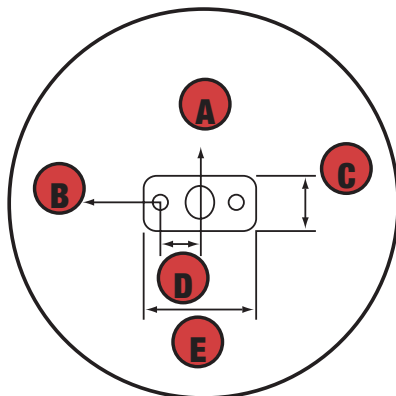
ORIGINAL DISK SKIMMER

TACKLES HEAVY OIL LOADS



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



Part Number	Description
Original Disk Skimmers	
LH300	12" disk 115v 7rpm
LH300.2	12" disk, 2rpm w/fan
LH460	18" disk 115v 7rpm
LH460.2	18" disk, 2rpm w/fan
LH460.4	18" disk 115v,w/timer
LW300	Extra High Heat - 12" HT disk, 115v, 7rpm
LW460	Extra High Heat - 18" HT disk, 115v, 7rpm
LW460.4	Extra High Heat - 18" HT disk, 115v, 7rpm w/ Timer

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

ACCESSORIES

Part Number	Description
DISK-A300	Acrylic Disk, 12" dia., 3/16" thick
DISK-H300	High-Impact Disk, 12" dia, 1/4" thick
DISK-H460	High-Impact Disk, 18" dia, 1/4" thick
DISK-H610	High-Impact Disk, 24" dia, 1/4" thick
DISK-S300	High-Temp Disk, 12" dia, 14 gage, 304 SS
DISK-W300	High-Temp Disk, 12" dia, 1/2" thick
DISK-W460	High-Temp Disk, 18" dia, 1/2" thick
DISK-W610	High-Temp Disk, 24" dia, 1/2" thick
LXWIP	Wiper Set for disk skimmers, 2 per set

FEATURES

- > Handles heavy oil loads
- > Heavy-duty steel construction
- > Continuous-duty fan-cooled motor
- > Does not retrofit for use with Diverter
- > Lifetime warranty on disk and wipers
- > Two year warranty on all other parts



Z17 COALESCER

TRAMP OIL SEPARATOR FOR WATER-BASED FLUIDS

The Z17 Coalescer and tramp oil separator 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.

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.



FEATURES

- > New, stronger coalescing tank
- > Patent-pending Flexor, the first ever internal surface skimmer:
- > Concentrates late-separating oil
- > Reduces surface-to-surface contact
- > Forms column of oil allowing for better oil-only discharge
- > Automatically aerates
- > Prevents bacterial growth
- > Cleaner fluid surface allows for chemical monitoring right from coalescing tank
- > Choose from four passive skimmers or intake attachments
- > Advanced pump:
- > IMPROVED-FLOW submersible, centrifugal pump
- > NEW adjustable oil weir
- > NEW external solids filtration allows for easier maintenance:
- > 1 pint capacity, 177µ stainless steel standard
- > Three flow restrictors included to balance the Z17 Coalescer to sump conditions
- > Permanent coalescing media accelerates oil collection
- > 10 minute hold time
- > Heavier-duty spin-welded fittings prevent cracking and leaks
- > Crush resistant hoses can be customized.
- > Clean coolant returned back to sump via gravity
- > Built-in siphon makes the coalescer easy to empty
- > Drum dolly allows easy movement between machine sumps (ordered separately)

Tramp oil also emulsifies into coolant. We recommend skimming daily.

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.



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

FEATURES

- > Z17 – Next generation technology active coalescer
- > Automatically freshens and aerates
- > 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

HOW IT WORKS

1. Dirty coolant is pulled from your sump surface (using an intake attachment) into the coalescing tank.
2. The external filter captures recirculating fines. Larger capacity filter options available.
3. 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 10 minutes.
4. The Flexor surface skimmer concentrates late-separating oils, containing them within the central coalescing cylinder. The formed column of oil allows for best oil-only discharge via the external spigot. Flexor provides a cleaner fluid surface, and automatically aerates to further prevent bacterial growth.
5. Clean coolant is returned from the bottom of the tank back to your sump via gravity.
6. Optional drum dolly.

Part Number	Description
FZ17.F1	Z17 Coalescer, Floating Sumpster, 115V
FZ17.F2	Z17 Coalescer, Floating Sumps
FZ17.H1	Z17 Coalescer, Hammerhead, 115v
FZ17.H2	Z17 Coalescer, Hammerhead, 2
FZ17.R1	Z17 Coalescer, Recept, 115v
FZ17.R2	Z17 Coalescer, Recept, 220V
FZ17.S1	Z17 Coalescer, Sumpster, 115v
FZ17.S2	Z17 Coalescer, Sumpster, 220V
FZ17MAIN	FZ17 Barrel complete, no attach



ATTACHMENTS FOR COALESCER

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.

How to Specify Your Coalescer

Base

FZ17

Intake

R = Recept
S = Sumpster
H = Hammerhead
F = Floating Sumpster

Pump

1 = 110v
2 = 220v

FZ17.R1



MAKE YOUR MACHINE

1) Select Intake attachments

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

2) Power the system

Centrifugal, 115v (1):

- Centrifugal, 115v
- Circulate coolant 24/7

Centrifugal, 220v (2):

- Centrifugal, 220v
- Circulate coolant 24/7



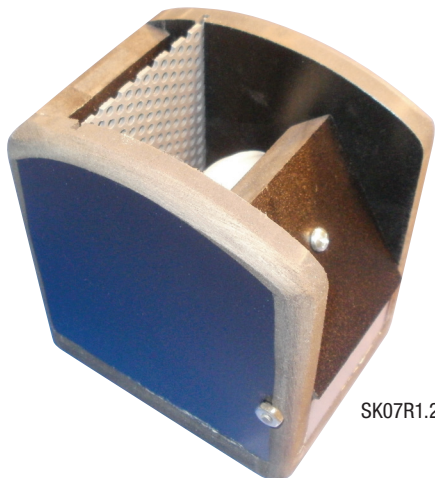
ACCESSORIES

Part Number	Description
FMXPF001	FZ17 External Filter Option
FMXTSF915	Optional T-Strainer filter. 20 Mesh (915µ). Stainless Steel, 3.750" long. (1 Pint)
FXDD15	Drum Dolly for Muscle, F17 Series
SK02D	Hammerhead, head portion only
SK03D12F	Hammerhead with hoses for Coalescer
SK02D12F-HF	Hose & Fittings for Hamm/Recept w/FXP3 or 11
SK07R1.2	Recept II for Muscle Series
SK10A7	Sumpster II for Muscle Series
SK10A7-HF.1	Hose & Fittings for Sumpster for use w/ FXP11
SK10A8-HF	Hose & Fittings for Sumpster, for FM60
SK10B2.3P	Floating Sumpster III for Coalescer, plastic
SK10B2.3S	Floating Sumpster III for Coalescer, steel
SK10B3.3P	Floating Sumpster III for Oasis, plastic
SK10B3.3S	Floating Sumpster III for Oasis, steel
FXP11	Pump with hoses, 115v, Muscle Series
FXP11.1	Circulation Pump Kit, 115v, 5 gpm
FXP11.3	Pump only, 115v, FZ17Submersible, no fittings
FXP3.1E	Circulation Pump Kit, 3 gpm, 220v
FMXSF150	Optional Stainless Steel Mesh Filter Cartridge only for use with all Zebra Coalescers 10" long filter housings, 150 micron. Reusable.
SKF17-C01121	8' Coolant return hose for Coalescer
SKF17-H020417	10' Pump Discharge Hose for Coalescer

	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°-90°F	40°-90°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:	# SK02D12F	# SK07R1.2	# SK10A7	# SK10B2.3S (SS floats) # SK10B2.3.3P (Plastic floats)
Ext./Diaphragm Pump:	# SK02D24S	# SK07R1.2	# SK10A7	# SK10B3.3S (SS floats) # SK10B3.3P (Plastic floats)

RECEPT

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.



HAMMERHEAD

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.



SUMPSTER

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

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.

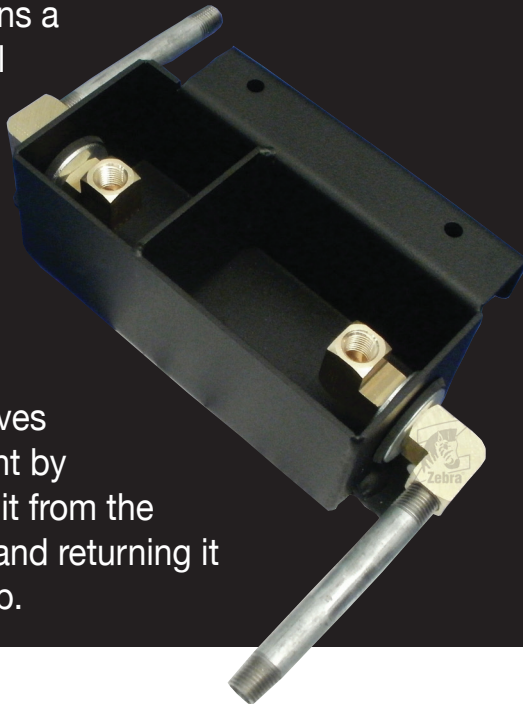


DIVERTER™

#BGST4

SEPARATE TRAMP OIL WASTE FROM GOOD COOLANT

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.

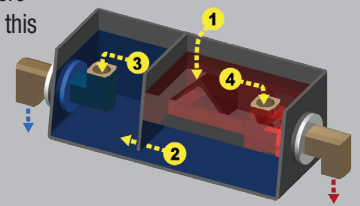


FEATURES

- > 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
- > [Lifetime warranty](#)
- > Dims: 7"x3"x2.5"

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™

#BGX2

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.



FEATURES

- > 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
- > [Lifetime warranty](#)

Q&A

Q. MY MECHANICAL SKIMMER NO LONGER PICKS UP OIL, WHY NOT?

A. Mechanical skimmers (disk, belt, or tube type) are designed to pick up oil, and will continue to do so as long as the oil layer IS just oil. Once the pickup mechanism no longer attracts and picks up the surface layer, the layer has become something other than just oil (referred to as biofilm) or it is coated with a rejection chemical.

Biofilms are formed when an abundance of bacteria have colonized. They combine with their food source- the oil layer. Until the bacteria are under control, this mucous layer will grow larger, clog lines and filters, give off foul odors, and eat away at the good stuff in your coolant. Nothing will pick it up except for a coalescer or shop vacuum. It is recommended that the machine be fully cleaned and decontaminated, then recharged with fresh coolant. You will know the machine is decontaminated when its rinse bath is a pH of 7 (that of water).

A rejection chemical is a chemical that is in your coolant blend or from another source (such as rust preventative or anything else that may end up in the coolant soup). The most common chemical that can cause this rejection is silicone. Once it is wiped off the pick up mechanism, the skimmer will work-but only until it is recoated! We recommend the use of the Muscle Coalescer instead of the mechanical skimmer for this situation.

Q. I HAVE ONLY 3 CNC MACHINES IN MY SMALL SHOP AND MONEY IS TIGHT. I NEED A MECHANICAL SKIMMER TO REMOVE TRAMP OIL FROM THE SUMPS, BUT I ALSO WOULD LIKE TO SKIM OFF A HOLDING BARREL. WHAT IS THE BEST PRODUCT FOR THIS APPLICATION?

A. Either a Zebra Belt Skimmer or Sidewinder™ Tube Skimmer, depending upon the access to your sumps. We recommend also mounting the Diverter and the Lockjaw™ Mounting Clamp. With the Lockjaw, you can then easily move the skimmer set up between each sump as well as to your barrel.

Q. HOW DO I KNOW IF I SHOULD GET MECHANICAL SKIMMERS OR COALESCERS TO REMOVE TRAMP OILS?

A. It is a matter of what best “fits” your application as well as your equipment preference.

A mechanical skimmer will remove the tramp oil layer via a pickup mechanism, such as a disk, belt, or tube. The tramp oil is then discharged automatically to a waste container, which will need to be manually emptied as needed. Since tramp oils are best removed daily, as they are a food source for bacteria, it is recommended to have one on each machine sump to run as needed.

A coalescer draws in the entire surface layer of your sump, then gravity separates the oil within its holding tank for manual discharge to a waste container. Again, oil removal should be done daily, so dedicate a coalescer (such as a Muscle™) on each sump to run continuously, or daily utilize a portable unit (such as the Snapdragon™) on each sump.

Q. WHAT FACTORS SHOULD I ADDRESS WHEN CHOOSING THE APPROPRIATE MECHANICAL SKIMMER?

A. Selection of a mechanical skimmer is based upon sump or tank factors such as:

- Access to the area where oils naturally collect (mount location of the skimmer)
- Reach needed to the lowest fluid level (distance from mounting point)
- Required rate of oil pickup (quarts or gallons per hour)
- Temperature of the solution (as in wash water)

Q. WHAT IS THE BENEFIT OF USING A COALESCER TO REMOVE THE TRAMP OIL OVER THAT OF A MECHANICAL SKIMMER?

A. The Muscle™ Coalescer will remove the oil layer AND keep the coolant sump in constant circulation, help-ing to prevent bacterial contamination which degrades coolant. If the machine tool runs less than 2 full shifts per day, a Muscle Coalescer will help to keep that sump in its best overall condition, preventing bacterial problems and coolant degradation. Little to no maintenance is required, as cleaning of the coalescer only needs to be done if there is a buildup of chips and debris within it, or if it is biologically contaminated. Zebra manufactures models which have chip collection capabilities to remove chips which also help to degrade coolant.

If using a coalescer is impractical or impossible near that machine, use a mechanical skimmer to remove the tramp oil and run an aeration device, such as the Zebra Oxygenator™, whenever the pump does not run to help keep bacteria at bay.



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 (O_2) so that the levels of O_2 will decrease, especially under floating oils. As the O_2 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 H_2S (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.



Coolant Quality Log

– Download from CoolantMaintenance.com –

Machine Name/#: _____

Questions? Contact: _____

Coolant Name: _____

Refractometer Factor: _____

Fresh Charge Date: _____

Coolant Maintenance Protocols:

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	_____

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	_____

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

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



TECHNICAL INFORMATION

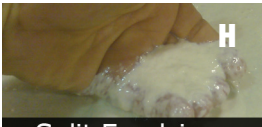
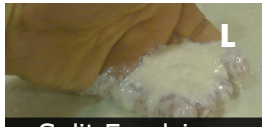



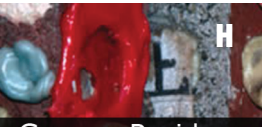



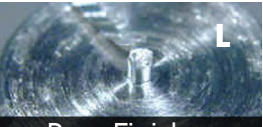


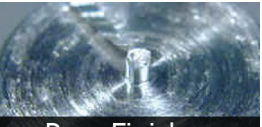





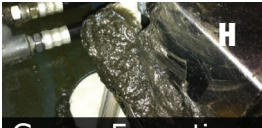



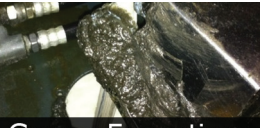
Coolant Troubleshooting Guide

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

H = High Value

L = Low Value

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.

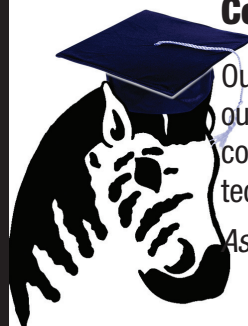
- 1.What's the real amount of concentrate in your ideal 5% sump? = 2.5 gallons
- 2.How much refill concentrate do you need? = 0.5 gallons
- 3.What is the concentration for the 25 gallons of refill? = 0.5 gal of concentrate ÷ 25 gallons of fluid required = .02, or 2% concentration.



Coolant Maintenance Courses

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

Ask about it today!



PROBLEMS RELATED TO...

PROBLEMS RELATED TO HARDNESS



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.



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.



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



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

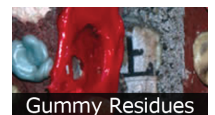
PROBLEMS RELATED TO HARDNESS



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



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



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.





25% of the Metal working employees have Skin Issues. Uncle Earls Soap is the only 100% All Natural ingredient Soap that can do the cleaning and also put the moisture back in your hands.

STRONGEST NATURAL SOAP ON THE MARKET

How WE MAKE IT

We make our soap using old-fashioned techniques and modern technology. Most importantly, we start with natural ingredients like soy and castor oils - things you could eat because they come from plants. None of our ingredients come from industrial chemical factories, and none have names you can't pronounce. None of them come from China. Our fragrances are real essential oils from lemon, orange and lavender flowers. Compare our ingredients to the competition's; we're PROUD of our ingredients, so we write them large.

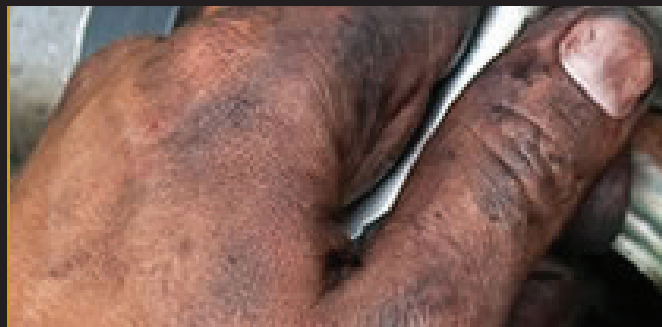
Two-PART FORMULA

Our secret two-part formula creates lather that's rich and luxurious, and also contains strong cleaning agents for the toughest natural stains, like grass, clays and oils.

HEALS DAMAGED SKIN AS IT CLEANS

MADE FOR MACHINIST

Originally developed as a hand soap for machinist, whose hands are ripped apart by solvents and chips. Conventional soap dries out their skin so that they crack and bleed. Using Uncle Earl's allows their skin to protect itself and heal the damage unlike any other product.



DO THE MATH!

A gallon of cheap stuff goes for \$10.

Each stroke of the plunger gives you about a half to a full ounce, depending on the brand.

1 Gallon = 128 ounces

If ONLY one stroke per wash is used (which they DON'T) then there is 128 washes in one gallon.

3 gallons = \$30 = 374 washes

UNCLE EARLES

HALF gallon of Uncle Earl's is concentrated
EXTREMELY CONCENTRATED

You only need one stroke, but lets say two strokes is used.

2 strokes = .07 ounces

1 container = 67.6 ounces

1/2 Gallon = \$42.00 = 500 washes



Dazzle Active Sump™

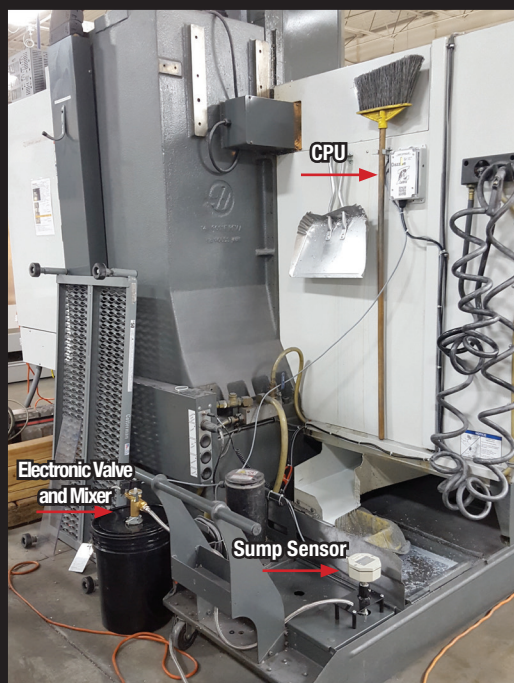
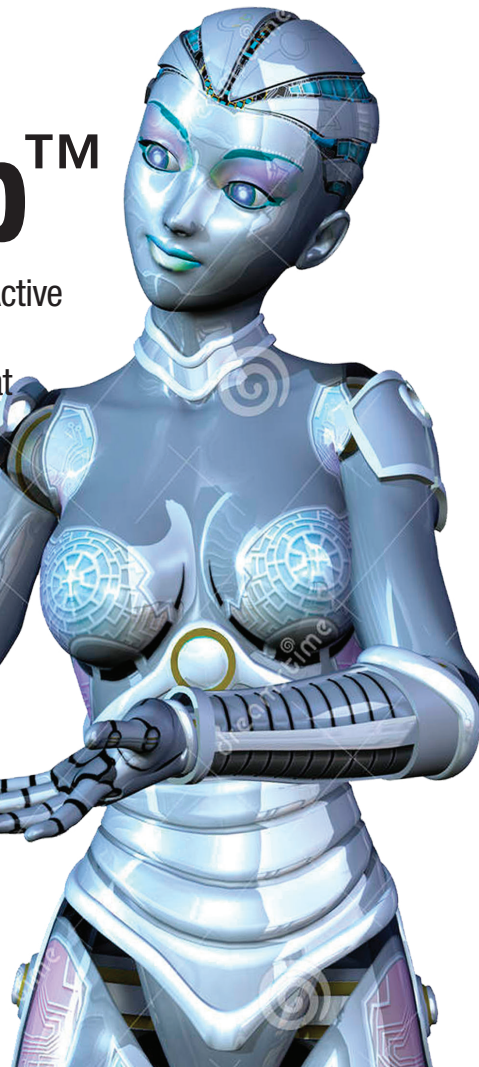
Free your maintenance team and operators from unproductive chores. Active Sump™ takes the guesswork out of coolant delivery and concentration management. Automatic sump level monitoring and delivery ensures that machines won't run out of coolant compromising production runs, tool life, and quality.

Affordably Automate Coolant Mixing, Delivery, and Sump Level Maintenance

It provides you with these benefits:

- Reduces waste in valuable work pieces and tooling
- Reduces labor
- Reduces waste coolant up to 50%
- Increases productivity of operators, maintenance, and other personnel
- Increases your environmental and OSHA safety margins
- Improves your confidence in lights-out operations
- Improves your bottom line

How it works...



Active Sump set up



Sump close up



Machine Sump Level Sensors

A programmable controller bundled with an advanced level sensor that maintains sump levels at optimal field defined rest and operating set-points to within centimeters preventing overflows and putting an end to bucket brigades.

- Programmable microprocessor controller with LED indicator lights and 100 dB audible alarm, 100 to 240 VAC, 50/60Hz
- Low profile level sensor
- Solenoid valve, 1/2" NPT
- Electrical and control cables



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