

FULL LINE
CATALOG

Zebra[®]

Zebra[®]

Zebra Skimmers
Clean Coolant
Maintenance Handbook
• Volume 16





Zebra is dedicated to serving the metalworking industry and providing cost-saving, fluid maintenance products and technical expertise.

Coolant is the least understood, yet most fundamental, tool in the shop and our mission is to help our customers understand the protocols of its maintenance. Like drills and endmills, it needs to be kept sharp for best performance, and life.

Choose the right coolant for the job at hand, then keep it sharp by sticking to preventative maintenance protocols. We can help you develop a customized maintenance schedule that works best for your operation, so call us today!

Sincerely,
The Zebra Crew

888.249.4855
ZebraSkimmers.com
CoolantMaintenance.com

Contents

Maintenance Matters	2-3
Troubleshooting	4
Refractometers.....	5
pH Strips	5
Hardness Sticks	5
Machinist Mixer	6
Economy Mixer	6
Proportioning Pumps	7
Fill Station™.....	7
Sump Level Regulator™	7
Sidewinder®.....	8
Belt Skimmer	8
Smart Disk Skimmer	9
Simple Disk Skimmer	9
Diverter™.....	10
Lockjaw™.....	10
Oxygenator™.....	11
Odor Control Tablets.....	11
Circulation Pumps	11
Muscle™ Coalescer	12-13
Oasis™ Portable Coalescer	14-15
Sierra™ Portable Coalescer	15
Zvac™ II Sump Assistant Vacuum	16
Uncle Earl's™ Soap	17
Parts Washer Equipment	18
Specifications, Parts.....	19



Chemistry

Coolant's chemical stability depend on its:

Emulsion: When concentrate and water are improperly mixed, the emulsion, or chemical combination, is unstable. Throwing a gallon of concentrate in the sump and topping it off with water is cause for danger. All molecules must combine together for a stable emulsion.

Concentration: Coolant is designed to perform at a given ratio of it to water. Enough concentrate must be present for it to perform. Low concentration can cause broken tooling, poor finishes, and rust. High ones can cause skin sensitivity, gummy residues, and pure waste.

Water Hardness: Calcium and magnesium in the water supply can split the emulsion, rendering coolant useless for lubrication. Tooling will break, metal will rust, and machines will get gummy residues. And, due to evaporation, these minerals build up in the sump. Low hardness can cause foam, inhibiting tramp oil removal and pose possible sump overflow.

pH: pH, as it applies to coolant, is the level of acid in it. Coolant is designed to work within a given range between 8-10 pH, meaning it is not acidic. Acid build up will cause split emulsions, rust, foul odors, and dermatitis. How does coolant become acidic? Plain and simple-biology...

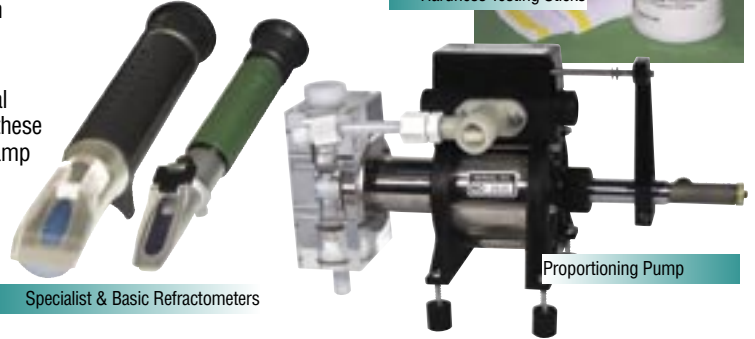
Machinists Mixer



pH Test Strips



Hardness Testing Sticks



Specialist & Basic Refractometers

Proportioning Pump

Biology

Coolant's biological stability depends on...bugs?

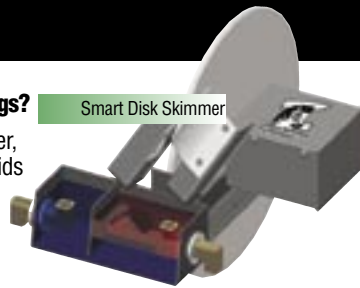
Coolant hosts bacteria, as they enter via the water, work material, and operator's skin. They add acids to the fluid, creating chemical instability. We may not be able to get rid of them entirely, but we can limit the environment in which they grow, preventing them from biological attack.

Tramp Oil: The best food source for bacteria as they float along with this layer. When bacteria then colonize, biofilms are created, inhibiting tramp oil skimming. Remove tramp oil each day the machine operates so bacteria have nothing to feed upon.

Aeration: Bacteria thrive best when there is no oxygen. When tramp oil is left on the fluid surface, it limits oxygen levels, so bugs multiply rapidly. With an inactive machine, oxygen levels also decrease, so aeration is key when the sump is idle.

Chips: Chip piles provide bugs a safe place to nest and raise their families, as they feed off the trace minerals that we all lack. Removing chips is key to limiting biological contamination, premature fluid failure, and rancidity.

Smart Disk Skimmer

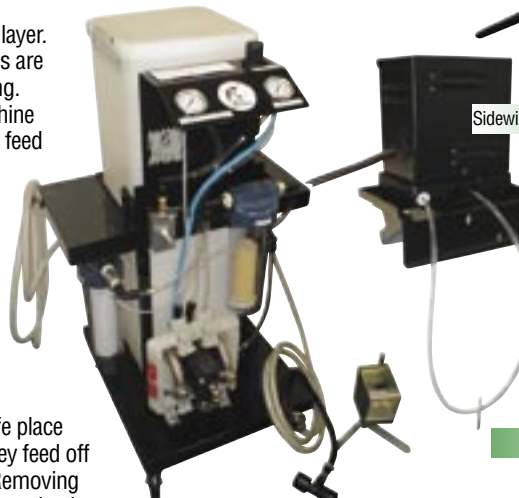


Muscle™ Coalescer



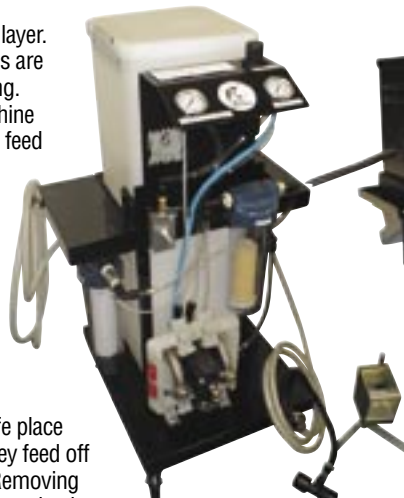
Oxygenators™

Sidewinder® Tube Skimmer



Belt Skimmer

Oasis™ Portable Coalescer



Zvac™ II Sump Assistant Vacuum System

Mechanics

Clean Coolant Can Happen For You

Now that the chemistry and biology of coolant is understood, it is a matter of selecting the right equipment which will extend its life. Some Zebra products are featured above for each preventative maintenance protocol. Contact us when we can help you choose the best product to fit your application and suit your objectives and operations.

Coolant Troubleshooting



SUMP OR TANK CONDITIONS

Grease Formations



- H Add softener agent, or consider RO water
- Filter metals down to 10µ pg. 12-15, 16

Foam



- L Add hardener agent
- Decrease aeration pg. 11
- Decrease pressure

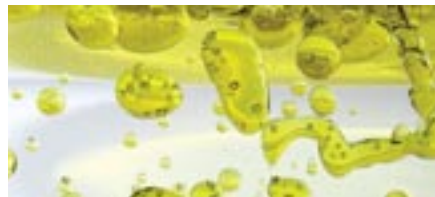
LEGEND OF CAUSES	
Concentration Low or High	●
Water Hardness Low or High	●
pH Low	●
Poor Tramp Oil Removal	●
Poor Chip Filtration	●
Over-Aeration	●
High Pressure or Temperature	●

Gummy Residues



- H Decrease concentration pg. 5
- H Add softener agent, or consider RO water

Split Emulsion



- H Add softener agent, or consider RO water
- Filter metals down to 10µ pg. 12-15, 16
- See "Bacterial Contamination" below

Emulsified Oils



- Remove tramp oils pg. 8-9, 12-15
- Filter metals down to 10µ pg. 12-15, 16

HEALTH & SAFETY

Odor



- See "Bacterial Contamination" below

Skin Sensitivity



Source: NZ Dermatol

- H Decrease concentration pg. 5
- See "Bacterial Contamination" below
- Remove tramp oils pg. 8-9, 12-15

Excessive Mist



- Remove tramp oils pg. 8-9, 12-15

PARTS & TOOLS

Rust/Corrosion



- H Add softener agent, or consider RO water
- See "Bacterial Contamination" below

Tool Breakage



- L Increase concentration pg. 5

Poor Finishes



- L Increase concentration pg. 5
- Filter metals down to 10µ pg. 12-15, 16

Bacterial Contamination (if you're experiencing this follow these steps - visit www.CoolantMaintenance.com for more information):

Remove surface slime and correct concentration
pg. 5

Skim oils and circulate sump when idle
pg. 8-15

Use odor control tablets or decrease biocide dose while increasing frequency
pg. 11

Clean machine (until rinse bath is pH of 7) before recharge
pg. 5

Coolant Measurement

Optical Refractometers Measure Concentration

Zebra Specialist Refractometer is the Most Precise

- Range 0-15 or 0-30 Brix
- Solid, bright scale built for the quality conscious machinist
- Integrated drip feed for easy, one-handed sampling
- Large, easy-to-handle body with gripping studs
- EZ comfort eye cushion and adjustable focus for easy reading
- Hand-operated zero adjust with locknut
- Anti-roll support
- One piece, easy-to-replace sample cover
- Precision accuracy range
- European precision and craftsmanship
- Carrying case included



Basic Refractometer for Every Machine Cell

- 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 for easy reading
- Auto temperature compensation for shop areas with varying temperature
- Average use accuracy range
- Carrying case with sampler included

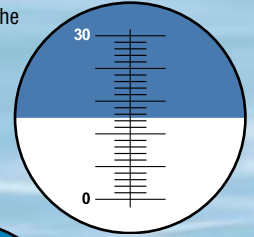
Refractometer Selection Guide:

Model	Part Number	Brix Scale*	Numbered Graduation	Accuracy	Weight	Dimensions
Specialist Refractometer	OPT15	0-15	Fifths	± .01%	9.7 oz.	2" dia., 9.25" long
	OPT30	0-30	Fifths	± .01%	8.6 oz.	2" dia., 7.5" long
Basic Refractometer	OPT10	0-10	Tenths	± .10%	9.9 oz.	1.5" dia., 8" long
	OPT32	0-32	Fifths	± .10%	9.3oz.	1.5" dia., 7" long
Replacement Parts	OPTX45	Replacement prism cover for OPT15, OPT30				
	OPTX10	Replacement prism cover with pin for OPT10, OPT32				

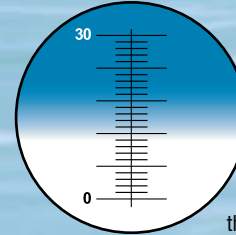
*Check coolant product data to determine how your coolant will read on the Brix Scale.

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.

pH Test Strips and Hardness Sticks Measure Chemical Balance

Coolant works best within its specific pH range (usually 8 - 10 pH). If outside this range, it can cause split emulsions, rust, foul odors, and dermatitis. Monitoring pH will help to prevent these issues and spoiled, rancid coolant and thus waste.



pH Test Strips for Quick-Sampling

- Simple way to measure pH on the fly
- Accurately measures coolant pH range of 6.5 - 10.0
- 100 Strips per box



Hardness Testing Sticks Prevent Coolant Pudding and Foam

Tap water contains minerals that can harm your coolant. Split emulsions, grease, scum, or 'pudding' are all dangers of mineral buildup in your sump.

- Dip into the fluid and compare colors
- A must for every shop
- 50 sticks per bottle
- Non-hazardous



pH & Hardness Selection Guide

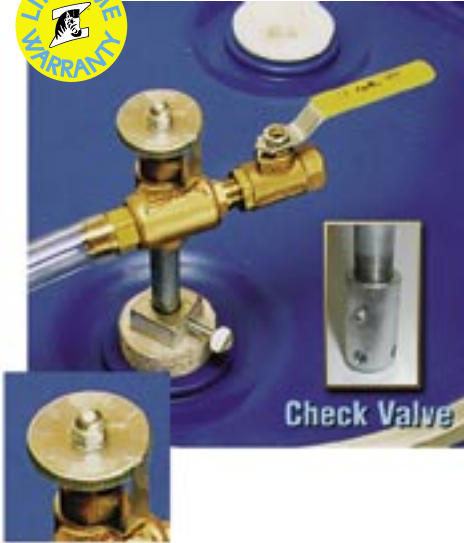
Model	Part Number	Description	Range	Accuracy
pH Strips	XPHPS09	pH Testing Strips	6.5 - 10.0	±0.2 pH
Hardness Testing Sticks	XWTF50	Hardness Test Sticks	0-1000 ppm	

Coolant Mixing & Delivery

Venturi Mixers & Positive Displacement Proportioning Pumps

Properly mixing provides better emulsions and saves on raw material costs

Maintaining a consistent concentration increases sump and tool life



Machinist's Mixer with Lifetime Warranty

- Separate water shut-off valve
- Machined from solid bronze casting with galvanized steel stand pipe
- Maximum viscosity of 500 SUS
- 40" discharge tube included (max length for delivery)
- 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



For longer delivery needs, refer to the Zebra [Proportioning Pump](#).

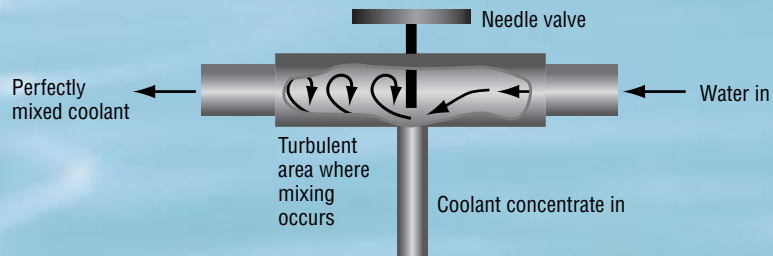
Economy Mixer

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



How They Work

Venturi pumps are commonly used for coolant mixers. The moving water across the coolant orifice creates a low pressure zone drawing coolant into the water stream. The combination of the two laminar flows creates a strong turbulent zone in which the two fluids are thoroughly mixed. Since there are no moving parts, the pump has a very high degree of reliability. The needle valve allows for a high degree of precision for setting the proportion of coolant mixed in with the water.



Venturi Mixer Selection Guide

Model	Part Number	GPM	Mix Range % ¹		Mixing Ratios		Max. Delivery ²	Range psi	Fittings, NPT		Application ⁴
			Low	High	Low	High			In ³	Out	
Machinist Mixer	MIX0327	3	0	7	100:1	15:1	40"	25-75	3/8"	1/2"	55 gal barrel
	MIXU0327	3	0	7	100:1	15:1	40"	25-75	3/8"	1/2"	Pail, barrel, tote
	MIX03725	3	0	25	100:1	4:1	40"	25-75	3/8"	1/2"	55 gal barrel
	MIXU03725	3	0	25	100:1	4:1	40"	25-75	3/8"	1/2"	Pail, barrel, tote
	MIX1027	10	0	7	100:1	15:1	40"	25-75	1/2"	3/4"	55 gal barrel
	MIXU1027	10	0	7	100:1	15:1	40"	25-75	1/2"	3/4"	Pail, barrel, tote
	MIX10725	10	0	25	100:1	4:1	40"	25-75	1/2"	3/4"	55 gal barrel
	MIXU10725	10	0	25	100:1	4:1	40"	25-75	1/2"	3/4"	Pail, barrel, tote
Economy Mixer	MIX05120	4.8	.25	22.2			48"	25-75	3/4" GHT	1/2" NPT	Barrel

Accessories	Part Number	Description
	MIXXLOCK	Lockout for Machinist Mixer to prevent tampering
	MIXSF3	Swivel Fitting for inlet garden hose for 3gpm machinist's mixer
	MIXSF10	Swivel Fitting for inlet garden hose for 10gpm machinist's 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
⁴Unit is supplied with intake hose to meet this container type

Zebra Water-Powered Proportioning Pump for Long-Distance Mix Delivery

Mixing hundreds of gallons per day?
Is it a pain to switch from working mix to make-up?
Tired of hauling coolant in buckets to your machine?
If so, you are ready for a proportioning pump!

- Perfectly mixed coolant at EVERY use
- Delivers mix through hose or conduit right to your machine
- No need to verify concentration once initially determined
- Compact with few moving parts
- Can be permanently mounted to wall
- Maximum viscosity of 700 SUS
- 800' lateral max delivery, 20' vertical max delivery
- One year warranty with purchase of prepump water filter (#MIXPPX75)
- Units available for wall mount configuration



Prepump water filter for mixers/pumps (#MIXPPX75)



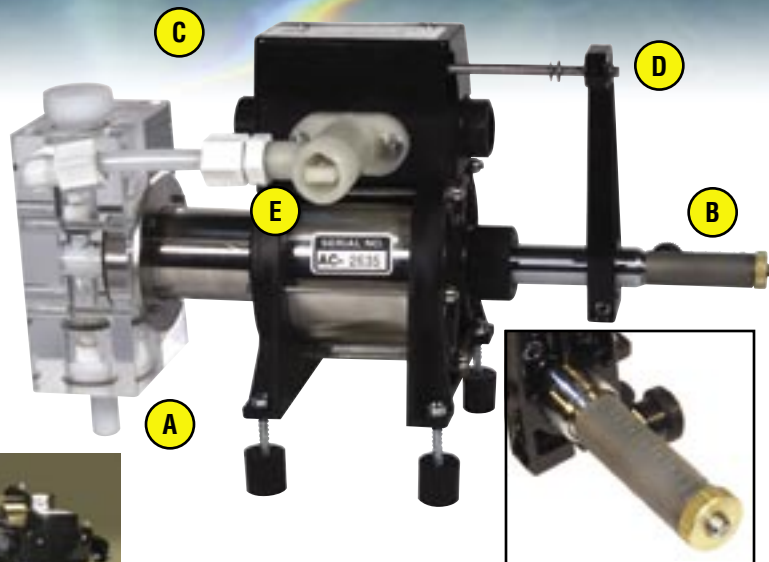
Available in direct wall-mount configuration.



Water Limiter (#MIXXWL.1)



Pressure regulating valve (#MIXXPRV.1)



How It Works

Your coolant is drawn in through the bottom port (A) and metered by the adjustable screw (B) for a constant amount of water being drawn in through the fitting (C) on the other side. The entire arm (D) moves back and forth so that your coolant is being injected into the water stream. The mixing occurs at the exit fitting (E), and proceeds to your coolant sump. You can watch what is being drawn in the clear coolant block, and you know the unit is working perfectly by seeing the draw arm moving.

Zebra Fill-Station™

Contact us about the Fill-Station for coolant on demand

Designed to meet your needs, it incorporates a proportioning pump and optional utilities:

- Level Sensing for Tank and/or Concentrate
- Light and/or Audio Indicators
- PLC Interfaces



Zebra Sump Level Regulator™

Have a water supply close to almost every sump? Then, why fill manually? Automate your fluid top-off process to save labor time and lower material costs.

- Eliminate fluctuations in concentration due to evaporation
- Use less coolant and reduce material costs
- Heavy-duty, mechanical components
- High-strength, magnetic mounting
- Installs easily in minutes
- Best with Zebra Proportioning Pump or Fill-Station



Proportioning Pump Selection Guide

Model	Part Number ¹	Max. GPM	Mix Range %		Mixing Ratios		Max. Delivery ²	Range psi	Fittings, NPT		Application ³
			Low	High	Low	High			In	Out	
Proportioning Pump	MIXPP58	7	.60	5.8	1:166	1:17	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP518	7	1.4	12.3	1:71	1:8	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP520	7	1.6	13.5	1:62	1:7	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP532	7	2.4	20	1:41	1:5	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP585	7	10.0	40.0	1:10	1:1.5	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP547	9.5	3.2	26.8	1:31	1:3.7	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP510-M	12	.80	7.5	1:125	1:13	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP562-M	12	1.6	13.5	1:62	1:7	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP58.5-M	12	2.4	20	1:41	1:5	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP565-M	12	4.7	33	1:21	1:3	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP58-V	25	.60	5.8	1:166	1:17	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP520-V	25	1.6	13.5	1:62	1:7	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	Accessories	MIXPPX75	Prepump water filter for proportioning pump protection, 20µ (required to maintain warranty)								
MIXXWL.1		Water limiter for proportioning pump protection									
MIXXPRV.1		Pressure regulating valve for pump protection when delivering vertically, or through multiple lines									
MIXXSLR.P		Sump Level Regulator, plastic float									
MIXXSLR.S		Sump Level Regulator, stainless steel float									

Notations

- ¹For wall mount configuration, add "(VM)" to end of part number
²The proportioning pump can also pump the mixture a vertical distance of 20'
³Unit is supplied with intake hose to meet this container type

Keep Sump Clean

Mechanical Oil Skimmers: Sidewinder® Tube Skimmer, Belt Skimmer, Disk Skimmers

Sidewinder Tube Skimmer Skims from Anywhere

New Features of Generation 8

- Improved gear drive technology
- Longer tube life
- Compact design

Skims underneath conveyors, enclosed sumps, and hard-to-access areas

Also works on oil spills

Pick the reach you need: reach sizes available from the standard 8" model up to 95"

Installs in seconds

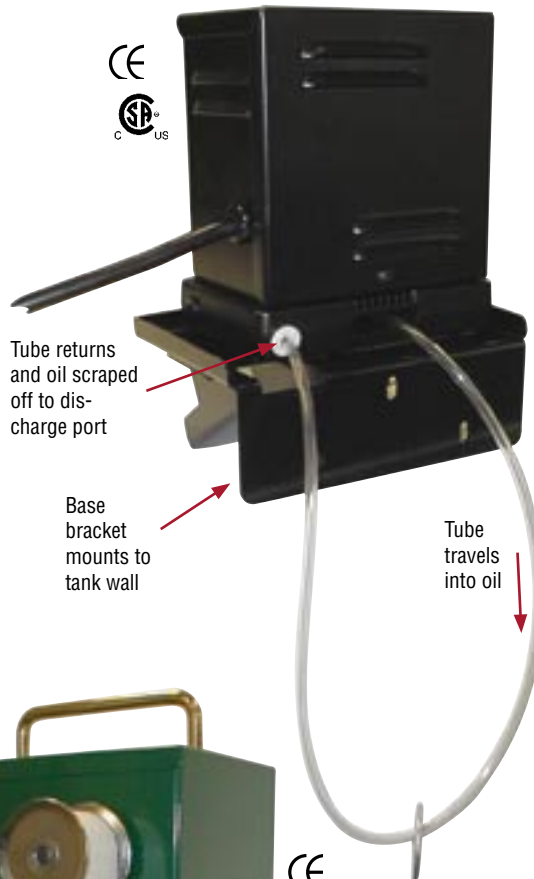
Industrial-grade pick-up tubing uses ceramic scraper

Large oil discharge port

Continuous-duty motor

One year warranty

The Sideways Skimmer™



Tube returns and oil scraped off to discharge port

Base bracket mounts to tank wall

Tube travels into oil

Options & Accessories



Zebra Diverter™ (#BGST4)



Magnetic base option (#ZXB8-MAG)



Integrated timer for mechanical skimmers (#XETIMER-GSBZ)

Zebra Belt Skimmer is a Traditional Favorite

Steel, heavy-duty, rugged construction

Removable, easy-to-clean collection tray

Self-tensioning belt on fixed lower pulley (for short reaches)

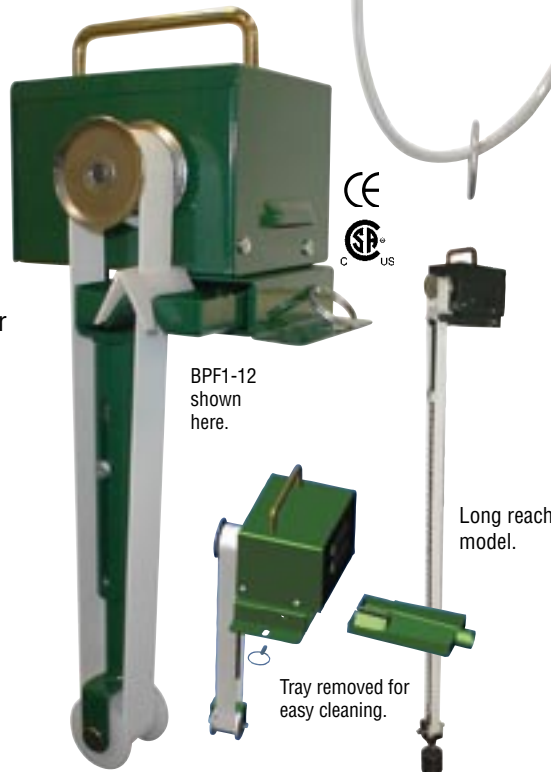
Hanging lower pulley (for long reaches)

Dual wiper set with lifetime warranty

Continuous-duty, fan-cooled motor

2" diameter minimum access required

One year warranty (except on steel belts)



BPF1-12 shown here.

Long reach model.

Tray removed for easy cleaning.

Options & Accessories



Zebra Diverter™ (#BGST4)



Integrated timer for mechanical skimmers (#XETIMER-GSBZ)



LockJaw™ (#BGX1)

Search No More for Replacement Belts

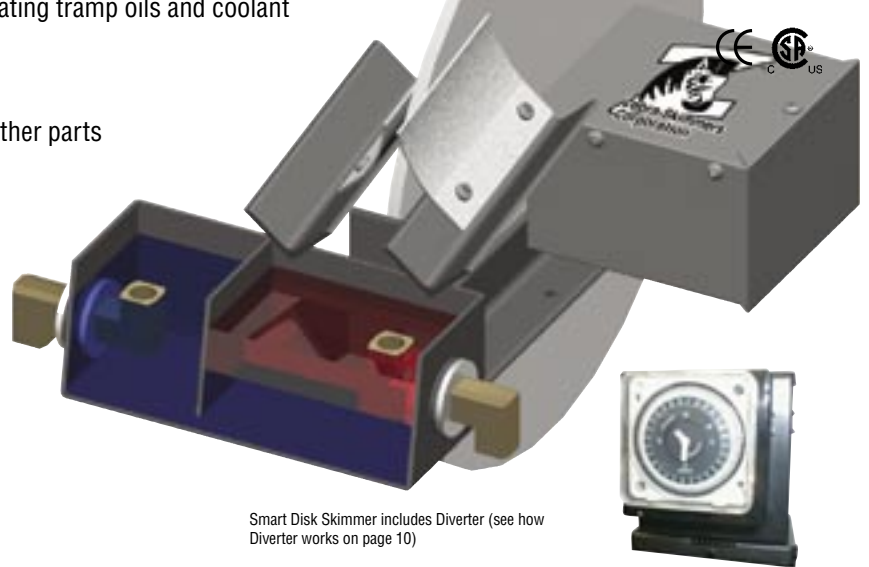
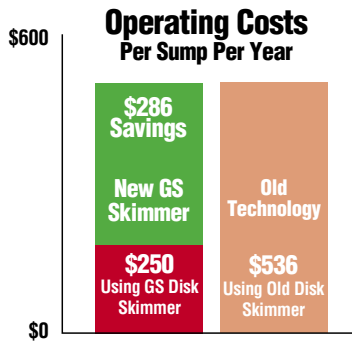
Zebra offers belts in stainless steel and cogged or flat polyurethane. All we need to know from you is the required OAL and width (we can calculate the OAL, or end to end measurements, if necessary). [Contact us](#) today for a quote.





Smart Disk Skimmer Saves You Time & Money

- Saves you nearly \$300 per year over Simple Disk Skimmers
- Integrated Diverter™ knows the difference between floating tramp oils and coolant
- Continuous-duty, fan cooled motor
- Rugged steel construction
- Lifetime warranty on disk and wipers, one year on all other parts



Smart Disk Skimmer includes Diverter (see how Diverter works on page 10)

Integrated timer for mechanical skimmers (#XETIMER-GSBZ)

Simple Disk Skimmer Tackles Heavy Oil Loads

- Handles heavy oil loads from coolant
- Regular-duty motor
- One year warranty (lifetime on disk and wipers)
- Recommended accessory: External timer

For a continuous-duty unit or for coolant-free oil output, refer to the Smart Disk Skimmer.



External timer for mechanical skimmers (#XETIMER)

Mechanical Skimmer Selection Guide

Model	Part Number	Access	Reach ¹	Capacity	Max. Temp.	Application	Material ²	Motor ²
Sidewinder Tube Skimmer (ZVA8 Series)	ZVA8-08	1/2" x 3"	8"	1 qt/hr	90°F (30°C)	Coolant	Polyvinyl	100-120v, 60Hz, 28 rpm
	ZVA8-08E	1/2" x 3"	8"	1 qt/hr	90°F (30°C)	Coolant	Polyvinyl	208/220/240v, 50Hz, 23/28 rpm
	ZVA8.2-08	1/2" x 3"	8"	1 pt/hr	90°F (30°C)	Coolant	Polyvinyl	110v, 60Hz, 7 rpm
Belt Skimmer (BP Series)	BPF1-08	2" dia.	8"	1 gal/hr	80°F (27°C)	Coolant	Polyvinyl	115v, 60 Hz
	BPF1-12	2" dia.	12"	1 gal/hr	80°F (27°C)	Coolant	Polyvinyl	115v, 60 Hz
	BPF1-18	2" dia.	18"	1 gal/hr	80°F (27°C)	Coolant	Polyvinyl	115v, 60 Hz
	BPF1-24	2" dia.	24"	1 gal/hr	80°F (27°C)	Coolant	Polyvinyl	115v, 60 Hz
Smart Disk Skimmer (GS Series)	GS4H300	1" x 12"	4.5"	2 qt/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
	GS4H460	1" x 18"	7.0"	2 qt/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
	GS4H610	1" x 24"	9.5"	2 qt/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
Simple Disk Skimmer (L Series)	LH300	1" x 12"	4.5"	5 gal/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
	LH460	1" x 18"	7.0"	5 gal/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
	LH610	1" x 24"	9.5"	5 gal/hr	80°F (27°C)	Coolant	High Impact	115v, 60 Hz
Skimmer Accessories	BGST4	Diverter, Oil/Coolant Separator for Zebra Sidewinder and Belt Skimmers						
	BGX1	Lockjaw Mounting Clamp for Zebra Sidewinder with Diverter and Belt Skimmers with or without Diverter						
	XETIMER	External timer for mechanical skimmers, 24 hour, 3 setting, 110v, 60Hz						
	XETIMER-GSBZ	Integrated timer for Sidewinder, Belt Skimmer, Smart Disk Skimmer only, 120v 60Hz, 7 day, 2 hour interval						
	ZXB8-MAG	Magnetic base option for Sidewinder without Diverter						

Notations
¹Customized Sidewinder reaches are available by changing the suffix number, in increments of 3", to a maximum of 95". Longer reach and wider belt skimmers are available, please call for quote.
²Warranties: Lifetime on all disk types, 1 year on polyvinyl tubes and belts, 30 days on stainless belts
³220v, 50 Hz models available by adding "E" to the end of the part number

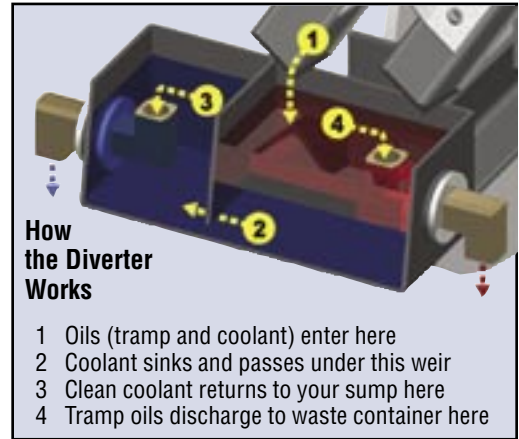
Keep Sump Clean

Zebra Diverter™ for Coolant/Oil Separation, LockJaw™ Mounts Skimmer Anywhere



Zebra Diverter Knows Its Stuff

- Separates oils for coolant-free skimmer output
- Mounts below Zebra Belt Skimmer & Sidewinder
- Rugged, heavy-duty, steel construction
- Brass outlet fittings
- Discharge pipes and mounting hardware included



Lockjaw Makes Installation A Snap

- Install your skimmer in seconds!
- Easiest way to transport your skimmer between machines or to drums
- Mounts below mechanical skimmers
- Fits easily on drums, pails, and sump walls of 1/4" or less



Belt Skimmer, Diverter, and Lockjaw.



Close up view shows clamping mechanism.

Fluid Transfer Kit

- Great for baffled, H-shaped sumps where surface oils do not communicate for easy pick up
- Direct oil layer to where you need it for skimming
- Contact us for best set-up recommendations
- Oil skimmer must be purchased separately



Selection Guide

Model	Part Number	Description	Application	Dimensions (L, W, H)
Diverter	BGST4	Mini Gravity Oil/Water Separator	Belt Skimmer/Sidewinder	7" x 3" x 2.5" (178 x 76 x 64mm)
LockJaw	BGX1	Lockjaw Mounting Clamp	Belt Skimmer w/ or w/o Diverter Sidewinder with Diverter only	9" x 4" x 2.5" (229 x 102 x 64mm)
Fluid Transfer Kit	FXFT.2	Fluid Transfer Kit includes 3gpm, 115v, 60Hz pump, Hammerhead oil intake attachment, transfer hoses, fittings, and magnets.		

Zebra Oxygenator™ / Aerator, Circulation Pumps, and Odor Control Tablets

Oxygenator

- Extend coolant life
- Eliminate foul odors
- Maintain high oxygen levels
- Industrial-grade bronze air diffuser
- Fuel-grade tubing

In the absence of oxygen, anaerobes multiply, causing coolant to spoil. Injecting oxygen into the coolant inhibits anaerobic bacterial growth, extending coolant life.



Air-operated model.



Circulation Kits

- Coolant lasts longer with continuous circulation
- Ideal for sumps or tanks over 100 gallons
- Low cost and small size
- Includes fluid transfer hose and magnet

Like a pond, coolant stays healthier longer if it circulates. *Don't shut down your coolant sump or your central tank!* Use a circulation pump to keep your fluids moving and you'll waste less coolant.



FXP3.1



FXP5.1

Odor Control Tablets

- Safe and easy-to-use
- Eliminates sump odors caused by hydrogen sulfide bacterial emissions
- Most effective way to control sump odor and correct for low pH
- Contains no formaldehyde or harmful chemicals
- Safer and more economical than biocides
- Works best when used with Zebra Oxygenator



NEW Improved Formula

Selection Guide

Model	Part Number	Description	Application	Capacity	Electrical*	Dimensions (L, W, H)
Oxygenator	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
Circulation Pump	FXP3.1	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	115v	6.5" x 4.5" x 5.5" (165 x 114 x 140 mm)
Odor Control Tablets	XOCT25	Odor Control Tablets	Most Coolants	1 tab/25 gal/week		15 tablets per tube

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

Keep Sump Clean

Zebra Muscle™ Coalescer for Individual Sumps

Triple-Action Coolant Cleaner

Continuously cleans, filters, and aerates to prevent rancidity
Circulates static sumps which tend to degrade more quickly

Zebra Muscle Delivers

- Customizable:** Buy only what you need. Extra hose? Certain attachments? No problem.
- Improved Sumpster:** Smaller, more precise, and allows less coolant to enter from the seams.
- Coalescing Media:** Increases surface area 5-fold enabling emulsified oils to separate faster.
- Improved IODS:** The new design on our Internal Oil Discharge Skimmer dispenses virtually no coolant.
- Separate Aeration:** We reduce the chance of barrel contamination by aerating it with an Oxygenator™.
- Particle Filtration:** Ours is the only unit that can work with a filter bag! Removes coolant-degrading metals such as cast iron or aluminum (model F15DF only).
- Drum Dolly Option:** Allows easy barrel maneuverability during routine maintenance.
- Leak-Proof Fittings:** We weld our fittings to the barrel so your shop floor stays clean. Other brands use leaky compression gaskets.
- Durable Hoses:** No cheap clear vinyl hoses here. We use spiral-wound and braided hoses that resist kinking and crushing!
- Easy-to-Empty:** A built-in siphon system empties the whole barrel in minutes. Other brands are tough to clean out.
- Guarantee:** One full year. 'Nuff said.

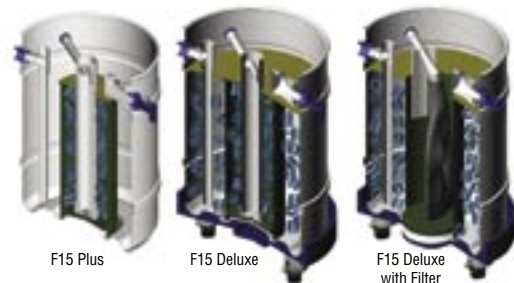


Model F15P shown here.

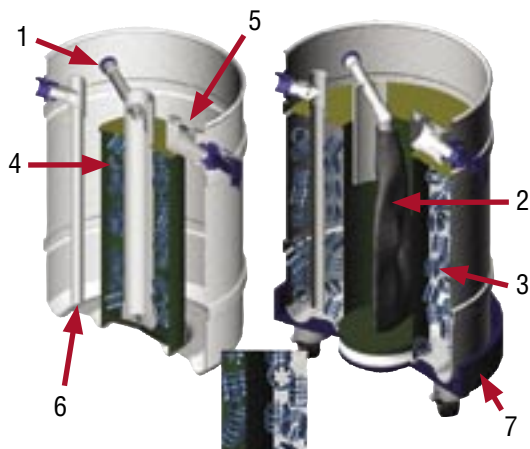


Diaphragm pumps also available, air model shown here.

Sectional Views of Models



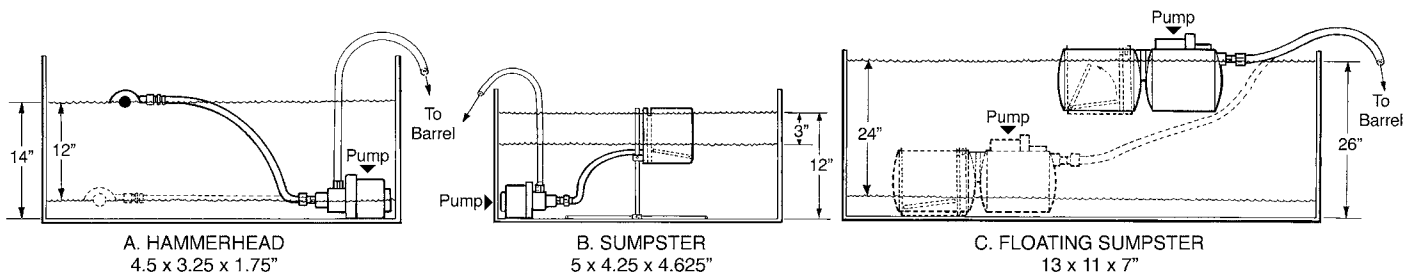
How the Zebra Muscle Coalescer Works



1. Dirty coolant is brought in by the intake attachment and travels through this fitting to the coalescing cartridge (or Fine Stopper on F15DF models).
2. The Fine Stopper (F15DF model) gathers any chips that are brought in with the dirty coolant through the intake attachment. These chips are mainly the ones that float with the tramp oil layer.
3. The coalescing media increase the internal surface area of the barrel fivefold to coalesce the oil droplets.
4. The coolant then travels through the coalescing cartridge, whereby the tiny oil droplets cling to the coalescing media. Once large enough, they then rise out of the coolant, traveling above the perforated plate atop of the coalescing cartridge for manual discharge.
5. The Internal Oil Discharge Skimmer (IODS) gathers the oils for virtually coolant-free discharge.
6. Clean coolant is returned from the bottom of the Muscle through this pipe.
7. The drum dolly provides for easy maneuverability of the coolant-filled Muscle during machine maintenance

Attachments and Options for the Zebra Muscle Coalescer

- A. Hammerhead™ Skimmer (#SK02D12F)
- Fits hard-to-access areas
 - Handles fluid fluctuations up to one foot
 - Floats easily, no adjustments necessary
- B. Sumpster™ Skimmer (#SK10A7)
- Galvanized steel construction, precision formed hinge, and chip screen which prevents clogging hoses
 - Handles a 3" level variation only
 - Skims without sucking air – great for coolant with foaming problems
 - The better option, if you have access!
- C. Floating Sumpster™ Skimmer (#SK10B2.3P)
- Same great benefits of the Sumpster, PLUS
 - Great for sumps deeper than 12" or sumps with changes in fluid levels above 3"
 - Suitable for underground applications (4' max lift w/ Muscle Series)
- D. Fine Stopper™ (#FXB100-10)
- New integrated fitting makes them easy to handle and replace when the filter bag is full
 - Discourages cleaning of the single use bags, ensuring that your sump isn't being re-fed a diet of fines
 - For F15 Deluxe with Filter models only



Muscle Selection Guide

Model	Part Number	Hammerhead (A)	Sumpster (B)	Floating Sumpster (C)	Drum Dolly*	Fine Stopper**
Plus	F15P	X	X			
	F15P.1	X				
	F15P.2		X			
	F15P.3			X		
Deluxe	F15D	X	X		X	
	F15D.1	X			X	
	F15D.2		X		X	
	F15D.3			X	X	
Deluxe w/Filter	F15DF	X	X		X	X
	F15DF.1	X			X	X
	F15DF.2		X		X	X
	F15DF.3			X	X	X
Competitor		X				

*May be ordered as accessory if not standard within the package

** (5) 100µ bags standard; 50 and 5µ bags available - please specify

Muscle Series equipped with centrifugal pumps standard. Air or electric diaphragm pumps are available as an optional upgrade by ordering as an additional line item (Part numbers FXP18 and FXP21, respectively). Contact us for details.

Keep Sump Clean

Zebra Oasis™ Portable Systems for Multiple Sumps

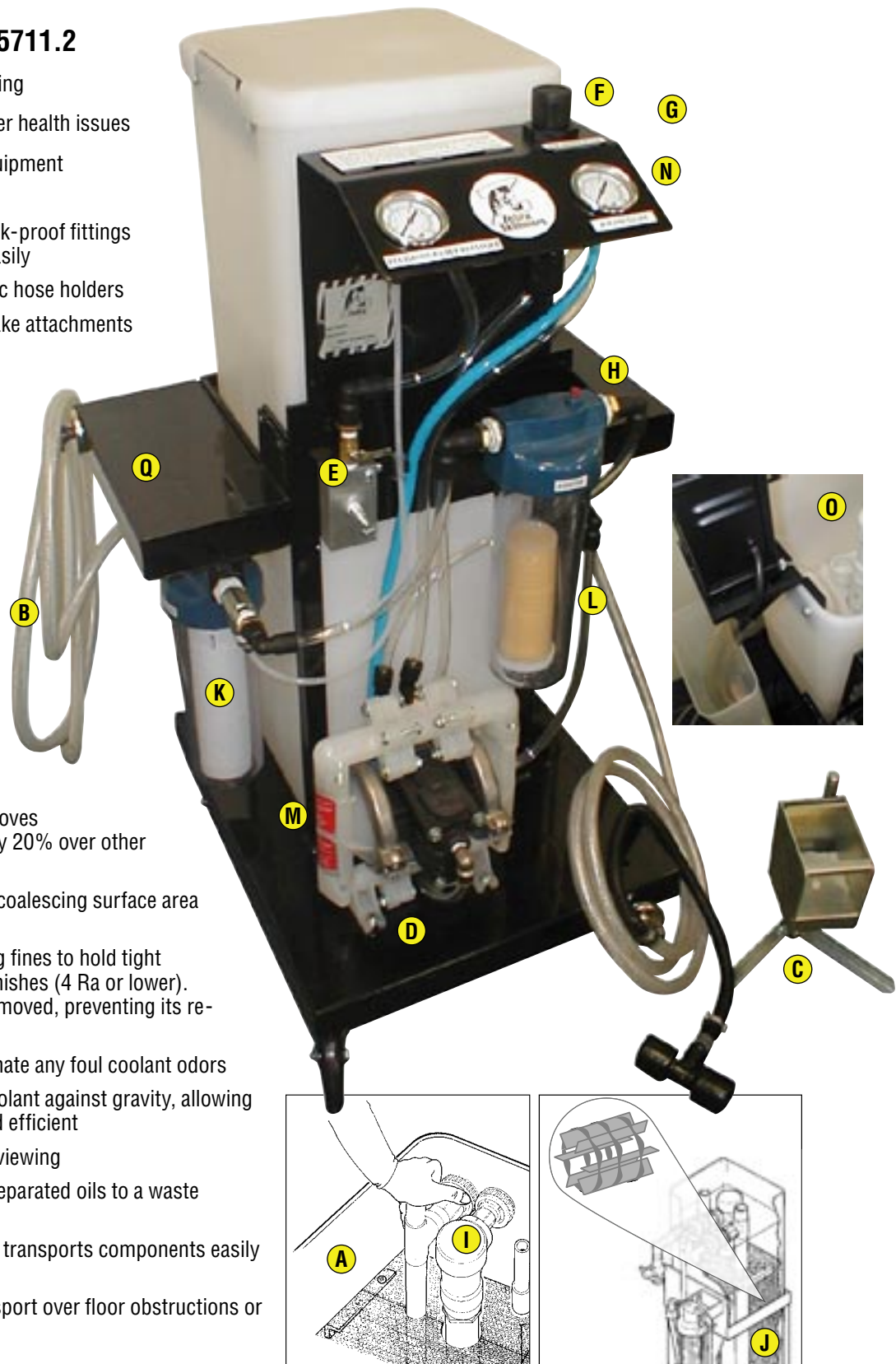
Zebra Oasis, Model #: FM60-5711.2

Extends the life of your coolant and tooling

Prevents shop mist, dermatitis, and other health issues

Simplifies your life with one piece of equipment

- A Translucent tank w/spin-welded, leak-proof fittings empties in minutes and cleans up easily
- B Crush-resistant hoses with magnetic hose holders
- C Hammerhead™ and Sumpster™ intake attachments included
- D 1/2", durable, air diaphragm pump handles multiple sump service and below ground applications
- E ON/OFF lever activates power to the pump
- F Regulator provides for adjustable flow rate for quicker servicing of coolant which pops tramp readily
- G Pressure limiter (not shown) protects pump from over-pressurization damage
- H 500µ stainless steel, reusable pump pre-filter prevents suspended chips from damaging pump
- I Baffled Anti-Turbulence System (BATS), a unique Zebra feature, removes entrained air, improving efficiency by 20% over other brands
- J Unique coalescing media increases coalescing surface area tenfold and never needs replacing!
- K Polishing filter captures recirculating fines to hold tight tolerances ($\pm.0002''$) and smooth finishes (4 Ra or lower). This is done once the tramp oil is removed, preventing its re-emulsification.
- L Odor Control Capsule helps to eliminate any foul coolant odors
- M Pressurized return delivers clean coolant against gravity, allowing transfer to a holding tank simple and efficient
- N All indicator gages located for easy viewing
- O Sidewinder® Tube Skimmer skims separated oils to a waste container, included
- P Rugged, powder-coated steel frame transports components easily (handle/hose rack not shown)
- Q Tow motor accessibility allows transport over floor obstructions or between plant levels



Intake Attachments

A. Hammerhead Skimmer (#SK02D24S)

- Fits hard-to-access area
- Handles fluid fluctuations up to two feet
- Floats easily, no adjustments necessary
- Dimensions: 4.5 x 3.25 x 1.75"

B. Sumpster Skimmer (#SK10A8)

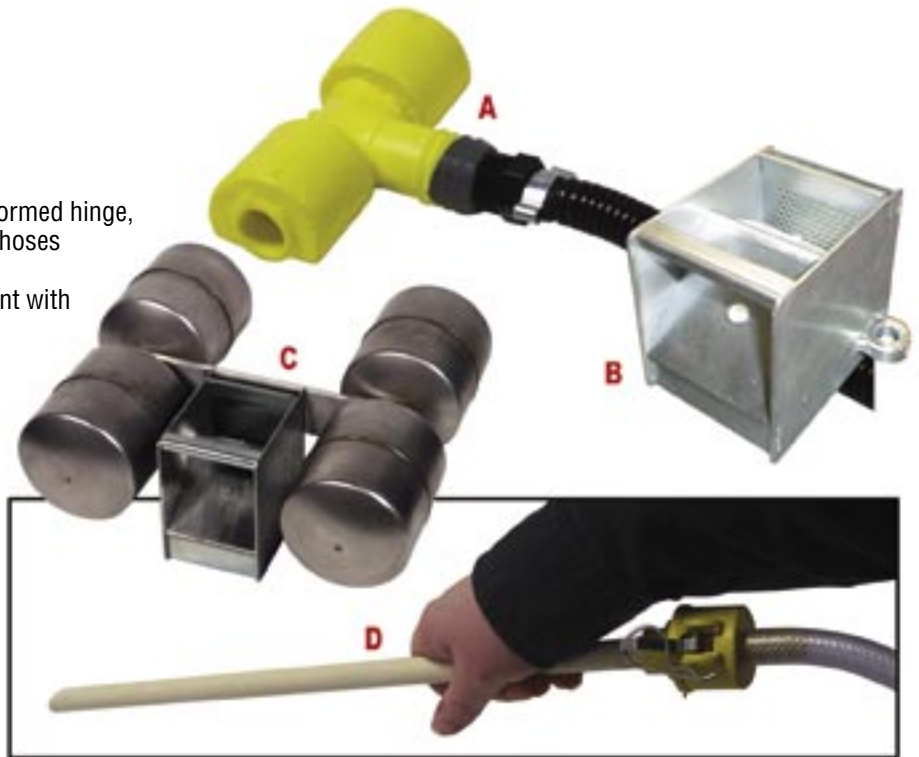
- Galvanized steel construction, precision formed hinge, and chip screen which prevents clogging hoses
- Handles a 3" level variation only
- Skims without sucking air-great for coolant with foaming problems
- Dimensions: 5 x 4.25 x 4.625"

C. Floating Sumpster Skimmer (#SK10B3.3P)

- Same great benefits of the Sumpster, PLUS
- Great for larger sumps with changes in fluid fluctuations above 3"
- Suitable for underground applications - 10' or 20' (dependent upon model) max lift w/ Snapdragon Series)
- Dimensions: 13 x 11 x 7"

D. Oil Wand™ (#FMXW1) Option Only

- Manual attachment for pick-up of oils that accumulate in machine ways or sump corners
- Great for clean-up of the Oasis tank



Zebra Sierra™, Model #: FM60-7309

Need to separate water and fines from straight oil? This model coalescer works "in reverse" of Oasis model coalescer, and has many of its great features.

Selection Guide

	OASIS FM60-5711.2	Sierra FM60-7309	Brand X
Sumpster™ (1)	X	X	
Hammerhead™ (1)	X	Not recommended.	
Floating Sumpster™ (option order separately)	X	X	
Oil Wand™ (option order separately)		X	
Pressurized Return	X (coolant)	X (oil)	
5µ Ultrafiltration: specify 50µ or 25µ	X	X	
500µ Pump Prefilter, reusable stainless	X	X	
Coalescing Media (non-consumable) 1 ft³	X	Not needed.	X
Baffled Anit-Turbulance System	X	X	
Odor Control Capsule	X	Not recommended.	
Sidewinder® Skimmer	X	Not needed.	
On/Off Switch	X	X	
Pressure Limiter	X	X	
Magnetic Hose Holders	X	X	X
Handle/Hose Rack (not shown)	X	X	
1/2" Double Diaphragm Air Pump	X	X	

Coolant types have various oil-rejection capabilities. A separation test of your blend will verify its ability to reject tramp oils especially as it ages. The Oasis will remove oils which naturally gravity separate in 20 minutes (while operating at 1 gpm).

The Sierra separates water and fines from straight oil only.



Keep Sump Clean



Zebra ZVac™ II Sump Assistant

Mid to Large Shops Require a Powerful, Heavy-duty Vacuum for Multiple Uses

- Clean your sump during change-outs (suck out a 55 gal tank in 2 minutes!)
- Filter chips from water, coolants, and straight oils for reuse
- Filters metals, plastic, and other chips from your fluids
- Clean up and remove chips from work zone
- Clean up floor dry, coolant spills, and mop water
- Top-off sumps easily...no more buckets!



Includes tools shown here:
 Vacuum hose (15')
 Hose cuffs (2)
 Curved steel intake tube (1)
 Rubber cone attachment (1)
 &
 Locking discharge handle (1)
 Discharge hose (10')
 w/optional simultaneous discharge capability



Other Included Features

- 360° Swivel suction fitting with quick-coupler
- Hinged cover with leak-free, oil-resistant gasket
- Steel filter basket, 500µ, 8 gal capacity
- 48 gallon capacity tank with auto shut-off prevents spillage
- Accessory tray stores tools
- Oil-resistant wheels with locking casters
- Hose holder secures hoses
- Ball valve drains sediment
- 30' Power cord reaches anywhere
- Easy-empty towlift belt included



Selection Guide

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

Optional Tools & Accessories

- Steel Bristle Brush #VXMCBA-S
- Nylon Bristle Brush #VXMCBA-N
- Metal Crevice Nozzle #VXMCBA
- Tapered Cone #VXTCA
- Round Bristle Brush, 3" #VXBA-3
- Flat Rubber Nozzle #VXFRNA
- Contin. Suction Wand #VXC5W
- Wheeled Floor Nozzle w/ Squeegee & Brush #VXWFN
- Curved Floor Wand, 54" #VXWAND
- Accessory Coupler #VXAC
- Extension Wand, 60" #VXEW-60
- 100µ Filter Bag #VXF2-100
- 50µ Filter Bag #VXF2-050
- Oil Mist Filter #VXOMF

Uncle Earl's™ Soap for Machinists™

NEW PRODUCT

Are your hands dry and cracked, burning while you work with metalworking fluid? Zebra has developed a soap especially for you!



**Call us today for a
FREE SAMPLE!**

- Formulated to easily remove shop grease, oils, and grime
- Moisturizers protect skin from metalworking fluid's chemistry and biology
- One 3.4 ounce bar lasts longer than one gallon of liquid soap
- Made with all natural ingredients
- No more need to use gritty cleaners
- No need to use liquid glove or other barrier creams

EARL'S STORY

EARL IS REAL, AN UNCLE IN THE SENSE OF BEING A TRUE FRIEND AND MENTOR. HE DESIGNED MACHINERY- EVERYTHING FROM HAND HELD CLAMPS TO FORTY TON CRANES-USING NOTHING MORE THAN A PENCIL, PAPER, AND A KEEN MIND. HE WAS ALSO A WOODWORKER, AN ANGLER, AND A PHILOSOPHER, WHO WAS OLD FASHIONED AND FRUGAL. WE NAMED THIS SOAP AFTER HIM. IT IS OLD FASHIONED AND FRUGAL TOO, AND WILL OUTPERFORM AND OUTLAST THOSE FANCY SOAPS OF TODAY.

Model	Item Number	Description
Uncle Earl's Machinist Soap	JPU-OFU.1	Uncle Earl's Soap for Machinists, Old-fashioned, original formula, unscented. One 3.4 ounce bar.
	JPU-OFU.6	Uncle Earl's Soap for Machinists, Old-fashioned, original formula, unscented. Six 3.4 ounce bars.



Parts Washer Equipment

Since not all fluids are created equal, Zebra offers equipment specially designed to meet parts washing application requirements.

Should something even more special be necessary, please contact us for a quote.

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)



3 POINT ACCURACY
Machined needle valve
Locknut below dial holds mixing reference
Check valve keeps mixing chamber loaded

Basic Refractometer

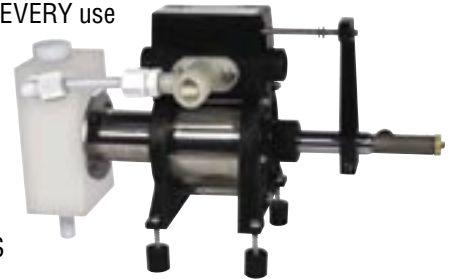
- Range 0-10 or 0-32 Brix
- Prism aperture lets in a lot of light
- Diamond-knurled sleeve for good gripping
- Comfortable eyepiece with adjustable focus
- Auto temperature compensation
- Average use accuracy range
- Carrying case with sampler included



Model	Part Number	Brix Scale	Graduation	Accuracy	Weight	Dimensions
Basic Refractometer	OPT10	0-10	Tenths	± .10%	9.9 oz.	1.5" dia., 8" long
	OPT32	0-32	Fifths	± .10%	9.3oz.	1.5" dia., 7" long
	OPTX10	Replacement prism cover with pin for OPT10, OPT32				

Proportioning Pump for Long-Distance Mix Delivery

- Perfectly mixed concentrate at EVERY use
- Delivers mix through hose or conduit right to your wash tank
- Compact with few moving parts
- One year warranty with purchase of prepump water filter
- Maximum viscosity of 700 SUS



Model	Part Number	GPM	Mix Range %		Mixing Ratios		Max. Delivery ¹	Range psi	Fittings, NPT		Application ²
			Low	High	Low	High			In	Out	
Venturi Mixer	MIX03725SS	3	0	25	100:1	4:1	40'	25-75	3/8"	1/2"	55 gal barrel
	MIXU03725SS	3	0	25	100:1	4:1	40'	25-75	3/8"	1/2"	Pail, barrel, tote
	MIX10725SS	10	0	25	100:1	4:1	40'	25-75	1/2"	3/4"	55 gal barrel
	MIXU10725SS	10	0	25	100:1	4:1	40'	25-75	1/2"	3/4"	Pail, barrel, tote
Proportioning Pump	MIXPP585-W	7	4.7	40.0	1:21	1:2.5	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP565-M-W	12	3.0	30.0	1:33	1:3.3	800'	10-75	3/4"	3/4"	Pail, barrel, tote
	MIXPP520-V-W	25	3.2	26.8	1:31	1:3.7	800'	10-75	3/4"	3/4"	Pail, barrel, tote
Accessories	MIXPPX75	Prepump water filter for proportioning pump protection, 20µ (required to maintain warranty)									
	MIXXWL.1	Water limiter for proportioning pump protection									
	MIXXPRV.1	Pressure regulating valve for pump protection when delivering vertically or through multiple lines									

Notations
¹The proportioning pump can also pump the mixture a vertical distance of 20' utilizing a check valve
²Unit is supplied with intake hose to meet this container type



Outboard motor bearing.

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
- One year warranty (except on steel belts)

Simple Disk Skimmer for High Heat

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



Model	Part Number ¹	Access	Reach ²	Capacity	Max. Temp.	Application	Material	Motor ³
Belt Skimmer (BS Series)	BSF1-08	2' dia.	8"	1 gal/hr	212°F (100°C)	Wash Water	Stainless	115v, 60 Hz
	BSF1-12	2' dia.	12"	1 gal/hr	212°F (100°C)	Wash Water	Stainless	115v, 60 Hz
	BSF1-18	2' dia.	18"	1 gal/hr	212°F (100°C)	Wash Water	Stainless	115v, 60 Hz
	BSF1-24	2' dia.	24"	1 gal/hr	212°F (100°C)	Wash Water	Stainless	115v, 60 Hz
Simple Disk Skimmer (LW Series)	LW300	1' x 12"	4.5'	5 gal/hr	212°F (100°C)	Wash Water	High Temp	115v, 60 Hz
	LW460	1' x 18"	7.0'	5 gal/hr	212°F (100°C)	Wash Water	High Temp	115v, 60 Hz
	LW610	1' x 24"	9.5'	5 gal/hr	212°F (100°C)	Wash Water	High Temp	115v, 60 Hz

¹Use prefix "BZF1" for outboard motor bearing option. Call for quote.

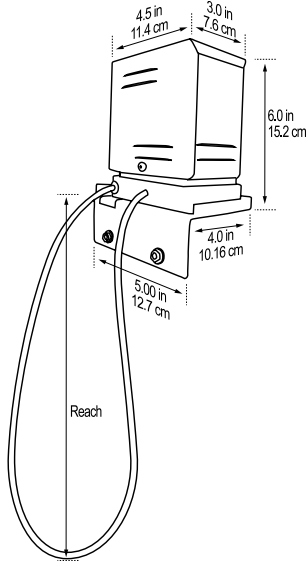
²Longer reach and wide belt skimmers available. Call for quote.

³220v, 50 Hz models available by adding "E" to the end of the part number

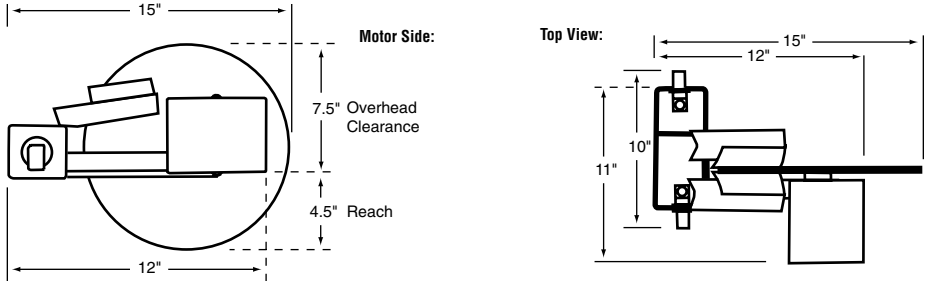
Specifications & Parts Information

Please review further specifications and parts information for all Zebra products on the Literature page at www.ZebraSkimmers.com.

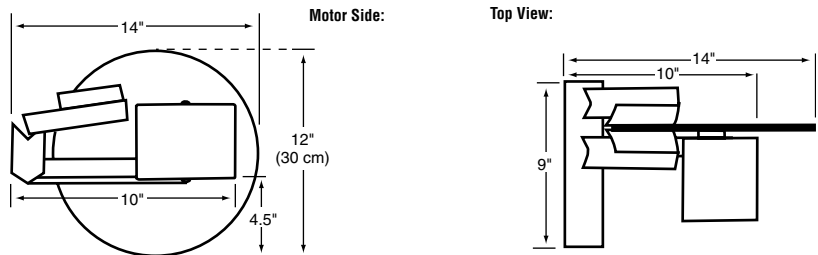
Sidewinder Tube Skimmers, ZVA8 Series



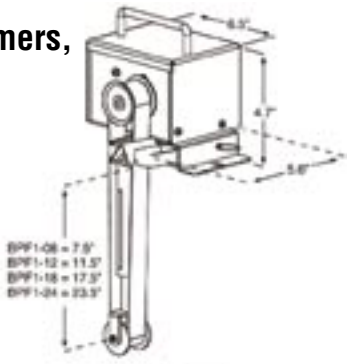
Smart Disk Skimmers, GS Series (model GS4H300 shown here)



Simple Disk Skimmers, L Series (model LH300 shown here)



Belt Skimmers, B Series



Muscle Coalescers (F15 Series)

- Barrel:** 15 gallons (57 liters), 22" (56cm) high, 17" (43cm) diameter
- Pump, Standard:** 3 gpm (3.8 lpm), w/ max 4' lift, 4" (10cm) high, 3" (7.6cm) wide, 4" (10cm) long
- Standard Electrical:** 110v, 60Hz standard, or 220v, 50Hz upon request by adding "(E)" to end of part number
- Pump, Option FXP18:** 1/4" (6.4mm) port, 1-4 gpm (4-15 lpm) total range, requires 1 CFM at 20 PSI
- Pump, Option FXP21:** 3/8" (9.5mm) port, 1-1.5 gpm (3.8-5.7 lpm) total range
- Flowrate:** System regulated to operate at 1 gpm regardless of pump configuration
- Oxygenator:** 110v 60Hz (or 220v, 50Hz), 42" (1.06cm) tubing w/bronze air diffuser, 1.5 watts, 1,000 cc/minute airflow
- Hammerhead:** 4.5" (114mm) x 3.25" (82mm) x 1.75" (45mm) w/1" (304mm) oil intake hose (max length), 1 gpm (3.78 lpm) max flow rating
- Sumpster:** 5" (127mm) x 4 1/4" (108mm) x 4 5/8" (117mm), 3gpm (11 lpm) max flow rating
- Floating Sumpster:** 11" (279mm) x12" (305mm) x 6" (152mm), 3gpm (11 lpm) max flow rating
- Fine Stopper:** 1 gallon (3.78 liters) capacity, (5) 100µ standard (50, 25, and 5µ sizes available upon request)
- Dolly:** Polyethylene, 16 3/8" 41.4cm dia., (4) 3" (76mm) dia. casters, 600 lb. (272kg) capacity
- Intake Hose:** 48" (1.2m) long, 0.5" (12mm) ID (customization available to 15' (4.5m) max)
- Discharge Hose:** 48" (1.2m) long, 1.25" (32mm) ID (customization available to 8' (2.4m) max)
- Maximum Temp:** 100° F (38° C)
- Shipping Weight:** 28-31 pounds (12 to 14 kg), dimensional weight, dependent upon model

Snapdragon Portable Coalescers (FM60 Series)

- Barrel:** 20 gal (76 liters) total capacity, 1/4" (6.35mm) thick, 36" (915mm) high
- Cart:** Powder-coated steel, 30" (762mm) x 21" (533mm) x 30" (762mm), (4) 4" (101mm) dia. casters, 600 lb. (272kg) capacity
- Hammerhead:** 4.5" (114mm) x 3.25" (82mm) x 1.75" (45mm), w/2" (61cm) oil intake hose (max length), rated at 1 gpm (3.78 liters), max flow rating
- Sumpster:** 5" (127mm) x 4 1/4" (108mm) x 4 5/8" (117mm), 3gpm (11 lpm) max flow rating
- Floating Sumpster:** 11" (279mm) x12" (305mm) x 6" (152mm), 3gpm (11 lpm) max flow rating
- Deluxe Intake Hose:** .5" (13mm) ID, 10' (254mm) long, clear wire reinforced
- Deluxe Pump, air dia.:** 1/4" (6.4mm) port, 1-4 gpm (4-15 lpm) total range, 20' (6.1m) max water lift, requires 1 CFM at 20 PSI
- Deluxe Disch. Hose:** 1.25" (32mm) ID, 10' (254mm) long, spiral reinforced
- Deluxe Pump Prefilter:** 19.5" (495mm) long, 2 qt. (2 liter) capacity, (1) 500µ stainless steel, reusable, standard
- Deluxe/ADAPT Pump, electric dia.:** 3/8" (9.5mm) port, 1-1.5 gpm (3.8-5.7 lpm) total range, 23' (6.9m) max water lift
- ADAPT Intake/Disch Hoses:** .5" (13mm) ID, 10' (254mm) long, clear wire reinforced
- ADAPT Pump, air dia.:** 1/2" (13mm) port, 1-6 gpm (4-23 lpm) total range, 15' (4.5m) max water lift, requires 4 CFM at 20 PSI
- ADAPT Pump Prefilter:** 9.5" (241mm) long, 1 qt. (1 liter) capacity, (1) 500µ stainless, reusable
- ADAPT Ultrafilter:** 9.5" (241mm) long, 1 qt. (1 liter) capacity, (2) 5µ, standard; (50µ and 25µ sizes available upon request)
- Maximum Operating Temp:** 100° F (38° C)
- Actual Weight:** 88 lbs. (40kg)
- Shipping Weight:** 125 lbs. (56.8 kg)

Zebra[®] Skimmers

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

We save you money by improving your productivity, quality, and health.

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

See all our products on-line at:
ZebraSkimmers.com



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