

SKIMERATOR®

Installation Instructions & Parts List #3241

(Models 3200, 3200C, 3200D and 3200F)

Note: This manual covers the following models:

Model 3200	Skimerator with shallow draft skimmer box and 115v electric pump.
Model 3200C	Skimerator with shallow draft skimmer box and 230v 50 Hz electric pump (for use in overseas installations only).
Model 3200D	Skimerator with deep draft skimmer box and 115v electric pump.
Model 3200F	Skimerator with floating skimmer box and 115v electric pump.

See page 4 for Skimerator model application.

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Manufactured in U.S.A by: Design & Manufacturing, Inc. Fisher, IL 61843
www.design-mfg.net or phone (217) 897-1172

IMPORTANT SAFETY INSTRUCTIONS

1. Read and understand all instructions before using.
2. Do not operate with a damaged cord or if the pump has been damaged until it has been examined by a qualified serviceman.
3. Position the cord so that it will not be tripped over, pulled or contact hot surfaces.
4. If an extension cord is necessary, a cord with a current rating at least equal to that of the appliance should be used. Cords rated for less amperage than the appliance may overheat.
5. Always unplug the pump from the electrical outlet before servicing and when not in use. Never yank cord to pull plug from outlet. Grasp plug and pull to disconnect.
6. To reduce the risk of electric shock, do not disassemble the pump. Return the pump to the manufacturer for servicing or replacement.
7. Connect the pump to a Ground Fault Interruption (GFI) outlet grounded outlet only.

The symbol shown here is the safety-alert symbol. When this symbol appears in this manual or on the product, be alert for the potential for personal injury.



Always follow recommended precautions and safe operating procedures.

Whenever you see the safety-alert symbol a signal word is used to identify the most serious hazards.

The word CAUTION warns of possible injury. The Caution signal word appears in black text on yellow on the decal.



The word WARNING warns of serious injury or possible death! The word Warning appears in black text on orange on the decal.



The word DANGER warns of imminent death or critical injury! The word Danger appears in white text on red on the decal.



SAVE THESE INSTRUCTIONS!

GROUNDING INSTRUCTIONS

⚠ WARNING THE PUMP MUST BE GROUNDED WHILE IN USE TO PROTECT THE OPERATOR FROM ELECTRIC SHOCK!

In the event of a malfunction, grounding provides the path of least resistance for electric current to reduce the risk of electric shock. This product is equipped with an electrical cord that has a grounding conductor and a grounding plug. The plug **MUST** be plugged into a matching electrical receptacle that is properly installed and grounded in accordance with **ALL** local codes and ordinances.

⚠ DANGER DO NOT MODIFY THE PLUG PROVIDED.

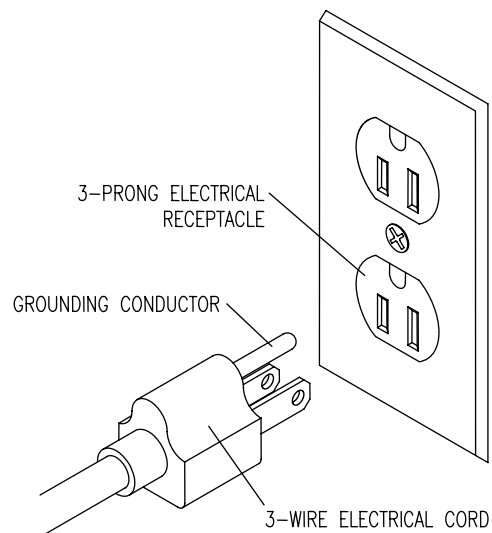
If it will not fit the electrical receptacle, have the proper electrical receptacle installed by a qualified electrician. Improper electrical connection of the equipment-grounding conductor can result in risk of electric shock. The conductor with the green insulation (with or without yellow stripes) is the equipment-grounding conductor.

DO NOT connect the equipment-grounding conductor to a live terminal if repair or replacement of the electric cord or plug is necessary.

Check with a qualified electrician or service personnel if you do not completely understand the grounding instructions, or if you are not sure the equipment is properly grounded.

USE ONLY A 3-WIRE EXTENSION CORD THAT HAS A 3-PRONG GROUNDING PLUG AND A 3-POLE RECEPTACLE THAT ACCEPTS THE POWER SUPPLY CORD'S PLUG. REPLACE A DAMAGED OR WORN CORD IMMEDIATELY.

This product is intended for use on a circuit that has an electrical receptacle with a grounding conductor as shown in Figure 1. **Do not remove the grounding conductor To use the plug in a two-prong outlet.**



⚠ WARNING

In all cases, make certain the electrical receptacle is properly grounded. If you are not sure, have a certified electrician check the electrical receptacle.

Figure 1

SKIMERATOR MODEL APPLICATION

Model #	Description	Application
3200	Shallow Draft Skimmer Box with 115v submersible pump	Use in sumps where the coolant level varies no more than 3". The skimmer box will accommodate a coolant depth of 1-1/2" to 4-1/2" with the skimmer box on the floor of the sump and 2-1/4" to 15-7/8" using the adjustable skimmer foot and 12" post.
3200C	Shallow Draft Skimmer Box with 230v 50 Hz submersible pump	Application is the same as Model 3200. This model is to be used only in countries that use 230v 50 HZ electrical power.
3200D	Deep Draft Skimmer Box with 115v submersible pump	Use in sumps where the coolant level varies no more than 5". The skimmer box will accommodate a coolant depth of 2" to 7" with the skimmer box on the floor of the sump and 2-3/4" to 18-1/4" using the adjustable skimmer foot and 12" post.
3200F	Shallow Draft Skimmer Box with floating head and 115v submersible pump	Use in sumps where coolant level fluctuates more than range of a fixed mount skimmer box. The skimmer box will function at any coolant level.

OVERVIEW

The Skimerator Coolant Aeration and Oil Removal System was designed to separate tramp oil from machining coolant while aerating the coolant to retard the growth of bacteria. In operation, floating oil is skimmed off the top of the coolant in the sump and into the skimmer box where it is pumped to the reservoir (see Figure 2, page 5). A float in the skimmer box allows only a small amount of surface coolant and oil floating on the coolant to enter the pump inlet hose. A removable trash screen prevents larger metal particles from entering the pump. The pump forces the oil/coolant mixture into the reservoir where the first stage of aeration takes place as the fluid pours into the baffle assembly. As the coolant/oil mixture settles in the baffle, the oil floats to the top of the reservoir and the cleaner coolant settles to the bottom. As more fluid enters the reservoir, clean coolant is forced through the stand tube to the hose where it returns to the sump. As the coolant pours into the sump the second stage of aeration takes place. When a significant amount of oil has accumulated in the reservoir, oil is drained off by opening the faucet and removing oil until coolant flows from the faucet.

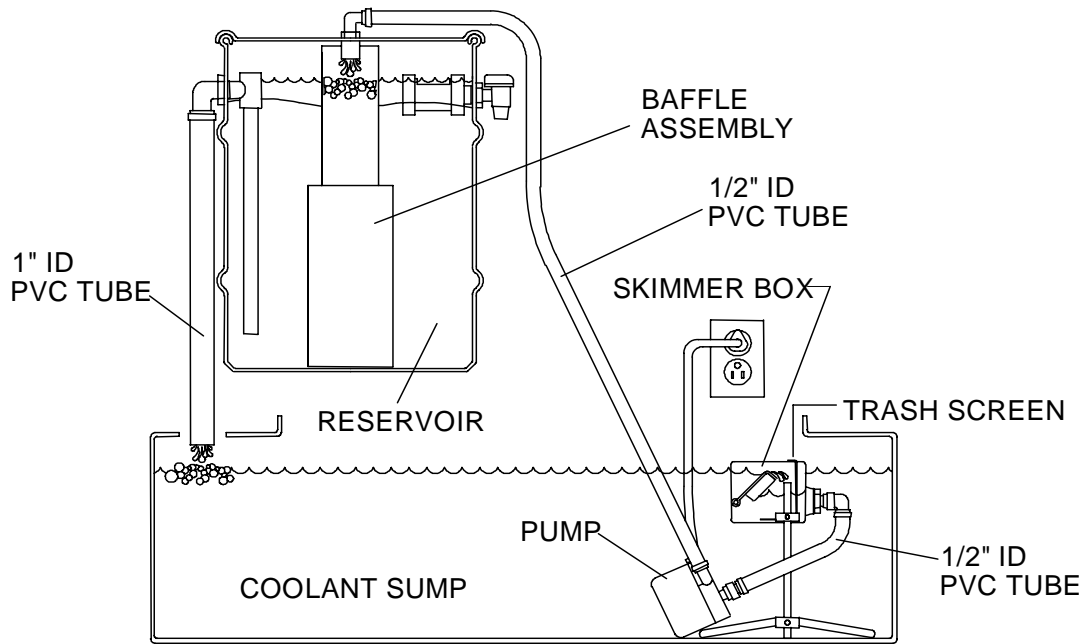


Figure 2

Note: When the coolant sump has more than one compartment or is separated by weirs, one Skimerator system will be required for each area. Coolant/oil from one compartment can also be moved to the Skimerator compartment by using a second pump. The surface area of coolant/oil being separated by any single Skimerator must be unobstructed. When a large surface area is being skimmed or a heavy concentration of oil is being removed, more than one Skimerator may be required. Position the return hose so the returning coolant forces the contaminated coolant toward the skimmer box.

Two sizes of skimmer boxes are available. The shallow draft box can accommodate a coolant level variation of 3". When the coolant level varies up to 5", the deep draft box is recommended. The shallow draft box can be used in deeper sumps where the access opening will not allow the deep draft box to be used.

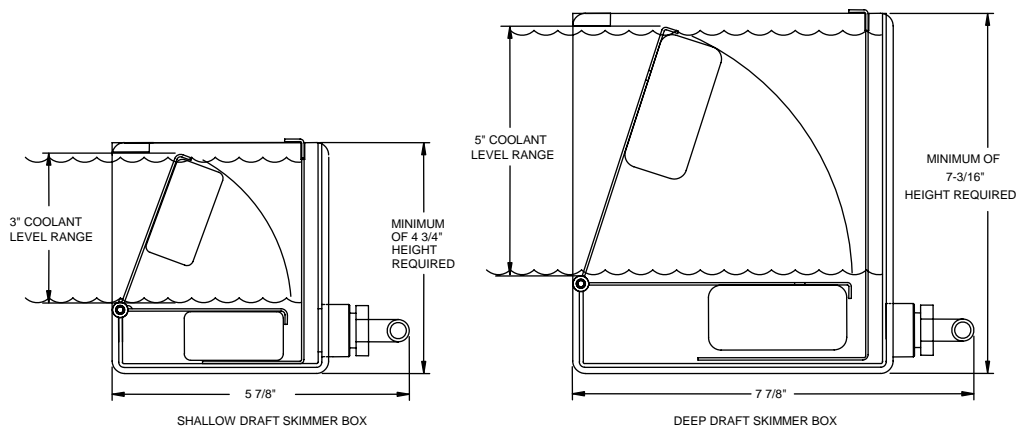


Figure 3

RESERVOIR ASSEMBLY

1. Install the Faucet Adapter to the 3/4" Faucet. Install the assembly through the smaller of the two holes in the side of the reservoir. Install a 3/4" O-Ring on the inside of the reservoir over the faucet adapter threads. Install the Weir Box Assembly on the faucet adapter. The Weir Box opening must be at the top when tightened (see Figure 4).

Note: When tightening the Weir Box and fittings against the O-Rings, tighten enough to seal around the opening but not enough to force the O-Ring into the opening.

2. Install the 1" Male Elbow in the 1" hole opposite the Weir Box. Install a 1" O-Ring over the threads on the inside of the reservoir and install the 1" Tee. Position the Tee as shown and press the Stand Tube into the Tee bottom until seated (see Figure 4).

3. Install the 1/2" Male Elbow in the reservoir lid. Install the 1/2" O-Ring and 1/2" Straight Fitting inside the reservoir lid (see Figure 4).

4. Place the Skimmer Baffle Assembly in the reservoir so it is centered on the bottom of the reservoir.

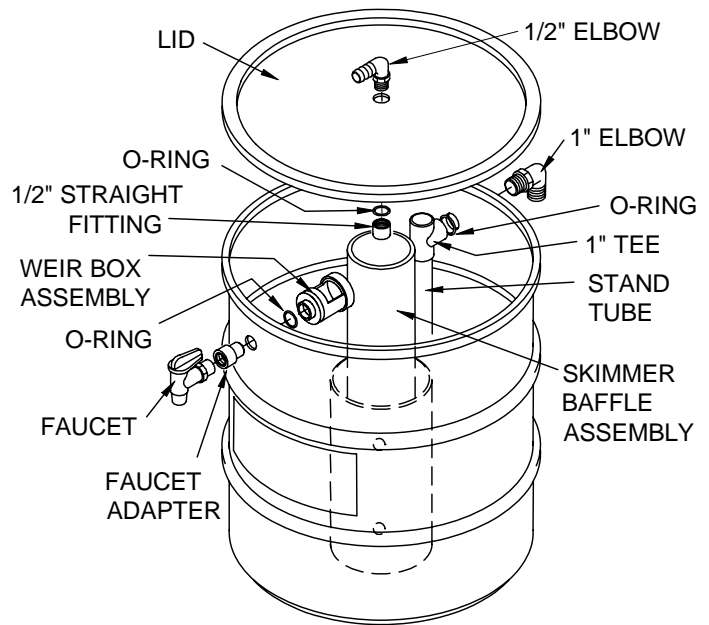


Figure 4

INSTALLATION

1. Mount the reservoir on or near the machine so the coolant level in the reservoir is above the coolant level in the machine sump. The reservoir tank can be mounted on the machine itself or on the optional stand (see Figure 5). Mount the reservoir as close to the coolant sump as possible to minimize the distance the coolant must be pumped from the sump to the reservoir. The pump capacity diminishes as the distance it must pump fluid increases. Position the reservoir tank to allow easy access to the oil drain faucet. Make sure the tank is level.

2. Connect one end of the 1" ID PVC tube to the 1" elbow on the side of the reservoir tank. Secure the end with a hose clamp. Route the tube to the sump so the fluid can flow downhill from the reservoir tank to the sump (see Figure 5). Do not submerge the end of the hose in the coolant. Keep the end of the hose above the fluid to allow aeration to take place as the fluid enters the tank and to assure proper draining.

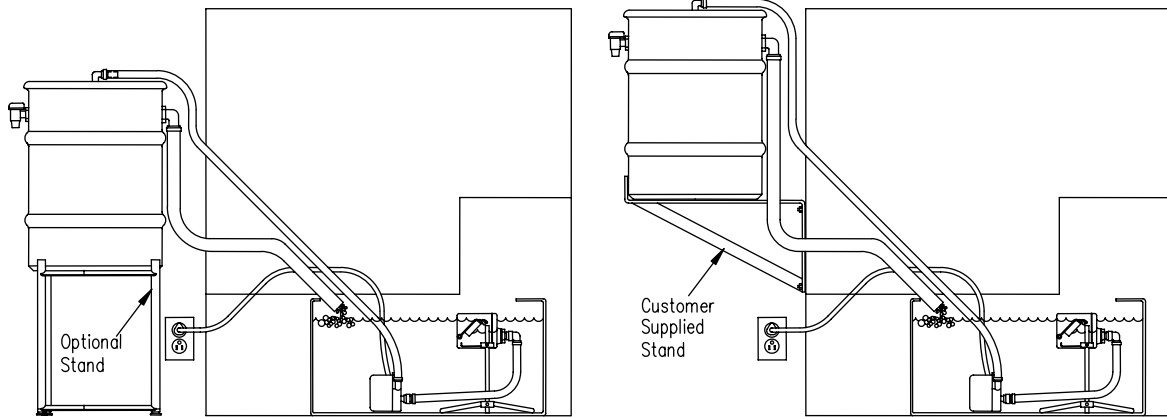


Figure 5

Note: Five feet of 1" ID tube is included. Cut to length as needed. Longer lengths are available.

3. Install the appropriate skimmer box in the coolant sump. The skimmer box can be set on the floor of the sump or mounted on the skimmer foot and post. If the foot and post is used, install the box on the post and adjust the height of the box. Level the box by adjusting the amount of the post protruding below the Skimmer Foot (see Figure 6).

The top of the box should be about 1/2" above the coolant level at the highest point of the coolant. The coolant/oil mixture must flow freely under the cross bar at the top of the box. The post can be shortened as needed. When used in deeper sumps with restricted access, a longer length may be required.

Note: When the deep draft skimmer box requires most of the 12" post for positioning, the second 12" post can be used on the opposite side to stabilize the skimmer box.

Note: An optional floating head is available. See page 10 for installation instructions. See page 14 and 15 for dimensions to determine if there is enough room in the sump for a floating head.

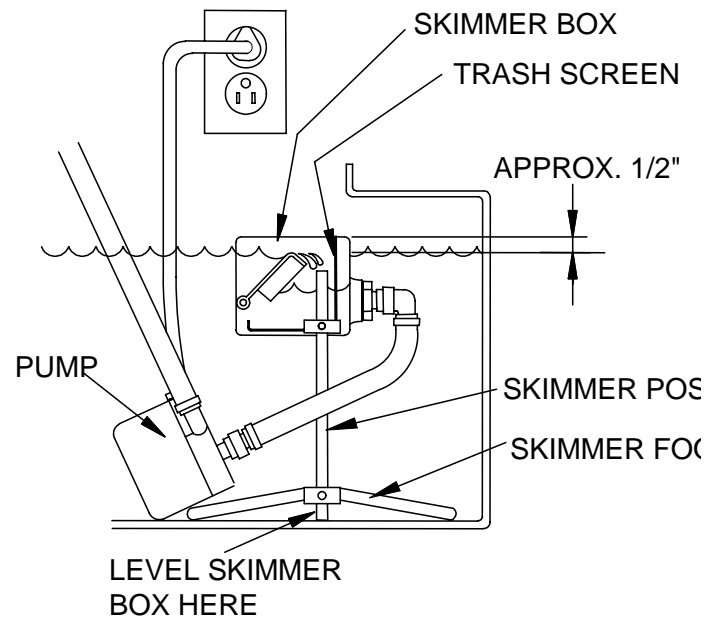


Figure 6

4. Place the skimmer pump in the coolant sump and connect the inlet port to the elbow on the skimmer box with a length of 1/2" ID PVC tube (see Figure 6).

Note: The pump must be completely submerged to cool properly. Make sure it is completely covered with coolant at all times.

5. Connect the pump outlet to the elbow in the reservoir tank lid with a length of 1/2" ID PVC tube. Secure the ends with hose clamps (see Figure 7).

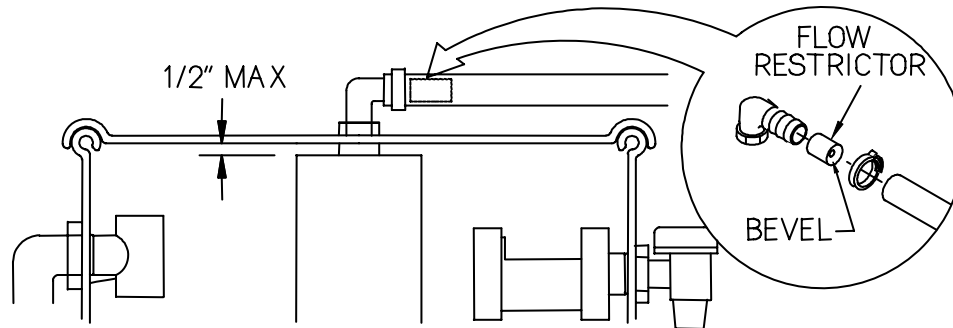


Figure 7

Note: A flow restrictor is included with the Skimerator. If the reservoir fills faster than it empties the restrictor can be used to slow the flow rate. A slower flow rate allows for longer settling time and reduces aeration in the reservoir. When the restrictor is removed, or drilled out, the settling time is decreased but aeration is improved. If more flow is desired, drill out the restrictor in 1/32" increments until the desired flow is obtained. The restrictor is installed in the end of the 1/2" ID tube next to the elbow. The beveled end should be toward the pump (see Figure 7).

6. Check the distance between the top of the baffle and the reservoir lid when the lid is installed. The distance should be 1/2" or less (see Figure 7). Install the lid, check all hose connections and plug the pump into an outlet. After the pump is primed coolant will fill the reservoir and flow into the sump.



WARNING

The pump must be plugged into an electrical outlet that is properly grounded (See page 3 for complete instructions).

MAINTENANCE

Normal maintenance involves draining the tramp oils collected in the reservoir and removing trash and sludge from the skimmer box screen. To clean the screen, disconnect power to the pump and lift the float to the up position. Lift the screen out (see Figure 8). Clean and reinstall in the box. Clean frequently to maintain a free flow of fluid to the pump. Occasionally lifting the float and agitating the fluid near the screen to break up congested matter will also improve performance.

Note: Do not operate without the screen in place.

An optional external screen is also available. See page 15.

When the reservoir is first set up, rotate the weir box (see Fig. 9) so one side of the opening is slightly lower than the other. After the reservoir fills and the skimmer has operated for several minutes, check to see if coolant has filled the weir box. If not rotate the weir box slightly to allow coolant to flow into the box. No further adjustment should be necessary.

Under normal circumstances, the oil/coolant level in the reservoir will be approximately 1/4" above the cutout in the weir box (see Fig. 9). When at least 3/4" of tramp oil has accumulated on the surface of the coolant, place a bucket under the weir valve and open the valve. The oil level will lower until it reaches the top of the weir opening. When relatively oil-free coolant begins to flow into the trap, close the valve.

Note: When the valve is opened and the drain tube continues to drain coolant, the coolant level will drop slightly.

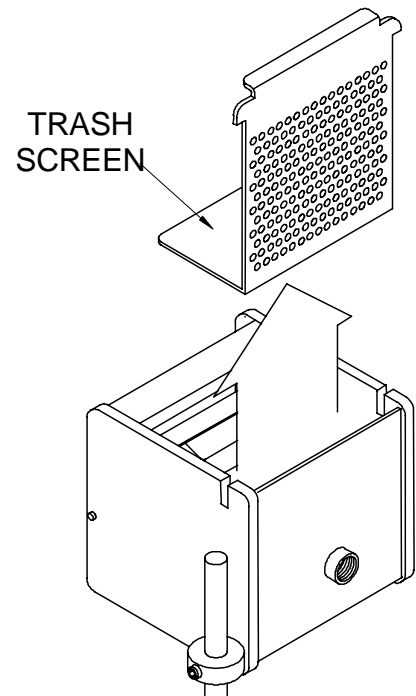


Figure 8

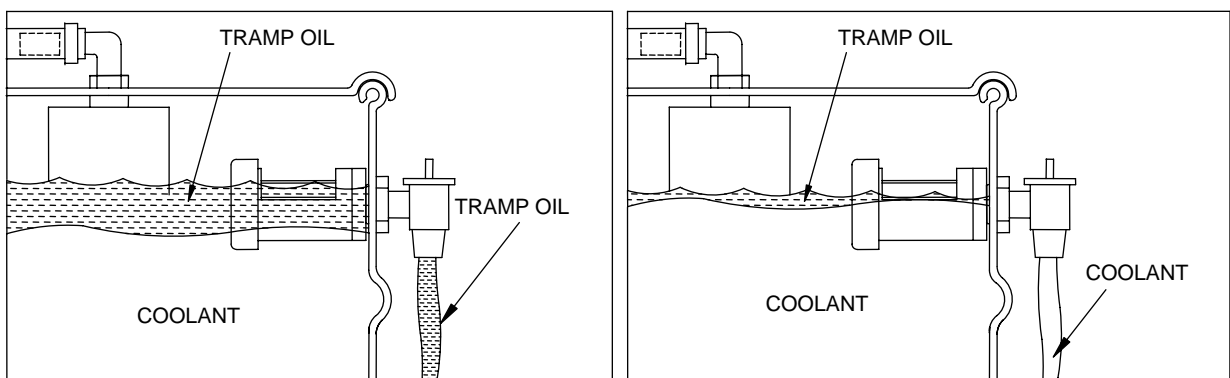


Figure 9

Note: When new coolant fills the reservoir, the weir box will fill with coolant before oil collects on the surface. When draining the oil a small amount of coolant will pour out before oil flow begins. Do not expect to drain all of the oil off of the surface. A small amount of oil will remain on the surface after clear coolant flows from the faucet.

Note: If the faucet or drain tube must be replaced, make sure the O-Ring is installed on the inside of the reservoir to insure a proper seal.

OPTIONAL SKIMMER FLOATING HEAD INSTALLATION

1. Install the pump on the skimmer box and place the assembly in the sump. Connect the outlet hose to the pump as shown in Figure 10.
2. Refer to system installation instructions for the remainder of the installation.

Important: The ends of the floats must be aligned with the open end of the skimmer box.

Note: Never remove the Floating Head Assembly while the pump is running.

See page 14 & 15 for more complete specifications.

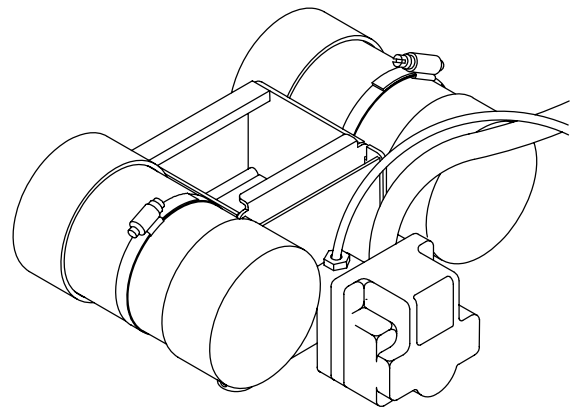


Figure 10

TROUBLESHOOTING

1. Pump not working
 - A. Check 120 volt (or 230v 50Hz on Model 3200C) power to the pump.
 - B. Clean out trash screen
 - C. Check for obstructions in ½” PVC tubing and the restrictor.
 - D. Disconnect electrical power, remove the impeller cover from pump and check for chips in the impeller. (To remove the impeller cover, disconnect pump from skimmer box and remove three phillips screws.)
 - E. If impeller is clean and pump does not run when power is applied, the pump is bad and must be replaced.

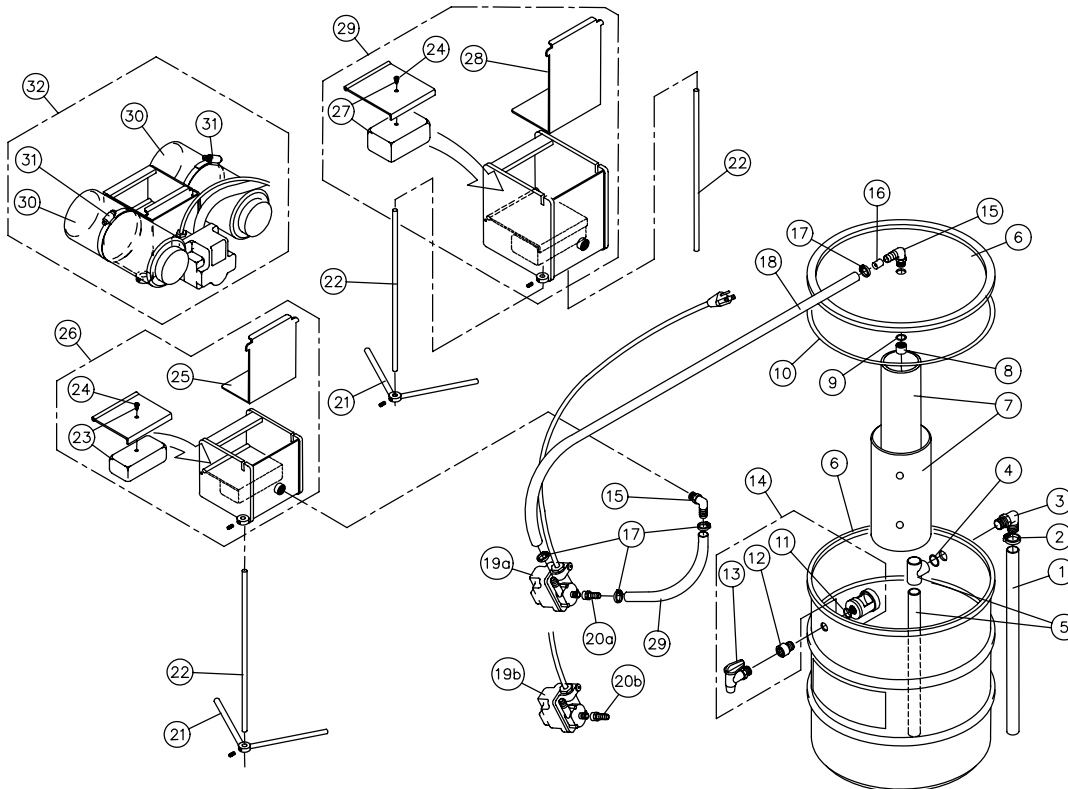
2. Reservoir overflows
 - A. Install restrictor in ½” PVC tube.
 - B. Stand pipe is obstructed, clear obstruction.
 - C. 1” PVC return tube kinked or obstructed.

3. Oil not being skimmed off.
 - A. Pump not pulling enough volume. The restrictor may have to be removed from line. If the reservoir overflows after restrictor is removed drill out restrictor in 1/32” increments and reinstall until pump works at maximum flow without reservoir overflowing.
 - B. Obstruction in coolant tank hindering flow of surface oil to skimmer box.
 - C. Trash Screen obstructed. Clean screen.
 - D. Coolant level too high or too low. Adjust skimmer box height.

SKIMERATOR REPLACEMENT PARTS

1	3226	PVC Tube 1" ID x 1 1/4" OD (specify length – 5 foot standard)	19a	3262	Skimmer Pump Type 2 115v 60 HZ
2	3233	Hose Clamp 1 1/4"	19b*	6203	Skimmer Pump Type 230v 50 HZ
3	3228	Elbow, 1" Male	20a	3278	Adapter 1/2"-F NPT x 1/2" HB
4	3230	O-Ring 1"	20b	6204	Adapter 3/8" NPT x 1/2" HB
5	3203	Skimmer Stand Tube Assembly (Includes items 3 & 4)	21	3246	Skimmer Foot Weldment
6	4427	Skimmer Reservoir Tank, Type 2	22	3248	Skimmer Post 12"
7	3202	Skimmer Baffle Assembly	23	4663	Skimmer Float w/screw, Shallow Draft (includes screw 1071)
8	3229	Straight Fitting 2"	24	2521	Screw PPH #8 x 3/8" Type 25 (included in 4664)
9	3390	O-Ring 1/8" x 13/16" ID x 1 1/16" OD	25	4359	Skimmer Trash Screen, Shallow Draft
10	6766	Gasket, Reservoir Tank	26	4428	Skimmer Box Assembly, Shallow Draft (includes Items 23, 24 & 25)
11	3294	O-Ring 7/8"	27	4664	Skimmer Float w/screw, Deep Draft (includes item 24)
12	5189	Faucet Adapter	28	4355	Skimmer Trash Screen, Deep Draft
13	3295	Drum Faucet, 3/4"	29	4429	Skimmer Box Assembly, Deep Draft (includes Items 24, 27 & 28)
14	4430	Weir Box Asy (Incl. items 11, 12 & 13)	30	3875	Plastic Bottle 32 oz.
15	3227	Elbow, 1/2" Male	31	3877	Skimmer Float Clamp
16	3224	Skimmer Flow Restrictor	32	6682	Skimmer Floating Head Assembly (Includes items 30 & 31)
17	3232	Hose Clamp 3/4"			
18	3225	PVC Tube 1/2" ID x 3/4" OD (specify length – 12 1/2' standard)			

* The Skimerator Model 3200C is supplied with a 230v 50 Hz pump for use in countries where this voltage is required. This pump is marked CE for use in Europe.



SKIMERATOR WARRANTY

DESIGN & MANUFACTURING, INC. warrants that the Skimerator is in working condition when it leaves our factory. The Skimerator is warranted against defective materials and workmanship for a period of twelve (12) months. If the Skimerator fails and is still within the warranty period, then the Skimerator will be repaired or replaced if returned, prepaid, to our factory. All defective parts returned under warranty will be fully inspected to determine the cause of failure before any warranty is approved.

The expressed warranty will be void if any of the following conditions are found:

1. The electrical pump equipped Skimerator is connected to a voltage other than indicated on nameplate.
2. The electrical cord on an electrical pump equipped model is cut off to a length less than three feet.
3. The electric pump is allowed to operate dry (fluid supply cut off).
4. The pump is used to circulate anything other than water-soluble lubricants, light oils, or other mild liquids at no higher temperature than 120 degrees F (no higher than 180 degrees for Hi-Temp Air Pump model).
5. The pump inlet screen is removed.

DESIGN & MANUFACTURING, INC. makes no representations, conditions or warranties, expressed or implied, including, without limitation the implied condition and/or warranties of merchantability and fitness for a particular purpose, regarding the Skimerator except as provided above.

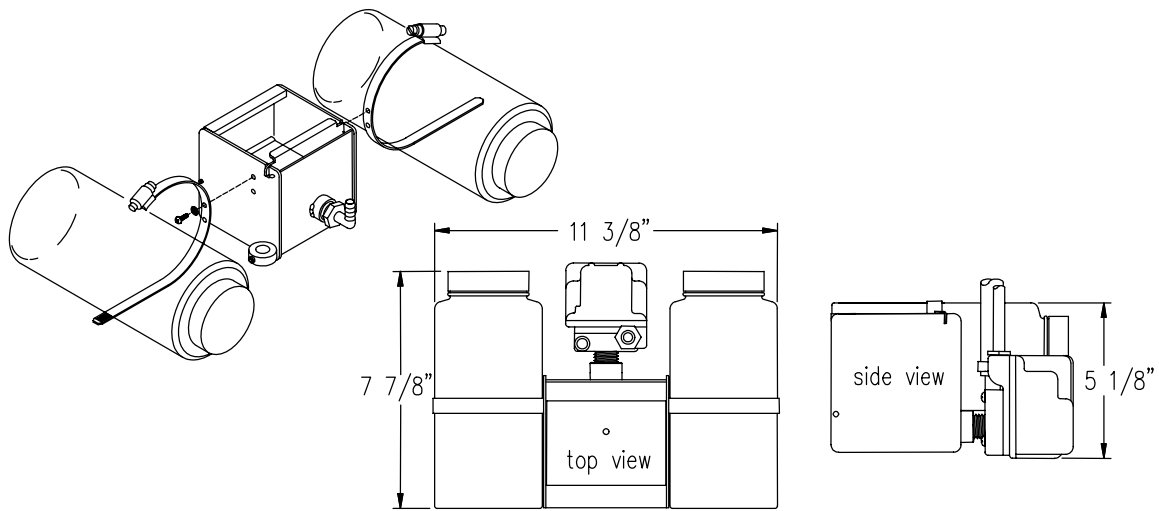
In no event will **DESIGN & MANUFACTURING, INC.**, its directors, officers, employees or agents be liable to you for any consequential, incidental or indirect damages (including damages for loss of business profits, business interruption, and the like) arising out of the use of or inability to use the Skimerator.

For further information regarding warranty service contact your dealer.

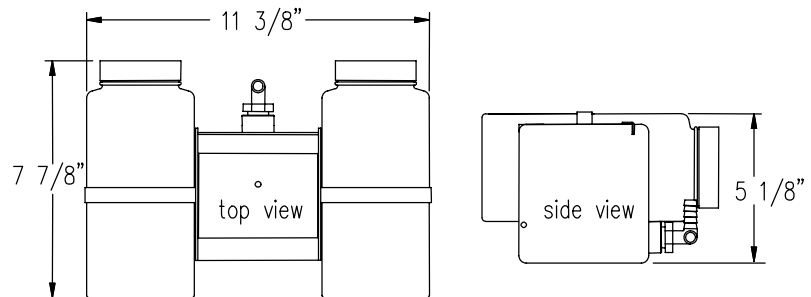
AVAILABLE SKIMERATOR ACCESSORIES

SKIMMER FLOAT OPTION

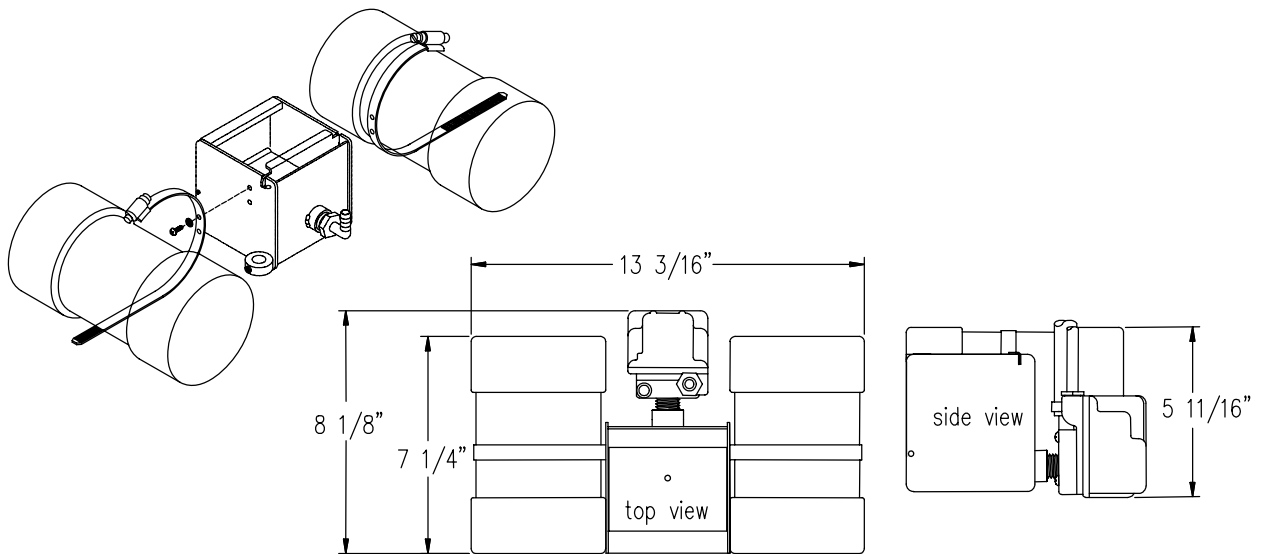
- ◆ A Floating Skimmer box can be used where coolant levels fluctuate more than the range of a fixed mount skimmer box.
- ◆ A Floating Skimmer box can be used with the pump mounted on the box or with the pump connected to the box by a hose.
- ◆ A Skimmer Box can be converted to a Floating Skimmer Box without modifications if the existing box has two small holes on each side of the box.
Order Kit # 6682 (standard duty) or Kit #6682-XD (extreme duty).
- ◆ If the box doesn't have these holes, the holes will have to be drilled or a kit with a Skimmer Box can be ordered.
Order Kit # 3201F (standard duty) or Kit #3201F-XD (extreme duty)



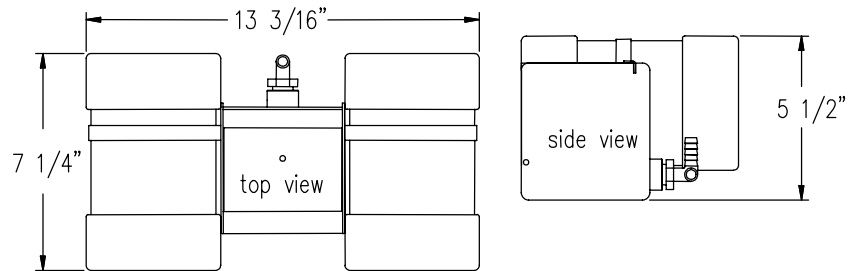
Kit #6682 or Kit #3201F with pump mounted on box.



Kit #6682 or Kit #3201F without pump mounted on box.



Kit #6682-XD or Kit #3201F-XD with pump mounted on box.



Kit #6682-XD or Kit #3201F-XD without pump mounted on box.

SKIMMER SCREEN OPTION

Increases filtering area and prevents large chips from entering the skimmer box. Can be used on any shallow draft skimmer box except the floating skimmer box.

Order #6698

