

INSTALLATION INSTRUCTIONS



1500/2000 PUMPS

® Rule Registered Trademark

ALL RETURNS MUST BE SHIPPED TO:

RULE INDUSTRIES, INC.
CAPE ANN INDUSTRIAL PARK
GLOUCESTER, MA 01930

A WRITTEN EXPLANATION OF RULE'S
ONE YEAR LIMITED WARRANTY
POLICY IS AVAILABLE UPON
REQUEST BY CALLING:

RULE CUSTOMER SERVICE
(978) 281-0440

CONGRATULATIONS!

You have just purchased one of the finest quality bilge pumps available in the industry. It was developed after years of experience, research and testing by our research staff and hundreds of thousands of users. It is built to give years of reliable trouble free performance. Most early pump failures are due to improper installation and wiring. Please read and follow the instructions carefully and your pump will provide you with the maximum output and the life for which it was designed.

These pumps are rated "Ignition Protected."



* Rule Registered Trademark
*Property of Rule Industries, Inc

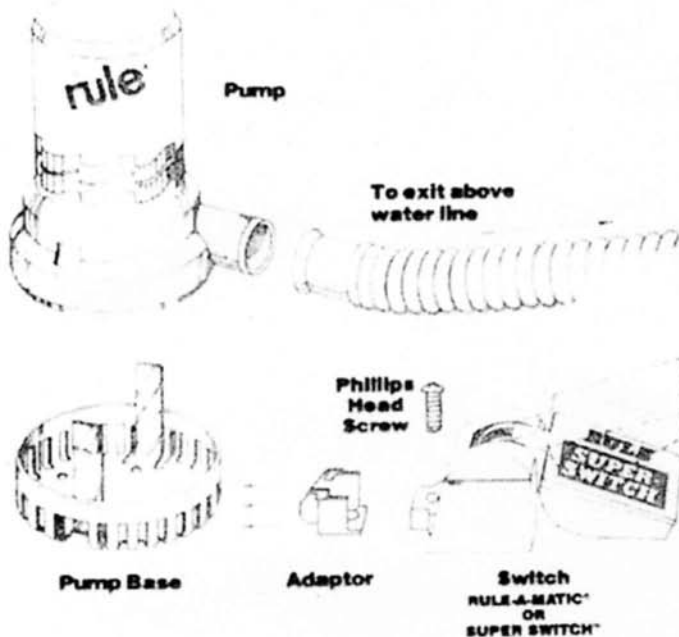
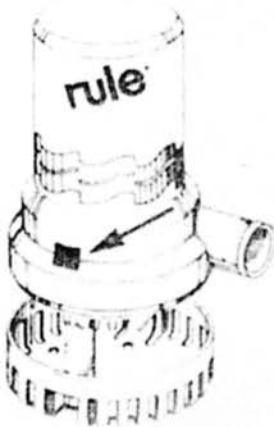


PROUDLY MADE IN THE U.S.A.

INSTRUCTIONS

STEP 1 Remove the strainer from the bottom of the pump by depressing the lock tabs on both sides of the pump.

CAUTION: Strainer must always be properly installed before attaching and running pump.



STEP 2 Determine the desired location for the pump. If only one pump is used it is usually located where the water is deepest in the bilge while the boat is at rest. The installation must allow for complete drainage of the hose. All water pockets must be eliminated by having the hose running level or continuously upward.

STEP 3 Position the strainer so that the pump nozzle is in the proper position to connect to the discharge hose.

STEP 4 Mounting the Strainer

A. If attaching the strainer to wood, fasten with stainless steel screws.

B. If attaching the strainer to metal or fiberglass, first mount a wooden block and then fasten the strainer to the wooden block.

STEP 5 Mount the pump on the strainer so that both $1\frac{1}{2}$ " lock-tabs "snap" into place. (The pump may be reversed on these tabs if so desired.)

STEP 6 Attach $1\frac{1}{8}$ " I.D. hose to the discharge nozzle and fasten with a stainless steel clamp. Rule flexible hose (Model #80) is recommended because it will not kink when making sharp bends.

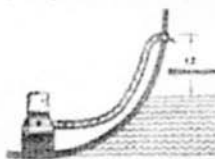
If your pump is replacing a competitive model with small diameter hose which is hard to replace, you may use rule[®] Adaptor Model #69 to adapt to the smaller hose.

Note: Restricting the flow from a Rule pump by using a smaller hose does not damage the pump. However, it will reduce the flow.

STEP 7 Thru-hull Fittings

A. For most installations, install a full size $1\frac{1}{8}$ " I.D. thru-hull fitting (Rule Model #60) to achieve the rated flow of the Rule pump. Locate the thru-hull fitting at least 12" above the

water line to prevent water from flowing back into the hull when the pump is off.



B. For stern installations, place the $1\frac{1}{8}$ " thru-hull fitting high enough in the stern so that submergence of the fitting will not occur under any conditions.

STEP 8 Wiring

In order to prevent electrolysis and corroded wire connections, it is essential that all wire ends and terminals be sealed with Rule® Heavy Duty Marine Sealant and located above the highest possible water level by fastening with insulated staples or plastic straps.

When installing your pump, 16 gauge wire should be used. However, if your installation is over 20' from the battery source, the wire size should be increased to 14 gauge. Using a wire which is too small causes undesirable heat in the wires and results in a voltage drop and lower performance of the pump.

STEP 9 Fusing

To protect your electrical wiring and automatic switch from possible overload install a fuse in the positive (+) lead from the battery. The fuse should be sized according to the following chart.

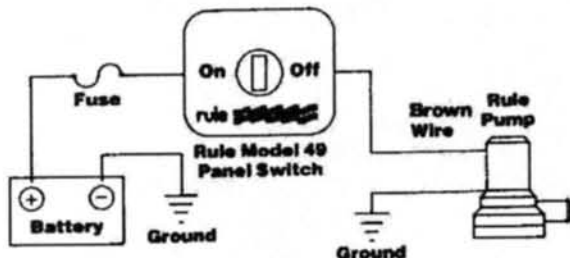
PUMP	1500-12 volt	1500-24 volt	2000-12 volt	2000-24 volt	2000-32 volt
AMP DRAW	4.8 amp	2.3 amp	8.4 amp	4.0 amp	3.1 amp
FUSE	9.0 amp	4.0 amp	15 amp	7.5 amp	6 amp

If using a panel switch with a fuse holder, check to see that the proper fuse is being used. You may wish to install a Rule® Panel Switch with a built-in fuse holder (Model #41 or #43 for 12 VDC or #42 for 24/32 VDC).

STEP 10 Follow one of the two wiring diagrams:

Wiring for Manual Operation

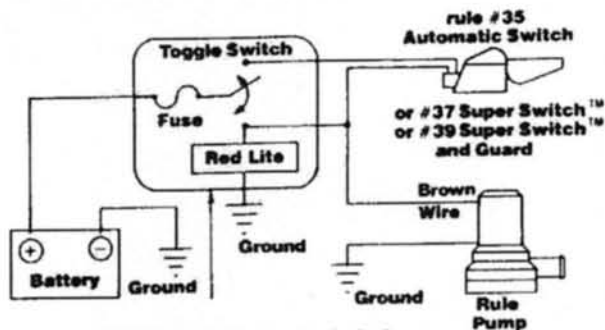
The **manual system** is the simplest system but it only provides ON-OFF control of the pump. Consequently, pumps are often left ON longer than necessary.



Wiring for Automatic Operation

The **automatic system** assures that the vessel is always pumped out, even when unattended. In addition, it extends the life of the pump and your battery by automatically shutting the pump off when the water has been pumped out.

The automatic system can also provide for manual control of the pump by installing a Rule® Panel Switch (Models #41, 42, 43 or 45). These switches have a "fail-safe" feature which automatically returns the switch to the "off" position, preventing the pump from being inadvertently left on.



All these parts are included on rule 3 way panel switch #41, 42, or 43

STEP 11 Polarity is important. If it is not correct, the pump will rotate **backwards**. Water will still come out of the discharge nozzle but the flow will be **very much reduced**. On the Rule® 1500/2000 pump the correct polarity will be obtained when the **BROWN** wire of the pump is connected to the POS or + side of the battery. The way to verify that the direction of rotation (and thus the polarity) is correct is to look into the inlet hole on the bottom of the pump while the pump is running and see if the impeller rotates in the direction of the arrow molded into the bottom. **Never** insert fingers or other objects into the inlet hole.

Storage

The pump itself is not affected by freezing temperatures. However, if the pump is embedded in ice or surrounded by ice, it cannot be used. **Never** turn the pump on if it is embedded in or surrounded by ice.

Performance Data

1500			
	GPH @ 0'	GPH @ 3.35' (10K pa)	GPH @ 6.7' (20K pa)
13.6 Volts	1500 (5678 LPH)	1200 (4542 LPH)	804 (3043 LPH)
12.0 Volts	1350 (5110 LPH)	1000 (3785 LPH)	500 (1893 LPH)
2000			
	GPH @ 0'	GPH @ 3.35' (10K pa)	GPH @ 6.7' (20K pa)
13.6 Volts	2000 (7570 LPH)	1620 (6132 LPH)	1300 (4921 LPH)
12.0 Volts	1740 (6586 LPH)	1450 (5488 LPH)	1160 (4391 LPH)

TROUBLE-SHOOTING SECTION

Symptom	Possible Cause	Cure
Reduced Flow	Plugged strainer	Clean outside of strainer and clean debris from around impeller.
	Discharge line plugged with trash	Clean out hose by back-flushing.
	Low battery voltage	Check battery condition and charge if necessary.
	Kinked discharge hose	If hose is kinked because of sharp bend, convert to Rule #80 hose which will not kink at bends.
No water pumped	Wire connections	Make sure wire connections are not corroded. Visual check is not enough—a slight pull on each wire will tell if the wires are still joined. Check to be sure no wire joints are hanging down into the water.
	Blown fuse	Check fuse to see that it is the correct size according to the chart in step 9. If fuse size is correct and fuse still blows, check impeller through inlet opening to be sure it is not jammed or stuck with debris.
	Float switch failure	Lift end of float switch up—if pump runs, switch is OK. If pump does not run, turn Manual Switch to ON position—if pump runs, automatic switch has failed.

Symptom	Possible Cause	Cure
Pump won't shut off	Something under float	Clean under the float to make sure debris is not holding the float up.
	Stuck float	Check to see that the float is loose and free of gummy bilge oil. If float action appears sluggish and/or the float does not move freely, intermittent or sporadic operation of the pump may occur. This condition is usually the result of oil and/or dirt accumulating in and around the movable parts of the switch. To correct, try soaking the entire switch in Sudbury® Automa Bilge Cleaner or Rule® All Purpose Marine Cleaner for ten minutes, agitating several times and checking for smooth and free operation of the float. Repeat if necessary.
	Switch mounted too low	If the pump is sucking air and the automatic switch has not reached the OFF position, then the switch may be mounted too low for the pump and should be reinstalled ¼" to ½" higher than the pump base.
Wires over-heated. Melted insulation	Combination of jammed impeller and wrong size fuse.	Be sure impeller is clean of debris and is free to rotate. Reduce fuse to proper size shown in chart in step 9. Replace damaged wiring and/or switch.
Repeated blown fuse	Fuse size or Jammed impeller	Be sure fuse has amp rating shown in chart in step 9. Check impeller to see that it is not bound up by fish line, etc.

IMPORTANT