

# OWNER'S MANUAL

# SUBMERSIBLE EFFLUENT & SEWAGE PUMPS WS SERIES



**SAFETY WARNINGS**



**BEFORE OPERATING OR INSTALLING THIS PUMP, READ THIS MANUAL AND FOLLOW ALL SAFETY RULES AND OPERATING INSTRUCTIONS.**

**SAFETY** CAREFULLY READ THESE SAFETY MESSAGES IN THIS MANUAL AND ON PUMP.

**CAUTION**

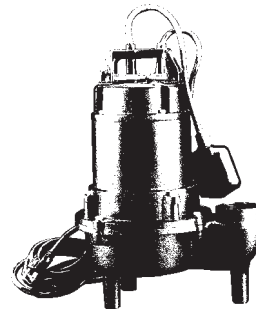
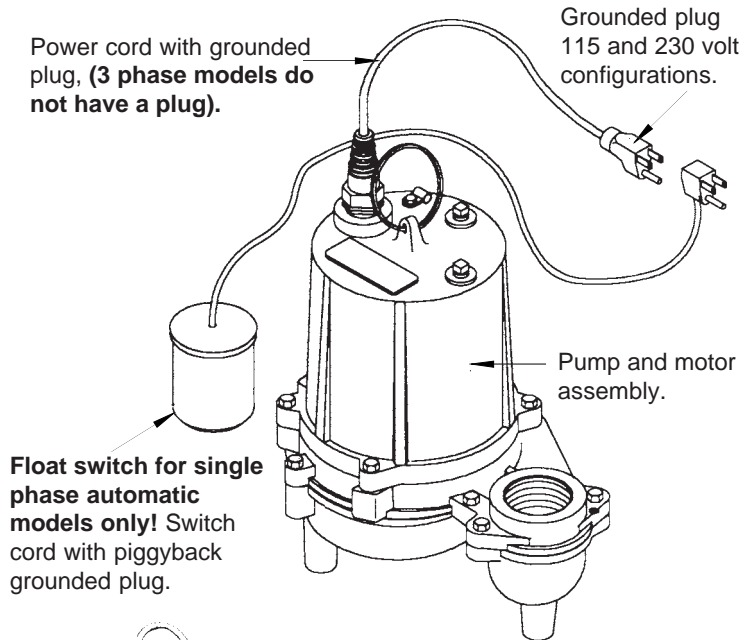
- Review instructions before operating.

**WARNING - ELECTRICAL PRECAUTIONS**

All wiring, electrical connections, and system grounding must comply with the National Electrical Code (NEC) and with any local codes and ordinances. Employ a licensed electrician.

**WARNING - RISK OF ELECTRICAL SHOCK**

- Have an electrician provide electrical power to motor.
- A ground fault interrupter (GFI) protected circuit is recommended for use with any electrical device operating near water.



**NOTE:**  
For automatic built-in float switch models, both the power and switch cords use the same grounded plug.

- A ground fault interrupter (GFI) protected circuit is recommended for use with any electrical device operating in or near water.
- Have a licensed and qualified electrician provide electrical power to the pump.
- Make sure the line voltage and frequency of the electrical current supply matches the specifications printed on the pump nameplate.
- Ensure the pump and electrical supply system are properly grounded. Never install or test a pump without proper electrical grounding of the system.

- Always disconnect pump from power source before handling or servicing.
- This product (Single Phase - 115 & 230 volt units ONLY) is furnished with a 3-prong plug for grounding; connect only to properly grounded receptacle.  
**NEVER UNDER ANY CIRCUMSTANCES REMOVE OR DISABLE THE GROUND PLUG.**
- Keep electrical plug dry - do not lift pump using cord.
- Not investigated for use in swimming pools.

## EFFLUENT & SEWAGE APPLICATIONS - UP TO 3/4" & 2" SOLIDS HANDLING CAPABILITY

- These pumps are for use in effluent or raw sewage applications where the total head required (including pipe friction losses) does not exceed the pump's maximum capability. Sewage type pumps can be used in raw sewage or effluent applications.
- Additionally, the maximum solids size, as shown in Fig.1, must not be exceeded.

### INSTALLATION RECORD

For future reference, keep an accurate record of your installation. Be sure to record the installation data in the area provided below.

Purchased from: _____	Installation by: _____
Phone No. (    ) _____	Phone No. (    ) _____
Pump Model No. _____	Pump Tank or Basin Size: _____ Capacity _____
Pump Serial No. _____	Discharge Pipe size: _____ Inches _____
Date of Installation: _____	Discharge Elevation: _____ Feet _____

### TABLE OF CONTENTS

Safety, Regulatory and Electrical Warnings .....	Throughout manual
Application .....	Page 2
Installation Records and Table of Contents .....	Page 2
Installation Information and Typical Installation Drawings .....	Pages 2, 3, 4 & 5
Start Up and Operational Check .....	Page 6
Safety Tips and Maintenance .....	Page 6
Troubleshooting .....	Page 7
Warranty .....	Page 8

### PERFORMANCE

<b>Performance Table</b>																		
Pump Model Suffix	Solids Handling (inches)	H.P.	RPM	Total Head in Feet														Shut-Off Head (ft.)
				Capacities in U.S. GPM														
				5	10	15	20	25	30	35	40	50	60	70	80	90		
<b>Effluent</b>																		
WS30	11/16	1/3	1750	105	90	70	45	15									28	
WS50	3/4	1/2	3450	106	90	80	65	53	36	21	6						42	
WS50H	3/4	1/2	3450		115	107	98	87	78	68	57	30	0				60	
WS100H	3/4	1	3450		150	145	140	134	128	122	115	97	76	53	27	0	90	
WS102H	2	1	3450			170	152	127	98	75	46						48	
<b>Sewage</b>																		
WS41	7/8	4/10	1750	118	95	70	40	8									26	
WS51	1 3/8	1/2	1750	155	120	83	52	14									27	
WS52	2	1/2	1750	135	90	47	14										23	
WS52H	2	1/2	3450		130	96	66	31									29	
WS102	2	1	1750		175	149	118	85	46	16							37	
WSV52	2	1/2	1750	112	80	40											18	
WSV52H	2	1/2	3450		69	44	19										23	

# INSTALLATION

## 1. WARNING - ELECTRICAL PRECAUTIONS

Before installation, check the national and local electrical and plumbing codes/ordinances.... A pump intended for use in a septic tank/sump or sewage installation requires that the tank/sump **MUST BE VENTED IN ACCORDANCE WITH LOCAL PLUMBING CODES**, and is **NOT TO BE INSTALLED IN LOCATIONS CLASSIFIED AS HAZARDOUS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE ANSI / NFPA 70-1990**.

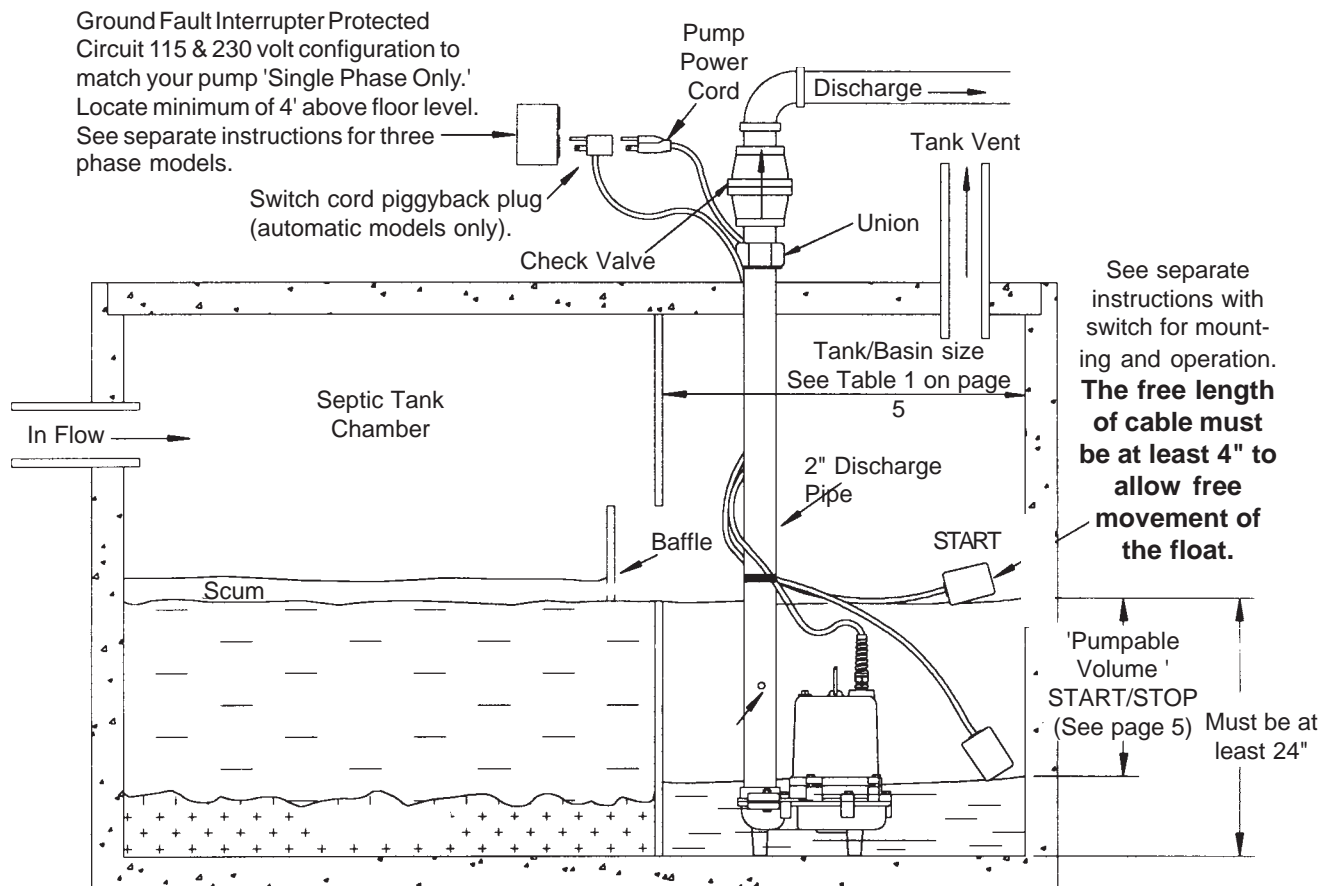
These regulations are for your safety and protection.

## 2. LOCATION:

Installation of the pump must be made in a location that....

- Has adequate room for servicing and is of adequate size (see page 5).
- Location is protected from freezing.
- Will require minimum lengths of piping to keep friction losses as low as possible.
- Refer to Fig. 2 below for typical effluent/sewage installation with automatic operation.

**Fig. 2**  
**TYPICAL EFFLUENT/SEWAGE SUMP INSTALLATION**  
**Automatic single phase 115 or 230 volt units illustrated**



## INSTALLATION

### 3. SEPTIC TANK/SUMP PREPARATION AND REQUIREMENTS:

#### **⚠ WARNING - ELECTRICAL PRECAUTIONS**

A SEPTIC SUMP CONDITION MAY EXIST. IF ENTRY INTO SUMP IS NECESSARY, then first provide proper safety precautions per OSHA requirements and secondly, DO NOT ENTER SUMP UNTIL THESE PRECAUTIONS ARE STRICTLY ADHERED TO.

- ❑ Do not smoke or use sparkable electrical devices or flame in a septic (gaseous) or possible septic sump.
- ❑ Do not install pump in location classified as hazardous per National Electrical Code ANSI/NFPA 70 - 1990. **See Warning notes on page 3 of this manual.**

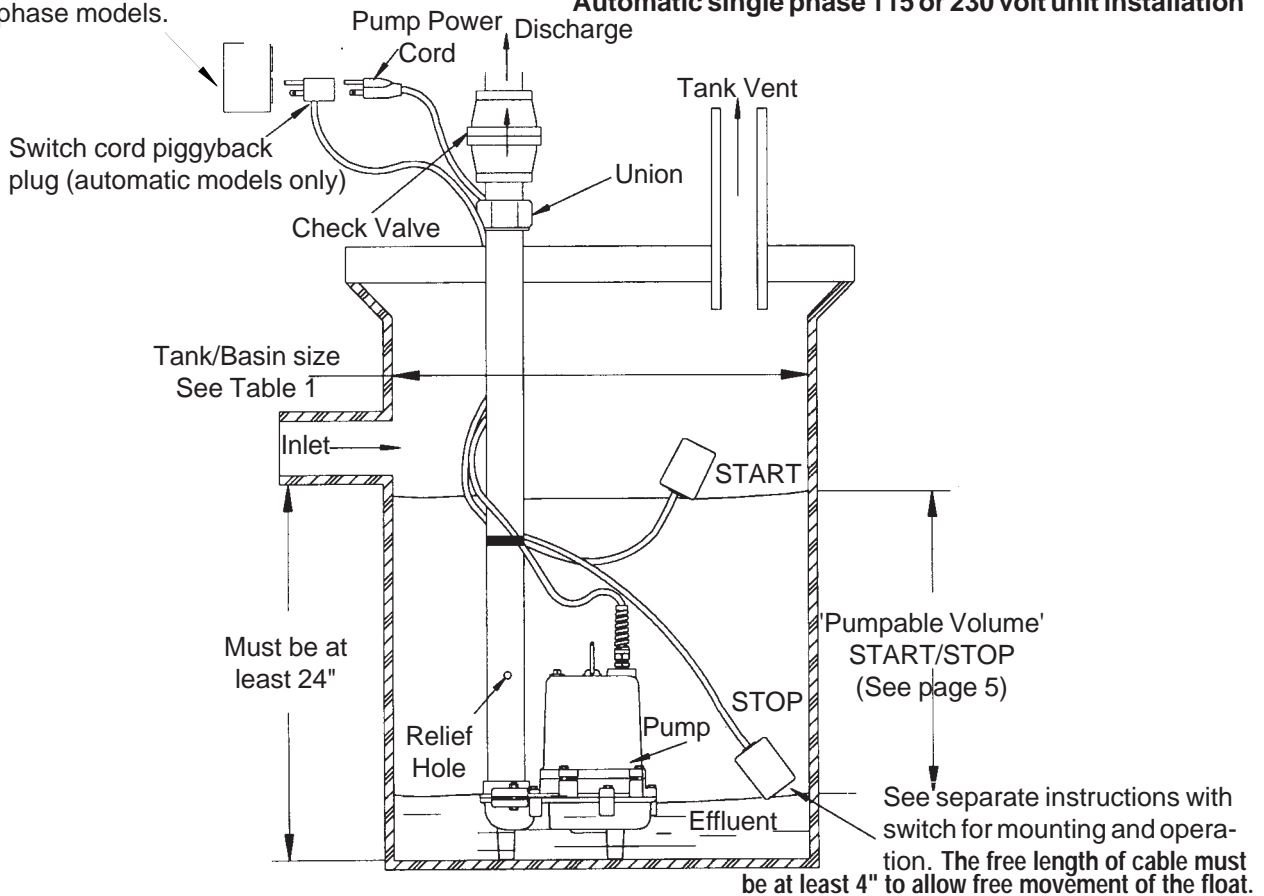
- a) Gas tight and properly vented with national & local electrical and plumbing codes.
- b) Level bottom of sump. DO NOT SET PUMP DIRECTLY ON BOTTOM OF SUMP IF IT IS NOT SOLID. Raise the pump by using brick or concrete blocks beneath it.
- c) Make sure sump is clean and free of nails, gravel, string, cloth, debris, etc. before installing pump.

Refer to Fig. 3 and associated Table to select a basin size or diameter and float switch tether length that will allow a sufficient 'pumpable volume' to prevent short cycling.

Ensure basin DEPTH is sufficient to allow for: (1) The "ON/OFF" range of the switch; and (2) the bottom of the basin must be at least 24" below the basin inlet.

Ground Fault Interrupter Protected Circuit, 115 and 230 volt configuration to match your pump 'Single Phase Only.' Locate minimum of 4' above floor level. See separate instructions for three phase models.

**Fig. 3**  
**TYPICAL EFFLUENT OR SEWAGE TANK / BASIN INSTALLATION**  
Automatic single phase 115 or 230 volt unit installation



## INSTALLATION

**TABLE 1**

Approximate 'pumpable volume' (gallons) for various combinations of basin diameters and float switch tether lengths.....

Tank Basin Dia. (inches)	TETHER LENGTH OF FLOAT SWITCH (inches)					
	6	8	10	12	14	16
	Approx. Float Switch Range (inches)					
	10	12	16	18	22	25
Pumped Volume (US Gallons)						
18	11	13	17	20	-	-
24	20	23	31	35	43	49
30	31	37	49	55	67	76
36	44	53	70	79	97	110
48	78	94	125	141	172	195
60	122	147	196	220	269	305
72	176	211	282	317	387	440

### 4. PLUMBING: PUMP AND DISCHARGE PIPING

- a) Use steel or plastic pipe for all connecting lines between pump and sewer outlet. Keep pipe length to a minimum to reduce friction losses. Pump is equipped with a 2" NPT female outlet - **DO NOT REDUCE TO A SMALLER SIZE.**

**NOTE:** Fluid flow velocity in the pump's discharge line must be at least two feet per second to carry the effluent without clogging. This is ensured if pump flow is at least:



21 GPM through a 2" pipe  
 30 GPM through a 2-1/2" pipe  
 46 GPM through a 3" pipe

**⚠ WARNING:** Some city regulations **DO NOT** allow the installation of a pump with plastic pipe. Check local regulations.

- b) A union or quick disconnect connection should be installed to facilitate pump removal if necessary. A **FULL FLOW CHECK VALVE IS RECOMMENDED AFTER THE UNION TO PREVENT BACKFLOW AFTER EACH PUMPING CYCLE.**

**NOTE:** When a check valve is used, drill a 1/8" or 3/16" air relief hole in the discharge pipe. This hole should be located below the floor line within the sealed pump unit and between the pump and check valve (see Fig. 2 & 3). Without this relief hole, the pump can air lock and will not pump even though it will run.

### 5. MOUNTING THE FLOAT SWITCH: AUTOMATIC OPERATION MODELS ONLY

- a) **All automatic models;** Single Phase 115 and 230 volt models come supplied with a float switch for mounting to the pump's discharge pipe and requires final adjustment to suit your systems needs.
- b) The float switch is equipped with a cord and 115 or 230 volt grounded piggyback plug configuration (depending on the voltage rating of the model you have). The switch provides automatic operation of the pump in water, effluent and sewage applications.

**⚠ WARNING - RISK OF ELECTRICAL SHOCK**

- c) The float switch is packaged separately within the pump carton and includes the switch manufacturer's assembly, adjustment, operation, safety and cautionary instructions.... **Follow the manufacturer's instructions explicitly for proper installation and operation. The free length of cable must be at least 4" to allow free movement of the float.**

### 6. MANUAL MODELS: SINGLE PHASE 115 AND 230 VAC MODELS

- a) Single Phase 115 or 230 volt manual models **DO NOT INCLUDE A FLOAT SWITCH.**
- b) The pump comes equipped with a power cord and 115 or 230 volt grounded plug configuration (depending on the voltage rating of the model you have).
- c) Plug in or unplug pump power cord as needed into ground fault interrupter (GFI) protected circuit or use with an approved motor control that matches the pump/motor input rated amperes. The motor control must be properly sized for the pump, installed and wired in compliance with the National Electrical Code (NEC) and any local codes and ordinances.

### 7. MANUAL MODELS: THREE PHASE 230, 460 AND 575 VAC MODELS

- a) Three Phase 230, 460 and 575 volt manual models **DO NOT INCLUDE A FLOAT SWITCH.**
- b) The pump comes equipped with a three phase power cord **without plug** for use with approved motor control that matches pump/motor rated amperes with overload element(s) selected or adjusted in accordance with the control manufacturer's instructions.
- c) Three phase motor control must be properly sized for pump, installed and wired in compliance with the National Electrical Code (NEC) and with any local ordinances.

## START UP AND OPERATIONAL CHECK

### 8. AUTOMATIC MODELS (WITH FLOAT SWITCH) SINGLE PHASE 115 AND 230 VAC MODELS:

- a) Connect the 3-prong grounded piggyback plug on the float switch cord into a 115 or 230 vac (depending on your model) ground fault interrupter (GFI) receptacle.

DO NOT REMOVE GROUND PRONG FROM PLUG. DO NOT USE AN EXTENSION CORD.

- b) Connect the 3-prong grounded plug from the pump power cord into the piggy back receptacle on the back of switch plug. DO NOT REMOVE GROUND PRONG FROM PLUG. DO NOT USE AN EXTENSION CORD.
- c) Manually fill the tank/basin with water to check the switch operation. DO NOT RUN DRY.
- d) Ensure that the float switch hangs free and the START /STOP levels are satisfactory. The float switch MUST NOT COME IN CONTACT WITH SIDES OR BOTTOM OF TANK / BASIN.
- e) Cycle your system a few times to ensure that its operation is satisfactory. Replace tank/basin cover and double check to ensure that all system components/requirements are in place.

### 9. MANUAL MODELS: SINGLE PHASE 115 AND 230 VAC MODELS

- a) Manually fill the tank/basin with water to check the pump's operation. DO NOT RUN DRY.
- b) Connect the 3-prong grounded plug on the pump power cord into 115 or 230 VAC (depending on your model) ground fault interrupter (GFI) receptacle or approved motor control. DO NOT REMOVE GROUND PRONG FROM PLUG. DO NOT USE AN EXTENSION CORD.
- c) Cycle your system a few times to ensure that its operation is satisfactory. Replace tank/basin cover and double check to ensure that all system components/requirements are in place.

### 10. MANUAL MODELS: THREE PHASE 230, 460 & 575 VAC MODELS

- a) Manually fill the tank/basin with water to check the pump's operation. DO NOT RUN DRY.
- b) After the pump power cord has been wired to an approved, properly sized and grounded three phase motor control, cycle your system a few times to ensure that its operation is satisfactory. Replace tank/basin cover and double check to ensure that all system components/requirements are in place.

## SAFETY TIPS AND MAINTENANCE

### 11. SAFETY TIPS WARNING: RISK OF ELECTRICAL SHOCK - BODILY INJURY


- a) Always wear rubber boots when you must unplug the pump from the power supply.
- b) Never make adjustments or do maintenance checks with power connected. Always disconnect your pump from the electrical power supply before beginning ANY service.
- c) DO NOT SMOKE OR USE SPARKABLE ELECTRICAL DEVICES OR FLAME IN A SEPTIC (GASEOUS) SUMP.
- d) A SEPTIC SUMP CONDITION MAY EXIST. If entry into sump is necessary, first provide proper safety precautions per OSHA requirements and secondly, DO NOT ENTER SUMP UNTIL THESE PRECAUTIONS ARE STRICTLY ADHERED TO.
- e) NEVER REMOVE GROUND PRONG FROM ANY POWER OR SWITCH PLUG. This is the ground and is there for your safety.

### 12. MAINTENANCE: YOUR PUMP IS CONSTRUCTED SO THAT NO REGULAR MAINTENANCE IS REQUIRED SINCE THE PUMP IS COMPLETELY SELF LUBRICATING. THE FOLLOWING ROUTINE CHECKING PROCEDURE IS RECOMMENDED TO BE CONDUCTED EACH YEAR - AND ESPECIALLY IMPORTANT FOR OCCASIONAL USE APPLICATIONS.

- a) Check power cords, switch cords and electrical service outlets for damage and corrosion.
- b) Ensure there is no build up of sludge, sediment or blockage in the tank/basin to clog the pump.
- c) Manually raise and lower the float switch to ensure correct pump operation (important for occasional use applications).
- d) Manually fill the tank/basin to check for correct switch adjustment and system operation.

## TROUBLESHOOTING

**13. TROUBLESHOOTING:** FOLLOW ALL SAFETY TIPS, PROCEDURES AND WARNINGS PREVIOUSLY IDENTIFIED IN THIS MANUAL BEFORE TROUBLESHOOTING THE SYSTEM.

TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
<b>Motor does not run</b>	Blown fuse Tripped circuit Disconnected plug Corroded plug Tripped overload  Defective switch Defective motor Float-improper position	Replace Reset Reinstall Clean prongs Allow pump to cool, investigate cause (jammed impeller) Replace switch Repair pump or replace if necessary Check for freedom of movement and operating levels
<b>Motor runs but flow reduced or none at all</b>	Impeller jammed Plugged check valve Partially blocked inlet Line leak Worn impeller Defective motor	Disassemble pump and clean Remove valve and clean Clean inlet Repair Repair pump or replace if necessary Repair pump or replace if necessary
<b>Runs continuously</b>	Plugged pump inlet Defective switch Float obstruction Plugged check valve	Clean Replace switch Adjust position of pump or float Remove valve, clean or replace
<b>Pump runs but delivers less water and pressure than it should. (Three phase units only)</b>	Pump may be operating in wrong direction. Correct impeller rotation is counter clockwise viewing suction inlet in bottom of pump.	 <b>WARNING:</b> Make sure power supply is disconnected - TURNED OFF, then switch any two motor leads inside the three phase motor control.
<b>NOTE:</b> A plugged pump inlet can be mistaken for a faulty switch. If pump runs continuously or for extended periods between turn offs, check first for a partially plugged pump inlet.		

## SERVICE

### 14. SERVICE:

- a) If your pump requires service it must be repaired by an authorized MONARCH service center or warranty will be void. If a service center is not available, return your pump to the place of purchase.
- b) YOUR WARRANTY IS VOID IF...
- Power cord has been cut.
  - Pump has been used to pump mud, cement, tar, abrasives or chemicals.
  - Pump has been used to pump hot water (above 140°F).
  - Pump has been dismantled by someone other than an authorized service center.

**15. WARRANTY:**

**LIMITED MONARCH INDUSTRIES WARRANTY**

For one year from date of purchase, Monarch Industries will replace or repair for the original purchaser, free of charge, any part or parts, found upon examination by any Monarch Industries Authorized Service Depot or by the Monarch factory, to be defective in material or workmanship or both. Equipment and accessories not manufactured by Monarch Industries are warranted only to the extent of the original manufacturer's warranty. All transportation charges on parts submitted for replacement or repair under this warranty must be borne by the purchaser. For warranty service see your nearest Monarch Industries Authorized Service Depot. THERE IS NO OTHER EXPRESS WARRANTY. IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO ONE YEAR FROM PURCHASE AND TO THE EXTENT PERMITTED BY LAW. LIABILITY FOR CONSEQUENTIAL DAMAGES UNDER ANY AND ALL WARRANTIES ARE EXCLUDED TO THE EXTENT EXCLUSION IS PERMITTED BY LAW. This warranty is an addition to any statutory warranty.

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