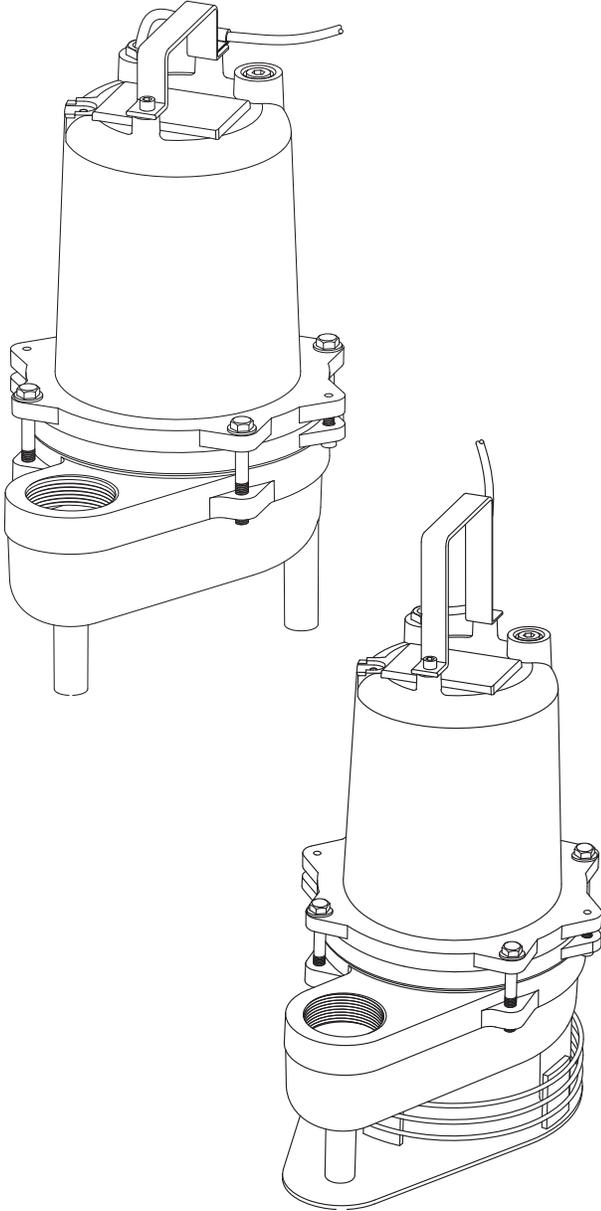


INSTALLATION, SERVICE & PARTS MANUAL



**Series: PFS411,
PFS411A, PFS411VF
PFS421, PFS411HT**

**0.4 HP • 1750 RPM • 60 Hz
Submersible Effluent, Sump
& Sewage Pumps
Standard &
High Temperature**



Power-Flo Pumps & Systems

a Power-Flo Technologies company

General Safety Information

Before installation, read the following instructions carefully. Failure to follow instruction and Safety information could cause serious bodily injury, death and/or property damage. Each Power-Flo pump is individually factory tested to insure proper performance. Closely following these instructions will eliminate potential operating problems, assuring years of trouble-free service.

⚠ DANGER "Danger" indicates an imminent hazardous situation which, if not avoided, WILL result in death or serious injury.

⚠ WARNING "Warning" indicates an imminent hazardous situation which, if not avoided, MAY result in death or serious injury.

⚠ CAUTION "Caution" indicates an potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury.

IMPORTANT - Power-Flo Pumps and Systems is not responsible for losses, injury or death resulting from failure to observe these safety precautions, misuse, abuse or misapplication of pumps or equipment.



ALL RETURNED PRODUCTS MUST BE CLEANED, SANITIZED, OR DECONTAMINATED PRIOR TO SHIPMENT, TO INSURE EMPLOYEES WILL NOT BE EXPOSED TO HEALTH HAZARDS IN HANDLING SAID MATERIAL. ALL APPLICABLE LAWS AND REGULATIONS SHALL APPLY.

⚠ WARNING Installation, wiring, and junction connections must be in accordance with the National Electric Code and all applicable state and local codes. Requirements may vary depending on usage and location.

® Power-Flo is a registered trademark of Power-Flo Technologies Inc. Other brand and product names are trademarks or registered trademarks of their respective holders. Alteration Rights Reserved. 7/2007, 6/08, 3/09, 4/09, 11/09, 4/10, 6/10, 7/10, 7/11, 2/12, 5/12, 6/13, 9/2020, 1/2021

⚠ WARNING Installation and servicing is to be conducted by qualified personnel only.

⚠ DANGER Keep clear of suction and discharge openings. **Do not** insert fingers in pump with power connected.

⚠ WARNING Always wear eye protection when working on pumps. Do not wear loose clothing that may become entangled in moving parts

⚠ DANGER Pumps build up heat and pressure during operation. Allow time for pumps to cool before handling or servicing.

⚠ DANGER This pump is **not** intended for use in swimming pools or water installations where human contact with pumped fluid. Pumps when used as a decorative water fountain pump **MUST** be used in circuit protected by a Ground Fault Interrupter.

⚠ DANGER Risk of electric shock. To reduce risk of electric shock, always disconnect pump from power source before handling. **Lock out power & tag.**

⚠ WARNING For PFS411/421 **Do not** us in water over 104°F, the PFS411HT is designed for 200°F. **Do not** exceed manufactures recommended maximum performance, as this could cause the motor to overheat.

⚠ DANGER **Do not** lift, carry or hang pump by the electrical cables. Damage to the electrical cables can cause shock, burnes or death. **Never** handle connected power cords with wet hands. Use appropriate lifting device.

⚠ WARNING Sump and sewage pumps often handle materials which could cause illness or disease. wear adequate protective clothing when working on a used pump or piping. Never enter a basin after it has been used.

⚠ DANGER Failure to permanently ground the pump, motor and controls before connecting to power can cause shock, burns or death.

⚠ DANGER These pumps are **NOT** to be installed in locations **classified as hazardous** in accordance with the National Electric Code, ANSI/NFPA 70.

⚠ WARNING: CANCER AND REPRODUCTIVE HARM- WWW.P65WARNINGS.CA.GOV

IMPORTANT! Prior to installation, record Model Number, MFG Date, Amps, Voltage, Phase and HP, from pump name plate for future reference. Also record the Voltage and Current Readings at Startup:

1 Phase Models	
Amps:	Volts:

Model Number: _____

MFG Date: _____

PHASE: _____ HP: _____

POWER-FLO Pumps & Systems

Model Number

MFG Date

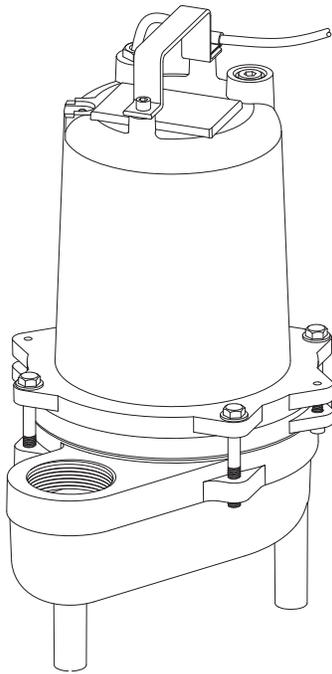
AMPS VOLTAGE

PHASE

60 Hz HP

POWER-FLO Pumps & Systems
877-24 PUMPS
www.powerflopumps.com

Specifications



**Series: PFS411-20,
PFS411A-20, PFS411VF-20,
PFS421-20**

**4/10 HP • 1750 RPM • 60 Hz
Submersible Sewage Pump**

DISCHARGE	2" NPT, Female, Vertical
LIQUID TEMPERATURE	77°F Continuous 115 volts 104°F Continuous 230 volts
VOLUTE	Cast Iron, Class 30
MOTOR HOUSING	Cast Iron, Class 30
IMPELLER	2 Vane, open with pump out vanes on back side Material: Cast Iron, Class 30
SHAFT	Stainless Steel
SEAL PLATE	Cast Iron, Class 30
SQUARE RINGS	Buna-N
HARDWARE	Stainless Steel
PAINT	Powder Coated - Industrial Grade
SEAL	Inboard Single Mechanical, Oil Filled, Material: Carbon/Ceramic/Buna-N Secondary Exclusion Seal
POWER CORD	20 Ft. Cord, Plug on 115 Volt, Pressure Grommet for Sealing and Strain Relief
MOTOR	Oil Filled, Squirrel Cage Induction Class F Insulation
SINGLE PHASE	Permanent Split Capacitor (PSC), Includes Overload Protection in Motor: Trip Off Temp. 248°F (120°C).
UPPER BEARING	Single Row, Ball, Oil Lubricated
LOWER BEARING	Single Row, Ball, Oil Lubricated
LEVEL CONTROL	<p>"A" Wide Angle, Mechanical Float, 15Ft. Cord with Piggy-Back Plug, Normally Open (N/O).</p> <p>"VF" Vertical Float, 15Ft. Cord with Piggy-Back Plug. Off Point ONLY is Adjustable.</p>

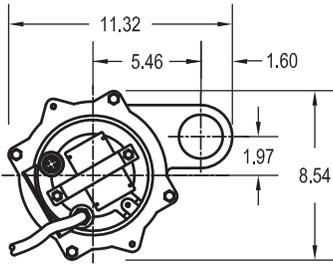
MODEL	HP	Hz	Volts/Ph	RPM	Full Load Amps	Locked Rotor Amps	NEMA Start Code	Winding Resistance MAIN--START	Cord Type	Cord Size	Cord O.D.
PFS411-20	4/10	60	115/1	1750	12.0	23.6	N	7.72 -- 22.4	SJTW	16/3	0.335
PFS411A-20	4/10	60	115/1	1750	12.0	23.6	N	7.72 -- 22.4	SJTW	16/3	0.335
PFS411VF-20	4/10	60	115/1	1750	12.0	23.6	N	7.72 -- 22.4	SJTW	16/3	0.335
PFS421-20	4/10	60	230/1	1750	6.2	12.5	C	5.89 --	SJTW	16/3	0.335

-30 = 30 foot cord,

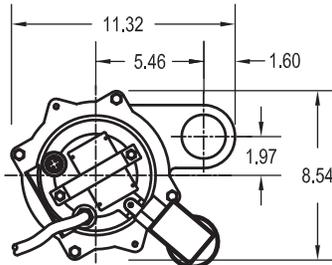
-50 = 50 foot cord



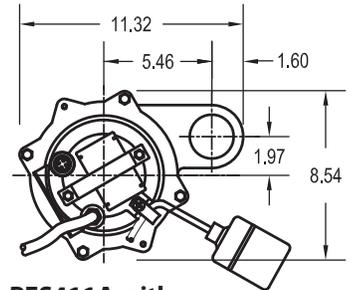
Dimensions & Performance



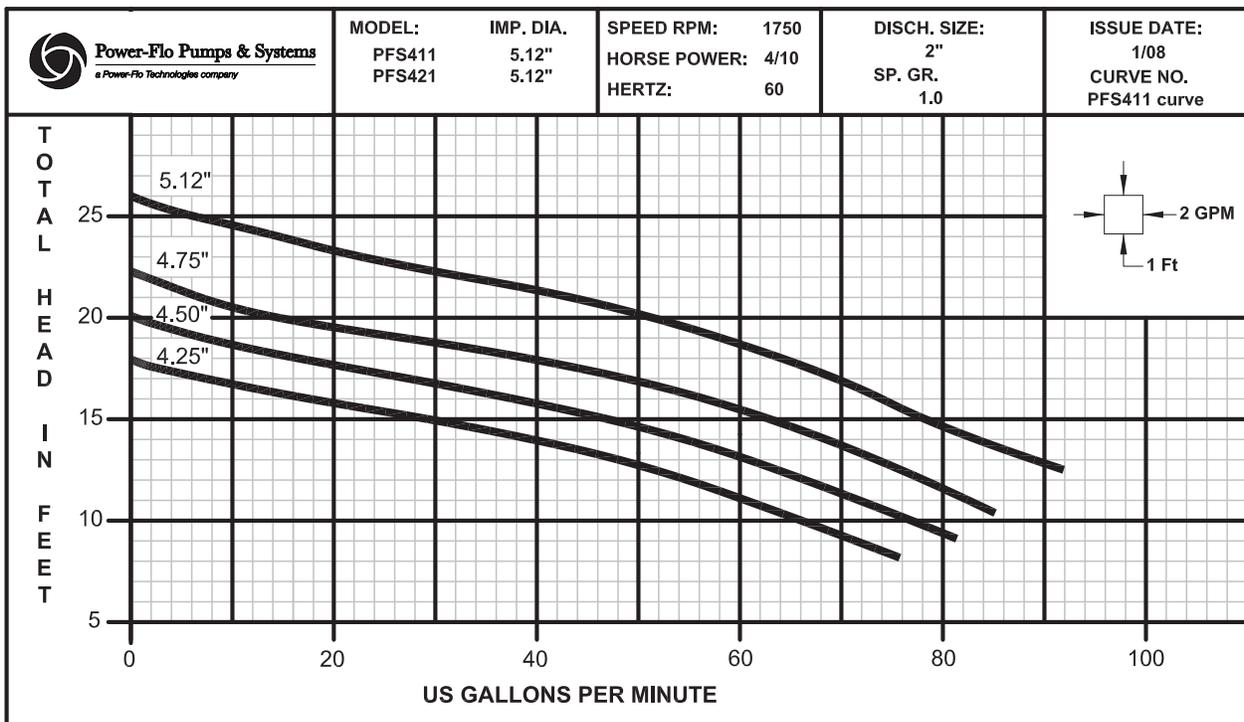
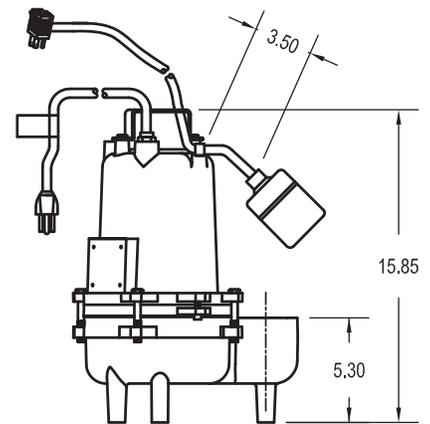
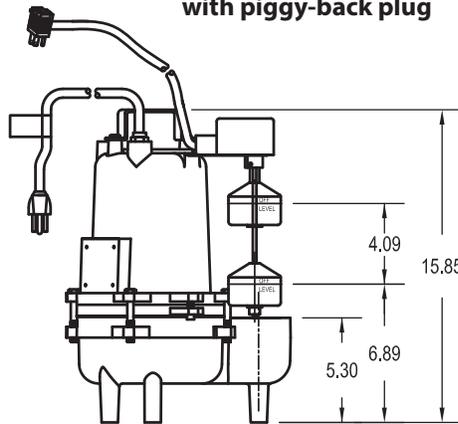
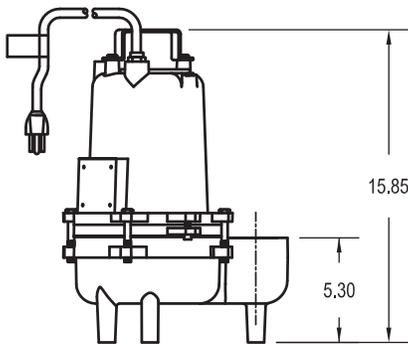
**PFS411 & PFS421
without float**



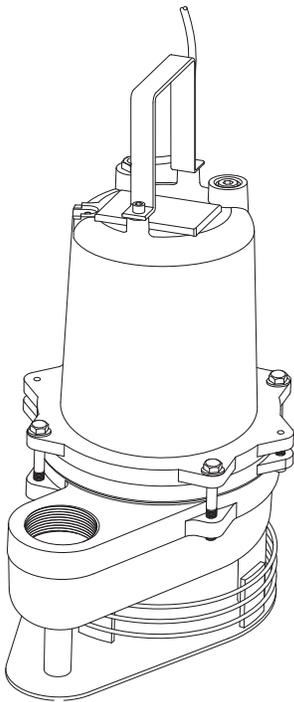
**PFS411VF
vertical level control
with piggy-back plug**



**PFS411A with
automatic float**



Specifications - High Temp



Series: PFS411HT

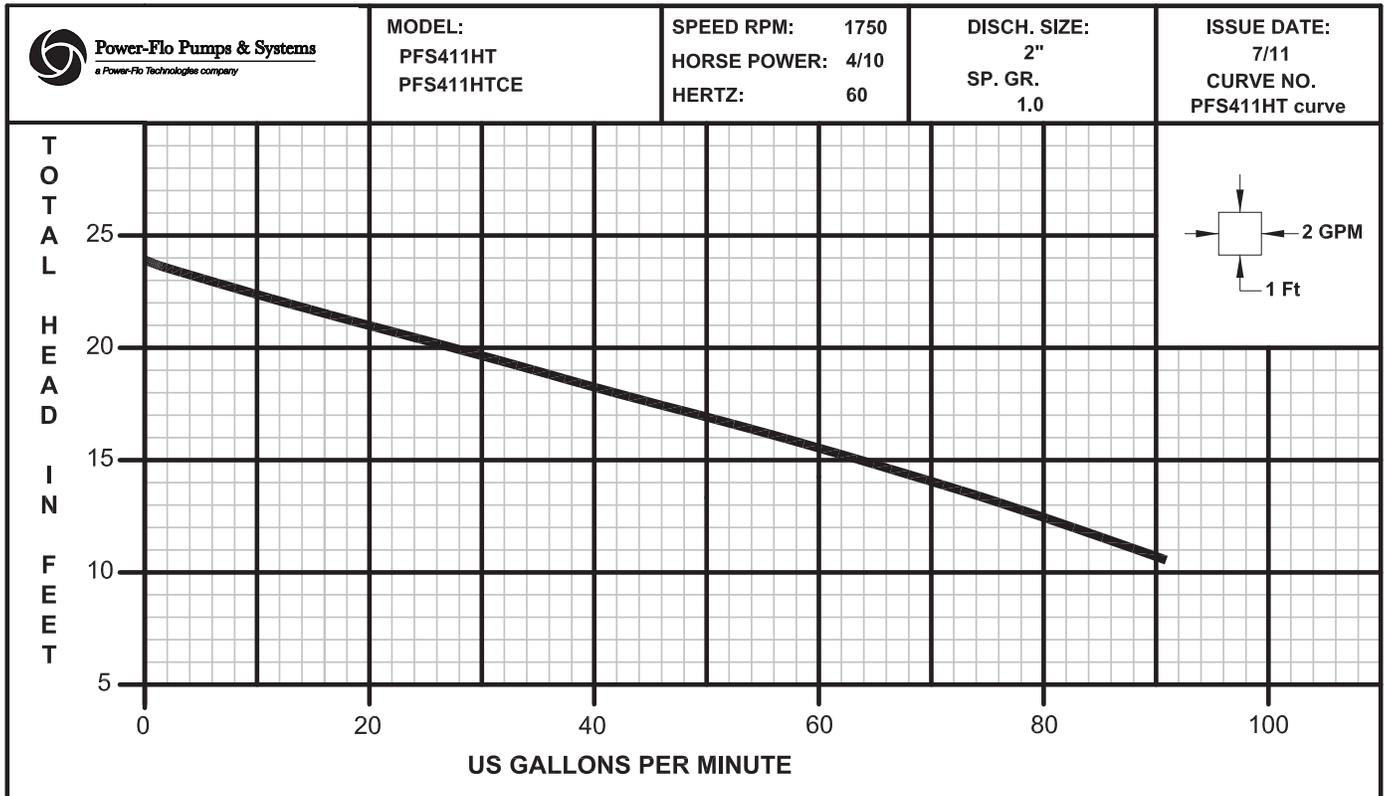
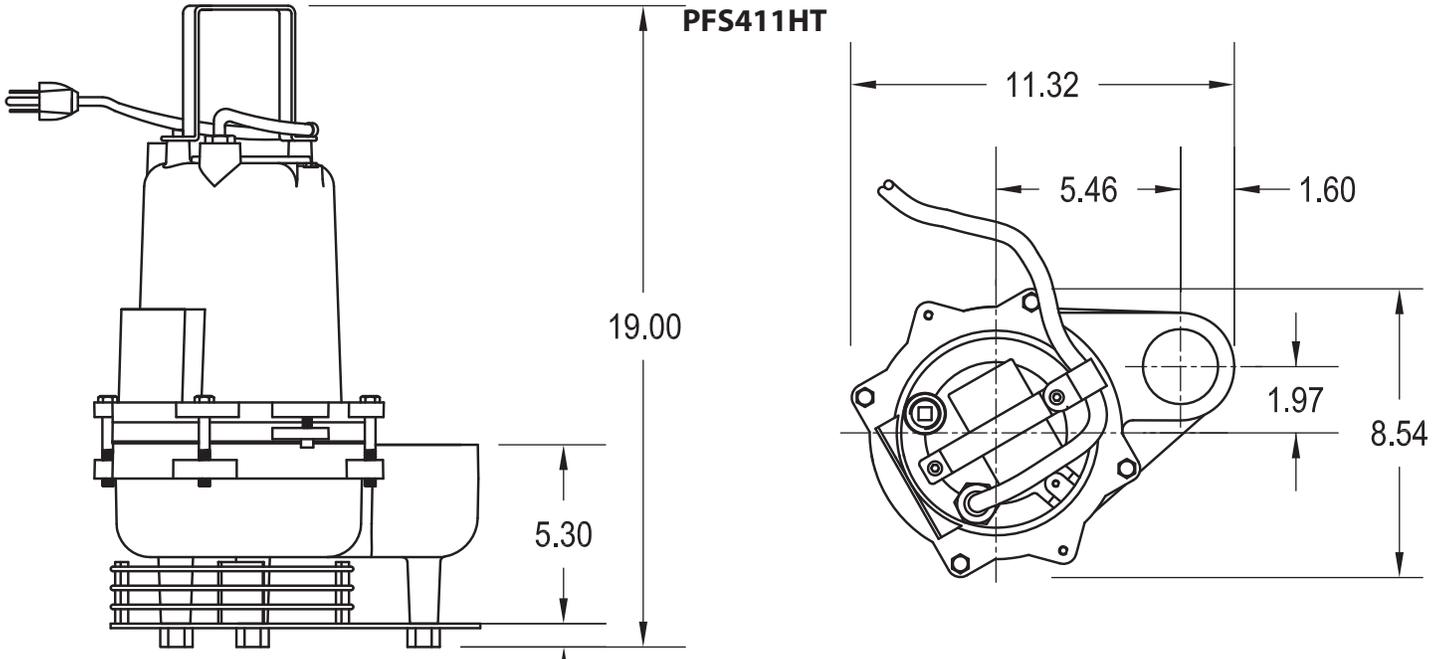
**4/10 HP • 1750 RPM • 60 Hz
High Temperature
Submersible Sewage Pump**

DISCHARGE	2" NPT, Female, Vertical
LIQUID TEMPERATURE	200°F (93°C) Continuous High Temperature
VOLUTE	Cast Iron, Class 30
MOTOR HOUSING	Cast Iron, Class 30
IMPELLER	2 Vane, open with pump out vanes on back side Material: Cast Iron, Class 30
SHAFT	Stainless Steel
SEAL PLATE	Cast Iron, Class 30
SQUARE RINGS	Buna-N
HARDWARE	Stainless Steel
PAINT	Powder Coated - Industrial Grade
SEAL	Inboard Single Mechanical, Oil Filled , Material: Type 21, Silicon Carbide/Buna-N Secondary Exclusion Seal
POWER CORD	15 Ft. Cord, Plug on 115 Volt, Pressure Grommet for Sealing and Strain Relief
MOTOR	Oil Filled, Squirrel Cage Induction Class H Insulation, Vacuum Pressure Impregnated (VPI)
SINGLE PHASE	Permanent Split Capacitor (PSC), Includes Overload Protection in Motor: 115v, 50A, Trip Off Temp. 293°F (145°C), closing Temp. 226°F (108°C).
UPPER BEARING	Single Row, Ball, Oil Lubricated
LOWER BEARING	Single Row, Ball, Oil Lubricated
SLUDGE STRAINER	HT: Bar Strainer

MODEL	HP	Hz	Volts/ Ph	RPM	Full Load Amps	Locked Rotor Amps	NEMA Start Code	Winding Resistance MAIN -- START	Cord Type	Cord Size	Cord O.D.
PFS411HT	4/10	60	115/1	1750	10.0	24.5	N	1.6 -- 18.5	SOOW	14/3	0.335

-20 = 20 foot cord, -30 = 30 foot cord, -50 = 50 foot cord

Dimensions & Performance - High Temp



Receiving & Installation

Receiving Inspection

Upon receiving the pump, it should be inspected for damage or shortages. If damage has occurred, file a claim immediately with the company that delivered the pump. If the manual is removed from the packaging, do not lose or misplace.

Storage

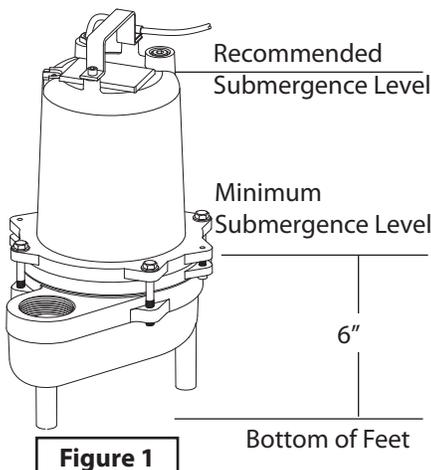
Any product that is stored for a period longer than six (6) months from the date of purchase should be bench tested prior to installation. A bench test consists of, checking the impeller to assure it is free turning and a run test to assure the motor (and switch if provided) operate properly. Do not pump out of liquid.

Controls

Manual models require a separate approved pump control device or panel for automatic operation. Be sure the electrical specification of the control selected properly match the electrical specifications of the pump.

Submergence

The pump should always be operated in the submerged condition. The minimum sump liquid level should never be less than above the pump's volute (See Figure 1).



Liquid Level Controls

Typical Discharge Pipe Mounted:

Refer to Figure 2 below which shows a typical installation of a 1 phase 115 volt pump using a level control mounted to the discharge piping with a piggy-back plug. The level control should have adequate clearance so it cannot hang up in it's swing and that the pump is completely submerged when the level control is in the "Off" mode. By adjusting the cord tether the control level can be changed.

Typical Installation with Wide Angle Level Control

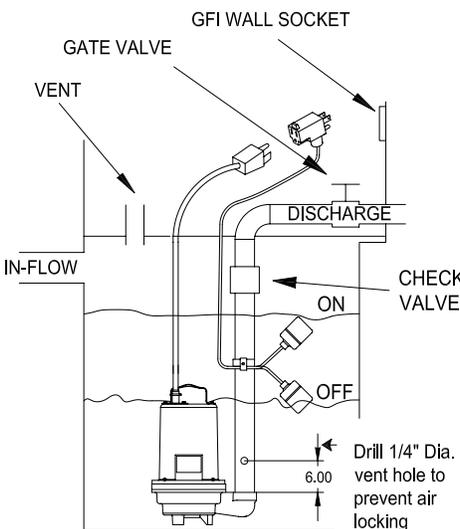


Figure 2

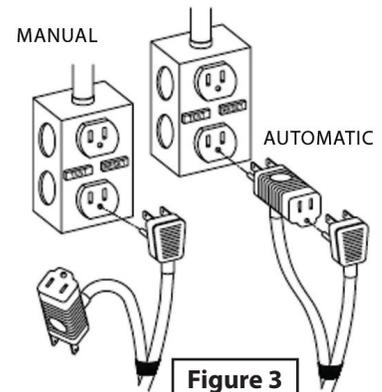


Figure 3

Automatic: Plug float cord into GFI outlet, then plug pump cord into float cord.
Manual: Plug pump cord directly into GFI outlet.

Level Control Basic Instructions:

Plug the level control plug into the GFI receptacle, then plug the pump into the piggy-back plug (See Figure 3). One cycle of operation should be observed, so that any potential problems can be corrected.

It is recommended that the level control float should be set to insure that the liquid in the sump never drops below the top of the motor housing or a minimum level of 6 inches above the basin floor.

Installation

These pumps are recommended for use in a sump or basin. The sump or basin shall be sealed and vented in accordance with local plumbing codes. **This pump is designed to pump effluent or wastewater, nonexplosive and noncorrosive liquids and shall NOT be installed in locations classified as hazardous in accordance with the National Electrical Code (NEC) ANSI/NFPA 70 or Canadian Electric Code (CEC).** The pump should never be installed in a trench, ditch, or hole with a dirt bottom. The legs will sink into the dirt and the suction will become plugged.

Installation & Service

The installation should be at a sufficient depth to ensure that all plumbing is below the frost line. If this is not feasible, remove the check valve and size the basin to accommodate the additional backflow volume.

Discharge Piping

Discharge piping should be as short as possible and sized no smaller than the pump discharge. **Do not reduce the discharge pipe size below that which is provided on the pump.** Both a check valve and a shut-off valve are recommended for each pump. The check valve is used to prevent backflow into the sump. The shut-off valve is used to manually stop system flow during pump servicing.

Electrical Connections

Power cable:

The power cable mounted to the pump must not be modified in any way except for shortening to a specific application. Any splice between the pump and the control panel must be made in accordance with the electric codes. It is recommended that a junction box, if used, be mounted outside the sump or be of at a minimum Nema 4 construction if located within the wet well. **DO NOT USE THE POWER CABLE TO LIFT PUMP.**

Always rely upon a Certified Electrician for installation.

Overload Protection:

Single Phase - The stator in-winding overload protector used is referred to as an inherent overheating protector and operates on the combined effect of temperature and current.

This means that the overload protector will trip out and shut the pump off if the windings become too hot, or the load current passing through them becomes too high.

IMPORTANT! - The overload will then automatically reset and start the pump up after the motor cools to a safe temperature. In the event of an overload, the source of this condition should be determined and corrected immediately.



WARNING! - DO NOT LET THE PUMP CYCLE OR RUN IF AN OVERLOAD CONDITION OCCURS!

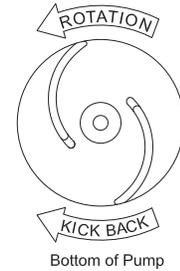
If current through the temperature sensor exceeds the values listed, an intermediate control circuit relay must be used to reduce the current or the sensor will not work properly.

Wire Size:

If longer power cable is required consult a qualified electrician for proper wire size.

Pre-Operation

1. **Check Voltage and Phase**
Compare the voltage and phase information stamped on the pump name plate.
2. **Check Pump Rotation** - Improper motor rotation can result in poor pump performance and can damage the motor and/or pump. Incorrect rotation for Single-Phase pumps is unlikely. Impeller rotation is counter-clockwise as viewed from bottom of pump.



3. **Name Plate** - Record the information from the pump name plate to drawing in front of manual for future reference.
4. **Insulation Test** - An insulation (megger) test should be performed on the motor. Before the pump is put into service. The resistance values (ohms) as well as the voltage (volts) and current (amps) should be recorded.
5. **Pump-Down Test** - Be sure pump has been properly wired, lowered into the basin, sump or lift station, check the system by filling with liquid and allowing the pump to operate through its pumping cycle. The time needed to empty the system, or pump-down time along with the volume of water, should be recorded.

Maintenance

No lubrication or maintenance is required. Perform the following checks when pump is removed from operation or when pump performance deteriorates:

- a). Inspect motor chamber for oil level and contamination.
- b). Inspect impeller and body for excessive build-up or clogging.
- c). Inspect motor and bearings.
- d). Inspect seal for wear or leakage.



Servicing

NOTE: Item numbers in () refer to Figures 5 thru 7.

Cooling Oil - Anytime the pump is removed from operation, the cooling oil in the motor housing should be checked visually for oil level and contamination. To check oil, set unit upright. Remove pipe plug from housing. With a flashlight, visually inspect the oil in the housing to make sure it is clean and clear, light amber in color and free from suspended particles. Milky white oil indicates the presence of water. Oil level should be just above the motor when pump is in vertical position.

Oil Testing

- Drain oil into a clean, dry container by placing pump on it's side, remove pipe plug, from housing.
- Check oil for contamination using an oil tester with a range to 30 Kilovolts breakdown.
- If oil is found to be clean and uncontaminated (measuring above 15 KV. breakdown), refill the housing.
- If oil is found to be dirty or contaminated (or measures below 15 KV. breakdown), the pump must be carefully inspected for leaks at the shaft seal, cable assembly, square ring and pipe plug, before refilling with oil. To locate the leak, perform a pressure test.

After leak is repaired, dispose of old oil properly, and refill with new oil.

Pressure Test (If oil has been drained)

Remove pipe plug from housing. Apply pipe sealant to pressure gauge assembly and tighten into hole. Pressurize motor housing to 10 P.S.I. Use soap solution around the sealed areas and inspect joints for "air bubbles".

If, after five minutes, the pressure is still holding constant, and no "bubbles" are observed, slowly bleed the pressure and remove the gauge assembly. Replace oil. Leak must be located and repaired if pressure does not hold.

Pressure Test (If oil has NOT been drained) - Oil should be at normal level. Remove pipe plug from housing. Apply pipe sealant to pressure gauge assembly and tighten into hole. Pressurize motor housing to 10 P.S.I. Use soap solution around the sealed areas above the oil level and inspect joints for "air bubbles". For sealed areas below oil level, leaks will seep oil. If, after five minutes, the pressure is still holding constant, and no "bubbles" /oil seepage is observed, slowly bleed the pressure and remove the gauge assembly. Replace oil. Leak must be located and repaired if pressure does not hold.

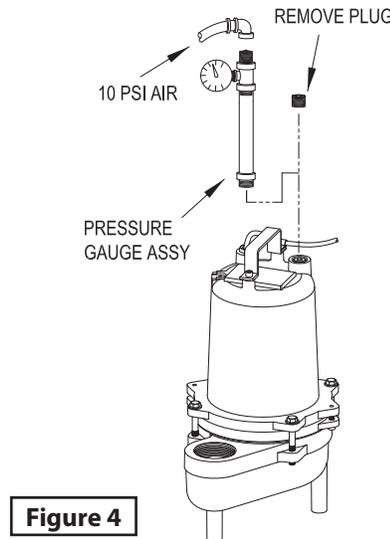


Figure 4



Pressure builds up extremely fast, increase pressure by "TAPPING" air nozzle. Too much pressure will damage seal. **DO NOT exceed 10 P.S.I.**

Oil Replacement - Set unit upright and refill with new cooling oil as per table below. Fill to just above motor, but below capacitor as an air space must remain in the top of the housing to compensate for oil expansion. Apply pipe thread compound to threads of pipe plug then assemble to housing.



DO NOT overfill oil. Overfilling of housing with oil can create excessive and dangerous hydraulic pressure which can destroy the pump and create a hazard. Overfilling oil voids warranty.

Cooling Oil - 40.6 oz Recommended Supplier/Grade	
BP	Enerpar SE100
Conoco	Pale Paraffin 22
Mobile	D.T.E. Oil Light
Shell Canada	Transformer-10
Texaco	Diala-Oil-AX

Disassembly

Impeller, V-ring and Volute:

1. Disconnect power.
2. Remove cap screws (42) and remove strainer (39) on HT model. (See Fig 7)
3. Remove cap screw (34) and washers (35) vertically lift motor, housing and seal plate assembly from volute (1). Clean out volute (1) if necessary.
4. Inspect gasket (2) and replace if cut or damaged.
5. Clean and examine impeller (38), for cracks or breakage and replace if required. To remove impeller (38), place a flat screwdriver in the slot of the end of the shaft to hold the shaft stationary while unscrewing the impeller (38).
6. Check v-ring (36) and remove if damaged.



Service

Power Cord & Motor:

7. Remove pipe plug (16) and drain oil from housing.

8. Remove gland nut (19A) from housing (32). Pull cable assembly (19) through and disconnect the wires from the terminals.

9. Remove screws (4) and lift motor housing (32) and rotor/stator from seal plate (15).

10. Remove o-ring (3), replace if damaged,

11. Check motor capacitor (11) with an Ohm meter by first grounding the capacitor by placing a screwdriver across both terminals and then removing screwdriver. Connect Ohm meter (set on high scale) to terminals. If needle moves to infinity (∞) then drifts back, the capacitor is good. If needle does not move or moves to infinity (∞) and does not drift back, replace capacitor (11).

12. Inspect motor winding for shorts and check resistance values. Check rotor for wear. If rotor or the stator windings are defective, the complete motor (7) must be replaced. (Note: Stator is pressed into the housing).

Shaft Seal:

13. Remove snap ring (6) from seal plate (15). Remove shaft and rotor from seal plate (15).

14. Remove seal's (33) rotating member, spring and retaining ring from seal plate. Examine all seal parts, if seal faces show signs of wear, uneven wear pattern, chips or scratches replace entire seal.

DO NOT interchange seal components, replace the entire shaft seal (33).

If replacing seal, remove stationary by prying out with flat screwdriver.

Bearings:

15. Examine lower bearing (5), and upper bearing (27), if replacement is required, remove by using a wheel puller.

Reassembly

Bearings:

1. Press bearings (5) and (27) onto shaft.



IMPORTANT! - All parts must be clean before reassembly. Handle seal parts with extreme care. DO NOT damage lapped surfaces.

Shaft Seal:

2. Clean seal cavity in seal plate (15) and oil. Press seal's (33) stationary member firmly into seal plate (15), use a seal tool or pipe. Nothing should come in contact with the seal face except the seal tool. Be sure the stationary is in straight.

3. Place seal's retaining ring, spring onto shaft. Lightly oil (**Do not use grease**) shaft and inner surface of bellows.

4. With lapped surface of seal's rotating member facing outward, slide over shaft using a seal tool, being careful not to damage seal face. Make sure spring is seated in retaining ring and spring is lined up on rotating member and not cocked or resting on bellows tail.

Motor:

5. Slide rotor/shaft with bearings and seal parts (33) into seal plate (15) until bearing seats into seal plate. Install snap ring (6) into seal plate (15).

6. Place spring washer (28) onto bearing (27) and lower housing (32) and stringing motor leads through the cord entry bore, with motor stator onto seal plate (15).

7. Place screws (4) through seal plate (41) into housing (32) and **torque to 10 ft-lbs.**

Power Cord:

8. Check power cord (19) for cracks or damage and replace if required. Reconnect motor leads to the cord terminals.

9. Place power cord (19) with nylon housing, ring, washer and gland nut into housing (32) and tighten gland nut to **17.5 ft/lbs.**

Impeller, V-ring and Volute:

10. Position v-ring (36) into seal plate (15) until seated.

11. Clean the threads with thread locking compound cleaner. Apply removable Loctite® 242 or equivalent to shaft threads. Screw impeller (38) onto the shaft hand tight while using a screwdriver in the slot at the end of the shaft to hold it stationary. Rotate impeller to check for binding.

12. Position gasket (2) on volute flange and position impeller and motor housing assembly on volute (1).

13. Place lock washers (35) on cap screws (34) and screw into volute (1). **Torque to 25 ft/lbs.** Check for free rotation of impeller.

14. Refill with cooling oil, (40.6 oz).



For Repair Part Please supply: Model Number and MFG Date as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

Repair Parts

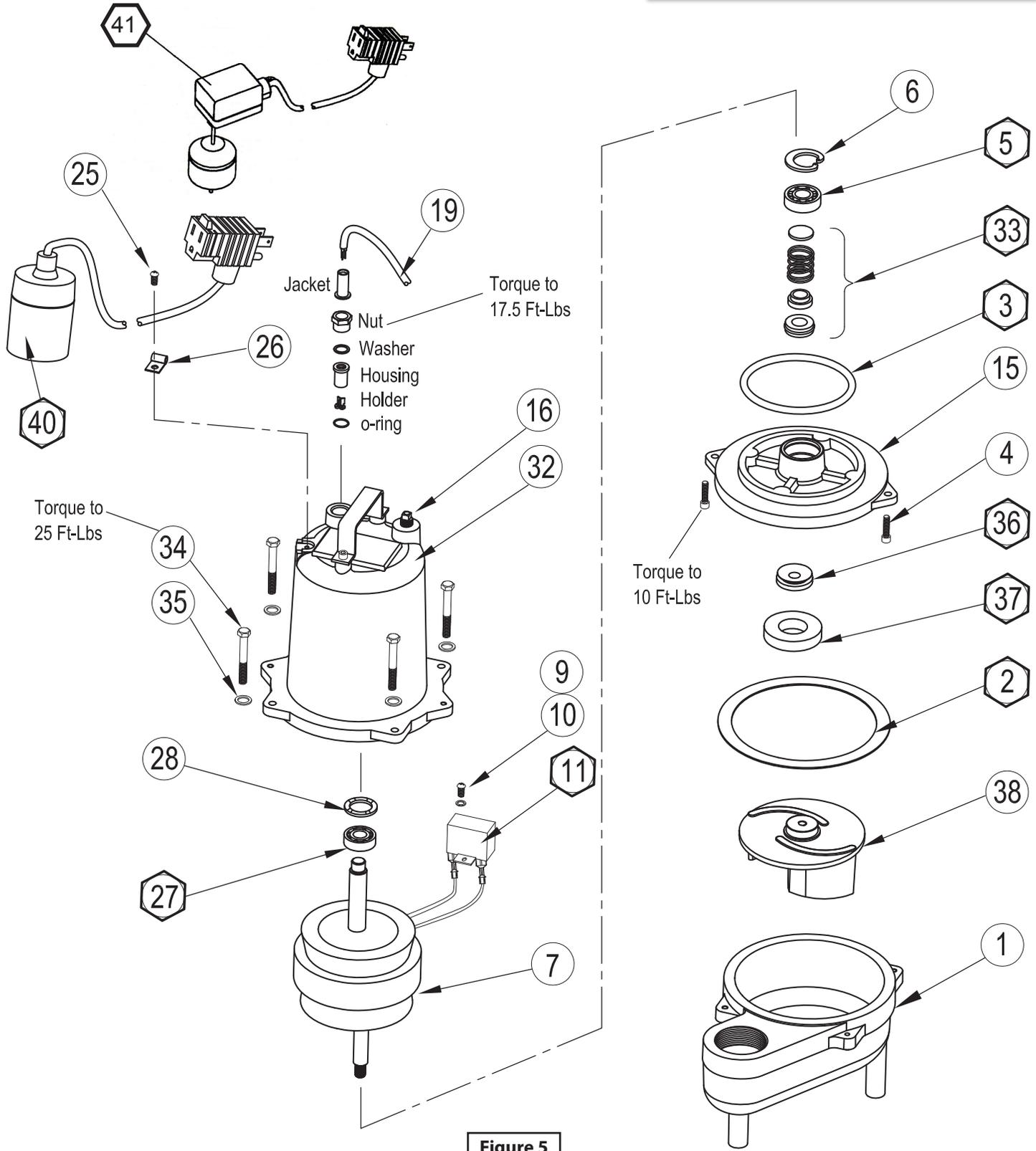


Figure 5

Repair Parts

For Repair Part Please supply: Model Number and MFG Date as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

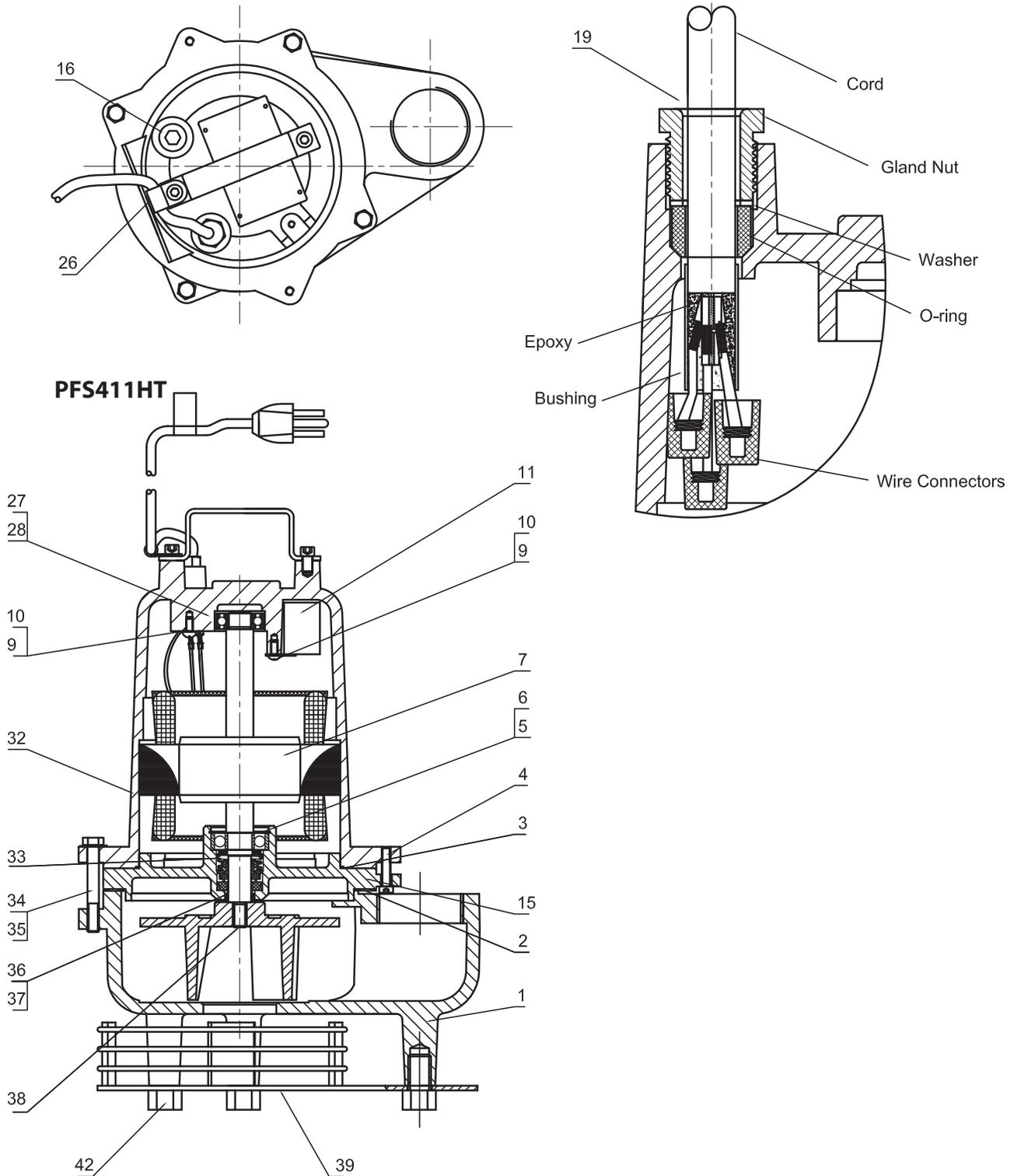


Figure 6



For Repair Part Please supply: Model Number and MFG Date as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

Parts List

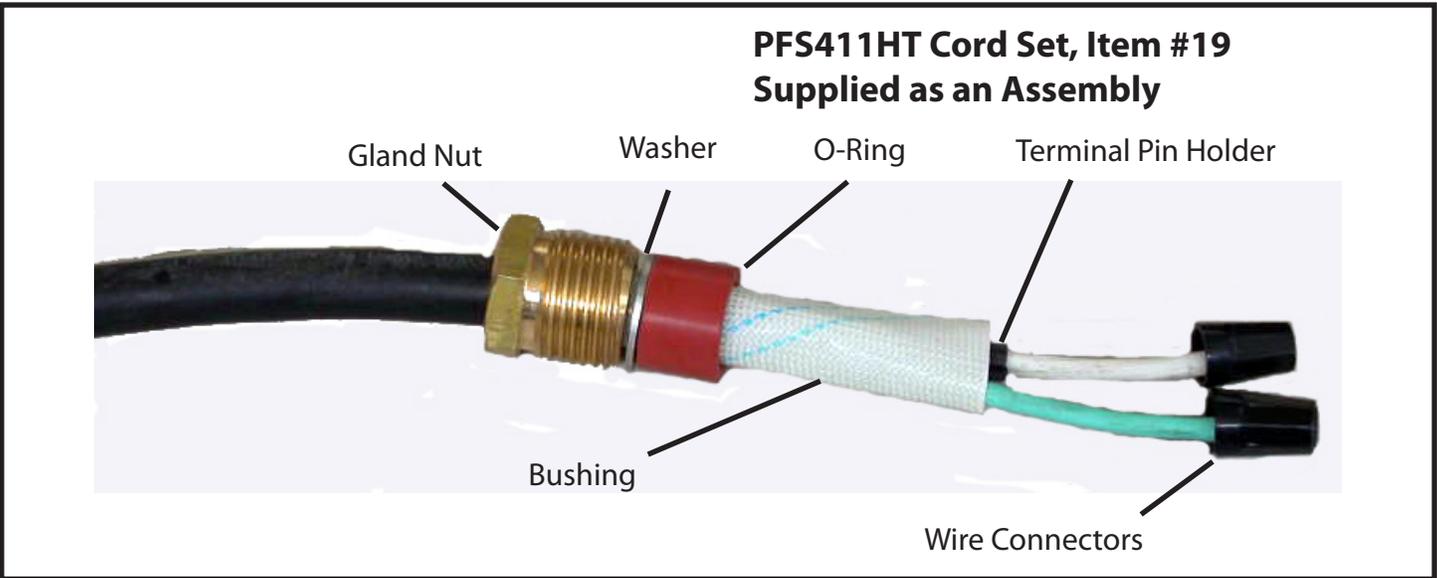


Figure 7

Repair Parts

For Repair Part Please supply: Model Number and MFG Date as shown on Name Plate, and Part Description and Part Number as shown on Parts List.

ITEM	QTY		DESCRIPTION	PFS411 PART No.	PFS421 PART No.	PFS411HT PART No.
1	1		Volute	PF089120	PF089120	---
2	1	◆	Gasket	PF068984	PF068984	PF068984A
3	1	◆	Square ring	PF019289	PF019289	PF019289A
4	2		Screw, Stainless	---	---	---
5	1	◆	Bearing, 6203 - Lower	PF17414	PF17414	PF17414
6	1		Snap Ring	---	---	---
7	1		Rotor/stator	---	---	---
9	1		Screw	---	---	---
10	1		Lockwasher	---	---	---
11	1	◆	Capacitor, 20mfd/250V	PF035864	PF035864	PF035864
15	1		Seal Plate	---	---	---
16	1		Pipe Plug	---	---	---
19	1	☆	Power Cord Assy. 15 Ft.	PF099260	PF099261	PF100502
			Power Cord Assy, 20Ft	PF099260-20	PF099261-20	PF100502-20
			Power Cord Assy, 30Ft	PF099260-30	PF099261-30	PF100502-30
			Power Cord Assy, 50Ft	PF099260-50	PF099261-50	PF100502-50
25	1		Screw	---	---	---
26	1		Cord Clamp	---	---	---
27	1	◆	Bearing, 6202 - Upper	PF17415	PF17415	PF17415
28	1		Spring Washer	---	---	---
32	1		Motor Housing	PF93065	PF93065	PF93065
33	1	◆	Mechanical Seal, .625", Type "C"	PF068988	PF068988	PF068988SK
34	4		Screw	---	---	---
35	4		Washer	---	---	---
36	1	◆	V-ring	PF068053	PF068053	PF068053A
37	1	◆	Spacer Seal	PF63PFS4103	PF63PFS4103	PF63PFS4103
38	1	☆	Impeller	PF112561	PF112561	PF089369TG
39	1	☆	Strainer - HT	---	---	5000005
40	1	☆	Mechanical Float 15 Ft.	PF101758	---	---
			Mech. Float, 20Ft cord	PF101758-XA		
41	1	☆	Vertical Float 15 Ft.	PF100829	---	---
			Vert. Float, 20Ft cord	PF100829-20		
42	3		Cap screws - HT	---	---	Cap Screws
OVERHAUL KIT						
◆	Kit includes: gasket (2), square ring (3), bearing (5), capacitor (11), bearing (27), seal (33), spacer seal (37)			PFS411-21-OHK	PFS411HT-OHK	

◆ = Overhaul Kit
☆ = Supplied as individual items

Trouble Shooting Chart



Risk of electric shock. Always disconnect the pump from the power source before handling inspections or repairs.

Symptom	Possible Cause(s)	Corrective Action
Pump will not run	Blown fuse or other interruption of power; improper voltage. Switch is unable to move to the "turn ON" position due to interference with the side of basin or other obstruction Insufficient liquid level Defective level control	Check that the unit is securely plugged in. Have an electrician check all wiring for proper connections and adequate voltage and capacity. Position the pump or switch so that it has adequate clearance for free operation. Make sure the liquid level is allowed to rise enough to activate level control(s). Remove and replace level controls
Pump will not turn off	Discharge is blocked or restricted Check valve is stuck closed or installed backwards Gate or ball valve is closed Total lift is beyond pump's capability Pump impeller is jammed or volute casing is plugged	Check the discharge line for foreign material, including ice if discharge line passes through or into cold areas Remove check valve(s) and examine for freedom of operation and proper installation Open gate or ball valve Try to route piping to a lower level. If not possible, a larger pump may be required. Consult the factory Disconnect unit electrically. Remove the pump from the basin. Detach the pump base and clean the area around the impeller. Rotate impeller by hand. Reassemble and reinstall
Pump will not turn off	Level control(s) unable to move to the "turn OFF" position due to interference with the side of basin or other obstacle Defective level control	Position the pump or level control so that it has adequate clearance for free operation Remove and replace level control
Pump runs periodically when fixtures are not in use	Check valve is stuck open or is leaking Fixtures are leaking	Remove check valve(s) and examine for freedom of operation and proper installation Repair fixtures as required to eliminate leakage
Pump operates noisily	Debris in the impeller cavity Damaged impeller Worn bearings Piping attachments to building are too rigid	Remove the pump from the basin. Detach the pump base and clean the area around the impeller. Reassemble and reinstall Consult the factory for information regarding replacement of impeller Return pump to the factory or authorized repair station for repair Replace a portion of the discharge line with rubber hose or connector

NOTE: Power-Flo Pumps & Systems assumes no responsibility for damage or injury due to disassembly in the field. Disassembly of the pumps or supplied accessories other than at Power-Flo Pumps & Systems or its authorized service centers, automatically voids warranty.



2 YEAR WARRANTY

Manufacturer warrants, to the purchaser and subsequent owner during the warranty period, new pump product to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of 2 years from date of sale. The date of sale shall be determined by a dated sales receipt noting the model and serial number of the pump. The dated sales receipt must accompany the returned pump if the date of the return is more than 2 years from the date of manufacturer. Product will be repaired, replaced or remanufactured at Manufacturer's option. No allowance will be made for shipping charges, damages, labor or other charges that may occur due to product failure, repair or replacement. This warranty does not apply to and there shall be no warranty for any material or product that has been disassembled without prior approval of Manufacturer, subjected to misuse, misapplication, neglect, alteration, accident or act of God; that has not been installed, operated or maintained in accordance with Manufacturer's installation instructions; that has been exposed to outside substances including but not limited to the following: sand, gravel, cement, mud, tar, hydrocarbons, hydrocarbon derivatives (oil, gasoline, solvents, etc.), or other abrasive or corrosive substances, wash towels or feminine sanitary products, etc. in all pumping applications. The warranty set out in the paragraph above is in lieu of all other warranties expressed or implied; and we do not authorize any representative or other person to assume for us any other liability in connection with our products.

Contact Manufacturer at: 1-877-24PUMPS or www.powerflopumps.com, Attention: Customer Service Department, to obtain any needed repair or replacement of part(s) or additional information pertaining to our warranty. MANUFACTURER EXPRESSLY DISCLAIMS LIABILITY FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES OR BREACH OF EXPRESSED OR IMPLIED WARRANTY; AND ANY IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE AND OF MERCHANTABILITY SHALL BE LIMITED TO THE DURATION OF THE EXPRESSED WARRANTY.

Some states do not allow limitations on the duration of an implied warranty, so the above limitation may not apply to you. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

NOTE: 2 Year warranty does NOT include the PFS411HT. It has a 1 Year Limited Warranty.

