



Power-Flo Technologies

Power-Flo Pumps and Systems

PFCGP



3, 5, & 7.5 HP • 3450 RPM • 60 Hz
Submersible Grinder Pump

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 a 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.

▲ DANGER 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 Bronze/brass fitted pumps may contain levels higher than considered safe for potable water systems. Government agencies have determined that leaded copper alloys should not be used in potable water applications.

▲ 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.

▲ 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 Do not use these pumps in water over 104°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 DO NOT introduced into any sewer, either directly, or through a kitchen waste disposal unit or toilet: Seafood Shells, Aquarium Gravel, Cat Litter, Plastic Objects (toys, utensils, etc.), Sanitary Napkins or Tampons, Diapers, Rags, Disposable Wipes or Cloth, Medications, Flammable Material, Oil or Grease, Strong Chemicals, Gasoline.

▲ 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:

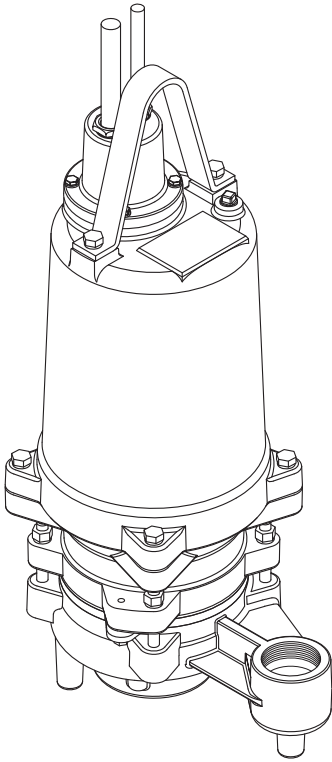
1 Phase Models	
Amps:	Volts:
3 Phase Models	
Amps L1-2:	Volts L1-2:
Amps L2-3:	Volts L2-3:
Amps L3-1:	Volts L3-1:

Model Number: _____

MFG Date: _____

PHASE: _____ HP: _____

® 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. 5/08, 6/09, 9/09, 5/10, 11/10, 1/12, 5/12, 8/12, 11/12, 2/13, 5/13, 8/17, 9/2020, 1/2021



DISCHARGE	2" NPT Vertical, Bolt-on Flange
LIQUID TEMPERATURE	104°F (40°C) Intermittent
VOLUTE	Cast Iron, Class 30
MOTOR HOUSING	Cast Iron, Class 30
SEAL PLATE	Cast Iron, Class 30
IMPELLER	Cast Iron, Class 30
SHREDDING RING	Stainless Steel
CUTTER	Stainless Steel
SHAFT	Stainless Steel
SQUARE RINGS	Buna-N
HARDWARE	Stainless Steel
PAINT	Air dry enamel
SEAL	Tandem Double Mechanical, Oil Filled Reservoir, Upper -Carbon/Ceramic/Buna-N, Lower - Silicon Carbide/Silicon Carbide/Viton Stainless Hardware
UPPER BEARING	Single row, Ball, Oil Lubricated
INTERMEDIATE BEARING	Single row, Ball, Oil Lubricated
LOWER BEARING	Sleeve, Oil Lubricated
POWER CORD	26 ft. Cord. Pressure grommet for Sealing and Strain Relief.
MOTOR	Oil Filled, Squirrel Cage Induction, Class F Insulation
SINGLE PHASE	Capacitor Start/Capacitor Run. Requires overload protection in the control panel, Requires starter or control panel which includes capacitors.
THREE PHASE	Dual Voltage 230/460. Requires overload protection in control panel
MOISTURE SENSOR	Normally Open (NO). Requires relay in control panel
TEMPERATURE SENSOR	Normally Closed (NC). Requires relay in control panel

**Series: PFCGP3032,
PFCGP3042, PFCGP5032,
PFCGP5042, PFCGP7532,
PFCGP7542**

**3, 5, & 7.5 HP•3450RPM•60Hz
Submersible Grinder Pump**

Description

Designed to reduce domestic, commercial, institutional and light industrial sewage to a finely ground slurry.

Specifications

MODEL	HP	Hz	Volts/Ph	RPM	Full Load Amps	Locked Rotor Amps	NEMA Start Code	Cord Type	Cord Size	Cord O.D.
PFCGP3062	3	60	208/3	3450	17	65	J	SOW	10/4	.75
PFCGP3032	3	60	230/3	3450	14.5	62	K	SOW	10/4	.75
PFCGP3042	3	60	460/3	3450	7.2	31	K	SOW	10/4	.75
PFCGP5062	5	60	208/3	3450	25	122	K	SOW	10/4	.75
PFCGP5032	5	60	240/3	3450	21.9	120	L	SOW	10/4	.75
PFCGP5042	5	60	460/3	3450	11	60	L	SOW	10/4	.75
PFCGP7532	7.5	60	230/3	3450	22.3	136	J	SOW	10/4	.75
PFCGP7542	7.5	60	460/3	3450	11.2	68	J	SOW	10/4	.75

Moisture & Temperature sensor cable for all other models is 18/5 SOW. 0.47 inches O.D. See page 17 for Relay kits.

(*) IMPORTANT! - These pumps require a control panel with start, run capacitors and relay. Capacitor kits which include Start & Run capacitors and Start Relay, are available if a Power-Flo control panel is not used, see page 17.

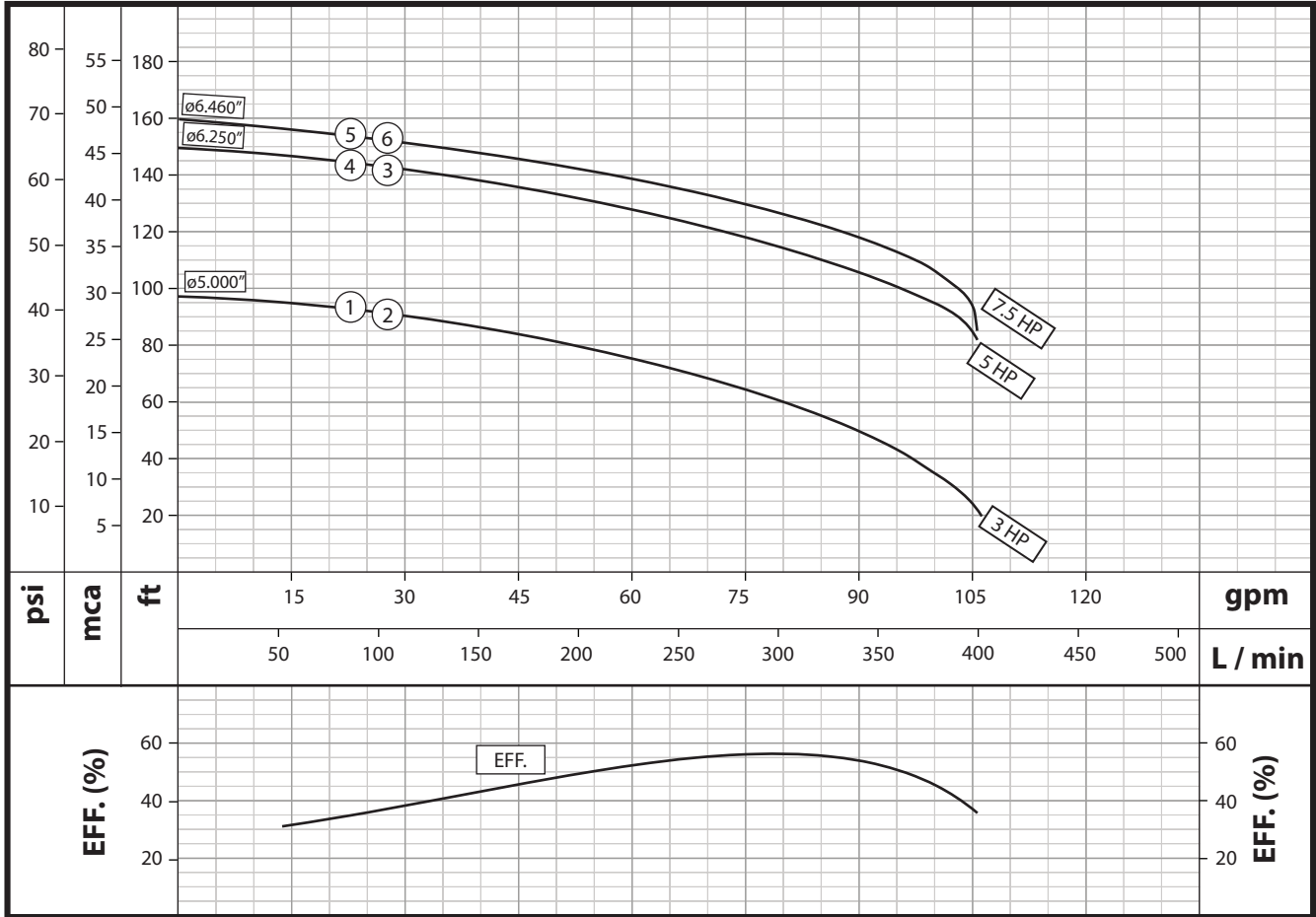
Recommended Breaker & Heater Sizes								
MODEL	HP	Hz	Volts/Ph	Breaker Size	Heater Size **	Voltage Relay	Start Capacitor	Run Capacitor
PFCGP3062	3	60	208/3	40 AMP	K-56	N/R	N/R	N/R
PFCGP3032	3	60	230/3	30 AMP	K-54	N/R	N/R	N/R
PFCGP3042	3	60	460/3	15 AMP	K-41	N/R	N/R	N/R
PFCGP5062	5	60	208/3	50 AMP	K-63	N/R	N/R	N/R
PFCGP5032	5	60	240/3	50 AMP	K-62	N/R	N/R	N/R
PFCGP5042	5	60	480/3	20 AMP	K-50	N/R	N/R	N/R
PFCGP7532	7.5	60	230/3	50 AMP	K-67	N/R	N/R	N/R
PFCGP7542	7.5	60	460/3	30 AMP	K-54	N/R	N/R	N/R

N/R = Not Required

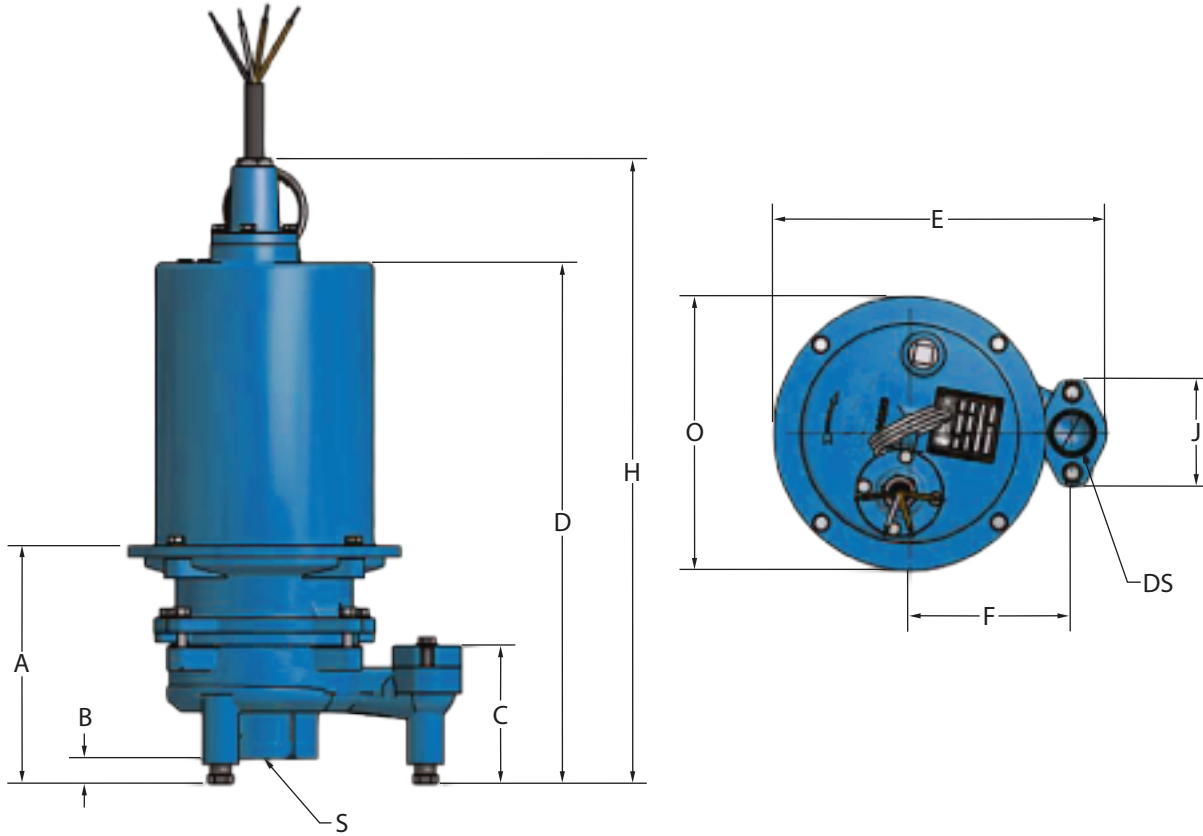
Winding resistance \pm 5% at terminal block. Rated operation at \pm 10% voltage at motor.

(**) Recommended heater sizes may vary depending on pump station requirements.

Performance



Dimensions



Model	A	B	C	D	E	F	H	J	O	Dis
PFCGP	12 1/4	2 5/8	6 7/8	23 5/8	13 7/8	7 1/2	30 5/8	3 3/8	9 3/8	2

Receiving & Installation

Installation

There are several methods of installing grinder pumps. See contract plans and/or specification: A slide rail in a package system or concrete wet well is the most common, which allows the pump(s) to be installed or removed without requiring personnel to enter the wet well.

The sump or basin shall be sealed and vented in accordance with local plumbing codes. **This pump is designed to pump grinder 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.

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.

Liquid Level Controls

The level control(s) should be mounted on the discharge piping, a cable rack or float pole. 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. 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 10 inches above the basin floor.

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.

Thermal Protection:

The normally closed (N/C) over temperature sensor is embedded in the motor windings and will detect excessive heat in the event an overload condition occurs. The thermal sensor will trip when the windings become too hot and will automatically reset when the pump motor cools to a safe temperature. It is recommended that the thermal sensor be connected in series to an alarm device to alert that an overtemperature condition and/or motor starter coil to stop pump.

In the event of an overtemperature, the source of this condition should be determined and repaired immediately. Thermal protection shall not be used as a motor overload device. A separate motor overload device must be provided in accordance with NEC code.



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.

TEMPERATURE SENSOR ELECTRICAL RATINGS		
Volts	Continuous Amperes	Inrush Amperes
110-120	3.00	30.0
220-240	1.50	15.0
440-480	0.75	7.5
600	0.60	6.0

Moisture Sensor:

To detect any moisture present a normally open (N/O) probe is installed in the seal chamber. The probe should be connected in series to an alarm device or motor starter coil to alert the operator that moisture has been detected. Check the probe leads for continuity, (° resistance = no moisture). Also check the junction box and control panel for moisture content as this may induce a false signal. **IF MOISTURE DETECTION OCCURES, MAINTENANCE SHOULD BE DONE TO IDENTIFY AND REPAIR.**

Installation & Service

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 stamps 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. Check rotation on three phase units by momentarily applying power and observe the "kickback".

Kickback should always be in a counter-clockwise direction as viewed from motor end or opposite to impeller rotation. Incorrect rotation for Single-Phase pumps is unlikely. If the rotation is incorrect contact factory.

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 7 & 8.

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 (30) from housing (8). With a flashlight, visually inspect the oil in housing (8) 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 (30), from housing (8).
- 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 (30) from housing (8). 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. Leek 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 (30) from housing (8). 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. Leek must be located and repaired if pressure does not hold.

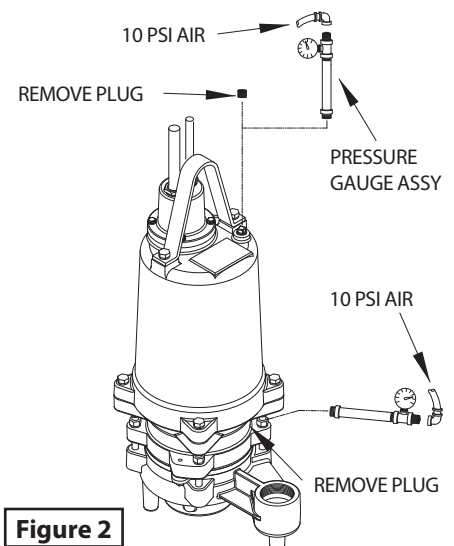


Figure 2

Service



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

Seal Chamber - Set pump on its side with fill plug (30) downward, remove plug (30) and drain all oil from seal chamber. Apply pipe sealant to pressure gauge assembly and tighten into hole in intermediate coupling (5). Pressurize seal chamber to 10 P.S.I. and check for leaks.

Oil Replacement:

Motor Housing - Drain all oil (if not already done so) from motor housing and dispose of properly per Local and Environmental Standards.

Set pump upright and refill with new cooling oil, see "Cooling Oil" chart. Fill to just above motor as an air space must remain in the top of the motor housing to compensate for oil expansion. Apply pipe thread compound to threads of pipe plug (30) then assemble to motor housing (8).

Seal Chamber - Drain all oil (if not already done so) from seal chamber and dispose of properly per Local and Environmental Standards. Place pump on its side with plug (30) upward, and refill with new oil, see "Cooling Oil" chart. Apply pipe thread compound to threads of pipe plug (30) and assemble to intermediate coupling (5).



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



WARNING! - Before any service work is done, disconnect and lock out electrical power to pump.

Disassembly

Cutter - Lay pump on its side and remove the cutter retaining screw (29) and washer (28). A small amount of heat may be needed to loosen screw. **DO NOT** overheat. Wedge a flat screwdriver between cutter and shredding ring and remove screw. With a hammer and punch, tap the cutter (27) counter-clockwise to remove.



CAUTION! - Cutter edges are very SHARP. Cutter must be removed before removing volute.

Volute - Remove hex nuts (25) and washers (9) from studs (26) and remove volute (23) and square ring (24) from pump.

Shredding Ring - To replace or reverse the shredding ring (20), remove allen screws (22) and lift throat (21) from volute (23) then press out using an arbor press. The shredding ring (20) can be pressed out and reversed when cutting edges dull.

Impeller- Remove impeller (18) by turning counter-clockwise while holding the motor shaft stationary with a screwdriver. NOTE: Seal spring is relaxed with impeller removed, some oil may seep from seal cavity. Do Not store dump without impeller in place.

Outer Seal - Handle seal parts with care. Remove seal (34) spring and rotating member from shaft. Examine all seal parts. Inspect contact faces for signs of uneven wear tracks on stationary, chips and scratches on either seal face. **DO NOT interchange seal components, replace the entire shaft seal (34).**

Seal Plate - Remove cap screws (35) and washers (38) from seal plate (19). Remove seal plate (19) and square ring (24) from intermediate coupling (5). With flat screwdriver, press out seal (34) stationary member. Inspect square ring (24) for cuts or abrasions.

Cable Assemblies - Remove Hex plugs (13B) and (14B), washers (13C) and (14C) and grommets (13D) and (14D) from conduit box (11).

Motor - Remove pipe plug (30) and drain oil if not already done so. Position pump upright using blocks or pvc pipe to avoid resting pump on the shaft. Remove cap screws (15) and lockwashers (16) from cable box assembly (11) and slide conduit box up the cords until motor lead wires are exposed. Disconnect connectors (17) from motor leads wires to remove cable assemblies (13) and (14). Remove ground screw (31). Remove and inspect o-ring (12).

Remove cap screws (10) and lockwashers (9) from motor housing (8). Vertically lift motor housing (8) from intermediate coupling (5) along with square ring (7), replace if cut or damaged. Remove motor bolts and carefully remove stator housing from rotor. Remove retaining ring (2) from intermediate (5) and pull rotor out with bearing (3) and rotating member of inner seal.

Service

Inspect motor winding for shorts and check resistance values. Check rotor for wear. If rotor or the stator windings are defective, the complete motor must be replaced.

Bearings & Inner Seal - Remove seal (4) rotating member and spring from rotor shaft. Press stationary from intermediate (5) with flat screwdriver. Examine all seal parts. Inspect contact faces for signs of uneven wear tracks on stationary, chips and scratches on either seal face. **DO NOT interchange seal components, replace the entire shaft seal (4).** Remove retaining rings (6) from shaft. Using a wheel puller or arbor press remove bearing (3) from shaft. Remove upper motor bearing from shaft with a bearing puller. (See Figure 3)

Check sleeve bearing (39) for excessive wear, if replacement is required the complete intermediate coupling (5) should be replaced.

Moisture Probes - Remove screws (37) and wire (33) from probes (36). Remove probes (36) from intermediate (5).



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

Reassembly

Moisture Probes - Apply thread compound to thread on probes (36) and install in intermediate (5). Connect wires (33) with screws (37).

Bearings - Be careful not to damage the rotor shaft when replacing bearings. Using an arbor press, hold the rotor and press the upper bearing on the rotor shaft, applying force to the inner race of the bearing only. Replace upper retaining ring onto rotor shaft. In the same manner replace lower bearing (3) onto rotor shaft. Place lower retaining rings (6) onto shaft.

Inner Seal - Clean and oil seal cavity in intermediate coupling (5). Lightly oil (Do not use grease) outer surface of stationary member. Press seal's (4) stationary member firmly into intermediate coupling (5), using 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. Place seal's (4) retaining ring and spring over shaft until seated on shaft shoulder. Slide a bullet tool over rotor shaft threads. Lightly oil (**Do not use grease**) shaft, bullet, and inner surface of bellows on rotating member, with finished end away from motor, slide rotating member over bullet and onto shaft until it engages spring. Make sure spring is seated in retaining ring and spring is lined up on rotating member and not cocked or resting on bellows tail. (See Figure 3)

Motor - Slide rotor/shaft with bearing (3) and seal parts (4) into intermediate coupling (5) until bearing seats into intermediate coupling. Install retaining ring (2) into intermediate coupling (5). Place motor stator over rotor, lining up motor bolts with holes in intermediate coupling (5). Place end bell on top of motor and insert motor bolts and torque to 17 in-lbs.

Wiring Connections - Set square ring (7) in groove on intermediate coupling (5). Pull wires through opening in top of motor housing (8) while lowering motor housing onto intermediate coupling (5). Insert capscrews (10) with lockwasher (9) through motor housing into intermediate and tighten. Place square ring (12) on motor housing (8). Place conduit box with cables next to motor housing and make wire connections (see Figure 4). Connect ground wire (42) with screw (31) to conduit box (11) if disconnected.

Check power cable (13) and control cable (14) for damage and replace complete conduit box and cable assembly if required.

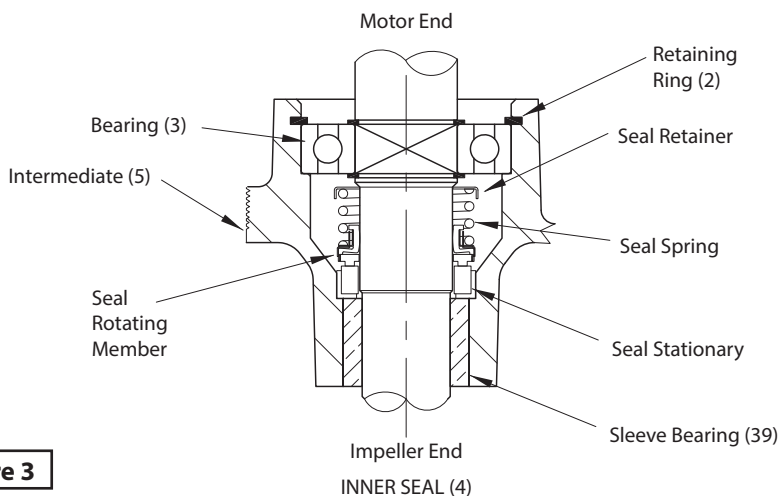
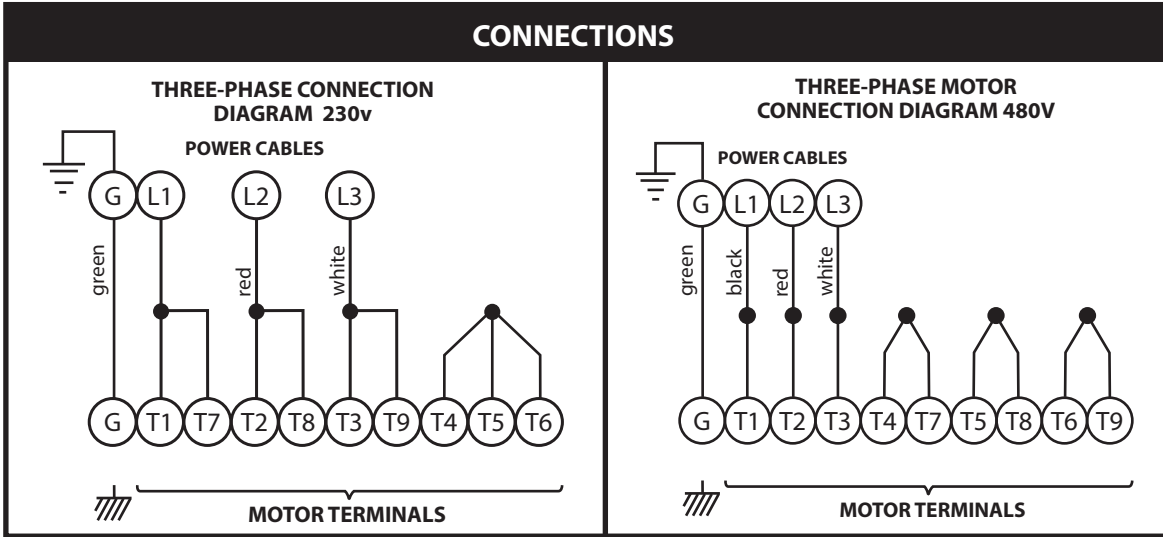
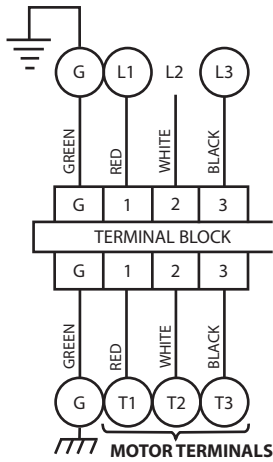


Figure 3

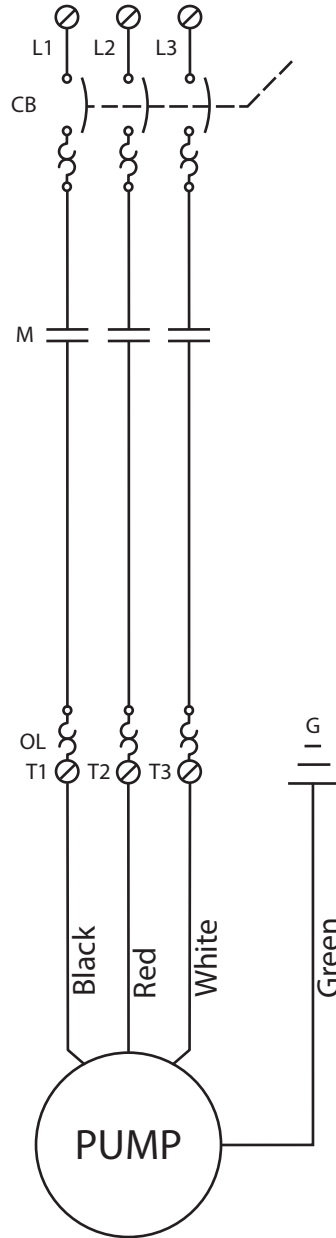
CONNECTIONS



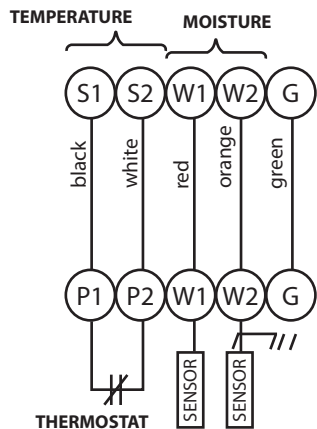
CONNECTION SINGLE-PHASE 200-240 V AC



PUMP CONNECTION 230/480V



MOISTURE AND TEMPERATURE SENSOR



Service

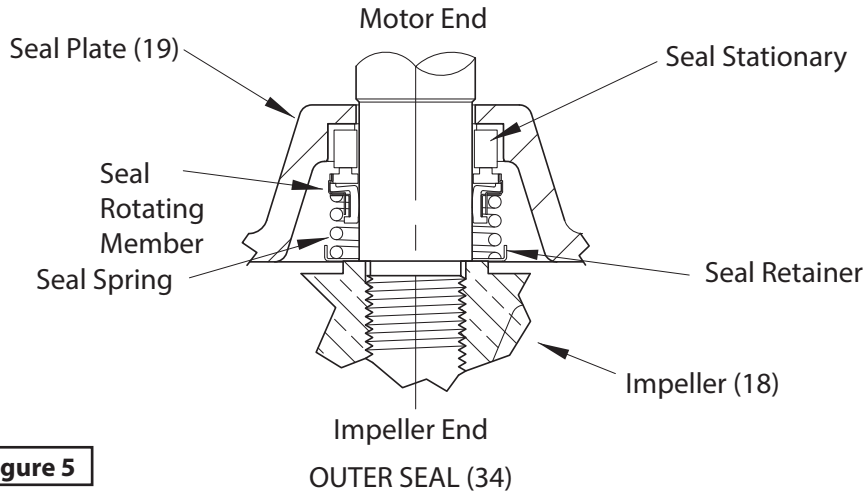


Figure 5

Place conduit box (11) on motor housing (8) and insert capscrews (15) with washers (16) into motor housing and torque to 16 ft/lbs.

Cable Assemblies - Power cable, Place one friction ring (13C), grommet (13D), one friction ring (13C) and hex plug (13B) into conduit box (11). Control Cable, Place one friction ring (14C), grommet (14D), one friction ring (14C) and hex plug (14B) into conduit box (11). Torque hex plugs to 15 ft. lbs. to prevent leakage. See Figures 7 & 8.

Seal Plate - Lubricate and set square ring (24) in bottom groove of seal plate (19). Place seal plate (19) over shaft and onto intermediate coupling (5), being sure square ring (24) is not twisted and in the groove. Place two capscrews (35) with lockwashers (38) into seal plate and torque to 6.5 ft/lbs.

Outer Seal - Clean and oil stationary seal cavity in seal plate (19). Slide seal guide tool over motor shaft. Lightly oil (Do not use grease) outer surface of seal's (34) stationary member.

Press stationary firmly into seal plate (19) using a seal pusher tool. Be sure the stationary member is in straight. Nothing but the seal tool is to come in contact with seal face. (See Figure 5)



IMPORTANT! Do not hammer on the seal pusher. It will damage the seal face.

With seal guide tool over motor shaft, Lightly oil (**Do not use grease**) guide shaft and inner surface of bellows on rotating seal.

With lapped surface of rotating member facing inward toward stationary, slide rotating member over guide and onto shaft, using seal pusher tool, until lapped faces of stationary and rotating seal are together. Place spring over shaft and rotating member. Be sure it is seated on the retainer and not cocked or resting on bellows tail.

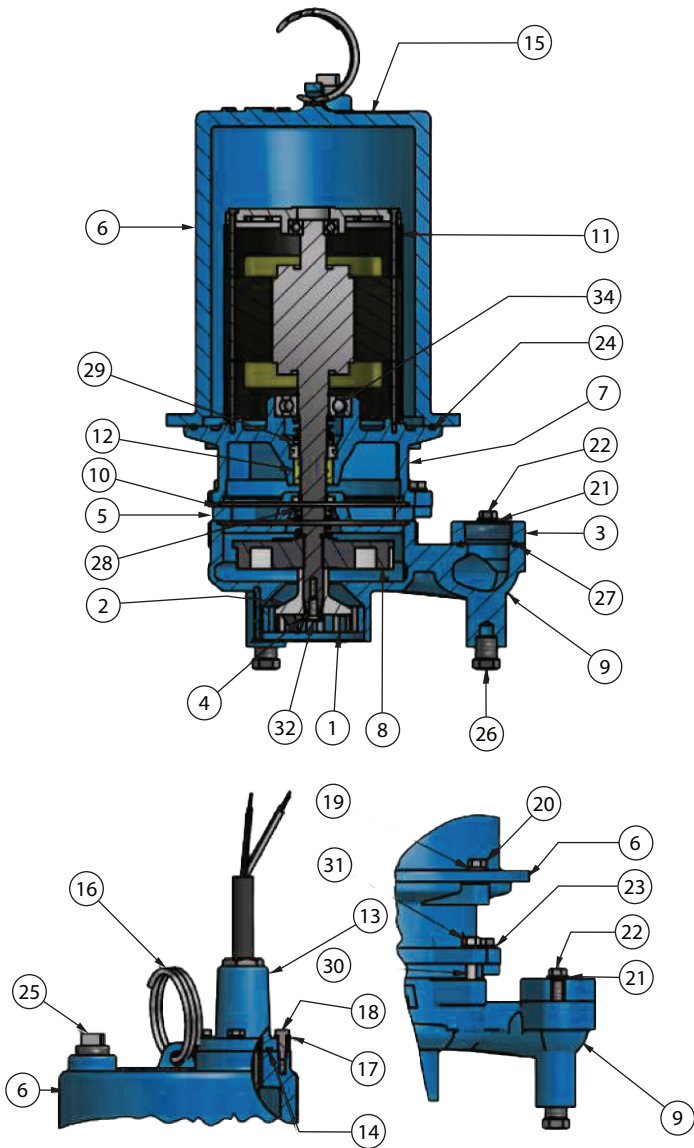
Impeller - Place impeller (18) on motor shaft, with machined step fitting inside the inside diameter of seal spring, by turning clockwise while holding shaft stationary with screwdriver.

Shredding Ring - Install shredding ring (27) into volute with the use of an arbor press. Assemble throat (21) into volute (23) with tree allen screws (22).

Volute - Lubricate square ring (24) and place in groove in bottom of seal plate (19). Place volute (23) on seal plate (19) being careful not to damage square ring (24). Place nuts (25) with lockwashers (9) onto studs (26) and torque evenly to 11 ft/lbs.


Cutter - Screw radial cutter (27) onto shaft, turning it clockwise while holding the shaft stationary with a screwdriver. The radial cutter (27) should be flush with shredding ring (20), on suction side to within $\pm .020$. Place washer (28) on screw (29), apply green Loctite on threads and place into shaft and tighten.

Parts Breakdown



ITEM	QTY	DESCRIPTION	MATERIAL
1	1	SHREDDING RING	INOX 440C
2	1	RADIAL CUTTER	INOX 440C
3	1	DISCHARGE FLANGE	CAST IRON ASTM A48
4	1	WASHER	STAINLESS STEEL AISI 304
5	1	SEAL PLATE	CAST IRON ASTM A48
6	1	MOTOR HOUSING	CAST IRON ASTM A48
7	1	INTERMEDIATE COUPLING	CAST IRON ASTM A48
8	1	IMPELLER	CAST IRON ASTM A48
9	1	VOLUTE	CAST IRON ASTM A48
10	2	O-RING	BUNA
11	1	MOTOR	CHECK INFO WITH SUPPLIER
12	1	CENTRAL HUB	BRONZE
13	1	WIRE ASSEMBLY	CAST IRON / BUNA
14	1	O-RING	BUNA
15	1	PLATE SERIES	STAINLESS STEEL AISI 304
16	1	LIFTING HANDLE	STAINLESS STEEL AISI 304
17	4	LOCK WASHER	STAINLESS STEEL AISI 304
18	4	SCREW	STAINLESS STEEL AISI 304
19	4	LOCK WASHER	STAINLESS STEEL AISI 304
20	4	SCREW	STAINLESS STEEL AISI 304
21	2	WASHER	STAINLESS STEEL AISI 304
22	4	SCREW	STAINLESS STEEL AISI 304
23	6	LOCK WASHER	STAINLESS STEEL AISI 304
24	1	SQUARE RING	BUNA
25	1	PIPE PLUG	GALVANIZED STEEL
26	3	PIPE PLUG	GALVANIZED STEEL
27	1	O-RING	BUNA
28	1	SEAL, OUTER*	CARBON / VERAMIC / BUNA
29	1	SEAL, INNER	CARBON / SILICON CARBIDE / VITON
30	4	STUD	STAINLESS STEEL AISI 304
31	4	HEX NUTS	STAINLESS STEEL AISI 304
32	1	SKHD SCREW	STAINLESS STEEL AISI 304
33	1	BEARING	STEEL

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	1. Poor electrical connection, blown fuse, tripped breaker or other interruption of power; improper power supply 2. Motor or switch inoperative (go to manual operation) 2a. Float movement restricted 2b. Switch will not activate pump or is defective 2c. Defective motor 3. Insufficient liquid level	1. Check all electrical connections for security. Have electrician measure current in motor leads, if current is within $\pm 20\%$ of locked rotor Amps, impeller is probably locked. If current is 0, overload may be tripped. Remove power, allow pump to cool, then re-check current. 2a. Reposition pump or clean basin as required to provide adequate clearance for float 2b. Disconnect level control. Set ohmmeter for a low range, such as 100 ohms full scale and connect to level control leads. Actuate level control manually and check to see that ohmmeter shows zero ohms for closed switch and full scale for open switch. (Float Switch) 2c. Check winding insulation (Megger Test) and winding resistance. If check is outside of range, dry and re-check. If still defective, replace per service instructions. 3. Make sure liquid level is above the pump 4. Re-check all sizing calculations to determine proper pump size. 5. Check discharge line for restrictions, including ice if line passes through or into cold areas. 6. Remove and examine check valve for proper installation and freedom of operation 7. Open valve 8. Check impeller for freedom of operation, security and condition. Clean impeller cavity and inlet of any obstruction 9. Loosen union slightly to allow trapped air to escape. Verify that turn-off level of switch is set so that the suction is ways flooded, Clean vent hole 10. Check rotation. If power supply is three phase, reverse any two of three power supply leads to ensure proper impeller rotation 11. Repair fixtures as required to eliminate leakage 12. Check pump temperature limits and fluid temperature 13. Replace portion of discharge pipe with flexible connector or tighten existing piping. 14. Turn to automatic position 15. Check for leaks around basin inlet and outlets
Pump will not turn off	2a. Float movement restricted 2b. Switch will not activate pump or is defective 4. Excessive inflow or pump not properly sized for application 9. Pump may be air locked causing pump not to flow 14. H-O-A switch on panel is in "HAND" position	
Pump hums but doesn't run	1. Incorrect low voltage 8. Impeller jammed or loose on shaft, or inlet plugged	
Pump delivers insufficient capacity	1. Incorrect low voltage 4. Excessive inflow or pump not properly sized for application 5. Discharge restricted 6. Check valve partially closed or installed backwards 7. Shut off valve closed 8. Impeller jammed or loose on shaft, or inlet plugged 9. Pump may be air locked causing pump not to flow 10. Pump running backwards	
Pump cycles too frequently or runs periodically when fixtures are not in use	6. Check valve partially closed or installed backwards 11. Fixtures are leaking 15. Ground water entering basin	
Pump shuts off and turns on independent of switch, (trips thermal overload protector). CAUTION! Pump may start unexpectedly. Disconnect power supply.	1. Incorrect low voltage 4. Excessive inflow or pump not properly sized for application 8. Impeller jammed or loose on shaft, or inlet plugged 12. Excessive water temperature (internal protection only)	
Pump operates noisily or vibrates excessively	2c. Worn bearings, motor shaft bent 5. Debris in impeller cavity or broken impeller 10. Pump running backwards 13. Piping attachments to building structure too loose or rigid	

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.



LIMITED WARRANTY

Manufacturer warrants, to the immediate purchaser and subsequent initial owner during the warranty period, every new pump to be free from defects in material and workmanship under normal use and service, when properly used and maintained, for a period of eighteen (18) months from date of manufacture or twelve (12) months from date of installation (which ever comes first). Failure due to wear due to excessive abrasives is not covered. The initial owner is the purchaser who first uses the pump after its initial installation, or for non-permanent installation, the first owner who uses the pump. The date of installation 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. 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.