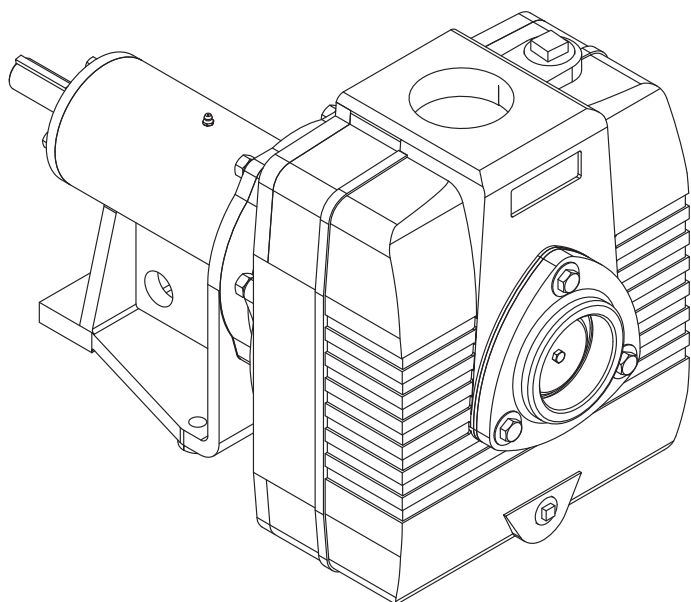


# INSTALLATION, SERVICE & PARTS MANUAL



**Series: PF15ICU, PF20ICU,  
PF25ICU**

**3" x 3"  
Universal Drive /Frame Mtd**



## **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 imminently hazardous situation which, if not avoided, **WILL result in death or serious injury.**

**⚠ WARNING** "Warning" indicates an imminently 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.**

**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. 7/08, 7/09, 1/2010, 3/10, 2/11, 1/12, 1/13, 5/13, 12/19, 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.

**⚠ 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 160°F. **Do not** exceed manufactures recommended maximum performance, as this could cause the motor to overheat.

**⚠ DANGER** Operation against a closed discharge valve will cause premature bearing and seal failure. Heat build up on self-priming and end suction pumps may cause dangerous pressures. A high temperature switch or pressure relief valve is recommended to be installed in pump case.

**⚠ WARNING** Carefully read instruction manuals supplied with motor or engine before operating or servicing.

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

**⚠ WARNING** Pumps constructed with or fitted with bronze/brass may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications.

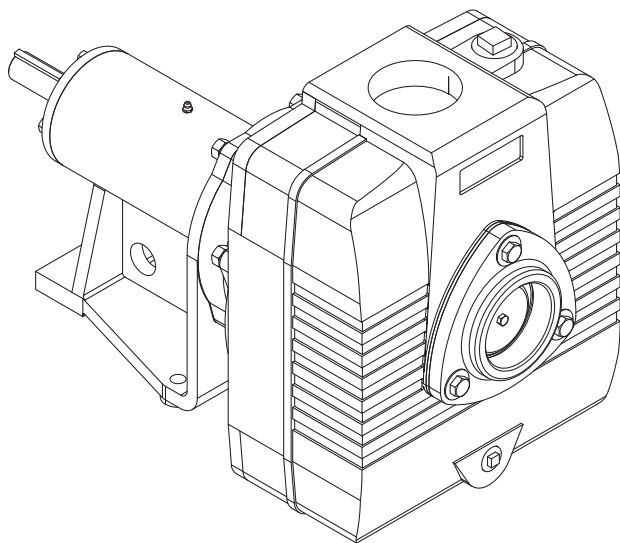
**⚠ WARNING:**  
CANCER AND REPRODUCTIVE HARM-  
[WWW.P65WARNINGS.CA.GOV](http://WWW.P65WARNINGS.CA.GOV)

**IMPORTANT!**  
Prior to installation, record Model Number, MFG Date, and/or serial number, from pump name plate for future reference.

Model:
Serial:
MFG Date:

**Specifications**

<b>DISCHARGE</b>	3" x 3" NPT, Female
<b>LIQUID TEMPERATURE</b>	160°F Continuous
<b>VOLUTE</b>	Cast Iron, Class 30, Removable
<b>BODY</b>	Cast Iron, Class 30
<b>PEDESTAL</b>	Cast Iron, Class 30
<b>SHAFT</b>	Stainless Steel
<b>SHAFT SLEEVE</b>	Stainless Steel
<b>IMPELLER</b>	Open trash type, dynamically balanced Material: Cast Iron, Class 30
<b>O-RINGS</b>	Buna-N
<b>HARDWARE</b>	Steel & Stainless Steel
<b>PAINT</b>	Air dry enamel
<b>SEAL</b>	Single Mechanical with Lip Seal, Oil Lubricated Material: Graphite/Ceramic-NBR-304
<b>BEARING-DRIVE END</b>	Single Row, Ball, Grease Lubricated
<b>BEARING-PUMP END</b>	Single Row, Ball, Grease Lubricated
<b>CHECK VALVE</b>	Neoprene Flap type valve, with steel weight
<b>OPTIONAL (-BF)</b>	Bronze Volute and Impeller

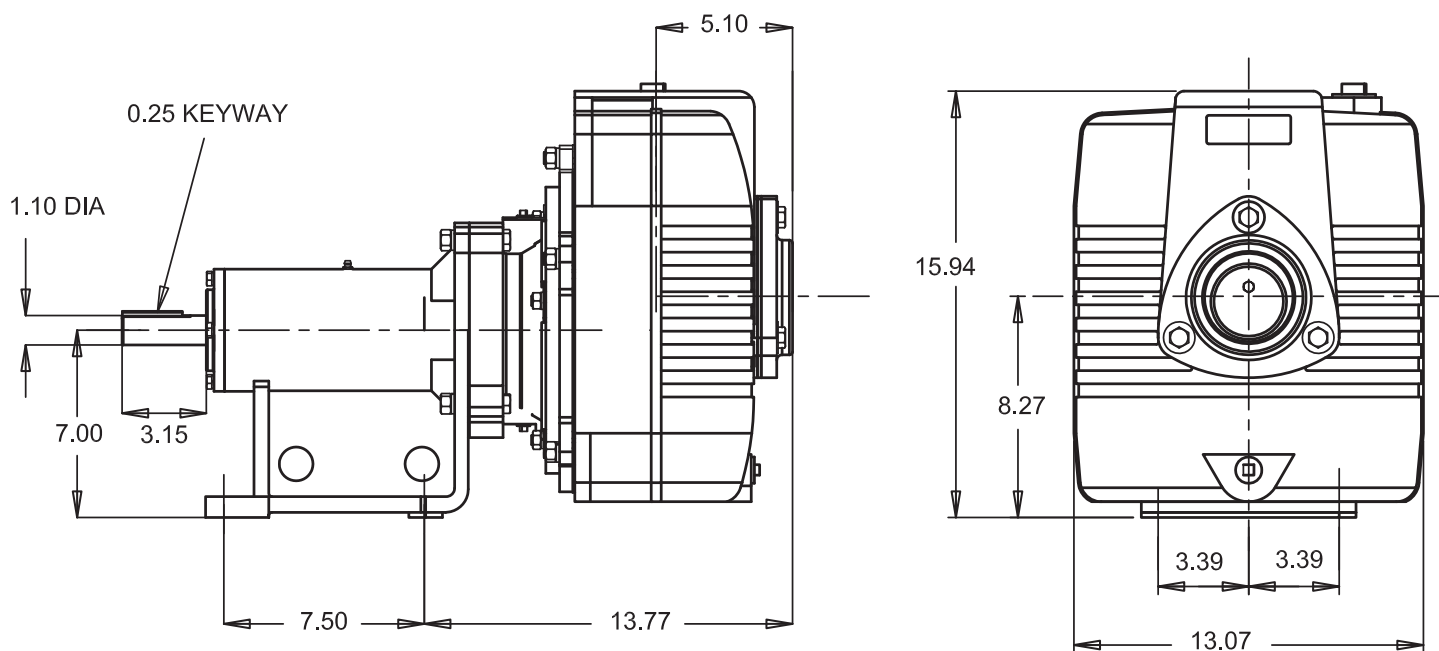


**Series: PF15ICU, PF20ICU  
PF25ICU**

**3" x 3"  
Universal Drive /Frame Mtd**



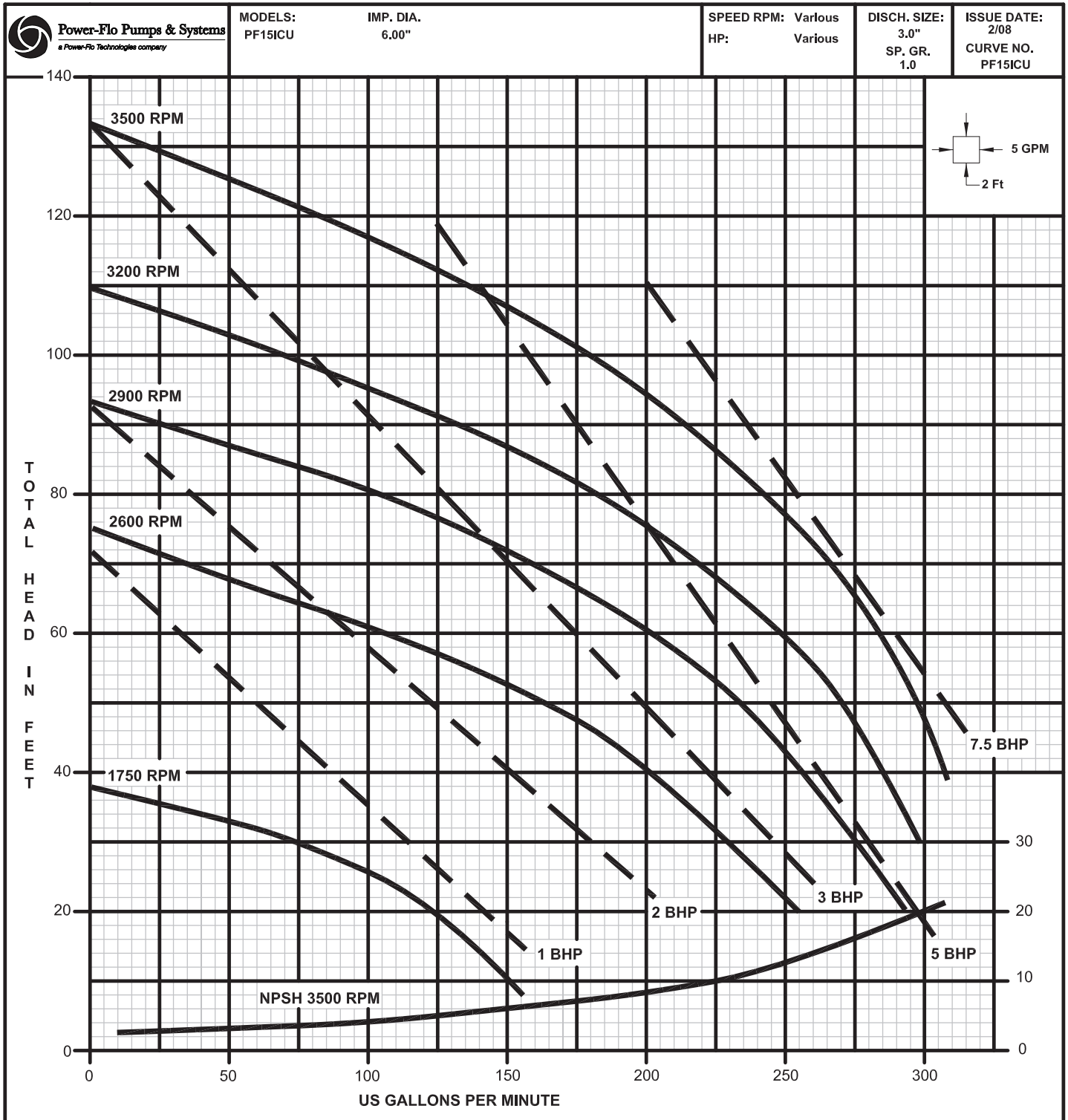
## Dimensions



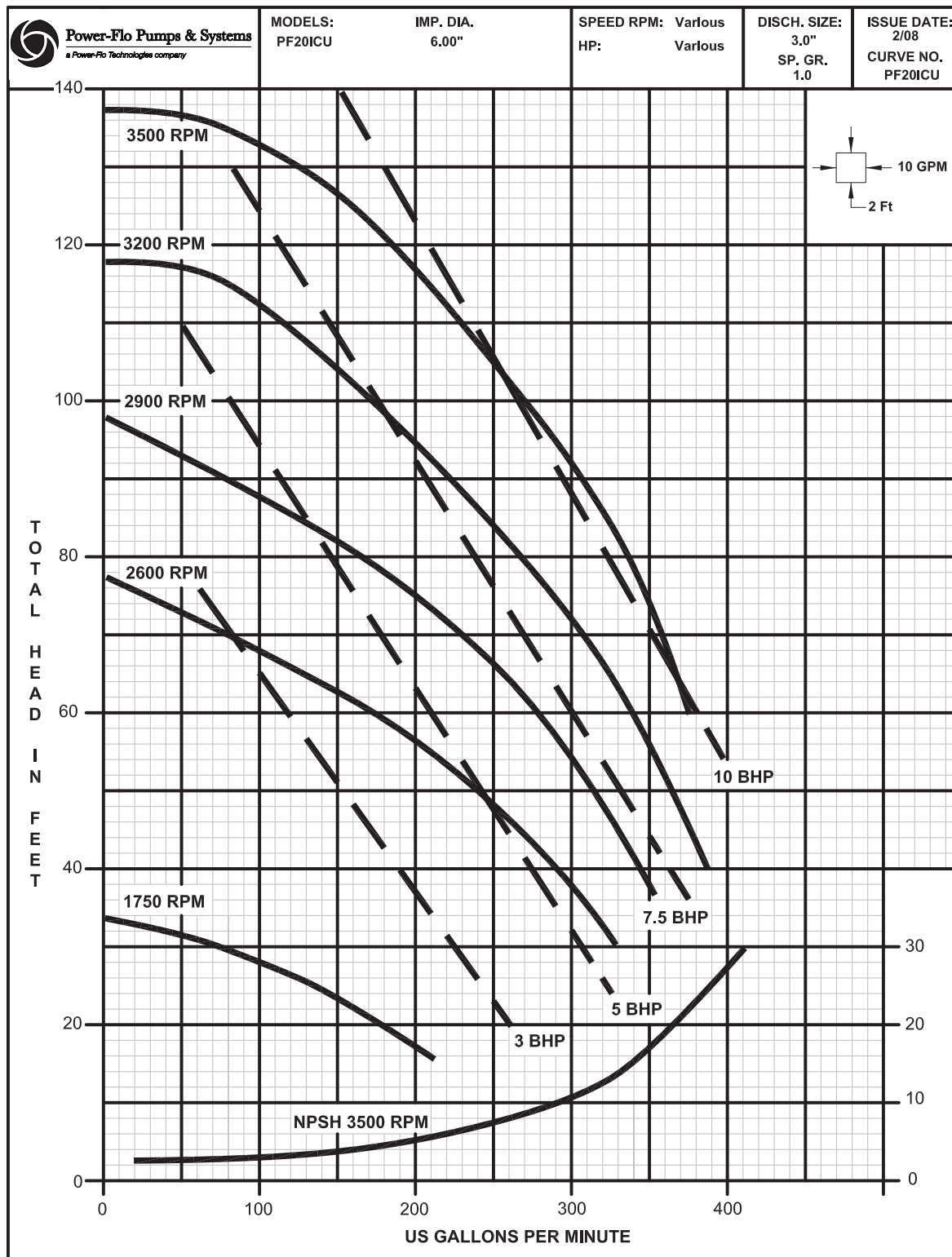
Model	Weight	
PF15ICU	224 lbs	
PF20ICU	224 lbs	
PF25ICU	236 lbs	

Not for pumping flammable liquids or hazardous materials that is not compatible with pump materials.  
Add -BF for Bronze Fitted.

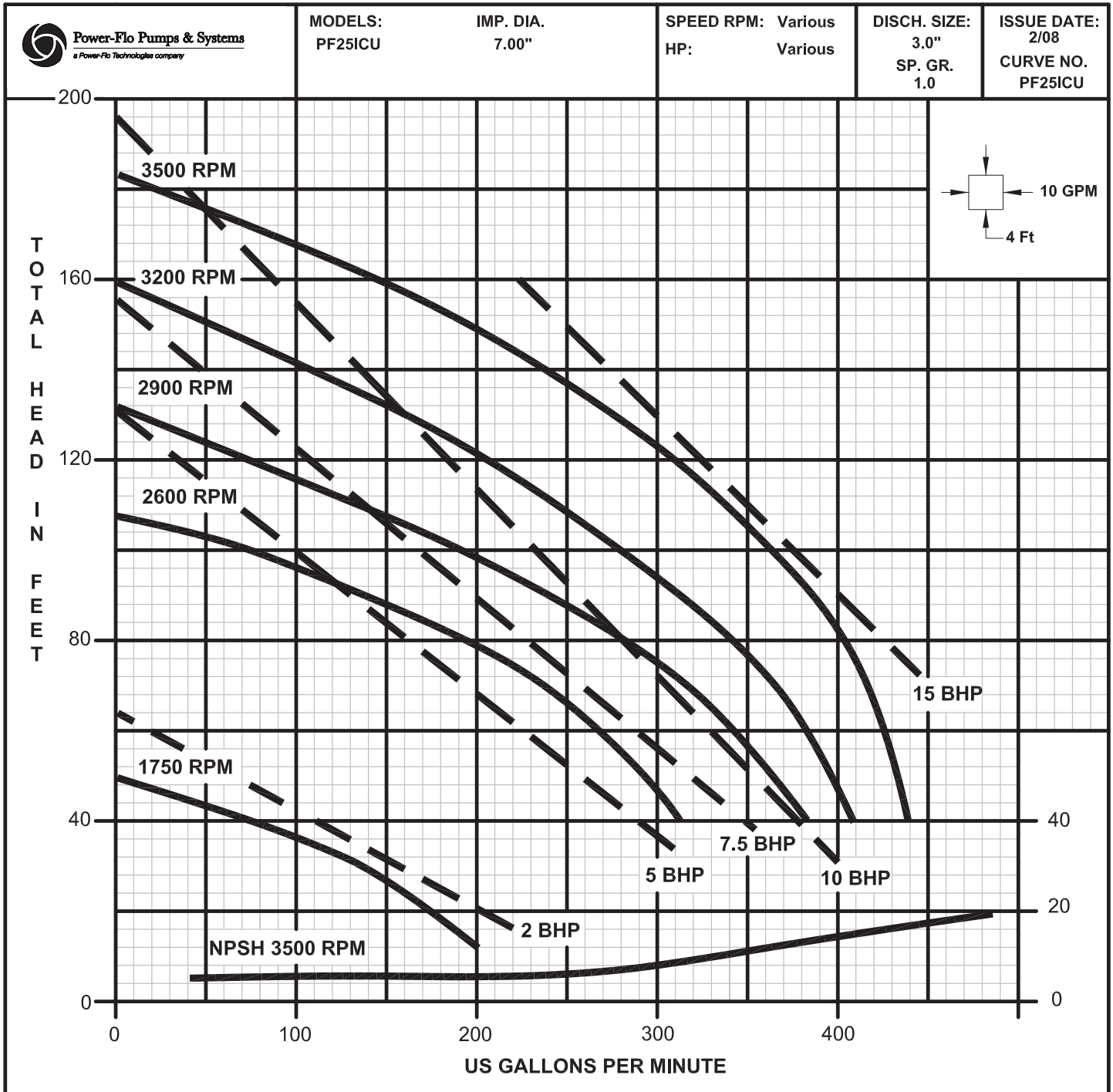
Performance



Performance



Performance





## Receiving, Installation & Service

### 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.

### Location

Locate pump as near as possible to the liquid being pumped. Do Not place pump more than 25 feet above the surface of the liquid supply.

Be sure pump is level. Mount pump firmly so not to move due to vibration. Permanently grout onto a cement foundation, flex coupled and v-belt driven units. Flex coupled units should be realigned after grouting to eliminate excessive wear on the coupling.

A minimum of 18 inches in front of pump case to permit easy removal and access to the interior of the pump. On v-belt units, allow a minimum of 10 inches at the shaft end to permit easy removal of pedestal or rotating assembly.

### Controls

Be sure the electrical specification of the control selected properly match the electrical specifications of the pump.

### Motor Connection

All wiring of motor and control, overload protection and grounding should be in accordance with the National Electrical Code, State and Local codes. Make motor connection per label located on motor or motor manufactures manual.

### Rotation

All units rotate "clockwise" as viewed from shaft end of pump. It is necessary to slide one half of the flex coupling back when checking rotation to eliminate the possibility of unscrewing the impellers which are threaded on the shaft.

### Suction



**CAUTION! - Pump should not be operated without a suction strainer to prevent foreign matter from being drawn into impeller. The strainer should be cleaned regularly.**

The use of pipe the same size as the port size is highly recommended. Using a smaller pipe line can cause internal damage. Make sure all lines have air-tight joints. The smallest air leak in the suction line may prevent the pump from priming. All horizontal suction lines should slope up to the pump to avoid trapped air pockets. All piping should be properly supported.

### Discharge

Connect discharge hose or pipe to the discharge port. Make sure all lines have air-tight joints.

### Lubrication

Seal and impeller are water lubricated and need no attention.

Fill pedestal (34) with SHELL ALVANIA R2, MOBILE MOBILUX 2, AMPOL RR2, B.PENERGERASE LS2, CALTEX MULTIFAX 2 or equal.

Fill Coupling head with 80-90W gear oil.

### Priming

Remove pipe plug (15) in top of body (16) and fill the pump body completely with solids free liquid. In freezing weather prime pump with warm water.



**DO NOT operate pump without priming first. Operating dry will damage seal.**

### Starting

To start pump, apply power to motor per the Motor or Engine manufacture's instructions.

### Shutdown

Discontinue operation by stopping the engine as stated in Engine Manual or by disconnecting electric power to motor. It is recommended to drain and flush pump if pump has been operating in freezing weather.

### Service

Turn off and lock out power before servicing pump.

### Check Valve

Disconnect suction piping and remove hex nuts (49), lockwashers (44) and suction flange (22). Remove gasket (18), weights (17), (19), screw (20), lockwasher (21) and hex nut (50) and replace if worn or damaged.

To replace, the *HINGE* section of gasket is at the *TOP* and the *LARGE* weight is on the pump side of gasket.

### Body, Volute & Impeller

Disconnect suction and discharge piping. Remove hex nuts (49) and lockwashers (44) then remove body (16) and o-ring (9) from seal plate (6). Pull volute (13) and gasket (14) from seal plate (6). Remove cap screw (12), washer (30) and shim seal (31). Unscrew the impeller (11) from shaft (23) in the right hand direction. Take note of the size and quantity of shims (10) & (29) used.





**Receiving, Installation & Service**

To reassemble, use the required number of shims (10) and (29) to result in an impeller-to-volute clearance of .015" max.

**Shaft Seal**

Remove rotating member, spring and retaining ring of seal (8) from shaft. To remove stationary, remove hex nuts (48) and lockwashers (47) and pull seal plate (6) from coupling head (24). Press stationary out of seal plate. If any part shows wear or damage replace complete seal (8).



**Handle all seal parts with care.  
Do Not damage lapped faces.**

To reassemble, lightly oil ring and press stationary into seal plate (8). Lightly oil inner surface of stationary and replace seal plate (6) onto coupling head (24). With lapped surface facing pedestal, slide rotating member onto shaft until lapped faces of rotating member and stationary are together.

**Pedestal & Shaft**

Remove capscrews (34) and lockwashers (33) from pedestal (25). Remove bearing cap (36), o-ring (40), lip seal (39) and retaining ring (35). Remove shaft, slinger and bearing assembly. To replace bearing (38) remove retaining ring (35) and slinger (2).

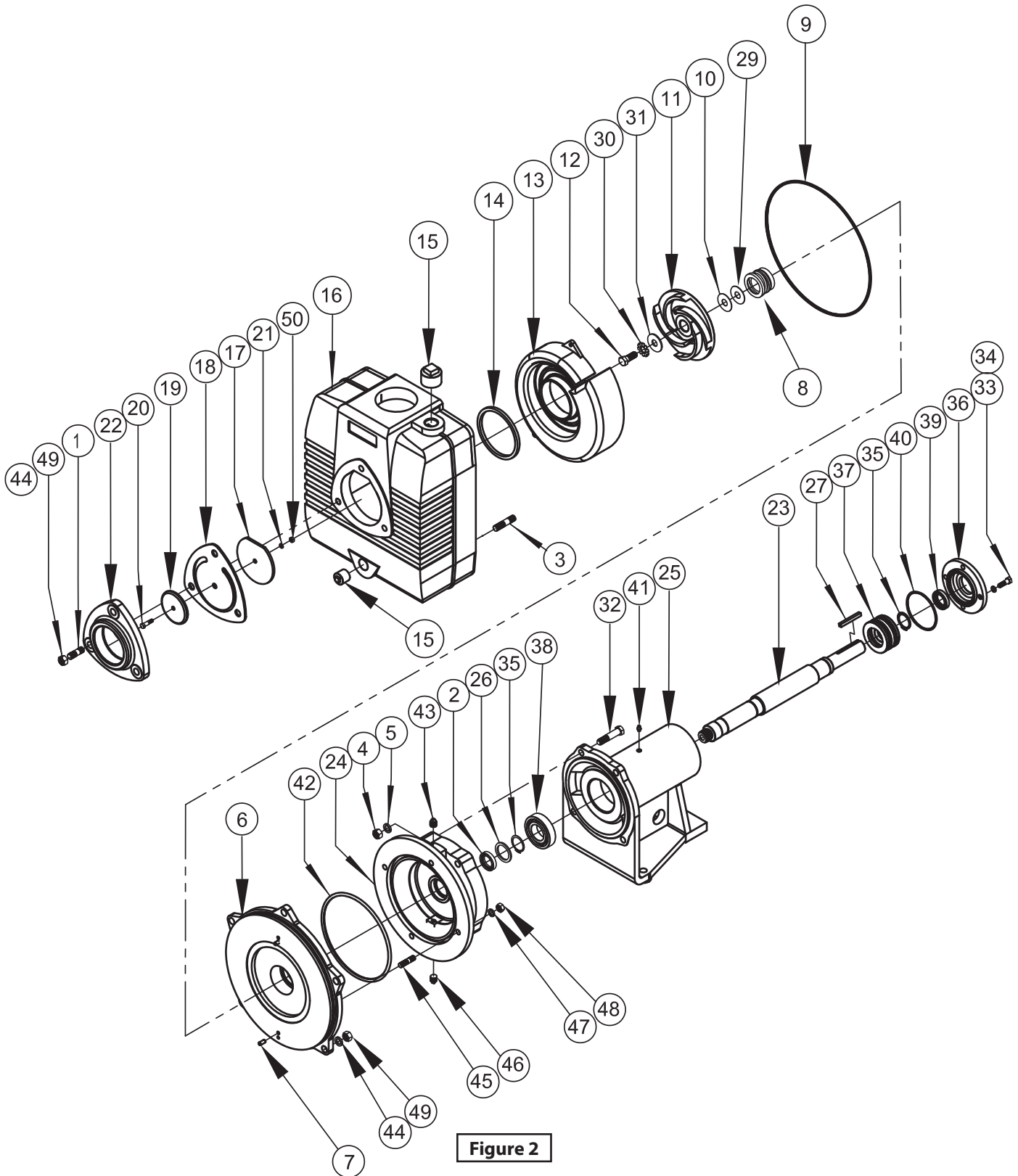
Press off bearings (38) and (37) from shaft (23). Remove cap screws (32), lockwashers (5) and hex nuts (4) and pull coupling head (24) from pedestal (25), replace grease seal (26).

REASSEMBLE REMAINDER OF PUMP IN OPPOSITE ORDER. Refill coupling head with gear oil and pedestal with grease.



**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 2**



**PF15ICU, PF20ICU, PF25ICU****Self-Priming Universal Pumps**

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**

ITEM		QTY	DESCRIPTION	PF15ICU PART No.	PF20ICU PART No.	PF25ICU PART No.
1		3	Stud, 1/2-13 x 2.00" Lg, Stainless	PF021078	PF021078	PF021078
2		1	Slinger	PF005163	PF005163	PF005163
3		5	Stud, 1/2-13 x 2.00" Lg, Stainless	◆	◆	◆
4		4	Hex nut, 7/16-14, Stainless	◆	◆	◆
5		4	Lockwasher, 7/16, Stainless	◆	◆	◆
6		1	Seal plate	PF039984	PF039984	PF039984
7		2	Volute pin	PF039992	PF039992	PF039992
8	◇	1	Shaft seal, Graphite/Ceramic-NBR-304, Type 21, 1.375"	PF052601	PF052601	PF052601
9	◇	1	O-ring, NBR, 292 x 3.55mm	PF018386	PF018386	PF018386
10	◇	1	Shim, Stainless, .010	PF001349	PF001349	PF001349
11	☆	1	Impeller, Cast Iron (STD)	PFC115CCEIMP	PFC120CCEIMP	PFC125CCEIMP
			Impeller, Bronze, Optional (-BF)	PFBRZ15CCEIMP	PFBRZ20CCEIMP	PFBRZ25CCEIMP
12		1	Hex Hd screw, 1/2-20 x 1.00" Lg, Stainless	◆	◆	◆
13	☆	1	Volute, Cast Iron (STD)	PFC120CCEVOL	PFC120CCEVOL	PFC125CCEVOL
			Volute, Bronze, Optional (-BF)	PFBRZ20CCEVOL	PFBRZ20CCEVOL	PFBRZ25CCEVOL
14	◇	1	Volute gasket, Rubber, 114 x 101 x 6.2mm	PF018388	PF018388	PF018388
15		2	Pipe plug, 1.00" NPT	◆	◆	◆
16		1	Body, Cast Iron	PFC125CCETNK	PFC125CCETNK	PFC125CCETNK
*	◆		Check Valve Assy	PF018387	PF018387	PF018387
17	◆	1	Weight, 4.00" O.D.	PF067500	PF067500	PF067500
18	◆◇	1	Gasket, Neoprene, Ø171x3mm	PF018008	PF018008	PF018008
19	◆	1	Weight, 2.75" O.D.	PF001588	PF001588	PF001588
20	◆	1	Hex Hd Screw, 1/4-20 x 1.00" Lg	◆	◆	◆
21	◆	1	Lockwasher, 1/4" Stainless	◆	◆	◆
22	◆	1	Suction Flange	PF018884	PF018884	PF018884
23	☆	1	Shaft	PF077904	PF077904	PF077904
24		1	Coupling Head	PF051188	PF051188	PF051188
25		1	Pedestal	PF039982	PF039982	PF039982
26	○	1	Lip seal, VAR, 46.5 x 35 x 9.5mm, TC	PF039465	PF039465	PF039465
27	○	1	Key, 1/4 Sq. x 2.25" Lg	PF033771	PF033771	PF033771
29	◇	1	Shim, Stainless, .031	PF001348	PF001348	PF001348

◆ = Acquire standard hardware locally.

◇ = Seal/Gasket Kit

◆ = Check Valve Assembly

○ = Pedestal Kit

☆ = Supplied as individual items



**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	PF15ICU PART No.	PF20ICU PART No.	PF25ICU PART No.
30		2	Shakerproof washer, 1/2", Stainless	◆	◆	----
			Washer, Stainless	----	----	PF070089
31	◇	1	Shim seal, Stainless	PF026990	PF026990	PF026990
32		4	Hex Hd screw, 7/16-14 x 2.50" Lg, Stainless	◆	◆	◆
33		4	Lockwasher, 5/16 Stainless	◆	◆	◆
34		4	Hex Hd screw, 5/16-18 x .875" Lg., Stainless	◆	◆	◆
35		2	Retaining ring	PF019851	PF019851	PF019851
36		1	Bearing cap	PF039958	PF039958	PF039958
37	○	1	Bearing, SKF 5307, outer, 80mm OD	PF026302	PF026302	PF026302
38	○	1	Bearing, SKF 6207, inner, 72mm OD	PF033491	PF033491	PF033491
39	○	1	Lip seal, VAR 39.5 x 28 x 7.7mm	PF026309	PF026309	PF026309
40	○	1	O-ring, NBR, 80 x 2.65mm	PF026997	PF026997	PF026997
41	○	1	Air Plug, Cast Steel, 1/8" NPT	PF026307	PF026307	PF026307
42	○	1	O-ring, NBR, 184 x 6mm	PF059665	PF059665	PF059665
43	○	1	Pipe plug, 1/2" NPT, Cast Steel	PF071931	PF071931	PF071931
44		8	Lockwasher, 1/2" Stainless	◆	◆	◆
45		4	Stud, 3/8-16 x 1.75", Stainless	PF019034	PF019034	PF019034
46		1	Pipe plug, 3/8 NPT	◆	◆	◆
47		4	Lockwasher, 3/8" Stainless	◆	◆	◆
48		4	Hex nut, 3/8-16, Stainless	◆	◆	◆
		4 oz	Gear oil, 80-90W	◆	◆	◆
		4 oz	Grease (see page 8)	◆	◆	◆
49		8	Hex nut, 1/2-13, Stainless	◆	◆	◆
50	◆	1	Hex nut, 1/4-20, Stainless	◆	◆	◆
<b>Repair Kits</b>						
◆	<b>Check Valve Assembly</b> - Includes Items; 17, 18, 19, 20, 21, 22, 50			PF018387		
◇	<b>Seal &amp; Gasket Kit</b> - Includes Items; 8, 9, 10, 14, 18, 29, 31			PF15ICUSEAL-KIT		
○	<b>Pedestal Kit</b> - Includes Items; 26, 27, 37, 38, 39, 40, 41, 42, 43			PF15ICUPED-KIT		

◆ = Acquire standard hardware locally.

◇ = Seal/Gasket Kit

◆ = Check Valve Assembly

○ = Pedestal Kit

☆ = Supplied as individual items



**Power-Flo Pumps & Systems**  
a Power-Flo Technologies company

Power-Flo Pumps & Systems • 877-24PUMPS • www.powerflo pumps.com

**Notes:**

[illegible]

**Notes:**

[illegible]

## 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
Little or no discharge and will not prime	1. Pump body not filled with water 2. Total head too high 3. Suction head higher than pump designed for 4. Impeller partially or completely plugged 5. Leak in suction line 6. Foot-valve too small  7. Impeller damaged 8. Foot-valve or suction line not submerged deep enough in water, pulling air 9. Insufficient inlet pressure or suction head  10. Suction piping too small 11. Body gasket leaking 12. Suction or discharge line valves closed 13. Piping damaged 14. Clogged strainer or foot-valve	1. Fill pump body with water. 2. Shorten suction head 3. Lower suction head, install foot-valve and prime 4. Disassemble pump and clean out impeller 5. Repair or replace suction line 6. Match foot-valve size to piping or install one larger size foot-valve 7. Disassemble pump and replace impeller 8. Submerge lower in water  9. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line partially closed. 10. Increase pipe size to pump inlet size or larger 11. Replace 12. Open 13. Clean or replace 14. Clean or replace
Loss of suction after satisfactory operation	1. Air leak in suction line 2. When pump was last turned off, water siphoned out of pump body 3. Suction head higher than pump designed for 4. Insufficient inlet pressure or suction head  5. Clogged foot-valve, strainer or pump 6. Defective wearplate	1. Repair or replace suction line 2. Refill (reprime) pump body before restarting  3. Lower suction head, install foot-valve and prime 4. Increase inlet pressure by adding more water to tank or increasing back pressure by turning gate valve on discharge line to partially closed. 5. Unclog or replace 6. Replace
Pump overloads driver	1. Total head lower than pump rating, unit delivering too much water  2. Specific gravity and viscosity of liquid being pumped different than the pump rating	1. Increase back pressure by turning gate valve on discharge line to partially closed position that will not overload motor. 2. Consult factory
Pump vibrates and/or makes excessive noise	1. Mounting plate or foundation not rigid enough 2. Foreign material in pump causing unbalance 3. Impeller bent 4. Cavitation present  5. Piping not supported to relieve any strain on pump assembly	1. Reinforce 2. Disassemble pump and remove 3. Replace impeller 4. Check suction line for proper size and check valve in suction line if completely open, remove any sharp bends before pump and shorten suction line 5. Make necessary adjustments
Pump runs but no fluid	1. Air leak in suction piping 2. Pump located too far from fluid source 3. Gate valve closed 4. Clogged strainer 5. Fouled foot-valve 6. Discharge height too great 7. Fouled impeller 8. Faulty mechanical seal	1. Replace 2. Replace 3. Open 4. Clean or Replace 5. Clean or Replace 6. Lower the height 7. Clean or Replace 8. Replace
Pump leaks at shaft	1. Worn mechanical seal 2. Seal not installed properly	1. Replace 2. Follow service instructions for installing seal

**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](http://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.

