

OWNER'S MANUAL

POWER-FLO
Pumps & Systems

**Wet Rotor Circulator Pumps
For Indoor Use Only
Maintenance Free**



“Power-Flo Pumps & Systems,
Your Power-Ful partner
for all your pumping needs”

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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.

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 This pump is *not* intended for use in swimming pools, spa areas or water installations where human contact with pumped fluid.

Features:

Power-Flo circulator pumps are low noise, low leakage, reliable operation and easy installation. Single and three speed compact, efficient wet rotor circulators for closed loop (cast iron volute) hydronic heating and cooling circulation and open loop (bronze and stainless steel) domestic water recirculation applications.

- **MOTOR:** 2-pole, 3600rpm, single phase, PSC with Thermal protection
- **LIQUID TEMPERATURE:** 32°F - 230°F
- **MAX. SYSTEM PRESSURE:** 145 PSI
- **INSULATION:** Class H

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

DANGER In the event the retaining screws have been pulled out of the housing, **DO NOT** replace them. Use of any other screw may short out the stator windings, creating a risk of electrical shock.

CAUTION The addition of petroleum based fluids or certain chemical additives to the system voids the warranty.

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

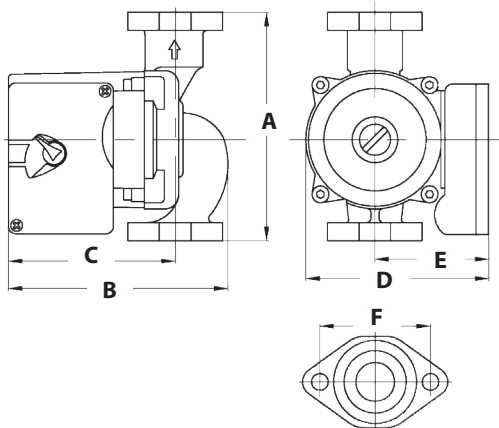


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Wet Rotor Circulator Pumps

Dimensions



SINGLE SPEED

MODEL NUMBER	VOLUTE Material	VOLTS/ PHASE	AMPS	WATTS	SYSTEM TYPE	A Face/Face	B	C	D	E	F	WT. lbs
PFWRC3737C1F	Cast Iron	115/1	3.0	335	Closed	6-1/2	6-3/8	5-1/16	5-3/8	3-1/4	3-5/32	12.5
PFWRC3737C2F	Cast Iron	230/1	1.5	335	Closed	6-1/2	6-3/8	5-1/16	5-3/8	3-1/4	3-5/32	12.5
PFWRC3737B1F	Bronze	115/1	3.0	335	Open	6-1/2	6-3/8	5-1/16	5-3/8	3-1/4	3-5/32	12.5

THREE SPEED

MODEL NO	VOLUTE Material	VOLTS/ PHASE	AMPS	WATTS	SYSTEM TYPE	A F/F	B	C	D	E	F	WT. lbs
PFWRC2017C1F	Cast Iron	115/1	0.9/0.7/0.5	100/70/55	Closed	6-1/2	5-7/16	4	5-1/8	3	3-5/32	7.25
PFWRC2727C1F	Cast Iron	115/1	1.6/1.5/1.3	185/170/135	Closed	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC2727C2F	Cast Iron	230/1	.8/.75/.65	185/170/135	Closed	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC2727B1F	Bronze	115/1	1.6/1.5/1.3	185/170/135	Open	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC3032C1F	Cast Iron	115/1	1.8/1.7/1.2	200/190/135	Closed	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC3032C2F	Cast Iron	230/1	.9/.85/.6	200/190/135	Closed	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC3032S1F	Stainless	115/1	1.8/1.7/1.2	200/190/135	Open	6-1/2	6	4-3/4	5-5/16	3-1/4	3-5/32	11.25
PFWRC2644C1F	Cast Iron	115/1	2.0/1.7/1.2	230/190/135	Closed	8-1/2	6-11/16	5-1/8	5-5/8	3-1/4	3-7/16	13.5
PFWRC2644C2F	Cast Iron	230/1	1.0/.85/0.6	230/190/135	Closed	8-1/2	6-11/16	5-1/8	5-5/8	3-1/4	3-7/16	13.5
PFWRC2644B1F	Bronze	115/1	2.0/1.7/1.2	230/190/135	Open	8-1/2	6-11/16	5-1/8	5-5/8	3-1/4	3-7/16	13.5

PF	WRC	21	20	Volute Material C, B, S	Motor Voltage 1 or 2	Connection Type F, S, U
Power-Flo	Wet Rotor Circulator	Shut Off Head (ft)	Max Flow (Gal)	C = Cast Iron B = Lead Free Bronze S = Stainless Steel	1 = 115 V 2 = 230V/1P	F = Flanged S = Copper Sweat U = Union

EXAMPLE: PFWRC120C1F - Power-Flo Pumps - Wet Rotor Circulator - 21" Shut Off Head - 20GPM Max Flow - Cast Iron Volute - 115 Volt, Flanged Connection.

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Installation

Pre-Installation

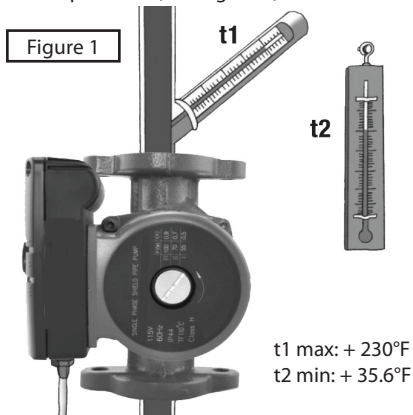
The following checks should be made before beginning installation.

A.) Uses: These pumps are generally designed to circulate water from 32°F to 230°F and up to a maximum pressure of 145 psi.

Closed Systems: These model pumps with cast iron pump housings are designed to pump water compatible with their cast iron construction. They are recommended for use in closed hydronic systems.

Open Systems: These series pumps with stainless steel or bronze pump housings are designed to pump water compatible with their construction and can be used in both open and closed systems.

B.) Maximum Water Temperature: The maximum allowable water temperature is determined by the ambient or surrounding air temperature. (See Figure 1)



t1 °F	35.6	104	140	176	194	212	221	230
t2 °F	32	104	140	176	158	140	131	93

C.) Inlet Pressure Requirements

The amount of pressure required at the inlet of the pump is a function of the temperature of the water as shown in the chart.

Inlet Pressure Requirements			
Water (°F)	190	165	140
Required Inlet Pressure (ft)	5	4.5	3
(psi)	2.2	1.9	1.3

In a pressurized system, the required inlet pressure is the minimum allowable system pressure. In a system open to the atmosphere, the required inlet pressure is the minimum distance the pump must be located below the lowest possible water level of the water source.

Installation

Position of terminal box: Proper installation of the pump will have the terminal box located to one side of the pump or the other, with the conduit entry down (See Figure 2).

If the terminal box position needs to be changed, it is best to do so before installation. However, if the pump is already installed, ensure that the electrical supply is turned off and close the isolation valves before removing the allen screws.

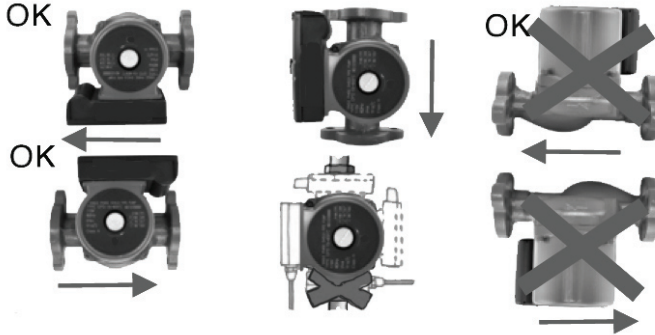
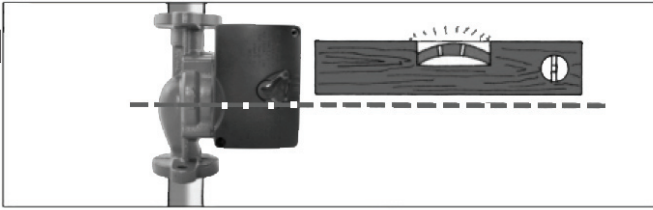
To change the terminal box position:

1. Remove the four (4) Allen screws while supporting the stator.
2. Carefully separate the stator from the pump chamber and rotate it to the correct terminal box orientation.
3. Replace the Allen screws and tighten diagonally and evenly to 7 ft-lbs.
4. Check that the impeller turns freely, if not repeat the disassembly and reassembly process.

Wet Rotor Circulator Pumps

Installation

Figure 2



Pump Mounting

Arrows on the pump chamber indicate direction of flow through the pump. The pump can be mounted both vertically or horizontally on the motor's shaft horizontally (see Figure 2).

NEVER install the pump with the shaft vertical or where the shaft falls below the horizontal plane.

It is recommended that the isolation valves be installed on each side of the pump. If possible, do not install elbows, branch tees, and similar fittings before or after the pump. Provide support to the pump or adjacent plumbing to reduce thermal and mechanical stress on the pump.

Installation Requirements

1. Thoroughly clean and flush the system prior to pump installation.

Wet Rotor Circulator Pumps

Installation & Operation

2. Do not install the pump at the lowest point of the system where dirt and sediment collect.
3. Install an air vent at the high point(s) of the system to remove accumulated air.
4. Ensure that water does not enter the terminal box during the installation.
5. (Open System) Install the pump in the supply line; the suction side of the pump should be flooded with water. Ensure that the static head requirement from chart is achieved.
6. (Closed System) install a safety relief valve to protect against temperature and pressure build-up.
7. If there are excessive suspended particles in the water, it is recommended that a strainer and/or filter be installed and cleaned regularly.

8. DO NOT START THE PUMP UNTIL THE SYSTEM HAS BEEN FILLED.

Check Valve Removal:

1. Use needle nose pliers to remove check valve from pump housing.
2. Check to make sure no part of the valve remains in the pump housing.

Start-Up

Do not use the pump to vent the system. Do not start the pump before filling the system. **NEVER OPERATE THE PUMP DRY.**

Operation

These circulating pumps will operate quietly and efficiently and provide years of service if sized for correct performance and installed properly. Under **NO** circumstances should the pump be operated without water circulation or without the minimum required inlet pressure for prolonged periods of time. This could result in motor and pump damage.

Some units are single speed and others are three speed. The speed on the three speed can be changed by a speed selector switch located on the terminal box.

Failure To Operate

When the pump is first started, the shaft may rotate slowly until water has fully penetrated the bearings. If the pump does not run, the shaft can be rotated manually. To accomplish this, switch off the electrical supply and close the isolation valves on each side of the pump. Remove the indicator plug in the middle of the nameplate. Insert a small flat blade screwdriver into the end of the shaft and gently turn until the shaft moves freely. Replace and tighten the plug. Open the isolation valves and wait 2 to 3 minutes for the system pressure to equalize before starting the pump.

NOTE: After a long shut down, multi-speed pumps should be started on speed 3 and then adjusted to the regular setting.

Electrical:

Wire the hot lead to terminal "L", neutral wire to terminal "N", and ground to the grounding terminal.

Grounding must be in accordance with the National Electrical Code and State and Local codes. The ground wire should be copper conductor and a minimum 14 AWG.

DO NOT GROUND TO GAS SUPPLY LINE.

Wire size should be based on the ampacity as required by the National Electrical Code or State and Local codes.

Operating voltage and other electrical data can be found on the nameplate. All models have thermal protection and require no additional external protection. The temperature of the winding will never exceed allowable limits, even in locked rotor.



Wet Rotor Circulator Pumps

Trouble Shooting

Symptom	Possible Cause(s)	Corrective Action
Pump won't start	Power supply is not connected	Check the fuse/circuit breaker or the power connection
	Capacitor is damaged	Change capacitor
	Motor blockage	Check that rotor shaft rotates freely.
There is noise in the system	The pump flow is too high	Decrease pump speed if multi-speed pump
	Air in the system	Vent the system
	The pump head is too high	Check speed, if necessary switch to lower speed.
Noise in the pump	Air in the pump	Vent the pump
	Cavitation due to insufficient inlet pressure	Increase system pressure within permissible range

3 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 3 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 3 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.

