

# PF Series Submersible Effluent Pumps: 1-Phase, 60-Hz, 4-inch (100-mm)

## Applications

Our PF Series 4-inch (100-mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or dosing tanks. They are constructed of lightweight, corrosion-resistant stainless steel and engineered plastics; all are field-serviceable and repairable with common tools; PF Series pumps are CSA certified to the U.S. and Canadian safety standards for effluent pumps, meeting UL requirements.

PF Series pumps are used in a variety of applications, including pressurized drainfields, packed-bed filters, mounds, aerobic units, effluent irrigation, liquid-only (effluent) sewers, wetlands, lagoons, and more. These pumps are designed to be used with a Biotube® pump vault or after a secondary treatment system.



## Features/Specifications

To specify this pump for your installation, require the following:

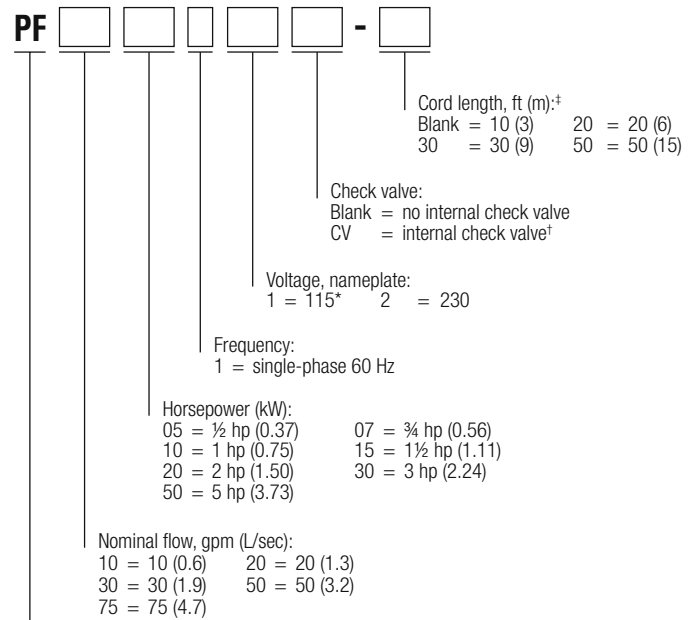
- Minimum 24-hour run-dry capability (liquid end) with no deterioration in pump life or performance\*
- Patented 1/8-inch (3-mm) bypass orifice to ensure flow recirculation for motor cooling and to prevent air bind
- Liquid-end repair kits available for better long-term cost of ownership
- TRI-SEAL™ floating impeller design on 10, 20, and 30 gpm (0.6, 1.3, and 1.9 L/sec) models; floating stack design on 50 and 75 gpm (3.2 and 4.7 L/sec) models
- Franklin Electric Super Stainless motor, rated for continuous use and frequent cycling
- Type SOOW 600-V motor cable (model PF751512 uses 14 AWG, SJ00W, 300-V cord)

\* Not applicable for 5-hp (3.73 kW) models

## Standard Models

See specifications chart, pages 2-3, for a list of standard pumps. For a complete list of available pumps, call Orenco.

## Product Code Diagram



Pump, PF Series

\* ½-hp (0.37kW) only

† Available for 10 gpm (0.6 L/sec), 1/2 hp (0.37 kW)

‡ Note: 20-ft cords are available only for pumps through 1½ hp



C US  
LR80980  
LR2053896



Powered by  
**Franklin Electric**

## Specifications

| Pump Model                  | Design gpm<br>(L/sec) | Horsepower<br>(kW) | Phase | Nameplate<br>voltage | Actual<br>voltage | Design flow<br>amps | Max<br>amps | Impellers | Discharge size<br>and material <sup>1</sup> | Length, in. (mm) | Min. liquid level, <sup>2</sup><br>in. (mm) | Weight, <sup>3</sup> lb (kg) | Rated cycles/day |
|-----------------------------|-----------------------|--------------------|-------|----------------------|-------------------|---------------------|-------------|-----------|---|------------------|---|------------------------------|------------------|
| PF100511                    | 10 (0.6)              | 0.50 (0.37)        | 1     | 115                  | 120               | 12.7                | 12.7        | 6         | 1 ¼ in. GFP                                 | 23.0 (660)       | 16 (406)                                    | 26 (12)                      | 300              |
| PF100511CV                  | 10 (0.6)              | 0.50 (0.37)        | 1     | 115                  | 120               | 12.7                | 12.7        | 6         | 1 ¼ in. GFP                                 | 23.0 (660)       | 16 (406)                                    | 26 (12)                      | 300              |
| PF100512                    | 10 (0.6)              | 0.50 (0.37)        | 1     | 230                  | 240               | 6.3                 | 6.3         | 6         | 1 ¼ in. GFP                                 | 23.0 (660)       | 16 (406)                                    | 26 (12)                      | 300              |
| PF100712 <sup>4,5</sup>     | 10 (0.6)              | 0.75 (0.56)        | 1     | 230                  | 240               | 8.3                 | 8.3         | 8         | 1 ¼ in. GFP                                 | 25.9 (658)       | 17 (432)                                    | 30 (14)                      | 300              |
| PF101012 <sup>5,6</sup>     | 10 (0.6)              | 1.00 (0.75)        | 1     | 230                  | 240               | 9.6                 | 9.6         | 9         | 1 ¼ in. GFP                                 | 27.9 (709)       | 18 (457)                                    | 33 (15)                      | 100              |
| PF102012 <sup>5,6,7,8</sup> | 10 (0.6)              | 2.00 (1.49)        | 1     | 230                  | 240               | 12.1                | 12.1        | 18        | 1 ¼ in. SS                                  | 39.5 (1003)      | 22 (559)                                    | 48 (22)                      | 100              |
| PF200511                    | 20 (1.3)              | 0.50 (0.37)        | 1     | 115                  | 120               | 12.3                | 12.5        | 4         | 1 ¼ in. GFP                                 | 22.3 (566)       | 18 (457)                                    | 25 (11)                      | 300              |
| PF200512                    | 20 (1.3)              | 0.50 (0.37)        | 1     | 230                  | 240               | 6.4                 | 6.5         | 4         | 1 ¼ in. GFP                                 | 22.5 (572)       | 18 (457)                                    | 26 (12)                      | 300              |
| PF201012 <sup>4,5</sup>     | 20 (1.3)              | 1.00 (0.75)        | 1     | 230                  | 240               | 10.5                | 10.5        | 7         | 1 ¼ in. GFP                                 | 28.4 (721)       | 20 (508)                                    | 33 (15)                      | 100              |
| PF201512 <sup>4,5</sup>     | 20 (1.3)              | 1.50 (1.11)        | 1     | 230                  | 240               | 12.4                | 12.6        | 9         | 1 ¼ in. GFP                                 | 34.0 (864)       | 24 (610)                                    | 41 (19)                      | 100              |
| PF300511                    | 30 (1.9)              | 0.50 (0.37)        | 1     | 115                  | 120               | 11.8                | 11.8        | 3         | 1 ¼ in. GFP                                 | 21.3 (541)       | 20 (508)                                    | 28 (13)                      | 300              |
| PF300512                    | 30 (1.9)              | 0.50 (0.37)        | 1     | 230                  | 240               | 6.2                 | 6.2         | 3         | 1 ¼ in. GFP                                 | 21.3 (541)       | 20 (508)                                    | 25 (11)                      | 300              |
| PF300712                    | 30 (1.9)              | 0.75 (0.56)        | 1     | 230                  | 240               | 8.5                 | 8.5         | 5         | 1 ¼ in. GFP                                 | 24.8 (630)       | 21 (533)                                    | 29 (13)                      | 300              |
| PF301012 <sup>4</sup>       | 30 (1.9)              | 1.00 (0.75)        | 1     | 230                  | 240               | 10.4                | 10.4        | 6         | 1 ¼ in. GFP                                 | 27.0 (686)       | 22 (559)                                    | 32 (15)                      | 100              |
| PF301512 <sup>4,5</sup>     | 30 (1.9)              | 1.50 (1.11)        | 1     | 230                  | 240               | 12.6                | 12.6        | 8         | 1 ¼ in. GFP                                 | 32.8 (833)       | 24 (610)                                    | 40 (18)                      | 100              |
| PF302012 <sup>5,6,7</sup>   | 30 (1.9)              | 2.00 (1.49)        | 1     | 230                  | 240               | 11.0                | 11.0        | 10        | 1 ¼ in. SS                                  | 35.5 (902)       | 26 (660)                                    | 44 (20)                      | 100              |
| PF303012 <sup>5,6,7,8</sup> | 30 (1.9)              | 3.00 (2.23)        | 1     | 230                  | 240               | 16.8                | 16.8        | 14        | 1 ¼ in. SS                                  | 44.5 (1130)      | 33 (838)                                    | 54 (24)                      | 100              |
| PF305012 <sup>5,6,7,8</sup> | 30 (1.9)              | 5.00 (3.73)        | 1     | 230                  | 240               | 25.6                | 25.8        | 23        | 1 ¼ in. SS                                  | 66.5 (1689)      | 53 (1346)                                   | 82 (37)                      | 100              |
| PF500511                    | 50 (3.2)              | 0.50 (0.37)        | 1     | 115                  | 120               | 12.1                | 12.1        | 2         | 2 in. SS                                    | 20.3 (516)       | 24 (610)                                    | 27 (12)                      | 300              |
| PF500512                    | 50 (3.2)              | 0.50 (0.37)        | 1     | 230                  | 240               | 6.2                 | 6.2         | 2         | 2 in. SS                                    | 20.3 (516)       | 24 (610)                                    | 27 (12)                      | 300              |
| PF500712                    | 50 (3.2)              | 0.75 (0.56)        | 1     | 230                  | 240               | 8.5                 | 8.5         | 3         | 2 in. SS                                    | 23.7 (602)       | 25 (635)                                    | 31 (14)                      | 300              |
| PF501012                    | 50 (3.2)              | 1.00 (0.75)        | 1     | 230                  | 240               | 10.1                | 10.1        | 4         | 2 in. SS                                    | 27.0 (686)       | 26 (660)                                    | 35 (16)                      | 100              |
| PF501512 <sup>4</sup>       | 50 (3.2)              | 1.50 (1.11)        | 1     | 230                  | 240               | 12.5                | 12.6        | 5         | 2 in. SS                                    | 32.5 (826)       | 30 (762)                                    | 41 (19)                      | 100              |
| PF503012 <sup>4,5,7,8</sup> | 50 (3.2)              | 3.00 (2.23)        | 1     | 230                  | 240               | 17.7                | 17.7        | 8         | 2 in. SS                                    | 43.0 (1092)      | 37 (940)                                    | 55 (25)                      | 100              |
| PF505012 <sup>5,6,7,8</sup> | 50 (3.2)              | 5.00 (3.73)        | 1     | 230                  | 240               | 26.2                | 26.4        | 13        | 2 in. SS                                    | 65.4 (1661)      | 55 (1397)                                   | 64 (29)                      | 100              |
| PF751012                    | 75 (4.7)              | 1.00 (0.75)        | 1     | 230                  | 240               | 9.9                 | 10.0        | 3         | 2 in. SS                                    | 27.0 (686)       | 27 (686)                                    | 34 (15)                      | 100              |
| PF751512                    | 75 (4.7)              | 1.50 (1.11)        | 1     | 230                  | 240               | 12.1                | 12.3        | 4         | 2 in. SS                                    | 33.4 (848)       | 30 (762)                                    | 44 (20)                      | 100              |

<sup>1</sup> GFP = glass-filled polypropylene; SS = stainless steel. The 1 ¼-in. NPT GFP discharge is 2 7/8 in. octagonal across flats; the 1 ¼-in. NPT SS discharge is 2 1/8 in. octagonal across flats; and the 2-in. NPT SS discharge is 2 7/8 in. hexagonal across flats. Discharge is female NPT threaded, U.S. nominal size, to accommodate Orenco® discharge hose and valve assemblies. Consult your Orenco Distributor about fittings to connect hose and valve assemblies to metric-sized piping.

<sup>2</sup> Minimum liquid level is for single pumps when installed in an Orenco Biotube® Pump Vault or Universal Flow Inducer. In other applications, minimum liquid level should be top of pump. Consult Orenco for more information.

<sup>3</sup> Weight includes carton and 10-ft (3-m) cord.

<sup>4</sup> High-pressure discharge assembly required.

<sup>5</sup> Do not use cam-lock option (Q) on discharge assembly.

<sup>6</sup> Custom discharge assembly required for these pumps. Contact Orenco.

<sup>7</sup> Capacitor pack (sold separately or installed in a custom control panel) required for this pump. Contact Orenco.

<sup>8</sup> Torque locks are available for all pumps, and are supplied with 3-hp and 5-hp pumps.

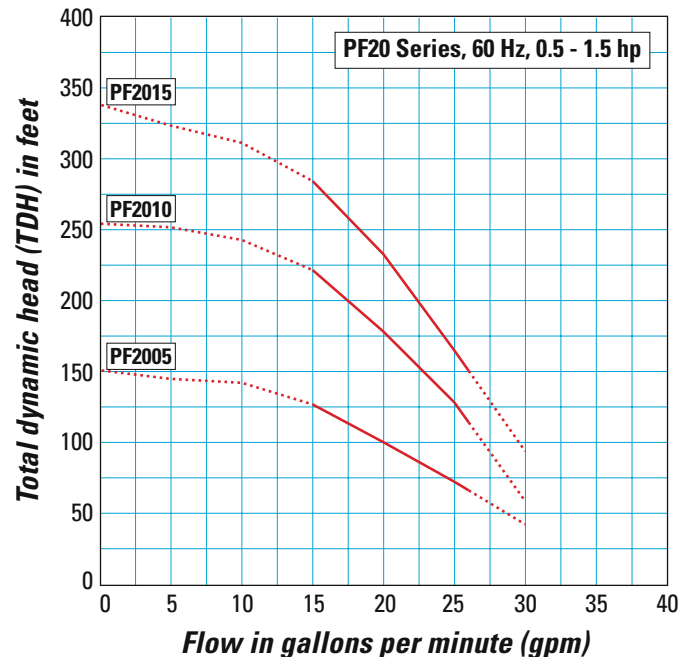
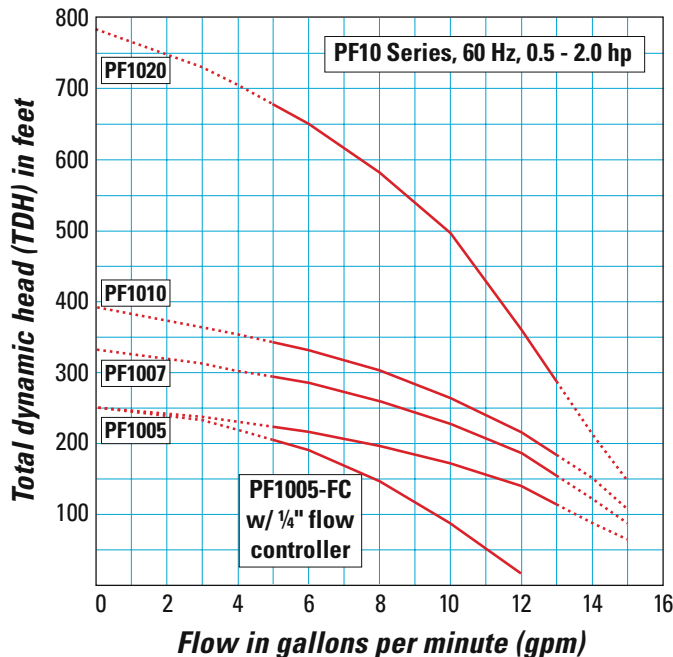
## Materials of Construction

|                    |   |
|--------------------|---|
| Discharge          | Glass-filled polypropylene or stainless steel   |
| Discharge bearing  | Engineered thermoplastic (PEEK)   |
| Diffusers          | Glass-filled PPO (Noryl GFN3)   |
| Impellers          | Celcon® acetal copolymer on 10-, 20, and 30-gpm models; 50-gpm impellers are Noryl GFN3   |
| Intake screen      | Polypropylene   |
| Suction connection | Stainless steel   |
| Drive shaft        | 7/16 inch hexagonal stainless steel, 300 series   |
| Coupling           | Sintered stainless steel, 300 series  |
| Shell              | Stainless steel, 300 series   |
| Motor              | Franklin motor exterior constructed of stainless steel. Motor filled with deionized water and propylene glycol for constant lubrication. Hermetically sealed motor housing ensures moisture-free windings. All thrust absorbed by Kingsbury-type thrust bearing. Rated for continuous duty. Single-phase motors are equipped with surge arrestors for added security. Single-phase motors through 1.5 hp (1.11 kW) have built-in thermal over-load protection, which trips at 203-221° F (95-105° C). |

## Using a Pump Curve

A *pump curve* helps you determine the best pump for your system. Pump curves show the relationship between flow and pressure (total dynamic head, or TDH), providing a graphical representation of a pump's optimal performance range. Pumps perform best at their nominal flow rate. These graphs show optimal pump operation ranges with a solid line and show flow rates outside of these ranges with a dashed line. For the most accurate pump specification, use Orenco's PumpSelect™ software.

## Pump Curves



**Pump Curves, cont.**

