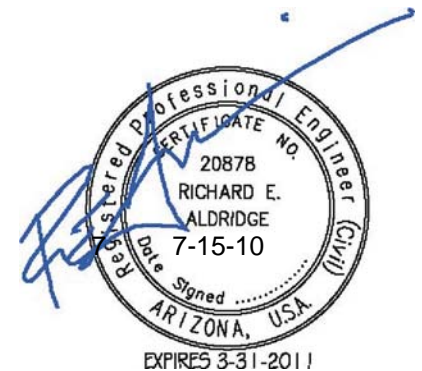


PRESERVE AT THE RANCH LOTS SEWER MEMORANDUM

The following is a summary of the individual lot sewer requirements for all 38 lots within the Preserve at the Ranch subdivision:

1. All pressure sewer system pumps shall be P-Series High-Head Effluent Pumps by Orenco Systems Inc.
2. Septic tank shall be sized to conform to ADEQ and YCHD requirements per R18-9-A314. ICR Sewer District engineer has recommended an additional 250 gallons of capacity to accommodate peak flows. (A 1,500 gallon tank would be adequate for a 4 bedroom house with 28 or less fixture Count.)
3. Pump information and a schematic installation diagram are attached to this memo.
4. A schematic subdivision lot layout with lot numbers is attached to this memo.
5. Pump discharge assembly including check valve, union, pipe, valve and hoses shall match the size of the pump discharge. The on lot piping from the pumping system to the connection to the service connection in the right of way shall match the size of the pump discharge and have a pressure rating equal to or greater than the discharge assembly and service connection pipe. A suitable transition fitting shall be provided at the service connection in the Right of Way.
6. The following is a table of the pressure zone, lot number and required Orenco pump model number.

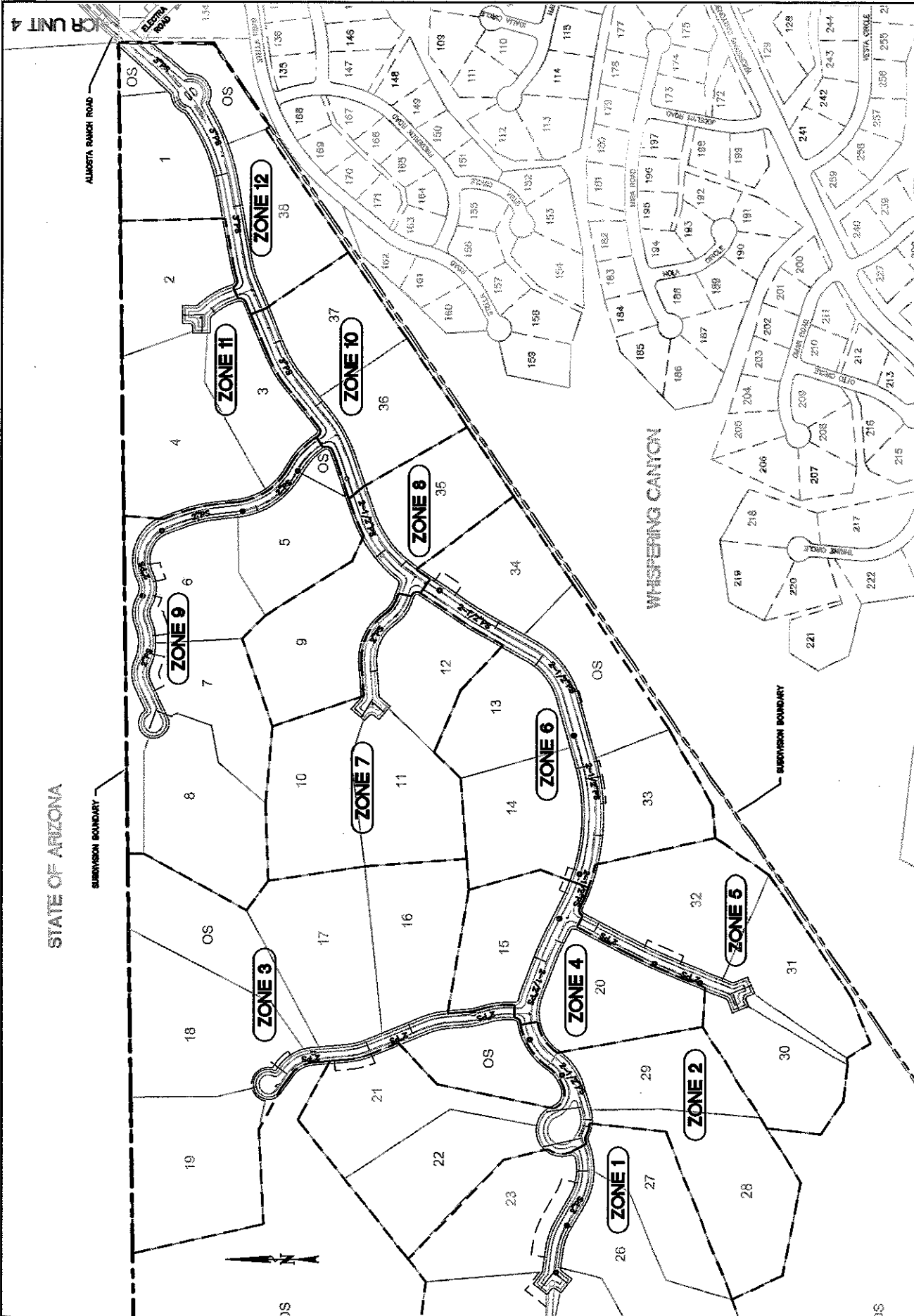
Zone	Lot No.	Units	Pump Model
1,2,3	16,17,18,19,21,22, 23,24,25,26,27,28,29	13	P1010
4,5,6,7,8,9, and 10	5,6,7,8,9,10,11,12,13, 14,15,20,30,31,32,33, 34,35,36,37	20	P1007
11	2,3,4	3	P5010
12	1,38	2	P5010



Prepared by:
SHEPHARD-WESNITZER, INC.

Richard Aldridge
Richard Aldridge, PE, MBA
SWI Branch Manager

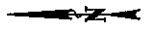
Attachments:
SWI Exhibit A – Sewer System Zones
Orenco Pumps P-Series High-Head Effluent
Pumps Technical Data Sheets
Effluent Pump System Dual Compartment
Drawdown exhibit



NO. DESCRIPTION		DATE	BY
REVISIONS			
JOB NO: 0419		DATE: SEPT. 2004	SCALE: NO SCALE
DRAWN: BY		DESIGN: CB	CHECKED: CB
SHEPARD - WESNITZER, INC. CIVIL ENGINEERING AND SURVEYING 221 N. MARINA ST., SUITE 102, PRESCOTT, AZ 86301 (928) 541-0443		THE PRESERVE AT THE RANCH	
YAVAPAI COUNTY ARIZONA		SHEET 1 OF 1	
EXHIBIT A SEWER SYSTEM ZONES		THE PRESERVE	

STATE OF ARIZONA

SUBDIVISION BOUNDARY



WHISPERING CANYON

SUBDIVISION BOUNDARY

CR UNIT 4

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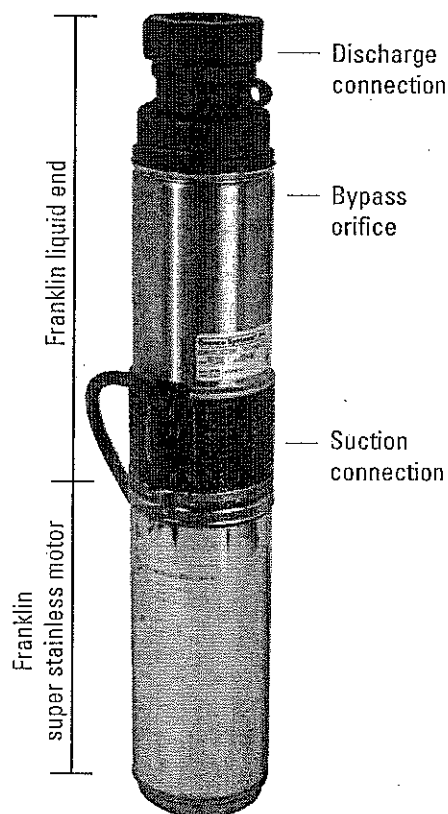
PF Series High-Head Effluent Pumps

Technical Data Sheet

Applications

Our submersible High-Head Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic tanks or separate dosing tanks. All our pumps are constructed of lightweight, corrosion-resistant stainless steel and engineered plastics; all are field-serviceable and repairable with common tools; and all standard 60-Hz PF Series models are CSA certified to the U.S. and Canadian safety standards for effluent pumps, meeting UL requirements.

Orenco's High-Head Effluent Pumps are used in a variety of applications, including pressurized drainfields, packed bed filters, mounds, aerobic units, effluent irrigation, effluent sewers, wetlands, lagoons, and more. These pumps are designed to be used with a Biotube® pump vault.



Features/Specifications

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

- Minimum 24-hour run-dry capability with no deterioration in pump life or performance*
- 1/8-inch (3-mm) bypass orifice (patent pending) 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 models; floating stack design on 50-gpm models
- Super stainless Franklin Electric motor, rated for continuous use and frequent cycling
- Type SOOW motor cable (suitable for Class I, Division 1 and Division 2 applications)
- Five-year warranty from date of manufacture against defects in materials or workmanship

* Not applicable to 5-hp models

Standard Models

See specifications chart, pages 2-3, for a complete list.

Nomenclature

PF -

Cord length:
Blank = 10'
20 = 20'
30 = 30'
50 = 50'

Note: Three-phase cords available only in 10-foot or 30-foot lengths.

Voltage (nameplate):
1 = 115 (1/2 hp only)
200 = 200
2 = 230 (220 if 50 Hz)
4 = 460

Frequency:
1 = single-phase 60 Hz
3 = three-phase 60 Hz
5 = single-phase 50 Hz

Horsepower:
05 = 1/2 hp
07 = 3/4 hp
10 = 1 hp
15 = 1-1/2 hp
20 = 2 hp
30 = 3 hp
50 = 5 hp

Nominal flow (gpm):
10
20
30
50

Pump (PF Series)



Orenco Systems
Incorporated

Changing the Way the
World Does Wastewater®

800-348-9843
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Page 1 of 6

PF Series High-Head Effluent Pumps (continued)

Specifications

60 Hz

Model	Design gpm (L/sec)	Horsepower (kW)	Phase	Nameplate voltage	Actual voltage	Design flow amps	Max amps	Impellers	Discharge size and material ¹	Length, in. (mm)	Min. liquid level, ² in. (mm)	Weight, ³ lb (kg)	Rated cycles/day
PF100511	10 (0.6)	0.5 (0.37)	1	115	120	12.7	12.7	6	1 1/4 in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF100512	10 (0.6)	0.5 (0.37)	1	230	240	6.3	6.3	6	1 1/4 in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF10053200	10 (0.6)	0.5 (0.37)	3	200	208	3.8	3.8	6	1 1/4 in. GFP	23.0 (660)	16 (406)	26 (12)	300
PF100712 ^{4,5}	10 (0.6)	0.75 (0.56)	1	230	240	8.3	8.3	8	1 1/4 in. GFP	25.9 (658)	17 (432)	30 (14)	300
PF10073200 ^{4,5}	10 (0.6)	0.75 (0.56)	3	200	208	5.1	5.2	8	1 1/4 in. GFP	25.4 (645)	17 (432)	31 (14)	300
PF101012 ^{4,5}	10 (0.6)	1 (0.75)	1	230	240	9.6	9.6	9	1 1/4 in. GFP	27.9 (709)	18 (457)	33 (15)	100
PF10103200 ^{4,5}	10 (0.6)	1 (0.75)	3	200	208	5.5	5.5	9	1 1/4 in. GFP	27.3 (693)	18 (457)	37 (17)	300
PF102012 ^{6,7,8}	10 (0.6)	2 (1.49)	1	230	240	12.1	12.1	18	1 1/4 in. SS	39.5 (1003)	22 (559)	48 (22)	100
PF10203200 ^{6,8}	10 (0.6)	2 (1.49)	3	200	208	8.7	8.7	18	1 1/4 in. SS	37.9 (963)	20 (508)	44 (20)	300
PF200511	20 (1.5)	0.5 (0.37)	1	115	120	12.3	12.5	4	1 1/4 in. GFP	22.3 (566)	18 (457)	25 (11)	300
PF200512	20 (1.5)	0.5 (0.37)	1	230	240	6.4	6.5	4	1 1/4 in. GFP	22.5 (572)	18 (457)	26 (12)	300
PF20053200	20 (1.5)	0.5 (0.37)	3	200	208	3.7	3.8	4	1 1/4 in. GFP	22.3 (566)	18 (457)	26 (12)	300
PF201012 ^{4,5}	20 (1.5)	1 (0.75)	1	230	240	10.5	10.5	7	1 1/4 in. GFP	28.4 (721)	20 (508)	33 (15)	100
PF20103200 ^{4,5}	20 (1.5)	1 (0.75)	3	200	208	5.8	5.9	7	1 1/4 in. GFP	27.8 (706)	20 (508)	33 (15)	300
PF201512 ^{4,5}	20 (1.5)	1.5 (1.11)	1	230	240	12.4	12.6	9	1 1/4 in. GFP	34.0 (864)	24 (610)	41 (19)	100
PF20153200 ^{4,5}	20 (1.5)	1.5 (1.11)	3	200	208	7.1	7.2	9	1 1/4 in. GFP	30.7 (780)	20 (508)	35 (16)	300
PF300511	30 (1.9)	0.5 (0.37)	1	115	120	11.8	11.8	3	1 1/4 in. GFP	21.3 (541)	20 (508)	28 (13)	300
PF300512	30 (1.9)	0.5 (0.37)	1	230	240	6.2	6.2	3	1 1/4 in. GFP	21.3 (541)	20 (508)	25 (11)	300
PF30053200	30 (1.9)	0.5 (0.37)	3	200	208	3.6	3.6	3	1 1/4 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 1/4 in. GFP	24.8 (630)	21 (533)	29 (13)	300
PF30073200	30 (1.9)	0.75 (0.56)	3	200	208	4.9	4.9	5	1 1/4 in. GFP	24.6 (625)	21 (533)	30 (14)	300
PF301012 ⁴	30 (1.9)	1 (0.75)	1	230	240	10.4	10.4	6	1 1/4 in. GFP	27.0 (686)	22 (559)	32 (15)	100
PF30103200 ⁴	30 (1.9)	1 (0.75)	3	200	208	5.8	5.8	6	1 1/4 in. GFP	26.4 (671)	22 (559)	33 (15)	300
PF301512 ^{4,5}	30 (1.9)	1.5 (1.11)	1	230	240	12.6	12.6	8	1 1/4 in. GFP	32.8 (833)	24 (610)	40 (18)	100
PF30153200 ^{4,5}	30 (1.9)	1.5 (1.11)	3	200	208	6.9	6.9	8	1 1/4 in. GFP	29.8 (757)	22 (559)	34 (15)	300
PF302012 ^{4,5,7}	30 (1.9)	2 (1.49)	1	230	240	11	11	10	1 1/4 in. SS	35.5 (902)	26 (660)	44 (20)	100
PF30203200 ^{4,5}	30 (1.9)	2 (1.49)	3	200	208	9.3	9.3	10	1 1/4 in. SS	34.0 (864)	24 (610)	41 (19)	300
PF303012 ^{6,7,8}	30 (1.9)	3 (2.23)	1	230	240	16.8	16.8	14	1 1/4 in. SS	44.5 (1130)	33 (838)	54 (24)	100
PF303032 ^{6,8}	30 (1.9)	3 (2.23)	3	230	240	10	10.1	14	1 1/4 in. SS	44.3 (1125)	27 (686)	52 (24)	300
PF305012 ^{6,7,8}	30 (1.9)	5 (3.73)	1	230	240	25.6	25.8	23	1 1/4 in. SS	66.5 (1689)	53 (1346)	82 (37)	100
PF305032 ^{6,8}	30 (1.9)	5 (3.73)	3	230	240	16.6	16.6	23	1 1/4 in. SS	60.8 (1544)	48 (1219)	66 (30)	300
PF500511	50 (3.2)	0.5 (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)	0.5 (0.37)	1	230	240	6.2	6.2	2	2 in. SS	20.3 (516)	24 (610)	27 (12)	300
PF50053200	50 (3.2)	0.5 (0.37)	3	200	208	3.7	3.7	2	2 in. SS	20.3 (516)	24 (610)	28 (13)	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
PF50073200	50 (3.2)	0.75 (0.56)	3	200	208	4.9	4.9	3	2 in. SS	23.1 (587)	26 (660)	32 (15)	300
PF500734	50 (3.2)	0.75 (0.56)	3	460	480	1.8	1.8	3	2 in. SS	34.8 (884)	25 (635)	31 (14)	300
PF501012	50 (3.2)	1 (0.75)	1	230	240	10.1	10.1	4	2 in. SS	27.0 (686)	26 (660)	35 (16)	100
PF50103200	50 (3.2)	1 (0.75)	3	200	208	5.7	5.7	4	2 in. SS	26.4 (671)	26 (660)	39 (18)	300
PF501512 ⁴	50 (3.2)	1.5 (1.11)	1	230	240	12.5	12.6	5	2 in. SS	32.5 (826)	30 (762)	41 (19)	100
PF50153200 ⁴	50 (3.2)	1.5 (1.11)	3	200	208	7	7	5	2 in. SS	29.3 (744)	26 (660)	35 (16)	300
PF503012 ^{4,5,7,8}	50 (3.2)	3 (2.23)	1	230	240	17.7	17.7	8	2 in. SS	43 (1092)	27 (686)	55 (25)	100
PF503032 ^{4,5,8}	50 (3.2)	3 (2.23)	3	230	240	10.4	10.4	8	2 in. SS	40 (1016)	30 (762)	46 (21)	300
PF50303200 ^{4,5,8}	50 (3.2)	3 (2.23)	3	200	208	13.1	13.1	8	2 in. SS	43.4 (1102)	30 (762)	55 (25)	300
PF505032 ^{6,8}	50 (3.2)	5 (3.73)	3	230	240	16.5	16.5	13	2 in. SS	59.3 (1506)	49 (1245)	64 (29)	300
PF751512	75 (4.7)	1.5 (1.11)	1	230	240	12.1	12.3	4	2 in. SS	33.4 (848)	30 (762)	44 (20)	100

NTD-PU-PF-1

Rev. 1.4, 4/08

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Page 2 of 6

See notes on following page.

PF Series High-Head Effluent Pumps (continued)

Model	50 Hz		Phase	Nameplate voltage	Actual voltage	Design flow amps	Max amps	Impellers	Discharge size and material ¹	Length, in. (mm)	Min. liquid level, ² in. (mm)	Weight, ³ lb (kg)	Rated cycles/day
	Design gpm (L/sec)	Horsepower (kW)											
PF100552	10 (0.6)	0.5 (0.37)	1	220	230	3.9	4.1	6	1 1/4 in. GFP	23 (584)	17 (432)	26 (12)	300
PF100752	10 (0.6)	0.75 (0.56)	1	220	230	6.2	6.2	9	1 1/4 in. GFP	26.8 (658)	17 (432)	30 (14)	300
PF300552	30 (1.9)	0.5 (0.37)	1	220	230	4.1	4.1	4	1 1/4 in. GFP	22.5 (572)	19 (483)	26 (12)	300
PF300752	30 (1.9)	0.75 (0.56)	1	220	230	6.1	6.1	5	1 1/4 in. GFP	24.8 (630)	19 (483)	29 (13)	300
PF301052	30 (1.9)	1 (0.75)	1	220	230	7.4	7.4	7	1 1/4 in. GFP	28.4 (721)	20 (508)	32 (15)	100
PF301552 ^{4,5}	30 (1.9)	1.5 (1.11)	1	220	230	9.3	9.3	8	1 1/4 in. GFP	35.4 (899)	24 (610)	40 (18)	100
PF500552	50 (3.2)	0.5 (0.37)	1	220	230	4	4	2	2 in. SS	20.3 (516)	25 (635)	29 (13)	300
PF500752	50 (3.2)	0.75 (0.56)	1	220	230	6.3	6.4	3	2 in. SS	23.7 (602)	25 (635)	31 (14)	300
PF501052	50 (3.2)	1 (0.75)	1	220	230	7.3	7.4	4	2 in. SS	27 (686)	26 (660)	35 (16)	100
PF501552	50 (3.2)	1.5 (1.11)	1	220	230	9.1	9.1	5	2 in. SS	32.5 (826)	30 (762)	42 (19)	100

¹ GFP = glass-filled polypropylene; SS = stainless steel. The 1 1/4-in. NPT GFP discharge is 2 7/8 in. octagonal across flats; the 1 1/4-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.

² 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.

³ Weight includes carton and 10-ft cord.

⁴ High-pressure discharge assembly required.

⁵ Do not use cam-lock option (O) on discharge assembly.

⁶ Custom discharge assembly required for these pumps. Contact Orenco.

⁷ Capacitor pack included with pump. Custom control panel required.

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

Materials of Construction

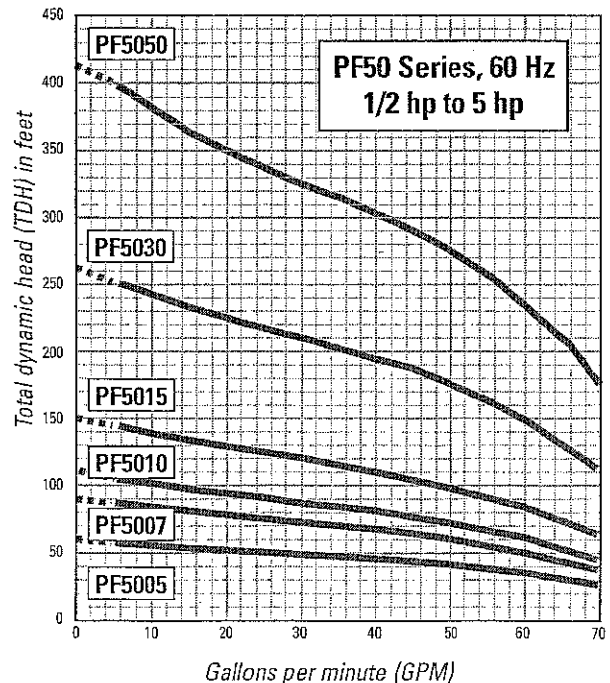
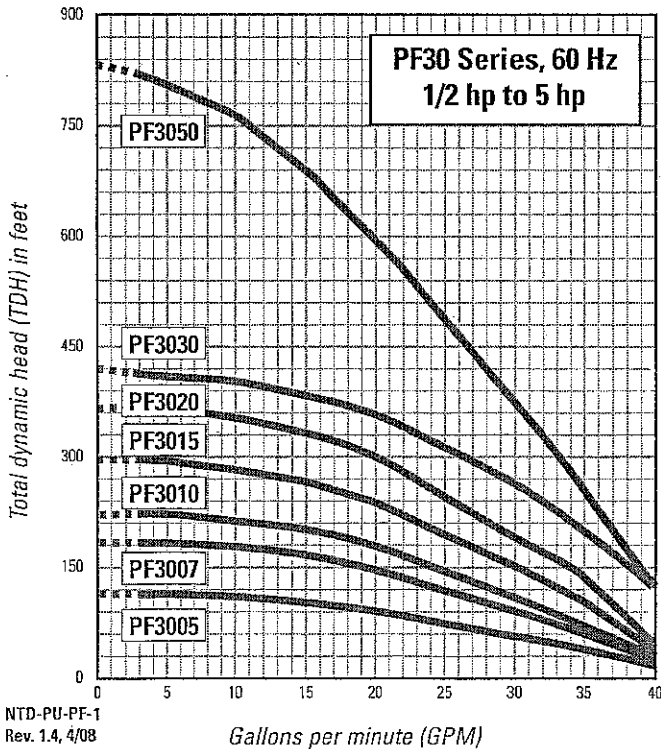
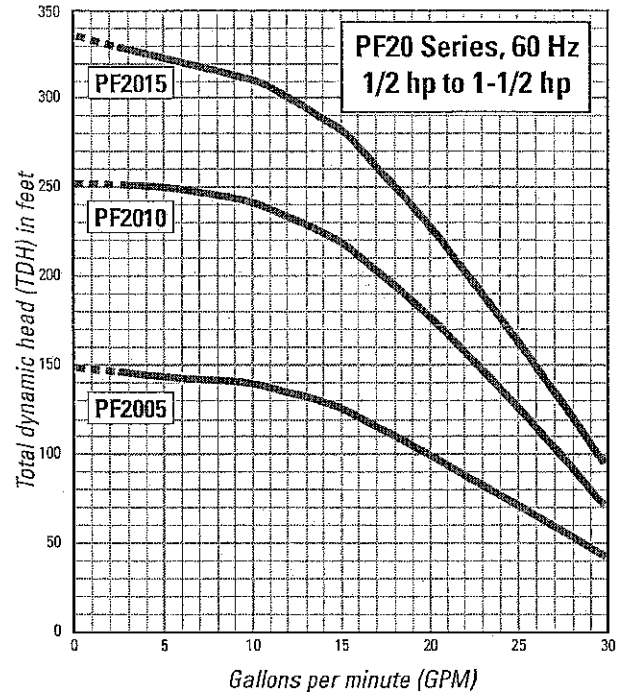
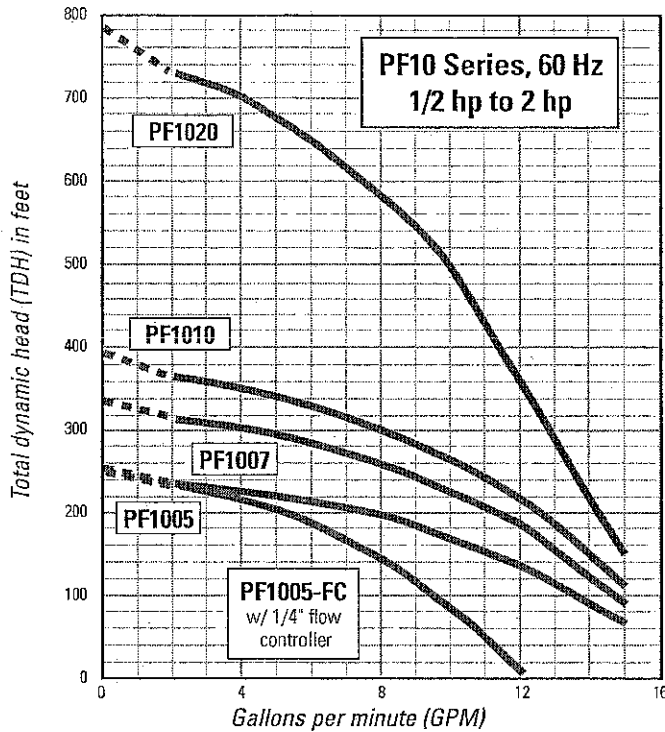
Discharge:	Glass-filled polypropylene or stainless steel
Discharge bearing:	Engineered thermoplastic (PEEK)
Diffusers:	Glass-filled PPO (Noryl GFN3)
Impellers:	Celcon® acetal copolymer on 10-, 20, and 30-gpm models; 50-gpm impellers are Noryl GFN3
Intake screen:	Polypropylene
Suction connection:	Stainless 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 assures moisture-free windings. All thrust absorbed by Kingsbury-type thrust bearing. Rated for continuous duty. Protected against thermal overload and equipped with surge arrestors for added security.

PF Series High-Head Effluent Pumps (continued)

Using a Pump Curve

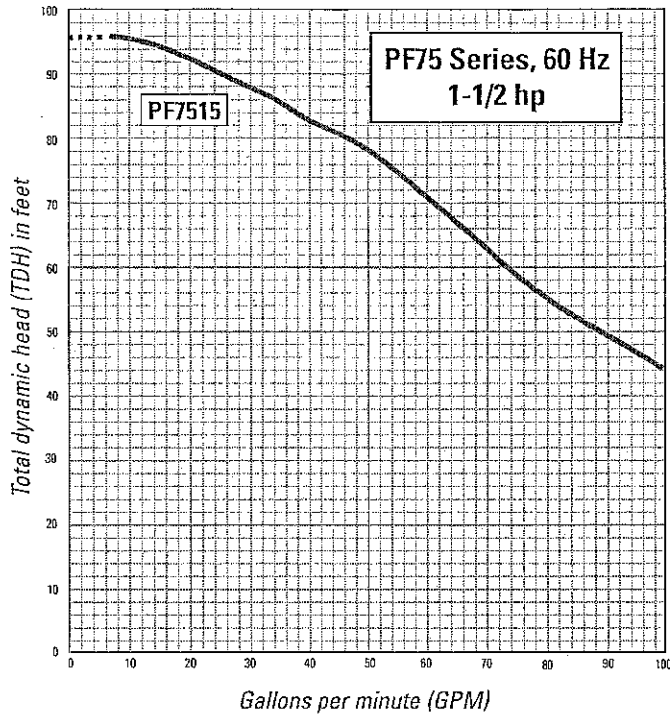
A *pump curve* helps you determine the best pump for your system. Pump curves show the relationship between flow (gpm or L/sec) and pressure (total dynamic head, or TDH), providing a graphical representation of a pump's optimal performance range. Pumps perform best at their *nominal flow rate*—the value, measured in gpm (or L/sec), expressed by the first two numerals in an Orenco pump nomenclature. At low flow rates, TDH varies from pump to pump, so it is represented as a dashed line in the pump curves. For most accurate pump specification, use Orenco's PumpSelect™ software.

60 Hz Models



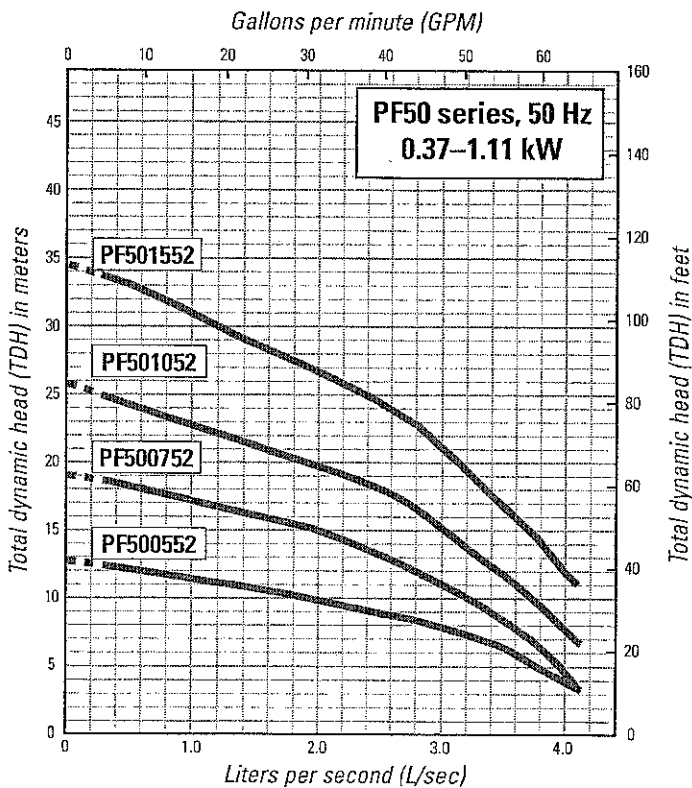
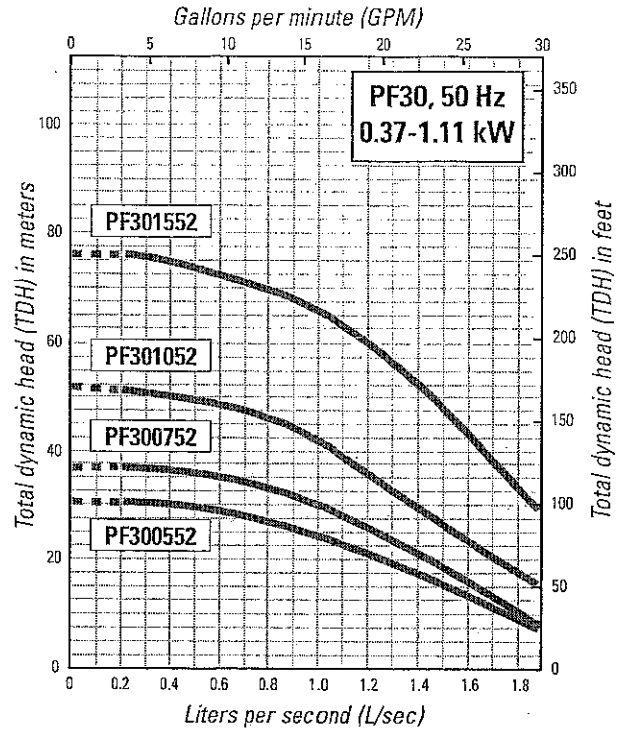
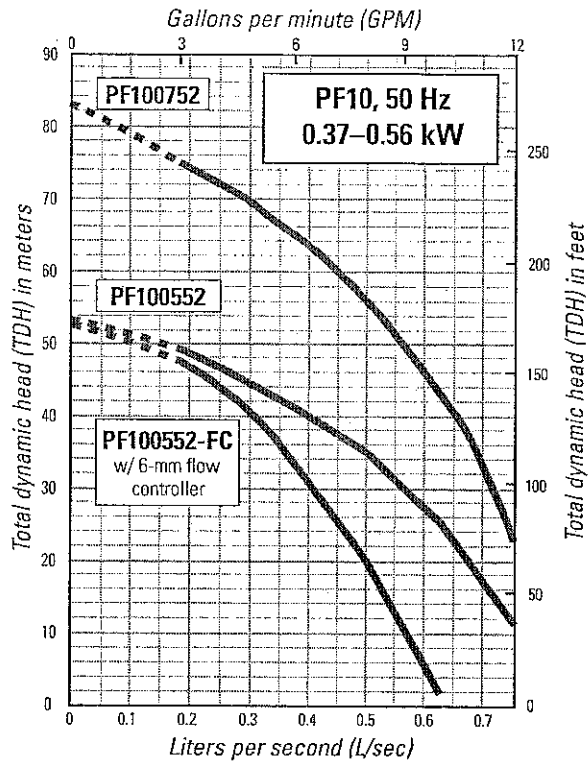
PF Series High-Head Effluent Pumps (continued)

60 Hz Models (continued)



PF Series High-Head Effluent Pumps (continued)

50 Hz Models





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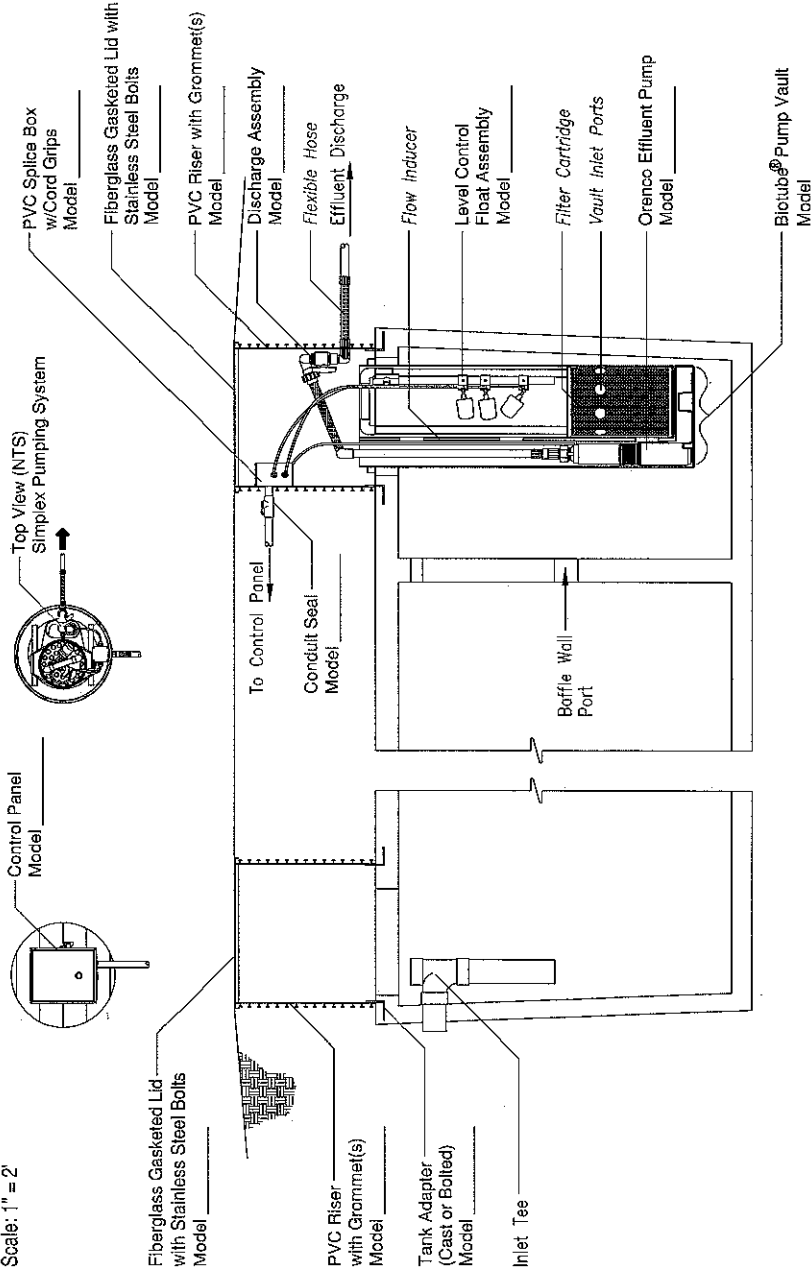
814 AIRWAY AVENUE
SUTHERLIN, OREGON
97479-9012

TOLL FREE:
(800) 346-9843

TELEPHONE:
(541) 459-4449
FACSIMILE:
(541) 459-2884

Effluent Pumping System - Dual Compartment Drawdown

Scale: 1" = 2'



Patents # 4,439,323 & 5,492,635
Foreign Patents May Apply
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NDW-TD-EPS-04
Rev. 3.0 (03/06)