NAVO & SONS, INC.

PO Box 975
815 Idaho-Maryland Rd.
Grass Valley CA 95945

"Your Septic System Specialist"
530 273-2964
530 885-6066
916 652-7665
www.navo.com

Certificate

I am a duly registered environmental Health Specialist in the State of California. My registration number is 6884. I have completely and thoroughly reviewed the site described as Assessor's Parcel Number 009-320-004 and, in accordance with the County Land Use and Development Code, Chapter VI, and my field inspection and tests, the attached design is submitted.

I will make field inspections to determine that the facilities are constructed in accordance with my design. I hereby certify that these facilities as recommended and designed have been designed in accord with sound engineering principles, and satisfactory performance is expected. However, the state of the art sewage disposal system design is such that no guarantee can be made as to the length of time that satisfactory service will occur.

I understand that, prior to requesting a sewage disposal system construction permit final approval, I will have to certify in writing to the permit file that the installation described above has been installed in conformance with the construction design.

Date: 5/5/26

Marc Lindbloom, REHS #6884

REVIEWED AND ACCEPTED

NEVADA COUNTY ENVIRONMENTAL HEALTH DEPARTMENT
Reviewed and accepted in conformance with NCDEH Local Area Management Plan (LAMP) and other applicable requirements. Structures on this site plan have not been reviewed for approval.

By: Carrie McReynolds Date: 05/06/2026

For: EH26-0127 Septic for Rooming House; 6 Occupants ONLY

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Pump to Gravity System Design

May 1, 2026

To: Nevada County Health & Human Services
950 Maidu Ave
Nevada City, CA 95959

Reference: 11855 Slow Poke Lane Grass Valley, CA 95945 APN: 009-320-004

This design is used to apply for the installation permit with the County and get an estimated install price from your desired installer.

Project Details: Soil testing evaluation (results attached) were performed on 03/04/2025 by: Navo & Sons, Inc. to establish a sewage disposal site for 6 occupants.

Calculations

This site is suited for a **"Pump to Gravity"** sewage disposal system around soil test pits 1.

The average percolation rate around these soil test pits is 7 mpi. (see percolation data page)

Application rate = 3.5 / $\sqrt{7}$ = 1.32 gal / ft2 / day

80 gal / day* / 1.32 gal / ft2 / day = 61 ft2

61 ft2 / 3 ft2 / L.F. = 20 L.F. of **"Pump to Gravity"** leach line per Occupant

*Sewage flows are based on the requirements for a rooming house at 80 gal / person / day

Installation/ Design Details: **"Pump to Gravity System"** for: 6 Occupants

(Minimum footage required) as shown on the approved site plan*: 120 lineal feet (recommend 140')

Depth of Trench *LEVEL ON COUNTOUR: 24" Width of Trench: 36"

Minimum Trench separation: **7-feet on center**

Minimum required septic tank size: 1500 gallons (requires new)

Minimum required discharge (pump) tank size: 1500 gallons

(See "Pump to Gravity Installation Guidelines" for installation details)

Use this design to apply for the permit for installation and/or get an accurate installation price. If desired to have our installation division work up an installation, please contact our office.

Dave Slaughter, REHS #7471

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Percolation Data Sheet

11855 Slow Poke Ln Grass Valley, CA 95945 APN: 009-320-004

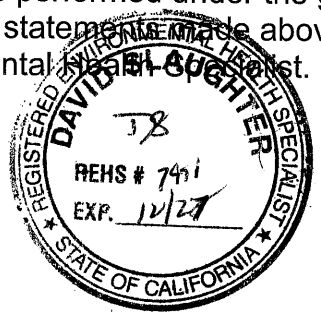
	(P1)			(P2)			(P3)		
	Interval	Depth: 30"		Interval	Depth: 30"		Interval	Depth 30"	
1	0	32.00	Drop	0	30.50	Drop	0	34.50	Drop
2	10	28.13 (r) 33.38	3.88	10	28.75 (r) 34.00	1.75	10	28.88 (r) 36.63	5.63
3	10	30.50	2.88	10	32.50	1.50	10	33.63	3.00
4	10	28.00	2.50	10	31.00	1.50	10	30.63	3.00
5	10	25.50	2.50						
6									
7									
8									
	Perc Rate (MPI)		4.0 ✓	Perc Rate (MPI)		6.7 ✓	Perc Rate (MPI)		3.33 ✓
Average Perc Rate using correction factor 1.59 = 7.0 ✓ mpi									

(r) = Percolation test holes are refilled between each reading

Test Date: 03/04/2025

Test Conducted By: Cory Pavan

These percolation tests were performed under the guidelines set forth in County Sewage Disposal Technical Regulations. The statements made above are true and testing was conducted under the supervision of an Environmental Health Specialist.



JOB COPY

NEVADA COUNTY SOIL TEST-PIT LOG

Test Date: 3-5-25 Page 1 of 1

Parent Rock Type: V (G) MS A Other Consultant: DR ES Carrie / Amy

SOIL PIT# 1 **1ST HORIZON** Depth: 0 to 39
Slope: ____% Aspect: ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: 2.5 YR 2.5/3
Redoxymorphic Features: (none) few common many
RC color____ RD color____ RM color____
Structure: gran platy (block) prism f m c single grain massive
Soil Pores: none few common (many) f m c inters tubular
Moist Consistence: (l) vfr fr f vf ef
Plasticity: (np) sp mp vp Stickiness: (ns) ss ms vs
Roots: none few common (many) vf f m c
Boundary: Distinctness: a (c) g d Topography: (s) w i b
Moisture: dry (moist) wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

SOIL PIT# **1ST HORIZON** Depth: ____ to ____
Slope: ____% Aspect: ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

2ND HORIZON Depth: 39 to 48 1/2
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: 2.5 YR 4/4
Redoxymorphic Features: (none) few common many
RC color____ RD color____ RM color____
Structure: gran platy (block) prism f m c single grain massive
Soil Pores: none few (common) many f m c inters tubular
Moist Consistence: (l) vfr fr f vf ef
Plasticity: np (sp) mp vp Stickiness: (ns) ss ms vs
Roots: none (few) common many vf f m c
Boundary: Distinctness: a (c) g d Topography: (s) w i b
Moisture: dry (moist) wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

2ND HORIZON Depth: ____ to ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

3RD HORIZON Depth: ____ to ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

3RD HORIZON Depth: ____ to ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.

4TH HORIZON Depth: ____ to ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.
Effective Soil Depth: ____ Groundwater ____

4TH HORIZON Depth: ____ to ____
Texture: s ls sl sc scl l c cl sic sicl sil si DRX IWRX MWRX DG
Rock Fragments: gravel ____% cobble ____% stone ____%
Color: ____
Redoxymorphic Features: none few common many
RC color____ RD color____ RM color____
Structure: gran platy block prism f m c single grain massive
Soil Pores: none few common many f m c inters tubular
Moist Consistence: l vfr fr f vf ef
Plasticity: np sp mp vp Stickiness: ns ss ms vs
Roots: none few common many vf f m c
Boundary: Distinctness: a c g d Topography: s w i b
Moisture: dry moist wet saturated
NOTES: ____
Same as SOIL PIT #____, Horizon #____.
Effective Soil Depth: ____ Groundwater ____

Consultant Signature DR

Nevada County Staff Signature

APN 009-320-004 JOB # EH25-0029

Notes:

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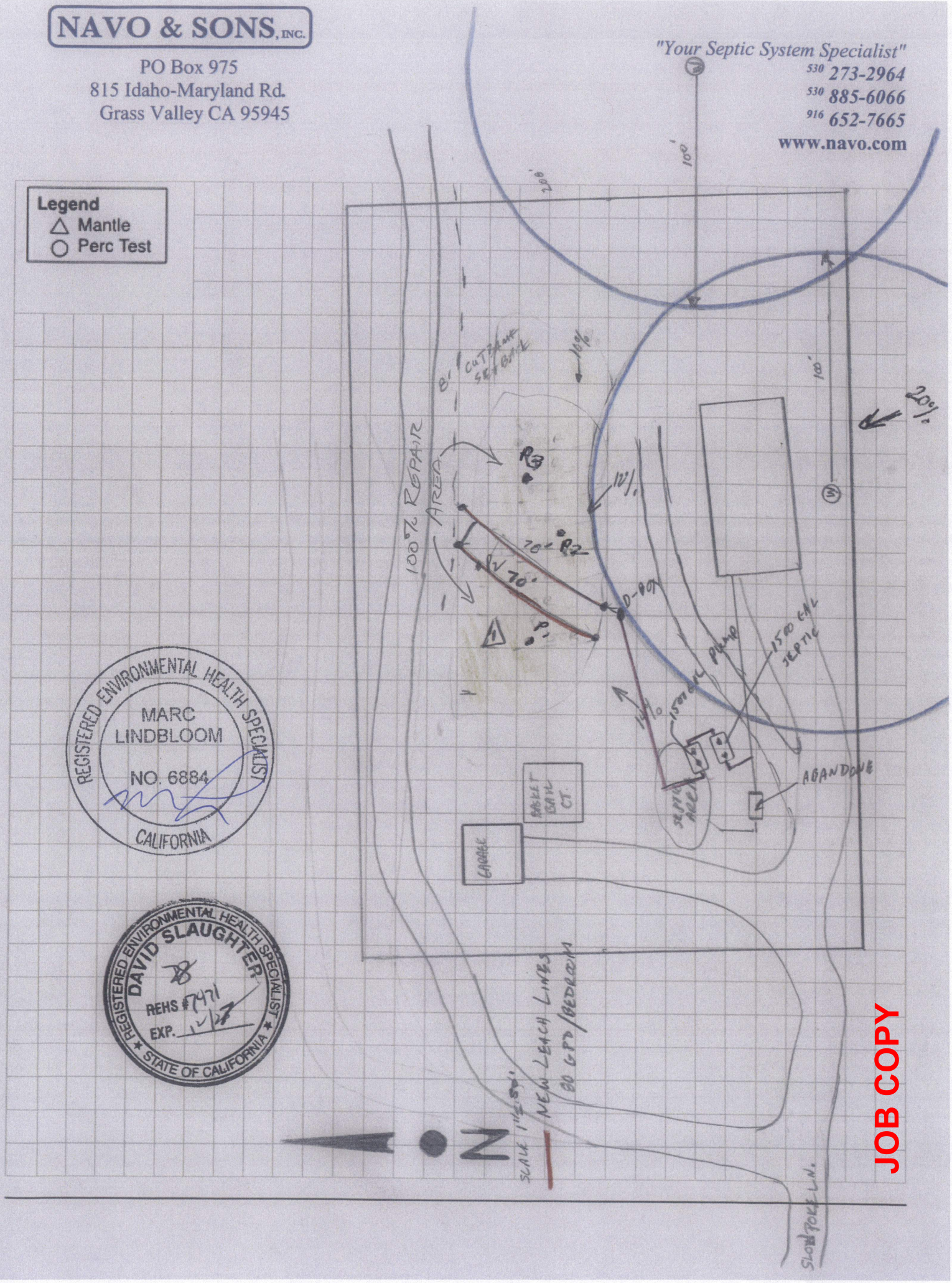

REGISTERED ENVIRONMENTAL HEALTH SPECIALIST
MARC LINDBLOOM
NO. 6884
CALIFORNIA

REGISTERED ENVIRONMENTAL HEALTH SPECIALIST
DAVID SLAUGHTER
REHS #7471
EXP. 12/23
STATE OF CALIFORNIA

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Pump to Gravity Installation Guidelines

We recommend a licensed (C-42 or General A) and insured contractor to install this septic system, that is both familiar and experienced in installing septic systems in this County.

Septic Tank: We recommend installing septic tank with a 4-inch inlet and outlet sanitary tees.**(for minimum size requirements** *see page 1 "Installation/ Design Details*)

Septic tank shall be installed with an effluent filter in second chamber of the tank and water-tight risers over each lid as specified in the local sewage ordinance.

PLEASE NOTE: IF there is an existing septic on site, you may be able to reuse it, IF you get a "passing" pumpers report showing that it meets the local sewage ordinance and the above minimum requirements.

Pump tank: We recommend installing a single compartment, precast concrete, as approved by the County Environmental Health. (for minimum size requirements *see page 1 "Installation/ Design Details*) Tank to be fitted with a riser over both lids. The pump vault shall be installed so that removal is easily facilitated for annual cleaning.

Pump tank pump: Orenco Systems Inc., effluent pump or equivalent. (*see head loss calculations/ pump curve page for pump details)*

Pump screen and pump assembly: The pump (in the pump tank) is to be screened using an Orenco Systems, Inc., Bio-tube screen and pump vault or equivalent. Hose and valve assembly shall include a high-pressure PVC flexible discharged assembly, Orenco System, Inc. or equivalent. Discharge pump line shall have an in-line check valve, threaded union, and ball valve. Water level control float switches shall be Orenco Systems, Inc., or equivalent (see pump tank cross-section). Float switch and wires shall be securely attached to a rigid upright riser, so that they will not slip or tangle. A high level alarm float, on / off float, and redundant off / low-level alarm float shall be provided. Pump and alarm shall be on separate electrical circuits.

Discharge pipe: Transport pipe and fittings shall be 2" PVC schedule 40 pipe. All pipes shall be solvent welded watertight.

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Control panel: Use an on demand Orenco Systems, Inc. control panel (or equivalent) with an audible and visual high and low level water level alarm shall be located in or on the side of the building served by the pump. This should not be affixed outside a bedroom wall if at all possible. A manual override switch in the panel to be provided for the pump to facilitate dosing control monitoring inspections. *(see control panel page for details about control panel needed)*

Leach Field: All absorption trenches should be placed **LEVEL ON CONTOUR** as per *"Installation/ Design Details on page one*. The bottom of the trenches should be level. Each trench shall be separated as specified on *page 1 "Installation/ Design Details*.

If Drain Rock is desired: Please note that 6-inches of 3/4 to 1 1/2-inch, washed drain rock should be placed below a 4-inch perforated pipe (with the perforations placed down) and an additional 2-inches of rock over the pipe for a total of 12-inches of rock in the trench *(see enclosed cross-section drawings)*
(OR if desired an equal amount of Easy-flow drain system can be installed

The surface between the soil and drain rock (or Easy-flow) should be covered with a permeable, non-woven geo-textile fabric (or a 4-inch thick layer of straw) to prevent migration of overlaying fine grained soils into the drain rock. *(see enclosed standard system cross section)*

The trench should be backfilled with a minimum 12-inch clean, native soil and mounded over each trench to allow for settlement.

Distribution: Prior to the leach field, allow all effluent from the discharge tank to flow into a single compartment, precast concrete Distribution box, as approved by County Environmental Health. Distribution boxes or elevated cross-overs to promote "serial" effluent distribution between trenches should be used. *(see enclosed cross-section drawings)*

Observation Wells: Install the 4" diameter plastic observation well pipes at the end of each trench. Pipe to have 1/8" wide slots from the bottom of rock to top of rock. Pipes to be capped, not glued. *(see enclosed cross-section drawings)*

Electrical Components: There shall be 2 circuits suppled to the pump system; one for the pump and a separate one for the panel. Please refer to local electrical codes for installation of the electrical components. *(see control panel and wiring for more details)*

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Maintenance

The outlet effluent filter should be pulled and cleaned annually by washing it off with a regular water hose in the inlet compartment. This can be done by the homeowner or we offer a service to inspect and clean them

Septic tank maintenance should include pumping the septic when solids are between 25-33% (typically every three to five years). Because the septic tank maintenance is critical to the over-all performance of the sewage disposal system, failure to perform this maintenance can lead to sedimentation and premature failure of the leach lines.

The primary and 100% repair area must be protected from vehicular traffic, corrals, animal enclosures, stables, structures, below or above ground pools, or any other activity that causes alterations such as grading, cuts/fills, etc. Failure to do so may void this report.

Please note that all roof drainage should be diverted away from the leach field. Irrigation in the area of the leach trenches should be kept to a minimum to avoid saturating the soil. Drip irrigation should be used.

Also we recommend water conservation should be enlisted for household water use to maximize the life expectancy of the absorption trenches. Also take care of any household leaks immediately to avoid unnecessary saturating of the leach trenches.

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Pump to Gravity Trench Inspection Requirements

In addition to inspections conducted by Environmental Health, the design consultant will conduct inspections of the critical steps of the construction process. Upon completion, the design consultant will certify to the Health Department that the system was installed in accordance to the approved design.

Please note: A minimum of 48 hours notice is required for any requested inspections for the designer and Environmental Health Department.

1. Tank and Discharge tank Flow/Operation Test - After the tanks, field and all plumbing/electrical connections installed. IF a watertight test is required, it would be done at this time.

2. Final Cover/Sign-off

The above inspections are expected to take up to 1 hour and are included in our original design costs and are at no additional charge. Additional time or inspection will be charged out at our normal inspection rate.

Limitations

This sewage disposal system has been designed in accordance with sound engineering principles. Satisfactory performance is expected. However, septic system design is such that no guarantee can be made as to the length of time that satisfactory service will occur.

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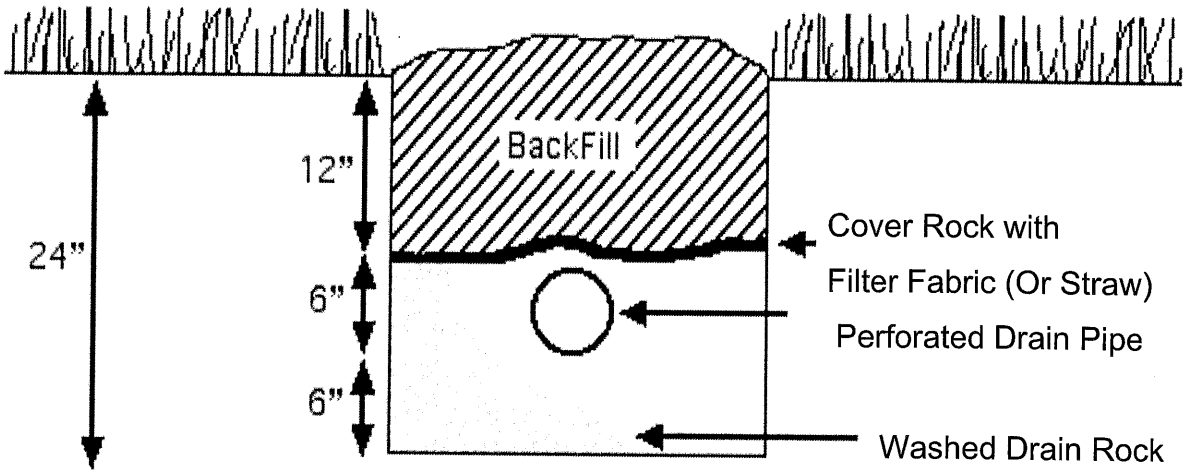
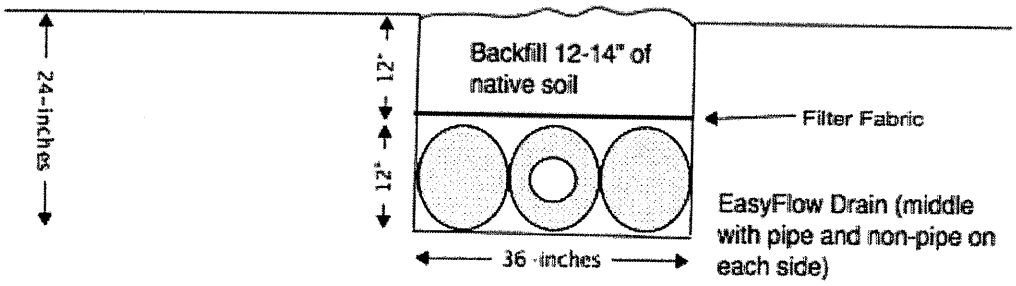
Cross-section Drawings

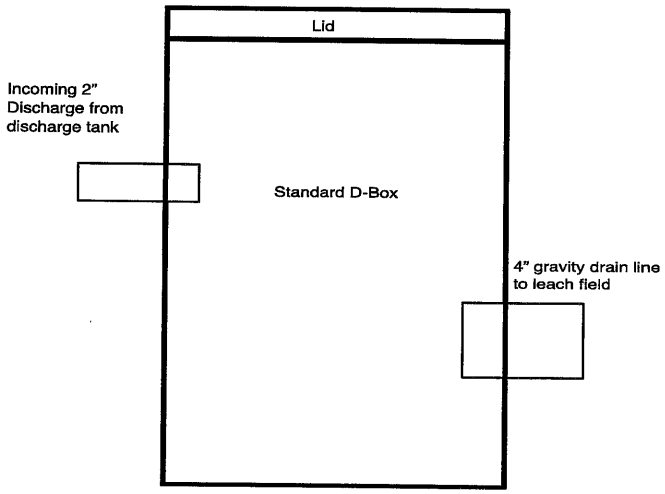
Cross-section of Standard Drain



Cross-section of Easy-Flow Leach line



From Pump to D-Box Schematic



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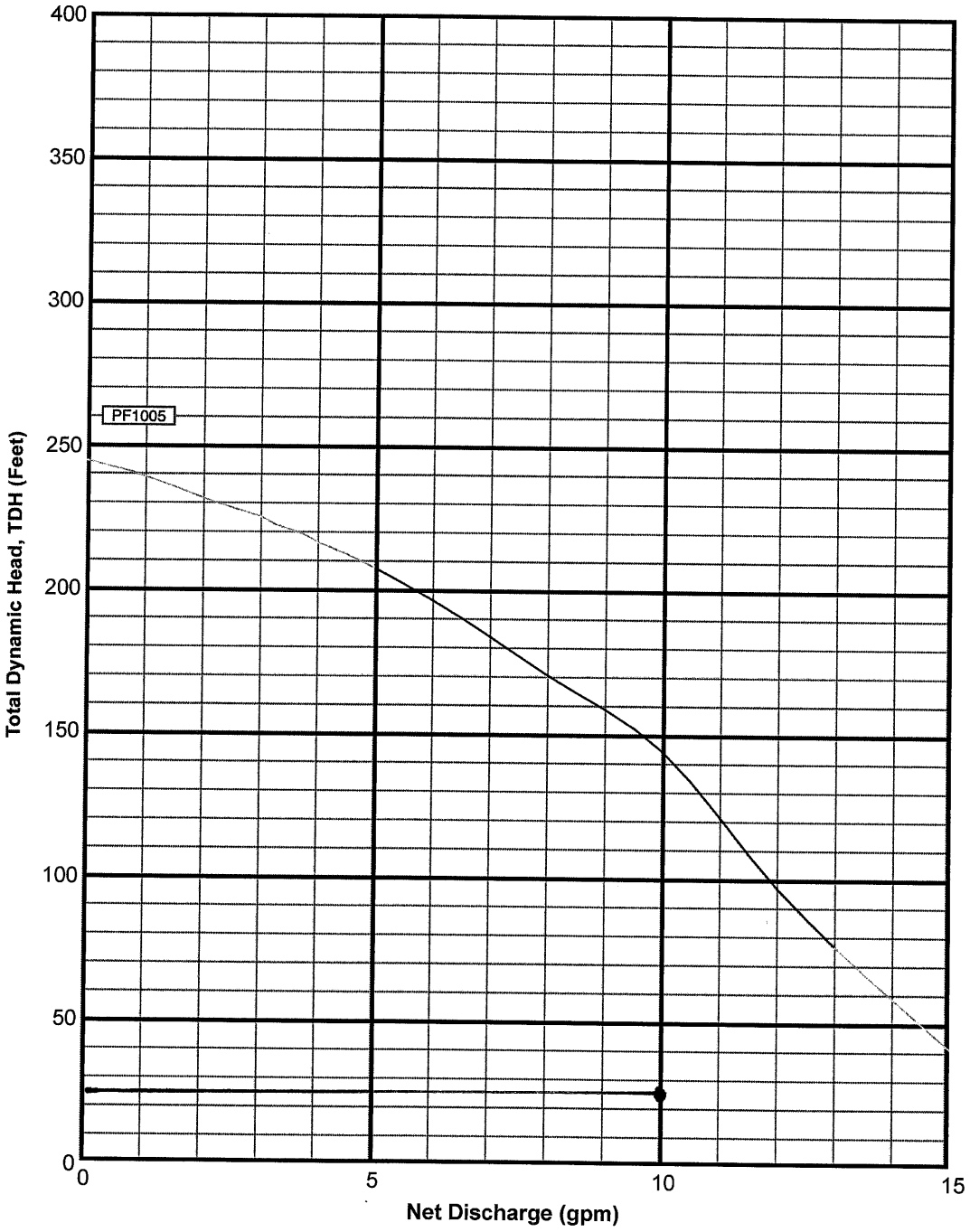
11855 Slow Poke Lane Grass Valley, CA 95945

APN: 009-320-004

Pump Curve
for PF1005



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Pump Selection for a Non-Pressurized System - Single Family Residence Project

11855 SLO POKE

Parameters

Discharge Assembly Size	2.00	inches
Transport Length	100	feet
Transport Pipe Class	40	
Transport Line Size	2.00	inches
Distributing Valve Model	None	
Max Elevation Lift	20	feet
Design Flow Rate	10	gpm
Flow Meter	None	inches
'Add-on' Friction Losses	2	feet

Calculations

Transport Velocity	0.9	fps

Frictional Head Losses

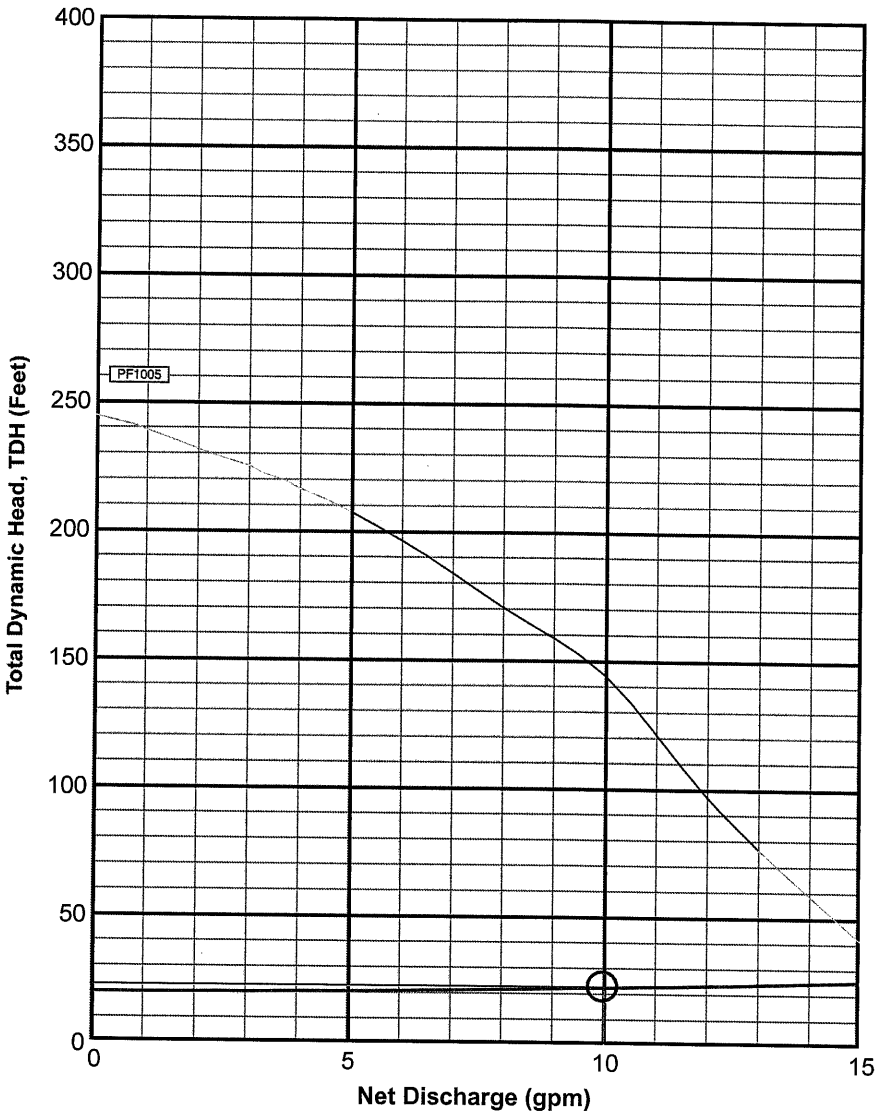
Loss through Discharge	0.2	feet
Loss in Transport	0.2	feet
Loss through Valve	0.0	feet
Loss through Flowmeter	0.0	feet
'Add-on' Friction Losses	2.0	feet

Pipe Volumes

Vol of Transport Line	17.4	gals

Minimum Pump Requirements

Design Flow Rate	10.0	gpm
Total Dynamic Head	22.4	feet



PumpData

PF1005 High Head Effluent Pump
10 GPM, 1/2HP
115/230V 1Ø 60Hz, 200V 3Ø 60Hz

Legend

System Curve:
Pump Curve:
Pump Optimal Range:
Operating Point:
Design Point:

Orenco SYSTEMS
PROTECTING THE WORLD'S WATER

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Orenco® PF-Series 60Hz, 1-Phase Pumps

Applications

Orenco's 60Hz, 1-phase, 4in (100mm) Submersible Effluent Pumps are designed to transport screened effluent (with low TSS counts) from septic or dosing tanks. These pumps are engineered using lightweight, corrosion-resistant stainless steel and polymers, and are field serviceable and repairable with common tools. They're also CSA and UL certified to US and Canadian safety standards for effluent pumps.

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.

C SP US
LR80980
LR2053896

Powered by Franklin Electric

General

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*
- 1/8in (3mm) bypass orifice to ensure flow recirculation for motor cooling and to prevent air binding
- 1/8in (3mm) mesh intake screen to limit solids
- Liquid-end repair kit availability for better long-term cost to own
- TRI-SEAL™ floating impeller design on 10, 20, and 30gpm (0.6, 1.3, and 1.9L/sec) models; floating stack design on 50 and 75gpm (3.2 and 4.7L/sec) models
- Franklin Electric Super Stainless motors are rated for continuous use and frequent cycling, with surge arrestors, hermetically sealed motor housing for moisture-free windings, and Kingsbury-type thrust bearing for thrust absorption
- Thermal overload protection trips at 203-221°F (95-105°C) for 1-phase motors through 1.5hp (1.12kW)
- Type SOOW 600V motor cable (model PF751512 uses 14 AWG, SJOOW, 300V cord)

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

Standard Models

See Specifications on page 2 for a list of standard pumps. For a complete list of available pumps, call Orenco.

Product Code Diagram

PF [10] [05] [1] [1] [CV] - [ ] - [ ]

- CLK = ClickTight™ compatible
- Cord length, ft (m):‡ Blank = 10 (3) 20 = 20 (6) 30 = 30 (9) 50 = 50 (15)
- Check valve: Blank = no internal check valve CV = internal check valve†
- Voltage, nameplate: 1 = 115* 2 = 230
- Frequency: 1 = 1-phase, 60Hz
- Horsepower (kW): 05 = 1/2hp (0.37) 07 = 3/4hp (0.56) 10 = 1hp (0.75) 15 = 1 1/2hp (1.12) 20 = 2hp (1.50) 30 = 3hp (2.24) 50 = 5hp (3.73)
- Nominal flow, gpm (L/sec): 10 = 10 (0.6) 20 = 20 (1.3) 30 = 30 (1.9) 50 = 50 (3.2) 75 = 75 (4.7)
- Pump, PF-Series

* 1/2hp (0.37kW) only
† Available for 10gpm (0.6L/sec), 1/2hp (0.37kW)
‡ Note: 20ft cords are available only for pumps through 1 1/2hp

Specifications

Pump Model	Design gpm (L/sec)	Horsepower (kW)	Phase	Nameplate voltage	Actual voltage	Design flow amps	Max amps	Discharge size and material[1]	Length in (mm)	Min. liquid level in (mm)[2]	Weight lb (kg)[3]	Rated cycles per day
PF100511 [9]	10 (0.6)	0.50 (0.37)	1	115	120	12.7	12.7	1¼in GFP	23.0 (584)	16 (406)	26 (12)	300
PF100511CV [9]	10 (0.6)	0.50 (0.37)	1	115	120	12.7	12.7	1¼in GFP	23.0 (584)	16 (406)	26 (12)	300
PF100512 [9]	10 (0.6)	0.50 (0.37)	1	230	240	6.3	6.3	1¼in GFP	23.0 (584)	16 (406)	26 (12)	300
PF100712 [4,5,9]	10 (0.6)	0.75 (0.56)	1	230	240	8.3	8.3	1¼in GFP	25.9 (658)	17 (432)	30 (14)	300
PF101012 [5,6,9]	10 (0.6)	1.00 (0.75)	1	230	240	9.6	9.6	1¼in GFP	27.9 (709)	18 (457)	33 (15)	100
PF200511 [9]	20 (1.3)	0.50 (0.37)	1	115	120	12.3	12.5	1¼in GFP	22.3 (566)	18 (457)	25 (11)	300
PF200512 [9]	20 (1.3)	0.50 (0.37)	1	230	240	6.4	6.5	1¼in GFP	22.5 (572)	18 (457)	26 (12)	300
PF201012 [4,5,9]	20 (1.3)	1.00 (0.75)	1	230	240	10.5	10.5	1¼in GFP	28.4 (721)	20 (508)	33 (15)	100
PF201512 [4,5]	20 (1.3)	1.50 (1.12)	1	230	240	12.4	12.6	1¼in GFP	34.0 (864)	24 (610)	41 (19)	100
PF300511 [9]	30 (1.9)	0.50 (0.37)	1	115	120	11.8	11.8	1¼in GFP	21.3 (541)	20 (508)	28 (13)	300
PF300512 [9]	30 (1.9)	0.50 (0.37)	1	230	240	6.2	6.2	1¼in GFP	21.3 (541)	20 (508)	25 (11)	300
PF300712 [9]	30 (1.9)	0.75 (0.56)	1	230	240	8.5	8.5	1¼in GFP	24.8 (630)	21 (533)	29 (13)	300
PF301012 [4,9]	30 (1.9)	1.00 (0.75)	1	230	240	10.4	10.4	1¼in GFP	27.0 (686)	22 (559)	32 (15)	100
PF301512 [4,5]	30 (1.9)	1.50 (1.12)	1	230	240	12.6	12.6	1¼in GFP	32.8 (833)	24 (610)	40 (18)	100
PF302012 [5,6,7]	30 (1.9)	2.00 (1.49)	1	230	240	11.0	11.0	1¼in SS	35.5 (902)	26 (660)	44 (20)	100
PF303012 [5,6,7,8]	30 (1.9)	3.00 (2.23)	1	230	240	16.8	16.8	1¼in SS	44.5 (1130)	33 (838)	54 (24)	100
PF305012 [5,6,7,8]	30 (1.9)	5.00 (3.73)	1	230	240	25.6	25.8	1¼in SS	66.5 (1689)	53 (1346)	82 (37)	100
PF500511 [9]	50 (3.2)	0.50 (0.37)	1	115	120	12.1	12.1	2in SS	20.3 (516)	24 (610)	27 (12)	300
PF500512 [9]	50 (3.2)	0.50 (0.37)	1	230	240	6.2	6.2	2in SS	20.3 (516)	24 (610)	27 (12)	300
PF500712 [9]	50 (3.2)	0.75 (0.56)	1	230	240	8.5	8.5	2in SS	23.7 (602)	25 (635)	31 (14)	300
PF501012 [9]	50 (3.2)	1.00 (0.75)	1	230	240	10.1	10.1	2in SS	27.0 (686)	26 (660)	35 (16)	100
PF501512 [4]	50 (3.2)	1.50 (1.12)	1	230	240	12.5	12.6	2in SS	32.5 (826)	30 (762)	41 (19)	100
PF503012 [4,5,7,8]	50 (3.2)	3.00 (2.23)	1	230	240	17.7	17.7	2in SS	52.0 (1321)	37 (940)	55 (25)	100
PF505012 [5,6,7,8]	50 (3.2)	5.00 (3.73)	1	230	240	26.2	26.4	2in SS	77.0 (1956)	55 (1397)	64 (29)	100
PF751012 [9]	75 (4.7)	1.00 (0.75)	1	230	240	9.9	10.0	2in SS	27.0 (686)	27 (686)	34 (15)	100
PF751512	75 (4.7)	1.50 (1.12)	1	230	240	12.1	12.3	2in SS	33.4 (848)	30 (762)	44 (20)	100

1. GFP = glass-filled polypropylene; SS = stainless steel. The 1 1/4in NPT GFP discharge is 2 7/8in octagonal across flats; the 1 1/4in NPT SS discharge is 2 1/8in octagonal across flats; and the 2in NPT SS discharge is 2 7/8in hexagonal across flats. Discharge is NPT threaded receptacle-style port, US 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 10ft (3m) cord.

4. High-pressure discharge assembly required.

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

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

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

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

9. ClickTight™ compatible.

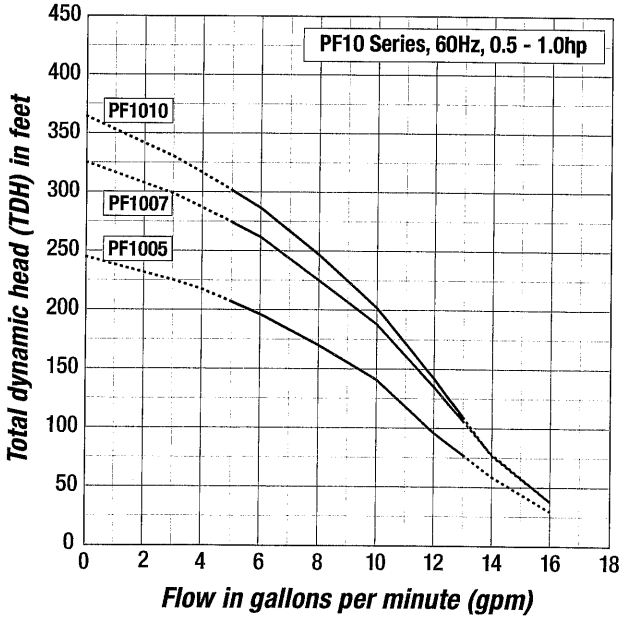
Materials of Construction

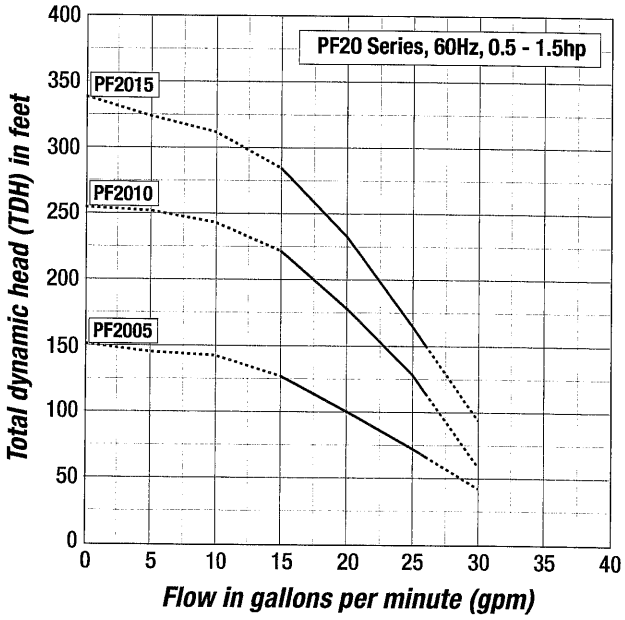
Discharge	Glass-filled polypropylene or stainless steel
Discharge bearing	Engineered thermoplastic (PEEK)
Diffusers	Glass-filled PPO (SABIC's NORYL™ GFN3 resin)
Impellers	Celanese's Celcon® acetal copolymer on 10, 20, and 30gpm models; 50gpm impellers are NORYL GFN3 resin
Intake screen	Polypropylene
Suction connection	Stainless steel
Drive shaft	7/16in hexagonal stainless steel, 300 series
Coupling	Sintered stainless steel, 300 series
Shell	Stainless steel, 300 series
Motor	Franklin Electric motor filled with deionized water and propylene glycol for constant lubrication. Stainless steel shell.

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, expressed by the first two numerals in an Orenco pump nomenclature. These graphs use solid lines to show the optimal pump operation range. Dashed lines indicate flow rates outside of the optimal range for each pump. For the most accurate pump specifications, use Orenco's PumpSelect™ software.

Pump Curves





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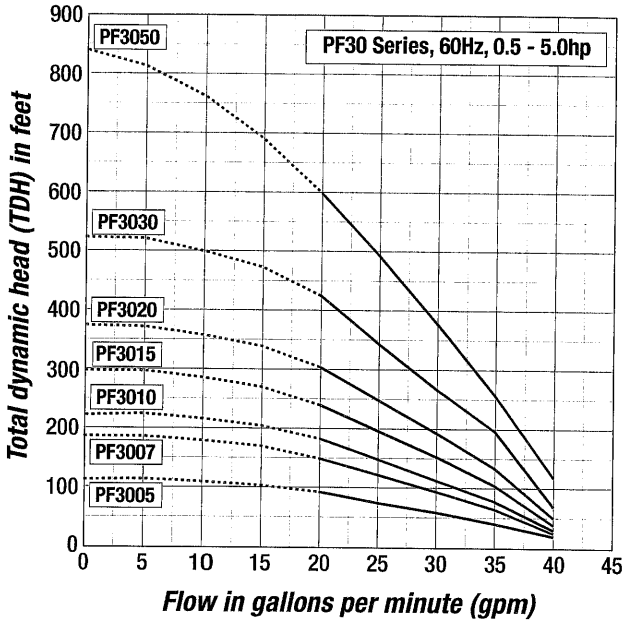
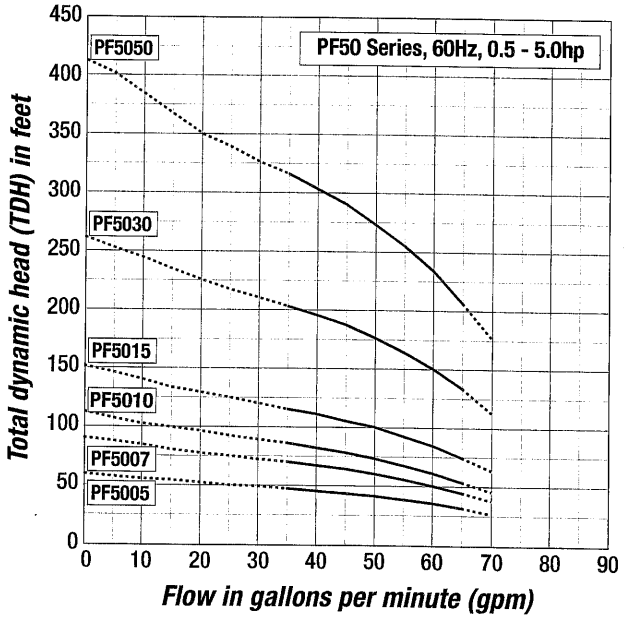
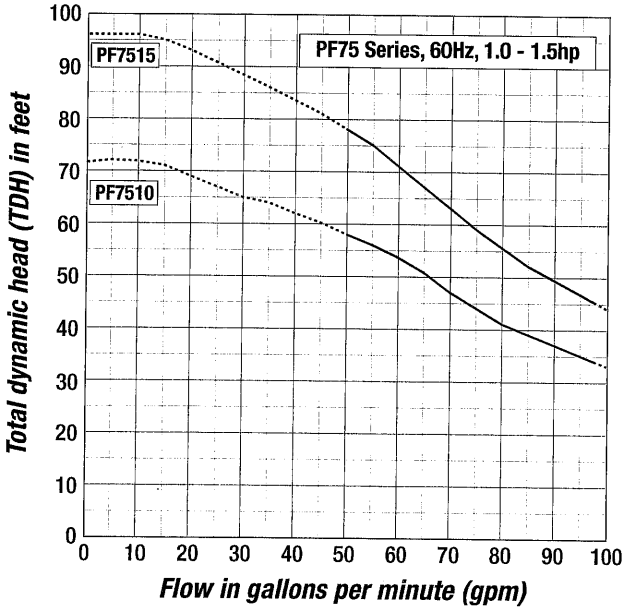
Pump Curves, cont.







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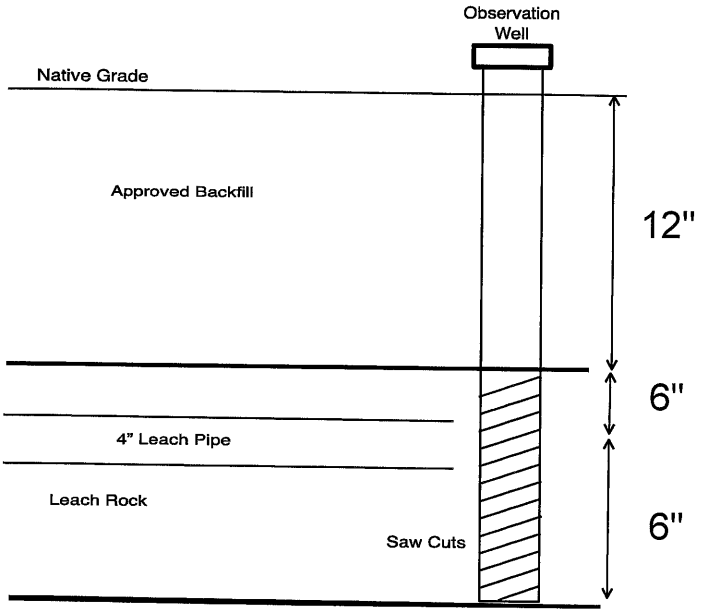
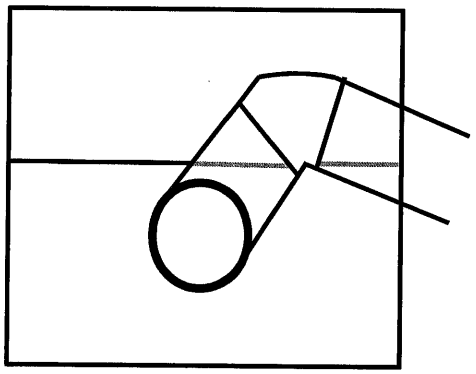
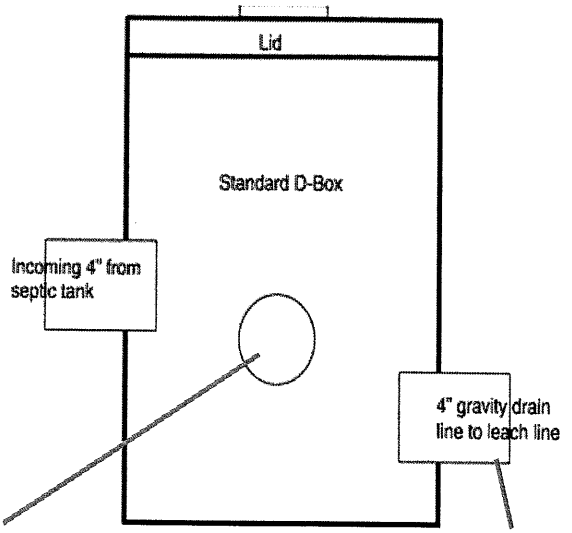
Cross-section of Observation Well



Cross-over Schematic



Distribution Box Schematic



This goes to next set
(If more than one line)

To 1st Line

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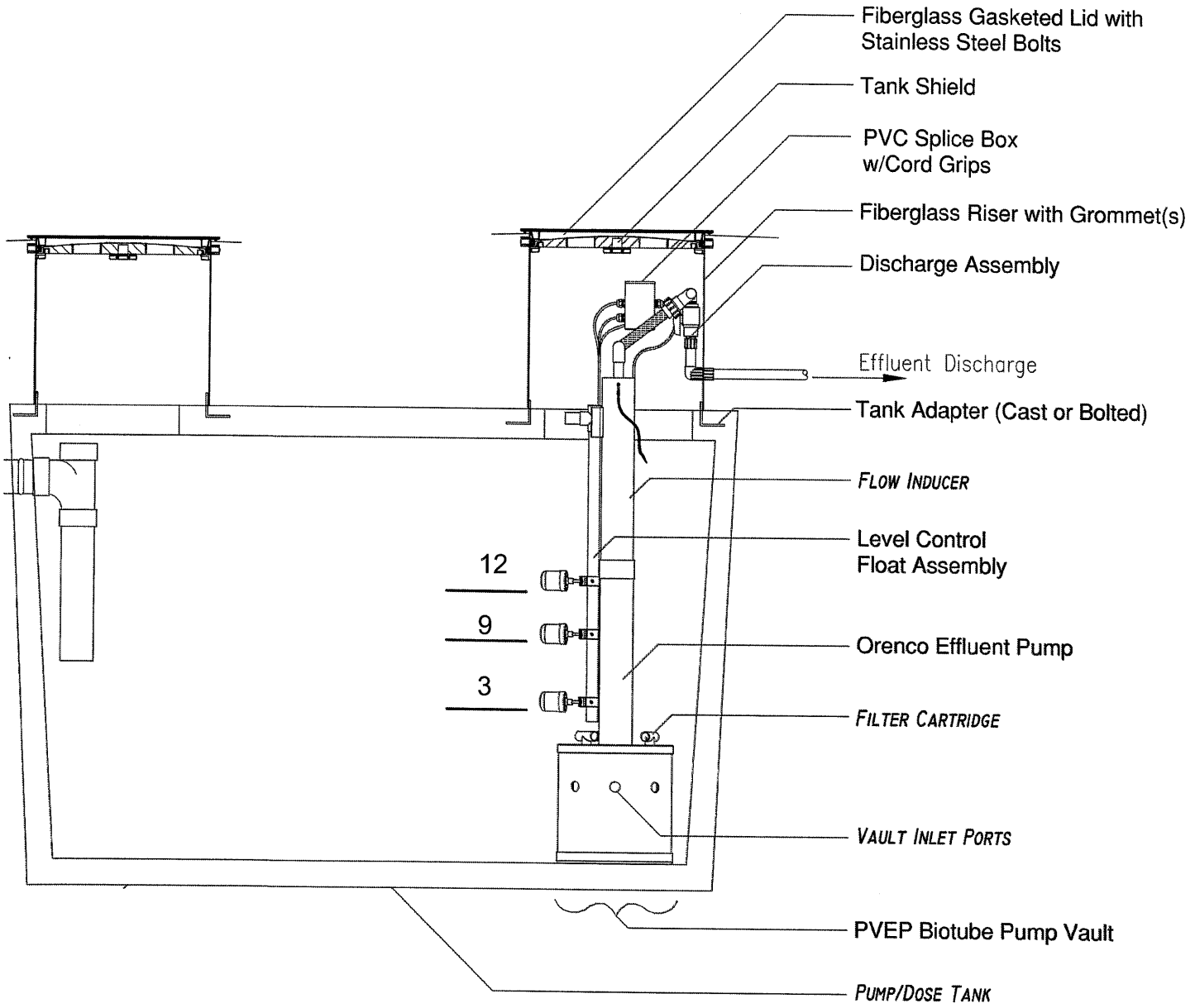
Discharge/ Pump Tank Drawing



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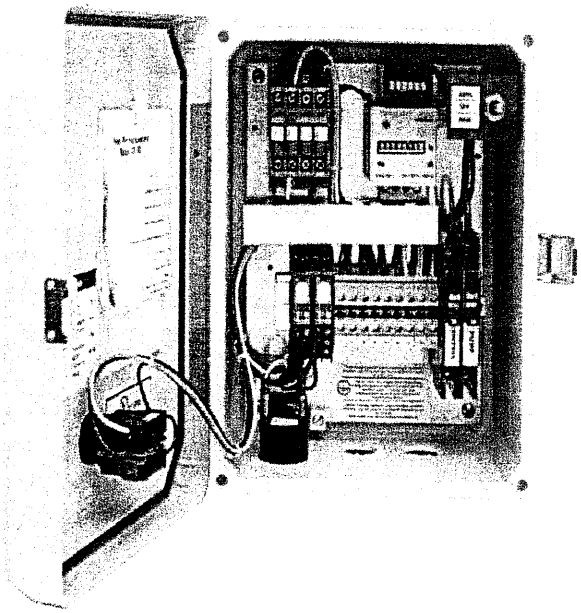
On Demand Redundant Off Control Panel & Wiring Details

Orenco Brand S1ROCT Control Panel
(please note equivalent panel can be used)



S Series Simplex Control Panels are used to control single pump and alarm functions in onsite septic systems and effluent pumping systems. They are also used to provide pump control with alarm functions into gravity sewer systems. S Series panels include include a motor contactor, which increases system life by reducing the load requirements on the float switches. These 60-Hz simplex panels are UL-listed and UL-C listed.

- 120-VAC control circuit breaker
- 120-or 120/240-VAC pump circuit breaker
- Motor-start contactor for pump circuit
- Automatic/Off/Manual (Auto/Off/Man) toggle switch
- 7/8-inc red visible alarm
- 95 dB audible alarm
- Automatic alarm silence reset
- Type 4X (IP 66) rated enclosures
- Pump motors used with these panels require internal overload protection

Simplex Operation
High level Alarm: This float activates the alarm light and audible alarm when lifted. The audible alarm may be silenced by pressing the illuminated "Push to Silence" button on the font of the control panel. The alarm light will remain on until the float is lowered.

Pump on: This float turn on the pump when lifted. The pump will continue to run until the pump off float is lowered

Pump off: This float shuts off the pump when lowered.

Redundant off (Low level alarm): This float turns off the pump when lowered. The float is secondary off float which will operate if the Pump Off float fails. Pumping will be disabled in both the automatic and manual modes. This float also activates the alarm light and audible alarm. The audible alarm may be silenced by pressing the illuminated "Push to Silence" button on the font of the control panel. The alarm light will remain on until the float is lifted.

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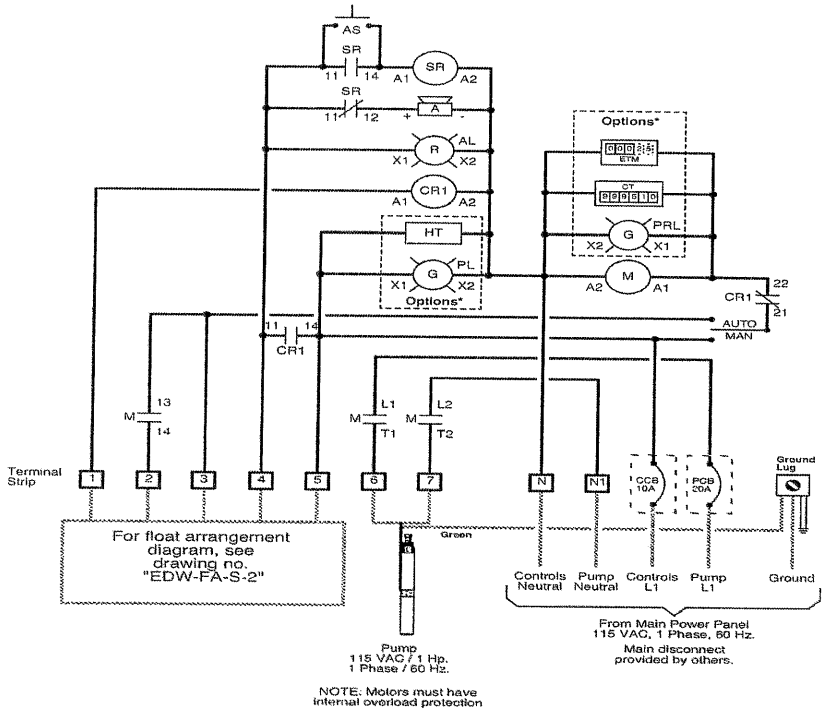
Panel Wiring Diagram
Model S1 RO



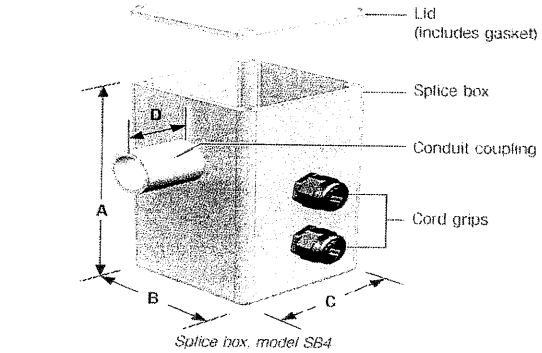
Key

= Factory Wire
= Field Wire
= Alternate Field Wire
A = Audio Alarm, 115 VAC
AL = Alarm Light
AS = Audio Silence Switch
CCB = Controls Circuit Breaker
CR1 = Redundant Off Relay
M = Motor Contactor
PCB = Pump Circuit Breaker
SR = Silence Control Relay
TL = Terminal Link

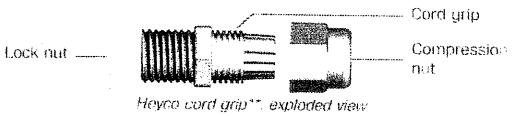
***Options**
CT = Cycle Counter
ETM = Elapsed Time Meter
HT = Heater
PL = Power Light
PRL = Pump Run Light

Applications

Orenco internal splice boxes* are used in risers to house spliced wire connections between an electrical control panel and such equipment as effluent pumps and float switches. They conform to UL 514C, CSA C22.2 No. 85 1968, and meet UL Type 4X rating. Cord grips can withstand temperatures of up to 212° F (100° C). Standard ½-in. (13-mm) cord grips can accommodate round cord diameters from 0.17 to 0.47 in. (4.3 to 12 mm). Large ¾-in. (19-mm) cord grips can accommodate round cord diameters from 0.45 to 0.70 in. (11 to 18 mm). Cord grips are also available to accommodate single- and three-phase CE-rated 1.5 × 3 flat cords.

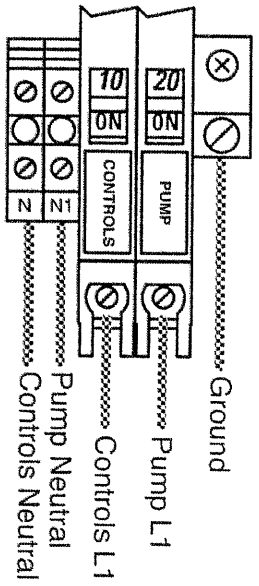


Splice box, model SB4



*Heyco cord grip** exploded view*

Two Circuits



Factory default.
Wire as shown.

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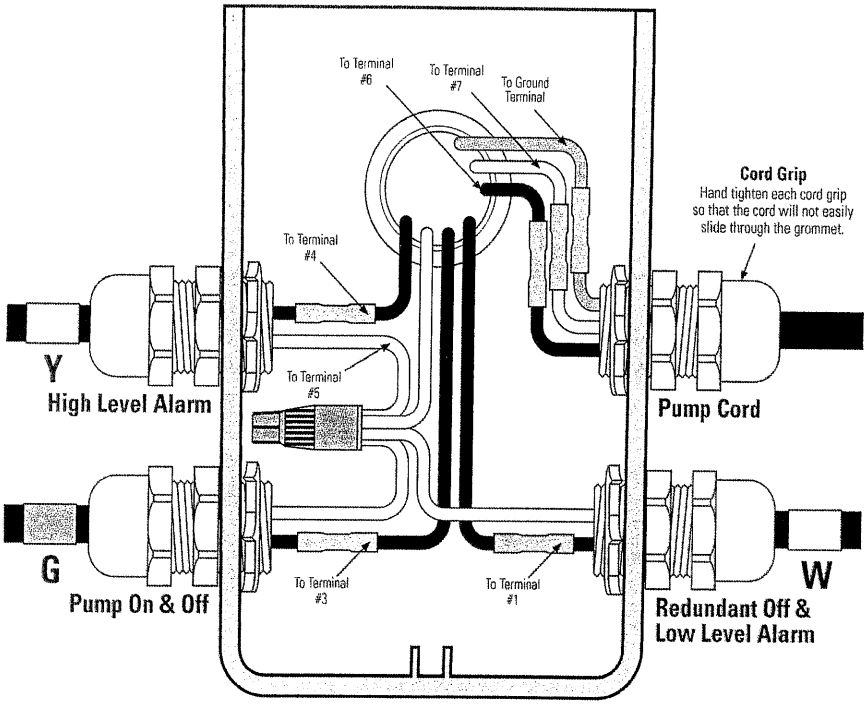


Key

- Black Wire
- White Wire
- Green Wire
- Waterproof Wire Nut
- Heat Shrink & Butt Connector *

* Refer to drawing EIN-SB-SB-1 for splicing instructions.

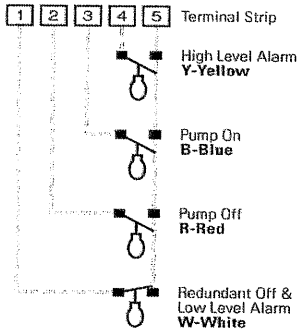
Float Tag Colors

- **Y** - Yellow
- **P** - Purple
- **B** - Blue
- **G** - Green
- **R** - Red
- **O** - Orange
- **E** - Grey
- **W** - White

Note: Multi-function floats will have more than one marker

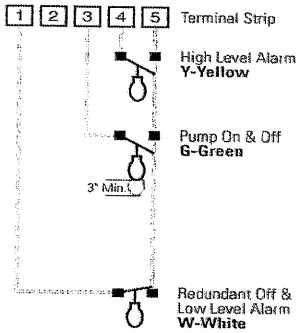
Attention: Failure to follow splicing instructions will void warranty

YBRW • *Factory Standard* •



For a wire splicing illustration of the above diagram, request Splice Box Wiring Diagram: **EDW-SB-S-12**

YGW



For a wire splicing illustration of the above diagram, request Splice Box Wiring Diagram: **EDW-SB-S-11**

Float Types

Typical OSI float model: A
Specs: contact - normally open
differential - no minimum
power rating - signal
Possible substitutions: B,C,D

Typical OSI float model: B
Specs: contact - normally open
differential - 3" min.
power rating - signal
Possible substitutions: C,D

Typical OSI float model: T
Specs: contact - normally closed
differential - no minimum
power rating - signal

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