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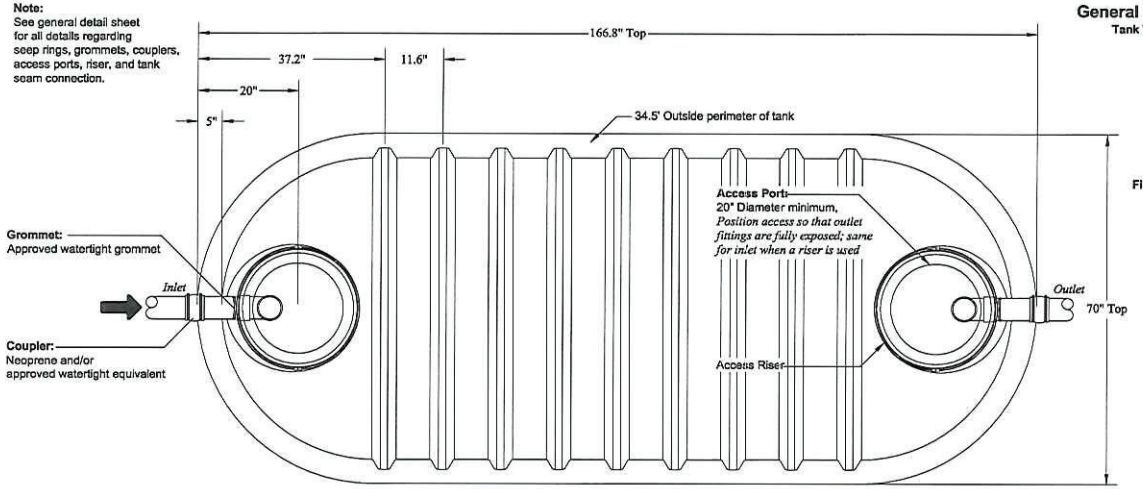
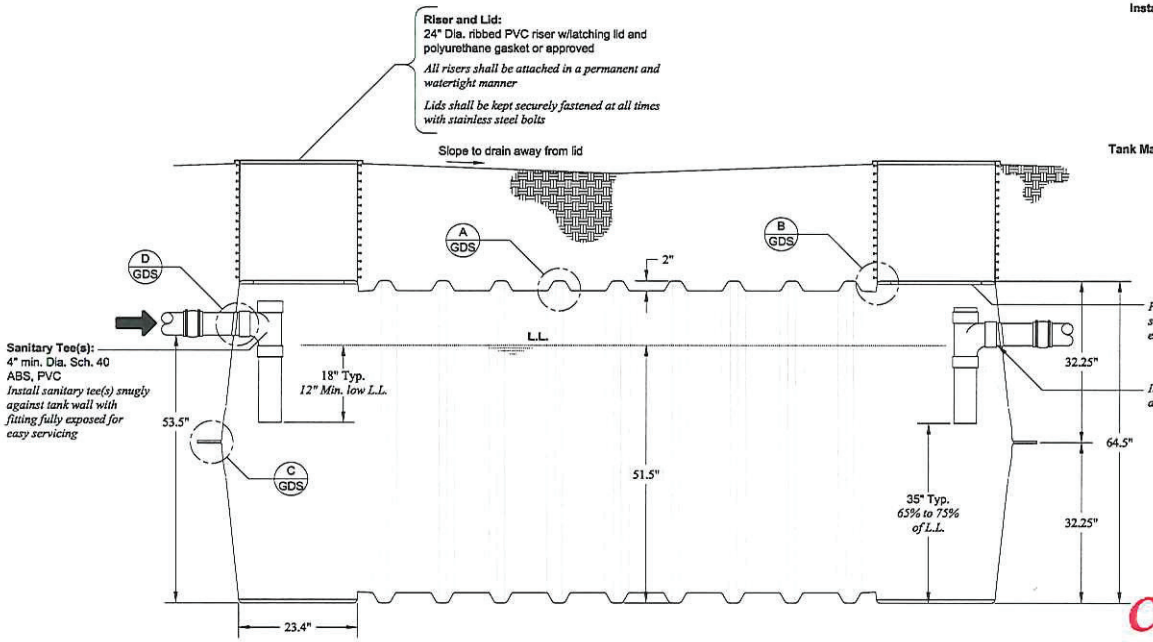
Note:
See general detail sheet for all details regarding seep rings, grommets, couplers, access ports, riser, and tank seam connection.



Top View



Side View 1500 Gallon Tank

General Notes:

Tank Volumes:
Total Volume: 1785 gal±
Operating Volume: 1570 gal± @ 51-1/2"
Unit volume at typical operating depth : 27.5 gal./in.±

Loads:
Top = 500 psf minimum
Lateral Load = 62.4 pcf, EFP
Concentrated Wheel Load = 2500 lb.
The septic tank shall be capable of withstanding long-term hydrostatic loading, in addition to the soil loading, due to a water table maintained at ground surface.
Soil Bearing = 1000 psf (*re-evaluate support base if soil bearing is less or unequal*)

Fiberglass:
Method of calculations:
1. Fiberglass tanks shall be analyzed using finite element analysis for buried structures.
2. Calculations shall address the following:
   - strength
   - buckling
   - deflection of 5% of the tank diameter, based on service load (including long-term deflection lag)
   - buoyancy
3. Performance testing

Resin: polyester (ortho, iso, dcpd)
Reinforcement: Fiberglass (25-35%). The thickness for different regions of the tanks shall be described and shown in drawings for each individual tank.

The laminate properties listed here along with the minimum thickness as shown in the details are considered design minimums that must be maintained during the manufacturing of the tanks. The primary strength properties are listed below:

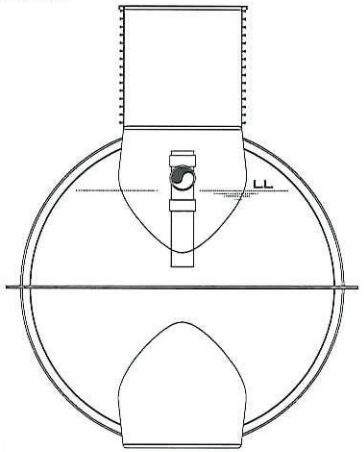
Property	Type I Laminate
Tensile modulus E_t	1,000,000 psi
Flexural modulus E_f	800,000 psi
Shear modulus G	400,000 psi
Ult. Tensile strength F_t	11,000 psi
Ult. Flexural strength F_b	18,000 psi
Ult. compressive strength F_c	21,000 psi
Ult. Shear In-Plane F_s	7,800 psi
Interlaminar Shear F_{is}	1,500 psi

The tank shall be constructed with a glass fiber and resin content specified by the manufacturer and with no exposed glass fibers. Any permanent metal part shall be 300 series stainless steel.

Installation:
Installation, bedding, compaction, etc., shall be in strict compliance with the manufacturers standards and state or local rules and or guidlines. All tanks shall be set level on a minimum 4 inch thick compacted sand or approved granular bedding overlying a firm uniform base. The base shall be stable and uniform in order to ensure equal bearing across the tank bottom. Installations with 18 inches or less of ground cover may require additional buoyancy considerations as described in the manufacturers instructions. A minimum cover of 12 inches is required over the tank in areas subject to occasional light wheel loads.

Test:
Tanks shall be tested and certified watertight per manufacturers recommendations and or any prevailing rules or guidelines, whichever is more restrictive.

Tank Markings:
Place marking on the upper most surface over the outlet.
Liquid capacity: 1500 gal. ±
Max burial depth: 4ft.
Max traffic (wheel): 2500 lbs.
Date manufactured:
Permit no.:



End View

Conditionally APPROVED

SEE CORRESPONDENCE

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Orenco Systems Inc.
Sutherlin, OR
1500 Gallon Septic Tank

Approved By: TRB P.E.	Designed By: TRB P.E.
Drawing By: CSI	Drawing #: 1 of 7
Date:	Project #:
Scale: 1" = 2'	Revision #:

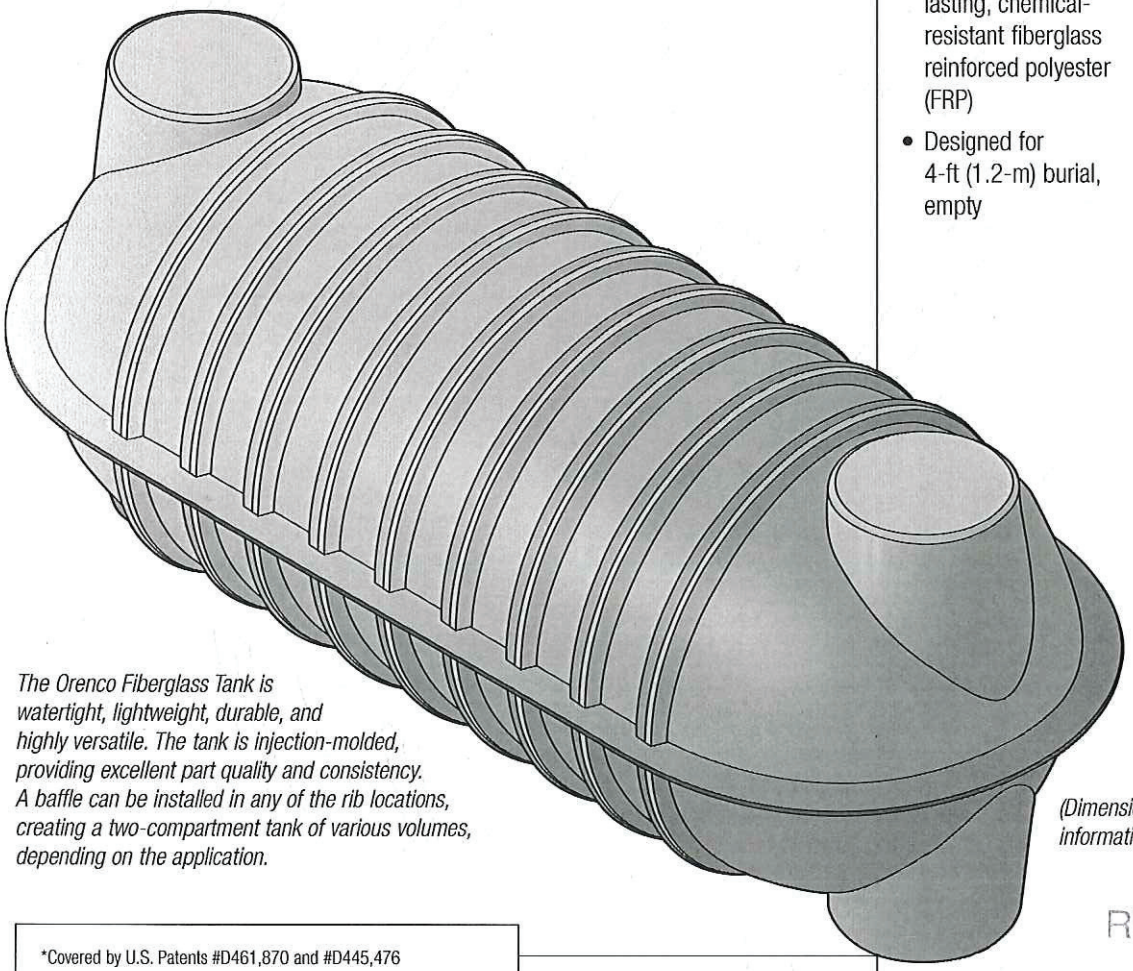
Orenco 1000- & 1500-gal. FRP Tanks

1000-gallon (3785-liter); 1500-gallon (5678-liter)

Applications

The watertight Orenco injection-molded Fiberglass Tank* comes in two sizes and has been optimized for use in onsite wastewater collection and treatment systems (residential and commercial) and in community-wide effluent sewer systems. As the tank collects and digests organic matter, it provides primary wastewater treatment, reducing wastewater contaminants by 65–70%.

Note: These tanks have not been tested for use with potable water.



The Orenco Fiberglass Tank is watertight, lightweight, durable, and highly versatile. The tank is injection-molded, providing excellent part quality and consistency. A baffle can be installed in any of the rib locations, creating a two-compartment tank of various volumes, depending on the application.

(Dimensions and ordering information on back.)

Features & Benefits

- 100% watertight, for optimal wastewater treatment; every tank is water tested before shipping
- Injection molded for unmatched part quality and consistency; eliminates costly callbacks for repairs
- Made of long-lasting, chemical-resistant fiberglass reinforced polyester (FRP)
- Designed for 4-ft (1.2-m) burial, empty
- Light enough to transport in a pickup or small trailer and install with a backhoe (lifting brackets attached); no waiting for delivery truck
- No-hassle installation, even on the smallest lots
- Accommodates a baffle wall in any of the rib locations, creating a two-compartment tank of various volumes
- Directly accepts standard Orenco 24-in. (600-mm) diameter PVC risers; adapter available for 30-in. (760-mm) diameter
- Installation and orientation of inlet and outlet easily accomplished with watertight EPDM grommets

*Covered by U.S. Patents #D461,870 and #D445,476

Note: Listed by IAPMO/UPC. These tanks have not been designed for use in a location that receives vehicle traffic. Placement in a traffic area requires an engineered traffic-bearing pad.

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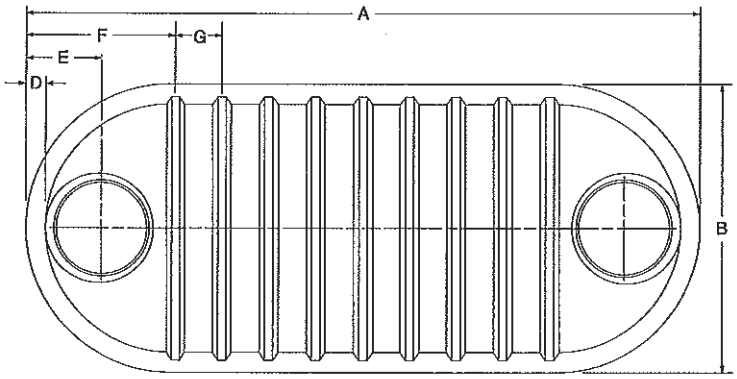
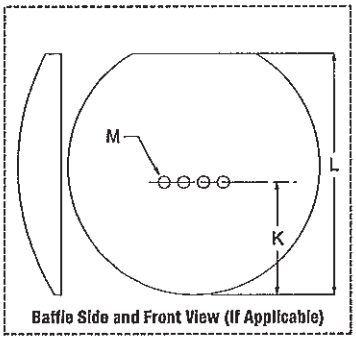
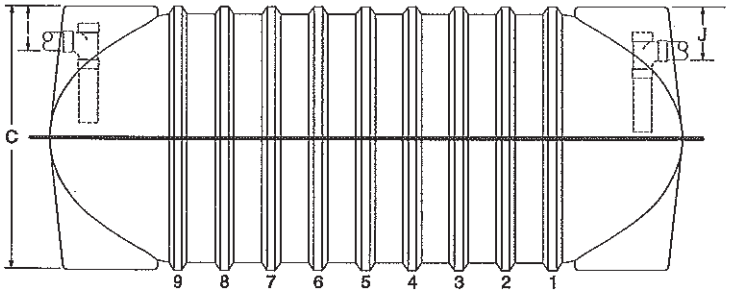
Orenco Fiberglass Tank Nominal Dimensions*



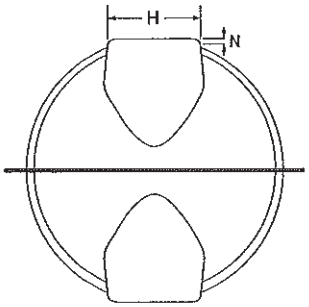
Top View



Baffle Side and Front View (If Applicable)



Side View



End View

Specifications

		1000 gal. (3785 L)	1500 gal. (5678 L)
Dimensions in inches (and millimeters)			
A	Length	121.0 (3073)	168.0 (4270)
B	Width	72.0 (1830)	72.0 (1830)
C	Height	64.5 (1640)	64.5 (1640)
D	Flange width	5.5 (140)	5.5 (140)
E	End to center of tank access	21.5 (550)	21.5 (550)
F	End to first rib	37.0 (940)	37.0 (940)
G	Rib spacing	11.6 (295)	11.6 (295)
H	Outside diameter of tank access	23.5 (600)	23.5 (600)
I	Inlet invert (typical)	11.0 (280)	11.0 (280)
J	Outlet invert (typical – if used)	13.0 (330)	13.0 (330)
K	Height to pass-through holes (typ.)**	30.0 (760)	30.0 (760)
L	Height to top of baffle	60.0 (1520)	60.0 (1520)
M	Pass-through hole diameter	3.0 (76)	3.0 (76)
N	Riser adapter depth	1.5 (38)	1.5 (38)
Weight in pounds (and kilograms)			
1-compartment (assembled)		390 (177)	590 (268)
2-compartment (assembled)		420 (191)	620 (281)
Volume in gallons (and liters)			
Volume to typical invert of inlet		1086 (4111)	1615 (6112)
Volume to typical invert of outlet		1050 (3974)	1561 (5908)
Total tank volume (approximate)		1210 (4580)	1800 (6813)

* *Detailed drawings and additional technical documentation are available, including volume charts and installation instructions.*

** *Other baffle configurations are available.*

Model Code

T [ ]-[ ]-[ ]/[ ]-[ ]/[ ]-[ ]/[ ]

- Tank
- Tank size (gallons):
  - 1000
  - 1500
- Number of compartments and baffle location (ribs 1 through 9):
  - 01 = one compartment
  - 21 = two compartments, rib #1
  - 22 = two compartments, rib #2, etc.
- Diameter of access riser openings (inlet side/outlet side):
  - Blank = no riser opening
  - 12 = accepts 12" riser
  - 18 = accepts 18" riser
  - 19 = includes flange for PVU applications
  - 22 = no flange; AX and PVU with NB option
  - C = custom; specify
- Depth to Inverts (Inlet/outlet):
  - Blank = no inlet or outlet
  - 11 = 11" (standard)
  - 13 = 13" (standard)
  - C = custom; specify
- Riser connections (inlet side/outlet side):
  - Blank = accepts 24" riser (no adapter needed)
  - 12 = accepts 12" riser
  - 18 = accepts 18" riser
  - 30 = 30" adapter installed

To Order

Call your nearest Orenco Systems®, Inc. Distributor. For nearest Distributor, call Orenco at 800-348-9843, or visit www.orenco.com and click on "Where to Buy."

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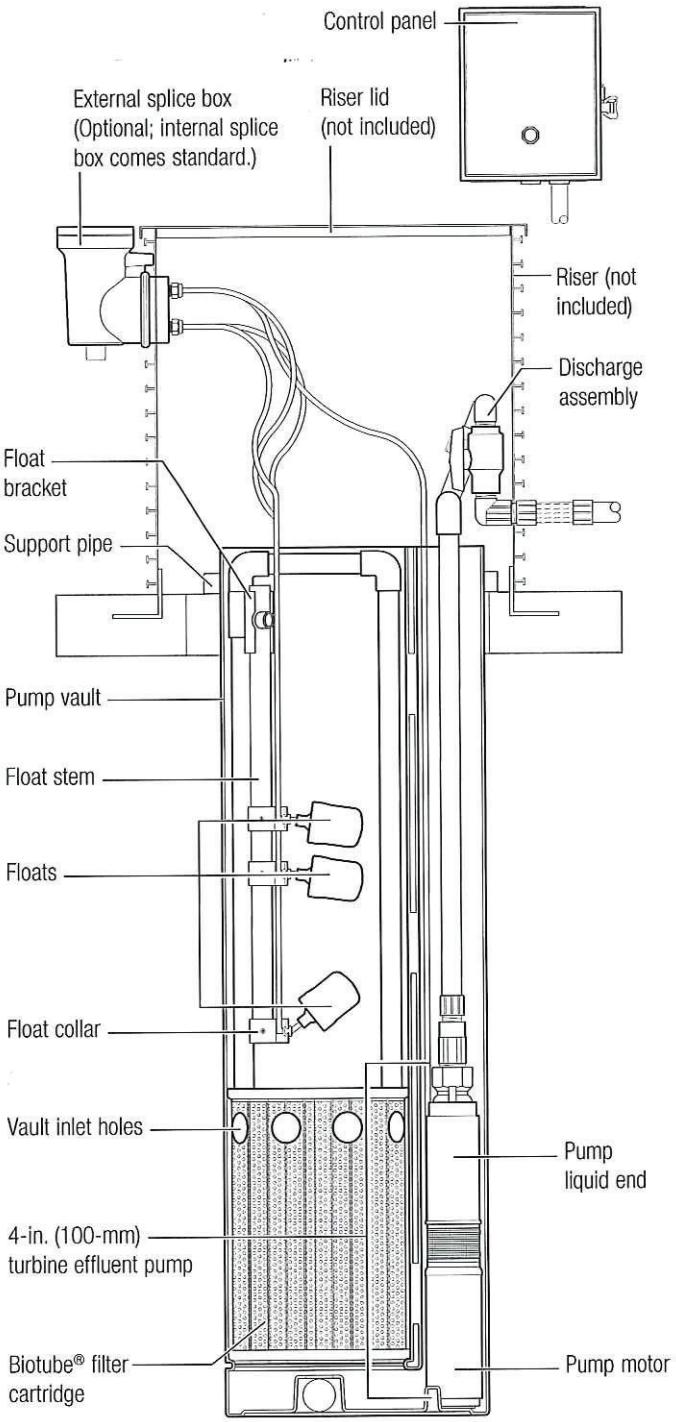
Orenco® *Technical Data Sheet*

Biotube® ProPak Pump Package™

60-Hz Series Pump Packages



Biotube® ProPak™ pump package components.

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General

Orenco's Biotube® ProPak™ is a complete, integrated pump package for filtering and pumping effluent from septic tanks. And its patented pump vault technology eliminates the need for separate dosing tanks.

This document provides detailed information on the ProPak pump vault and filter, 4-in. (100-mm) 60-Hz turbine effluent pump, and control panel. For more information on other ProPak components, see the following Orenco technical documents:

- *Float Switch Assemblies* (NSU-MF-MF-1)
- *Discharge Assemblies* (NTD-HV-HV-1)
- *Splice Boxes* (NTD-SB-SB-1)
- *External Splice Box* (NTD-SB-SB-1)

Applications

The Biotube ProPak is designed to filter and pump effluent to either gravity or pressurized discharge points. It is intended for use in a septic tank (one- or two-compartment) and can also be used in a pump tank.

The Biotube ProPak is designed to allow the effluent filter to be removed for cleaning without the need to remove the pump vault or pump, simplifying servicing.

Complete packages are available for on-demand or timed dosing systems with flow rates of 20, 30, and 50-gpm (1.3, 1.9, and 3.2 L/sec), as well as with 50 Hz and 60 Hz power supplies.

Standard Models

BPP20DD, BPP20DD-SX, BPP30TDA, BPP30TDD-SX, BBPP50TDA, BPP50TDD-SX

Product Code Diagram

BPP □ □ - □

Standard options:
Blank = 57-in. (1448-mm) vault height, internal splice box, standard discharge assembly
68 = 68-in. (1727-mm) vault height
SX = external splice box
CW = cold weather discharge assembly
DB = drainback discharge assembly
Q = cam lock
MFV = non-mercury float

Control panel application:
DD = demand-dosing
TDA = timed-dosing, analog timer
TDD = timed dosing, digital timer, elapsed time meter & counters

Pump flow rate, nominal:
20 = 20 gpm (1.3 L/sec)
30 = 30 gpm (1.9 L/sec)
50 = 50 gpm (3.2 L/sec)

Biotube® ProPak™ pump vault

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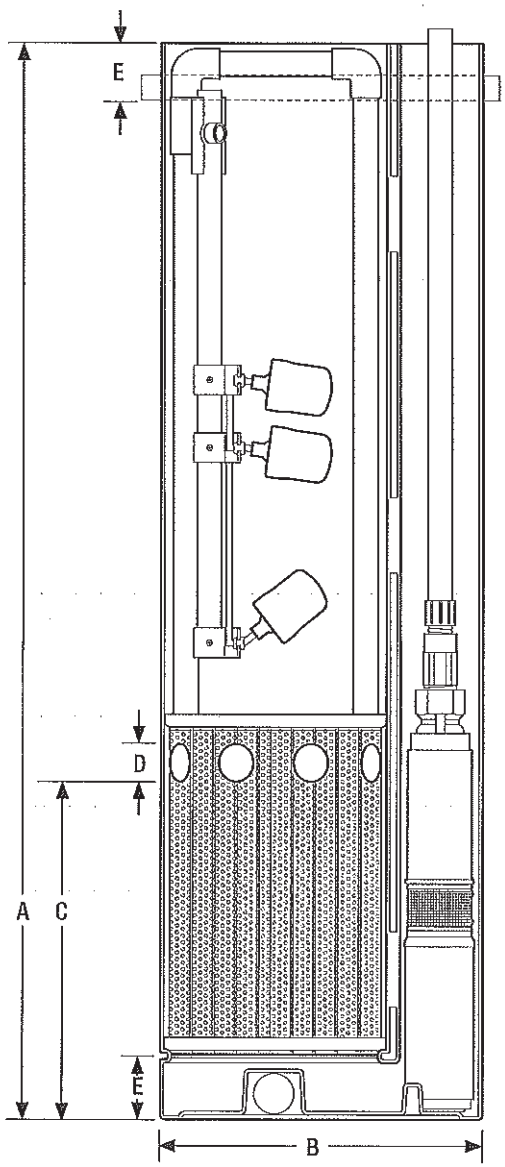
ProPak™ Pump Vault

Materials of Construction	
Vault body	Polyethylene
Support pipes	PVC
Dimensions, in. (mm)	
A - Overall vault height	57 (1448) or 68 (1727)
B - Vault diameter	17.3 (439)
C - Inlet hole height	19 (475)
D - Inlet hole diameter (eight holes total)	2 (50)
E - Vault top to support pipe bracket base	3 (76)
F - Vault bottom to filter cartridge base	4 (102)

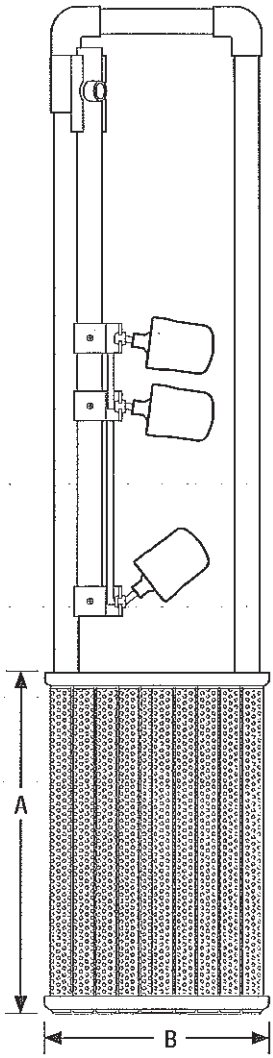
Biotube® Filter Cartridge

Materials of Construction	
Filter tubes	Polyethylene
Cartridge end plates	Polyurethane
Handle assembly	PVC
Dimensions, in. (mm)	
A - Cartridge height	18 (457)
B - Cartridge width	12 (305)
Performance	
Biotube® mesh opening	0.125 in. (3 mm)*
Total filter flow area	4.4 ft² (0.4 m²)
Total filter surface area	14.5 ft² (1.35 m²)
Maximum flow rate	140 gpm (8.8 L/sec)

**0.062-in. (1.6-mm) filter mesh available*



ProPak™ pump vault (shown with Biotube filter and effluent pump)



Biotube® filter cartridge (shown with float switch assembly)

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4-in. (100-mm) Turbine Effluent Pumps

Orenco's 4-in. (100 mm) Turbine Effluent Pumps are constructed of lightweight, corrosion-resistant stainless steel and engineered plastics; all are field-serviceable and repairable with common tools. All 60-Hz PF Series models are CSA certified to the U.S. and Canadian safety standards for effluent pumps, and meet UL requirements.

Power cords for Orenco's 4-in. (100-mm) turbine effluent pumps are Type SOOW 600-V motor cable (suitable for Class 1, Division 1 and 2 applications).

Materials of Construction

Discharge:	Stainless steel or glass-filled polypropylene
Discharge bearing:	Engineered thermoplastic (PEEK)
Diffusers:	Glass-filled PPO
Impellers:	Acetal (20-, 30-gmp), Noryl (50-gpm)
Intake screens:	Polypropylene
Suction connection:	Stainless steel
Drive shaft:	300 series stainless steel
Coupling:	Sintered 300 series stainless steel
Shell:	300 series stainless steel
Lubricant:	Deionized water and propylene glycol

Specifications

Nom. flow, gpm (L/sec)	Length in. (mm)	Weight lb (kg)	Discharge in., nominal [1]	Impellers
20 (1.3)	22.5 (572)	26 (11)	1.25	4
30 (1.9)	21.3 (541)	25 (11)	1.25	3
50 (3.2)	20.3 (516)	27 (12)	2.00	2

Performance

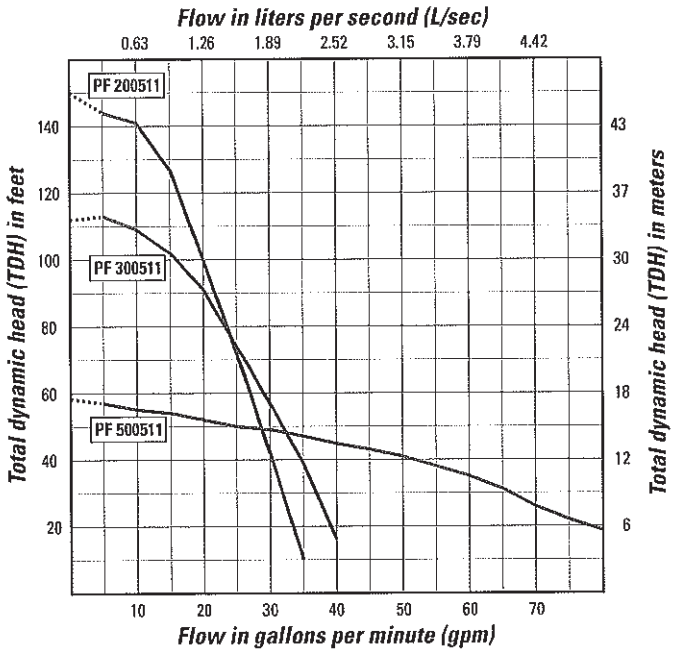
Nom. flow, gpm (L/sec)	hp (kW)	Design flow amps	Rated cycles/day	Min liquid level, in. (mm) [2]
20 (1.3)	0.5 (0.37)	12.3	300	18 (457)
30 (1.9)	0.5 (0.37)	11.8	300	20 (508)
50 (3.2)	0.5 (0.37)	12.1	300	24 (610)

[1] 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 discharge assemblies to metric-sized piping.

[2] Minimum liquid level is for single pumps when installed in an Orenco Biotube® ProPak™ Pump Vault.

Pump Curves

Pump curves, such as those shown here, can help you determine the best pump for your system. Pump curves show the relationship between flow (gpm or L/sec) and pressure (TDH), providing a graphical representation of a pump's performance range. Pumps perform best at their *nominal flow rate*, measured in gpm or L/sec.



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Control Panel (Demand Dose)

Orenco's ProPak™ demand dose control panels are specifically engineered for the ProPak pump package and are ideal for applications such as demand dosing from a septic tank into a conventional gravity drainfield.

Materials of Construction

Enclosure	UV-resistant fiberglass, UL Type 4X
Hinges	Stainless steel

Dimensions, in. (mm)

A - Height	11.5 (290)
B - Width	9.5 (240)
C - Depth	5.4 (135)

Specifications

Panel ratings	120 V, 3/4 hp (0.56 kW), 14 A, single phase, 60 Hz
1. Motor-start contactor	16 FLA, 1 hp (0.75 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA)
2. Circuit	120 V, 10 A, OFF/ON switch, Single pole breakers
3. Toggle switch	Single-pole, double-throw HOA switch, 20 A
4. Audio alarm	95 dB at 24 in. (600 mm), warble-tone sound, UL Type 4X
5. Audio alarm	120 V, automatic reset, DIN rail mount silence relay
6. Visual alarm	7/8-in. (22-mm) diameter red lens, "Push-to-silence," 120 V LED, UL Type 4X

Control Panel (Timed Dose)

Orenco's ProPak timed dose control panels are specifically engineered for the ProPak pump package and are ideal for applications such as timed dosing from a septic tank into a pressurized drainfield or mound. Analog or digital timers are available.

Materials of Construction

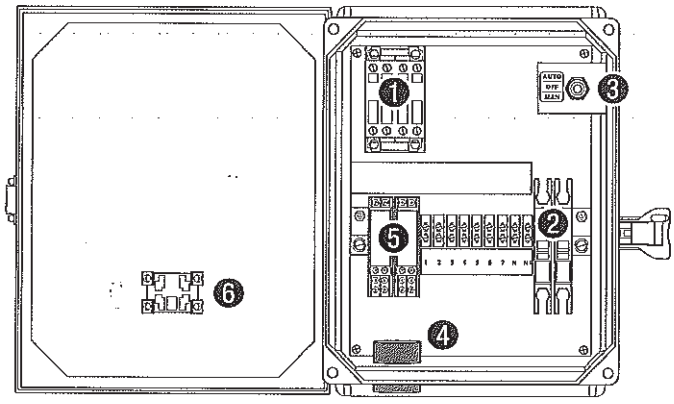
Enclosure	UV-resistant fiberglass, UL Type 4X
Hinges	Stainless steel

Dimensions, in. (mm)

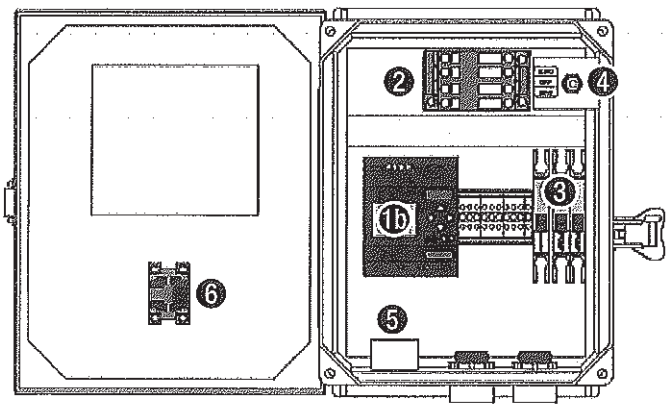
A - Height	11.5 (290)
B - Width	9.5 (240)
C - Depth	5.4 (135)

Specifications

Panel ratings	120 V, 3/4 hp (0.56 kW), 14 A, single phase, 60 Hz
Dual-mode	Programmable for timed- or demand-dosing (digital timed-dosing panels only)
1a. Analog timer (not shown)	120 V, repeat cycle from 0.05 seconds to 30 hours. Separate variable controls for OFF and ON time periods
1b. Digital timer (shown below)	120-V programmable logic unit with built-in LCD screen and programming keys. Provides control functions and timing for panel operation
2. Motor-start contactor	16 FLA, 1 hp (0.75 kW), 60 Hz; 2.5 million cycles at FLA (10 million at 50% of FLA)
3. Circuit breakers	120 V, 10 A, OFF/ON switch. Single pole 120 V
4. Toggle Switch	Single-pole, double-throw HOA switch, 20 A
5. Audio alarm	95 dB at 24 in. (600 mm), warble-tone sound, UL Type 4X
6. Visual alarm	7/8-in. (22-mm) diameter red lens, "Push-to-silence", 120 V LED, UL Type 4X



Control panel, demand-dose



Control panel, timed-dose (digital timer model shown)

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