

# Tanks, Risers, and Lids

## Our Presenter

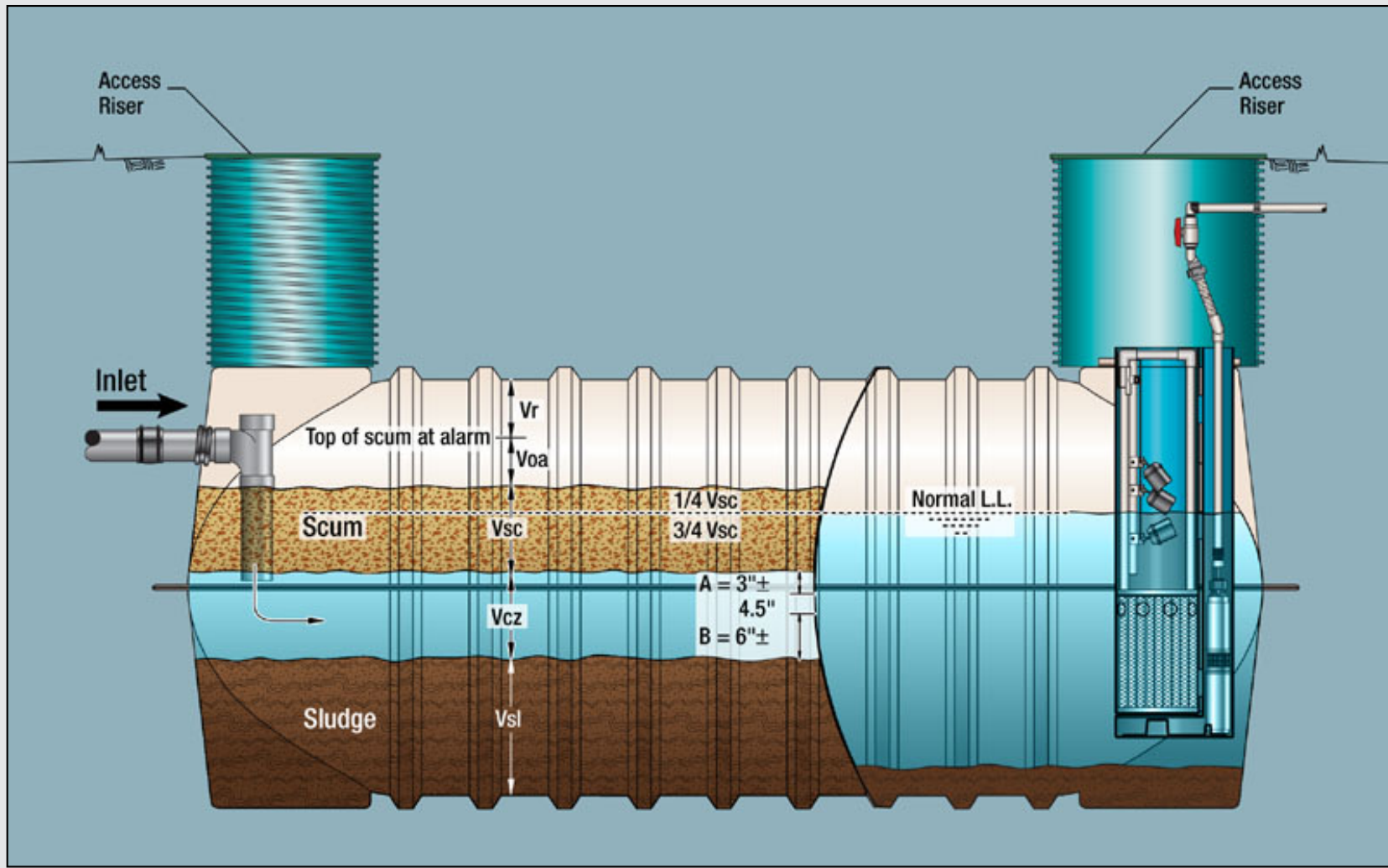
# Brandon Box

**Brandon Box** is a Customer Service Representative with Orenco Systems, a company based in Sutherlin, Oregon, that engineers and manufactures innovative infrastructure solutions. In this role, he works with customers to familiarize them with Orenco's products and help them select the appropriate equipment for their projects. He also assists Orenco's technical sales representatives in providing purchase orders and sales quotes.

Brandon holds a bachelor's degree in kinesiology from Oregon State University and joined Orenco the same year he graduated. He loves being a father to his young son, and in his free time, he also enjoys bow hunting, golf, and weight lifting.

# Tanks

# Simple Yet Complex

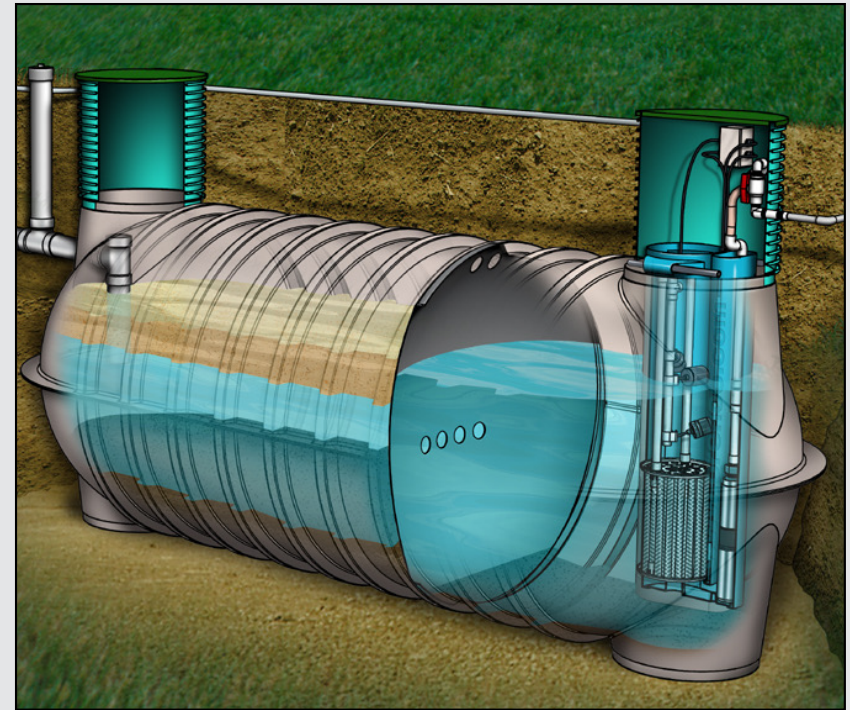


*Properly sized and configured tanks ensure optimum performance.*



# Onsite Systems Begin with a Watertight Tank

- Orenco insists that tanks are
  - ~ Watertight
  - ~ Structurally sound
- With well designed and constructed septic tanks:<sup>\*</sup>
  - ~ BOD<sub>5</sub> removal greater than 65%
  - ~ TSS removal of 70% or more
  - ~ FOG removal of at least 85%
  - ~ Reduce maintenance time/cost
- Protect public health, groundwater, and the environment



<sup>\*</sup> *Small and Decentralized Wastewater Management Systems*, Crites & Tchobanoglous, 1998, p.183.

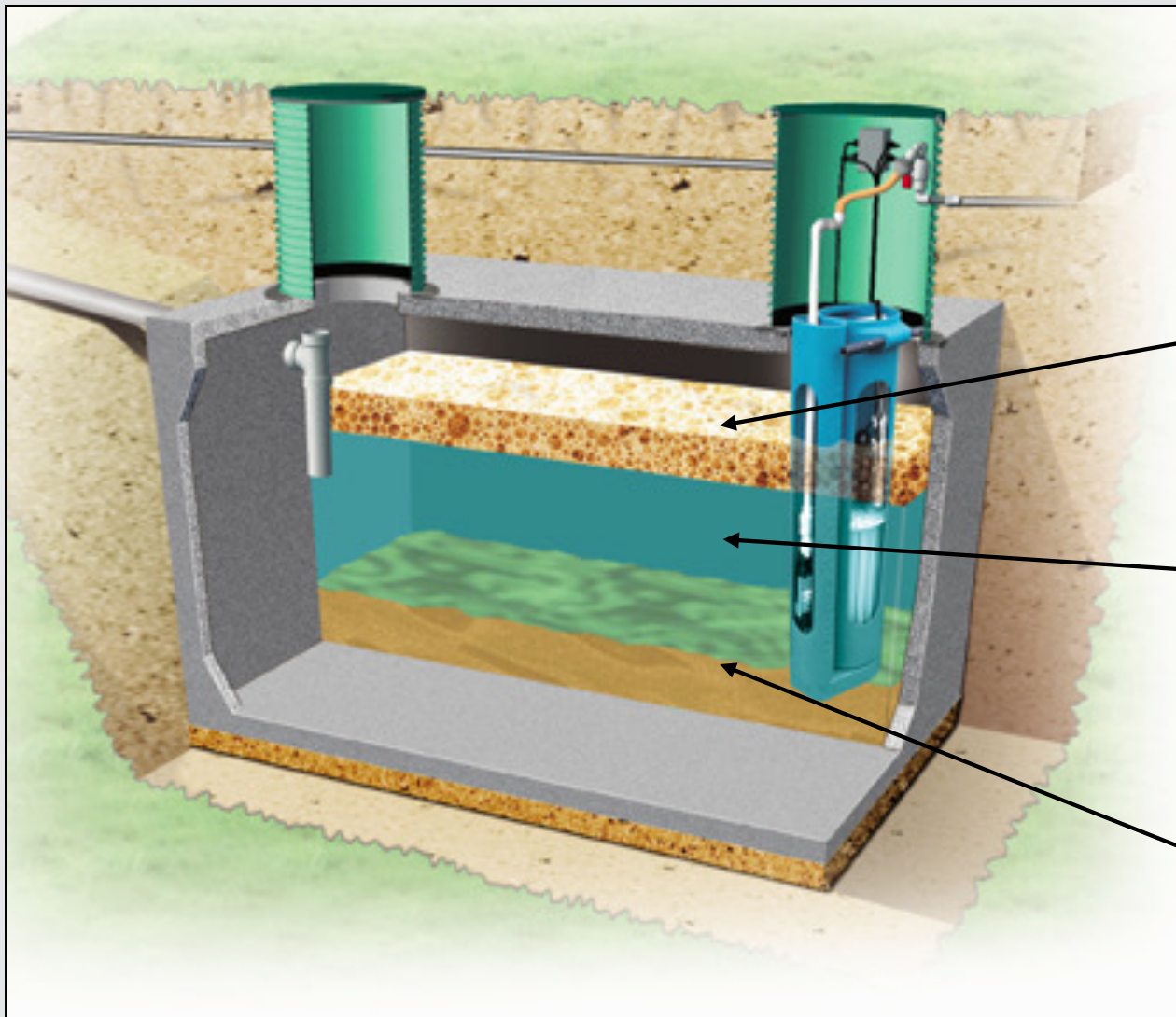
# When Specifying Tanks, Consider ...

- Proper sizing
  - Tank configuration
  - Structural integrity and watertightness
  - Site and access constraints
  - Materials of construction
- 
- So let's talk about **sizing** first

# Typical Tank Sizing Criteria

- 3-bedroom home or smaller
  - ~ 1000 gallons
- 4- to 5-bedroom home
  - ~ 1500 gallons
- 6-bedroom home or larger
  - ~ Consult Orenco

# Tank Configuration: One Compartment

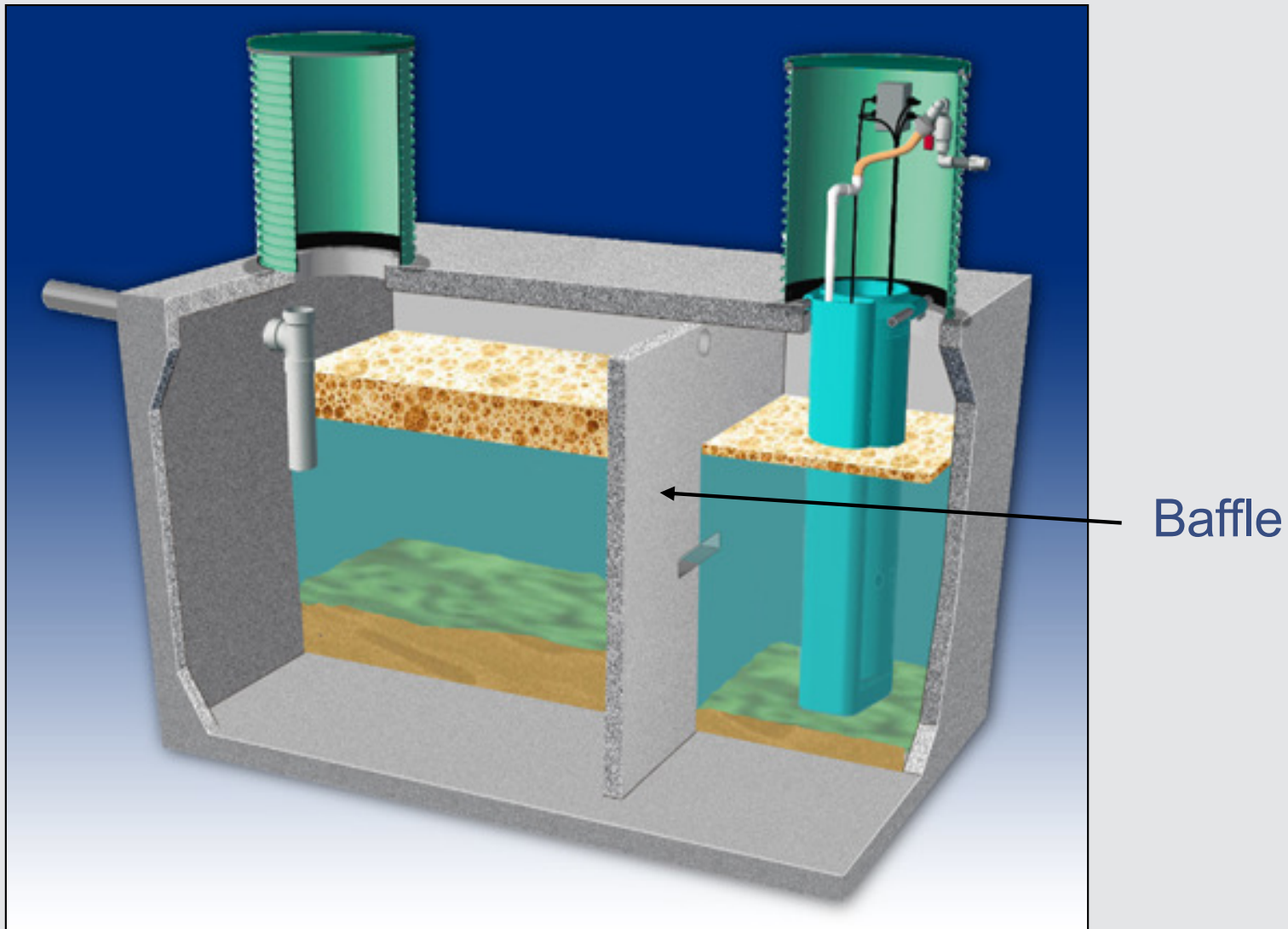


Scum layer

Clear zone

Sludge layer

# Tank Configuration: Two Compartments





# Materials of Tank Construction



# Orenco Meander Tank

- 1000 and 1500 gallon
- Unique Meander tank design
- Comes as gravity or pump tank.
- Made of DCPD; Incredibly Strong
- Injection-molded
- Industry leading 5-year warranty
- Watertight processor provides primary wastewater treatment
- Lightweight; easy to install
- Directly accepts Orenco standard fiber wound risers



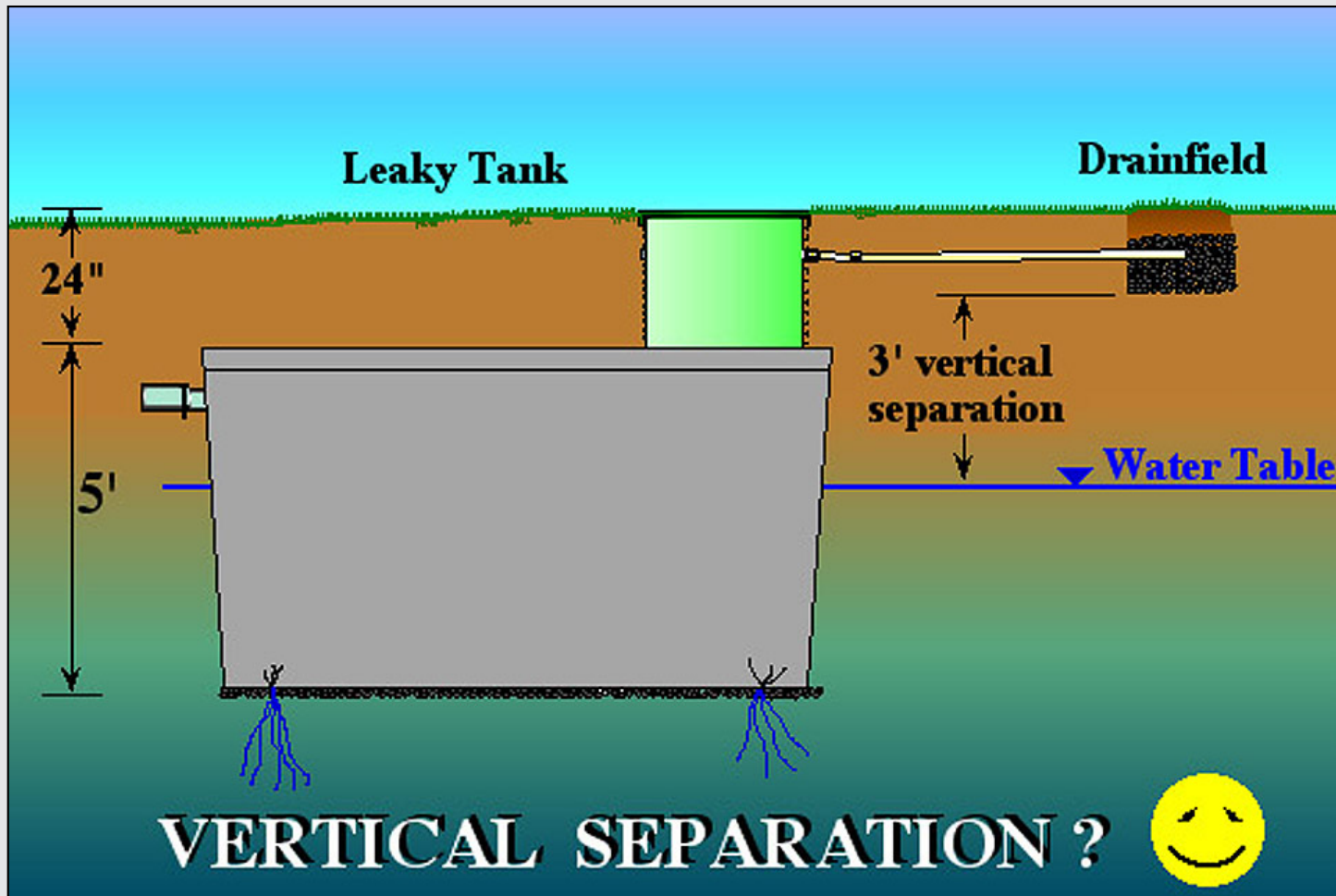




# Tank Structure Concerns and Watertightness

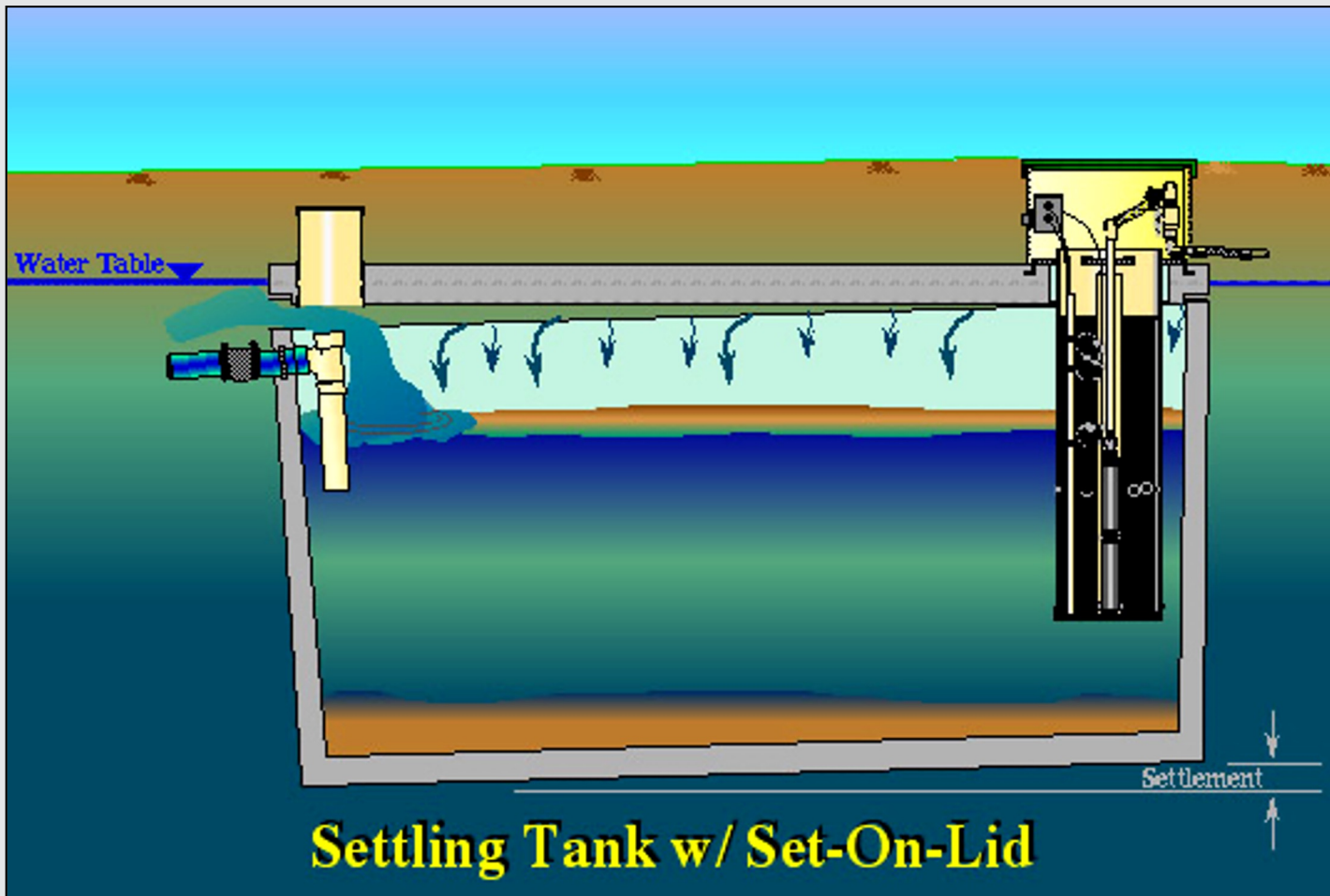
- Watertight tanks not available in some regions
- Leaking, deforming tanks
- Some sites require lightweight tanks and equipment
- For structural integrity and watertightness, consider ...
  - ~ Materials of construction
  - ~ Reinforcement
  - ~ A design for all loading conditions

# Leaky Tanks Result in Exfiltration



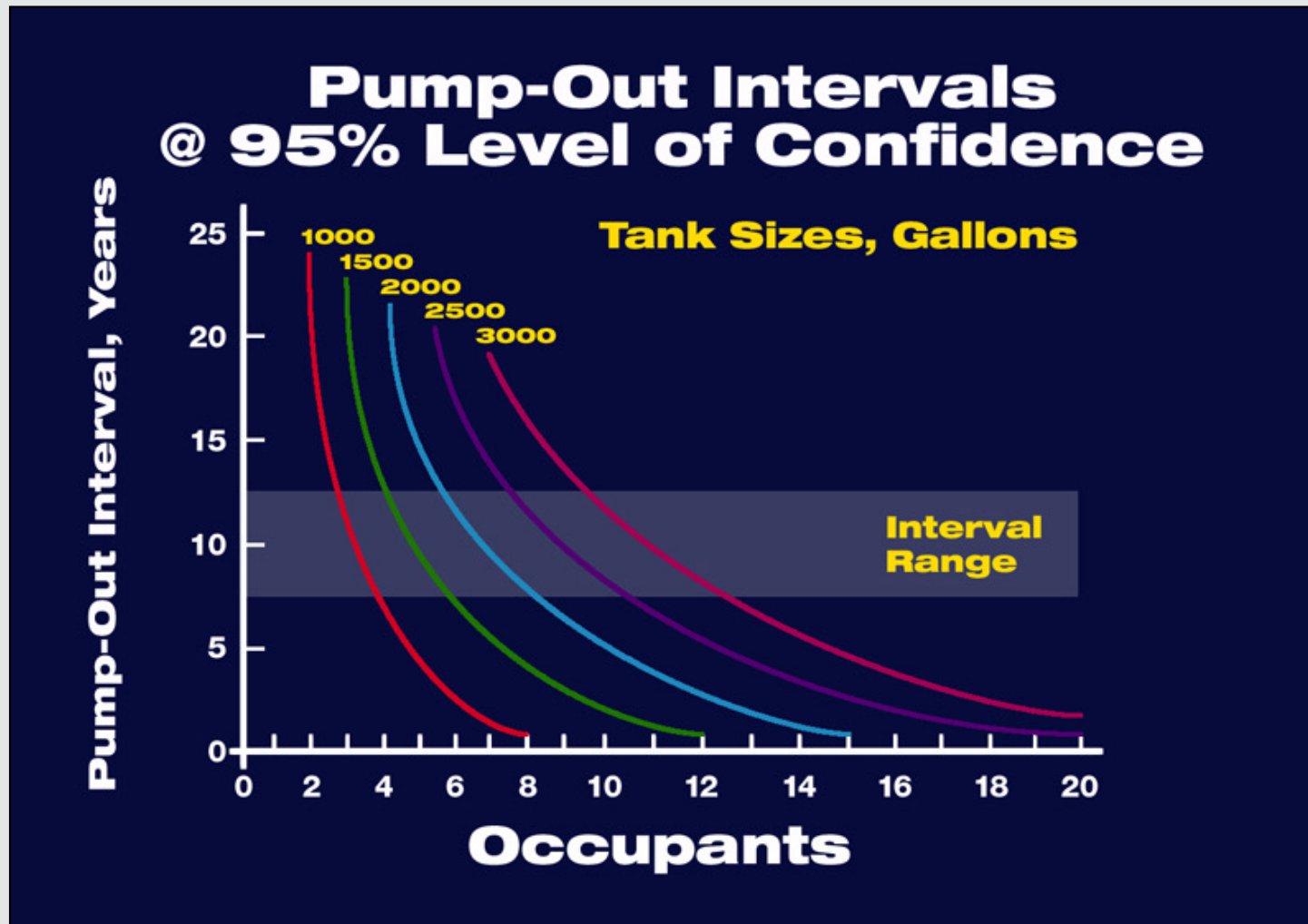
*Wastewater from leaky tanks bypasses the collection system/drainfield and goes into the groundwater.*

# Leaky Tanks Result in Infiltration



*1/8" or 1/4" separation in top seam can result in 30 gpm infiltration, disrupting the tank's treatment process.*

# Tank Configuration and Pump-Out Intervals

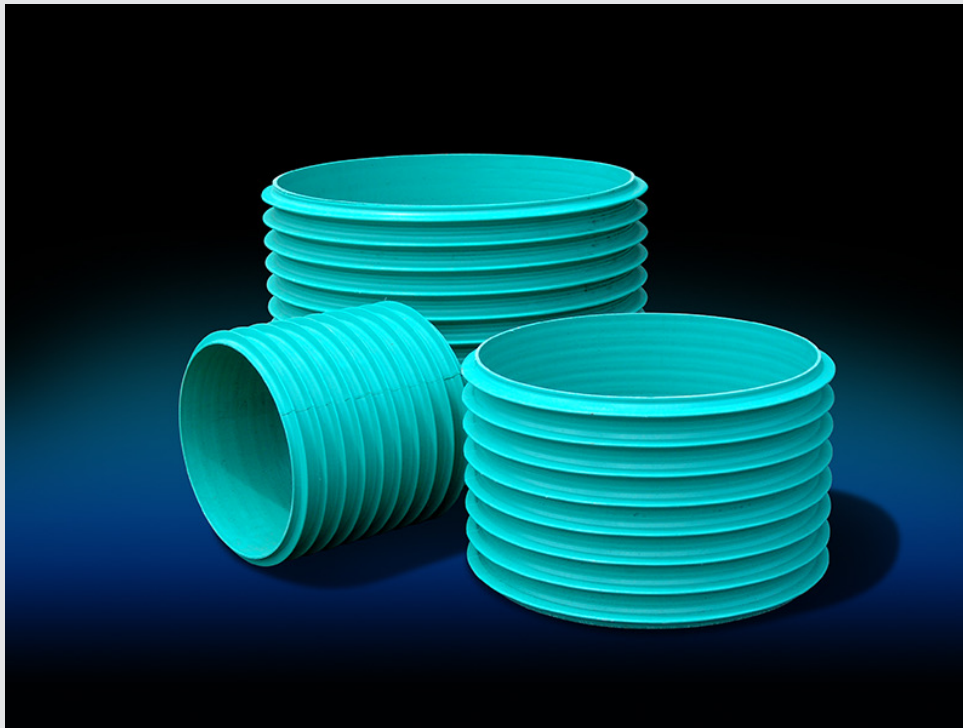


*The pumping interval for properly sized and managed watertight tanks is about 12-20 years.\**

\*Data gathered by Orenco during an audit of 450 tanks in Glide, Oregon, in 1986.

# Risers and Lids

# Access Risers



## Orenco® Technical Data Sheet

### Orenco® Fiberglass Access Risers

#### Applications

Orenco® Fiberglass Access Risers provide access to septic tank openings. They can be cast into the tops of concrete tanks or bonded to an Orenco riser tank adapter. They can also be used as valve enclosures.



Orenco® Fiberglass Access Risers are available in 36- and 48-inch (914- and 1219-mm) diameters.

#### General

Orenco Fiberglass Access Risers are constructed of filament-wound fiberglass, making them lightweight, corrosion resistant, and extremely strong.

Risers are available in diameters of 36 inches and 48 inches (914 mm and 1219 mm), with lengths available in 3-inch (75-mm) increments. They have an integral top flange with threaded bronze inserts for securing access riser lids.

#### Standard Models

RF36XX, RF48XX.

#### Nomenclature

RF		+		+	
					Discharge grommet:
					10 = 1"
					12 = 1¼"
					15 = 1½"
					20 = 2"
					Splice Box option:
					S = 1" (25-mm) grommet installed
					L = 1¼" (32-mm) grommet installed
					S1 = SB1 attached
					S2 = SB2 attached
					S3 = SB3 attached
					S4 = SB4 attached
					L5 = SB5 attached
					L6 = SB6 attached
					SX = Predrilled hole for external splice box*
					XS = Explosion-proof splice box for simplex pumps**
					XD = Explosion-proof splice box for duplex pumps**
					XT = Explosion-proof splice box for triplex pumps**
					Riser height (inches)
					Riser diameter: 36" (914 mm), 48" (1219 mm)
					Orenco® fiberglass access riser

\* Minimum riser height 18" (457 mm)

\*\* Used in Class I Division 1 environments

#### Materials of Construction

Access riser	Fiberglass reinforced polyester
Threaded inserts	Silicone, bronze

#### Specifications

Dimensions, nominal	RF36XX	RF48XX
Flange O.D., in. (mm)	42.0 (1067)	54.0 (1372)
O.D., in. (mm)	36.5 (927)	48.6 (1234)
I.D., in. (mm)	36.0 (914)	48.0 (1219)
Wall thickness, in. (mm)	0.25 (6.4)	0.30 (7.6)
Weight, lb/ft (kg/m)	24.0 (35.7)	36.0 (53.6)

# Riser Tank Shield RTS



## Orenco Tank Shield™

### Applications

Orenco's Tank Shield is a secondary safety barrier, designed to prevent unintended entry and accidental falls into tanks and pump basins. It can be installed in a new or existing tank access riser or pump basin. Tank Shield is compatible with Orenco's 24in (600mm) and 30in (750mm) FRP pipe, as well as 24in (600mm) Ultra Rib™ pipe.

### General

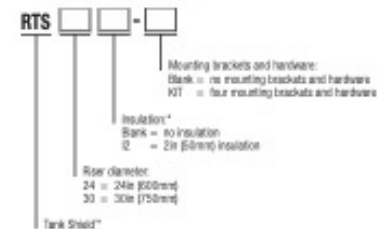
Orenco's Tank Shield is capable of supporting a load of up to 250lbs (113kg), providing more security and safety for tanks and pump basins than access riser lids alone. It locks securely into mounting brackets that are attached to the access riser with stainless steel hardware, eliminating the need for additional bolts or screws. It can be installed over pumping equipment.

Tank Shield is molded of co-polymer polypropylene (CPPP) for exceptional durability. Tank Shield mounting brackets and hardware can also be ordered individually (RTS-MB). For cold weather applications, optional insulation is available.

### Standard Models

RTS24-KIT, RTS30-KIT

### Product Code Diagram



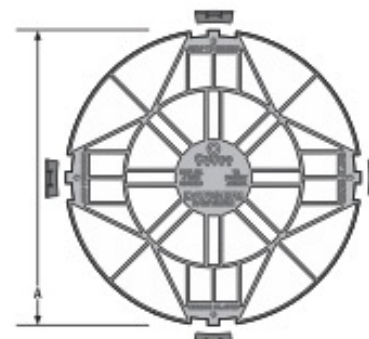
\* Insulation has an R-value of 18 per 2in increment (R31.8 per 50mm)

### Materials of Construction

Tank Shield	Co-polymer polypropylene
Brackets	ABS
Hardware	Stainless steel
Insulation, optional	Closed-cell foam

### Specifications

Model	RTS24	RTS30
<b>A</b> Diameter, in (mm)	23 (584)	29 (738)
<b>B</b> Height, in (mm)	1.5 (38)	1.9 (48)
Load rating, lbs (kg)	250 (113)	250 (113)
Insulation R-value (RSI value)	10 (1.8)	10 (1.8)



RTS30 Tank Shield, top view (shown with mounting brackets)



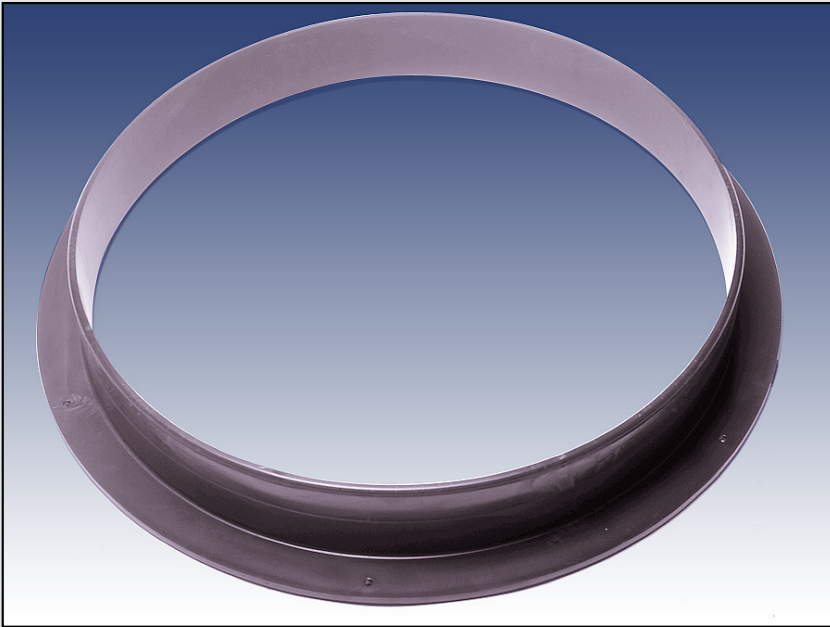
RTS30 Tank Shield, side view



Orenco's Tank Shield locks securely into mounting brackets without the need for additional bolts or screws.



# Riser-to-Tank Adapters





# Bolt-Down Kit

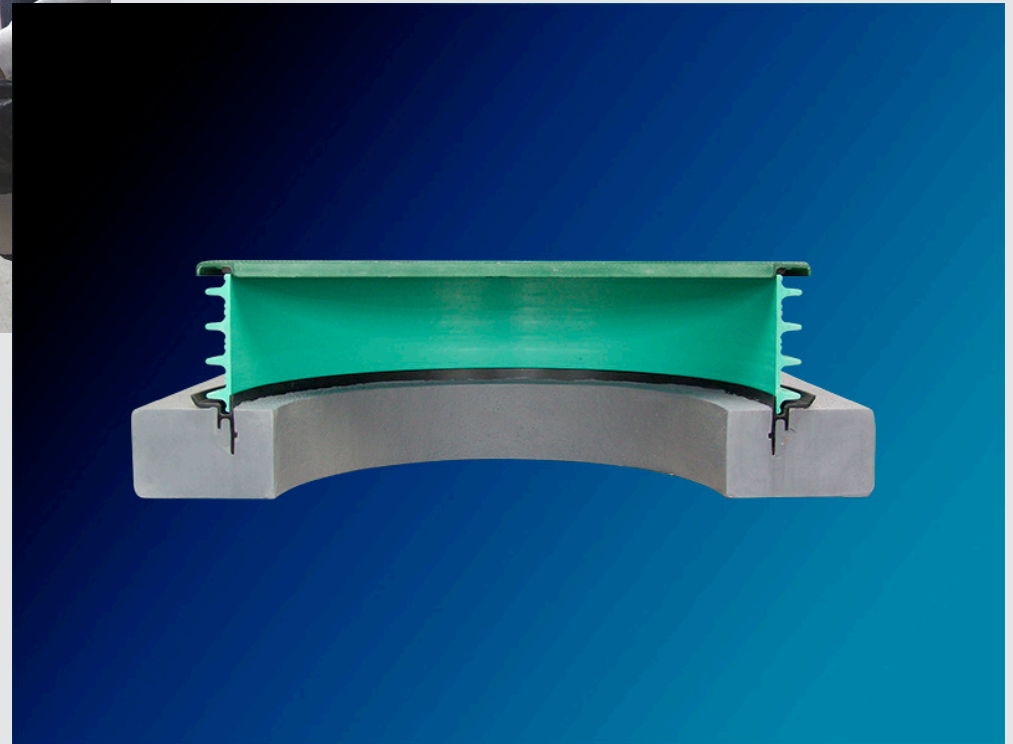


## Bolt-Down Kit, cont.





# Cast-In PRTA



# Grade Rings

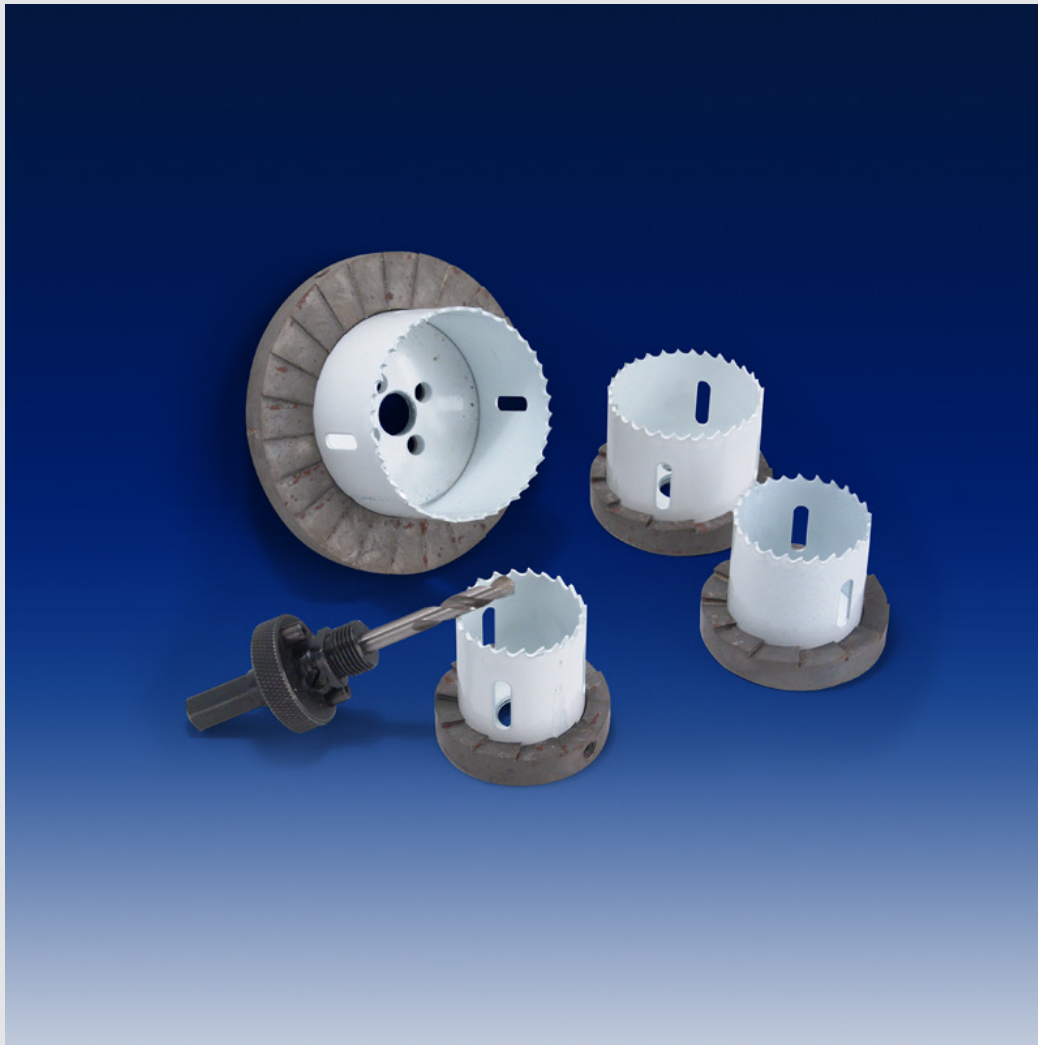


# Types of Adhesive

- MA320
- ADH200
- ADHP10

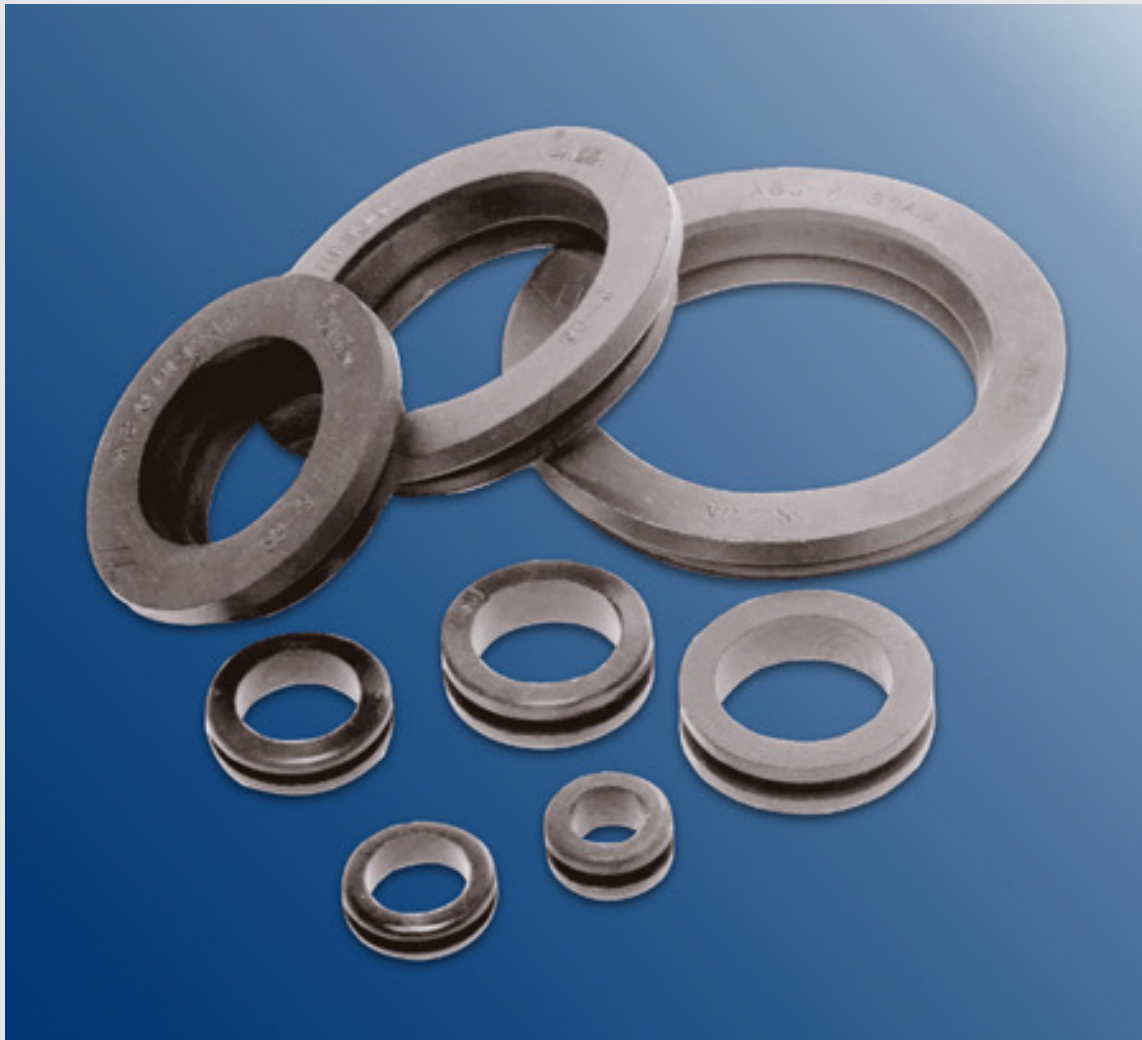


# Riser Tools





# Grommets

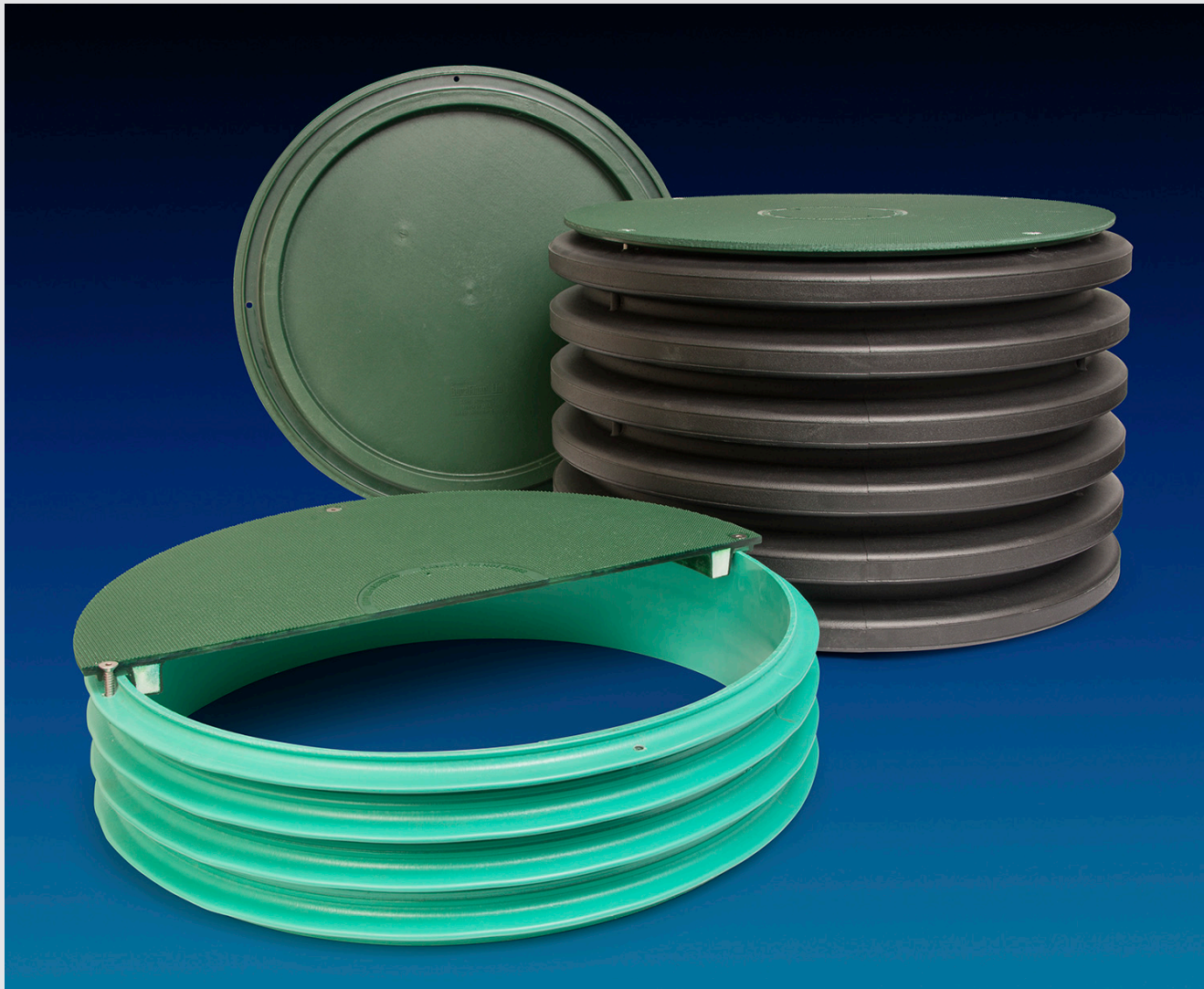


# Grommet Installation

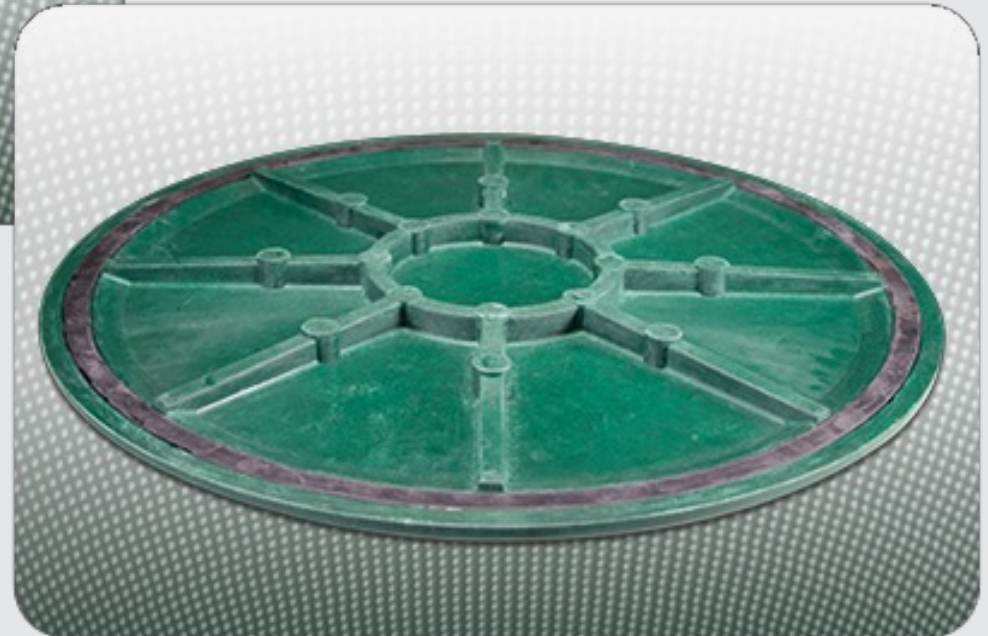
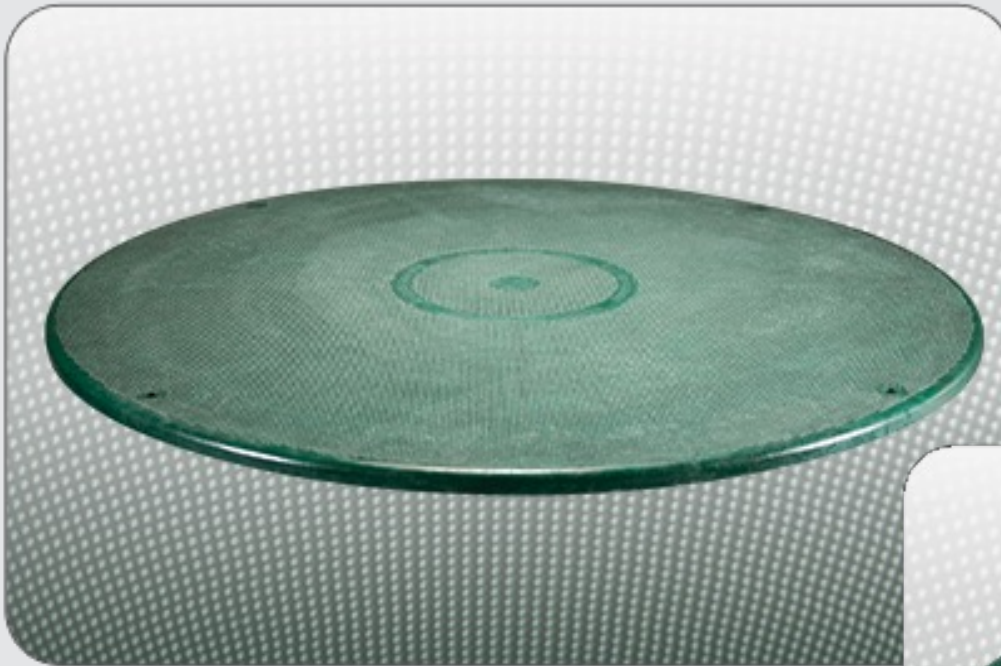




# Orenco Durafiber® Lid



# Orenco FiberLast™ Lid





# Logo Lids



# ***Solutions for Decentralized Wastewater Treatment***

***Orenco Systems<sup>®</sup>, Inc.***

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