

# ONYXX VALVE

## Pressure Isolator Ring

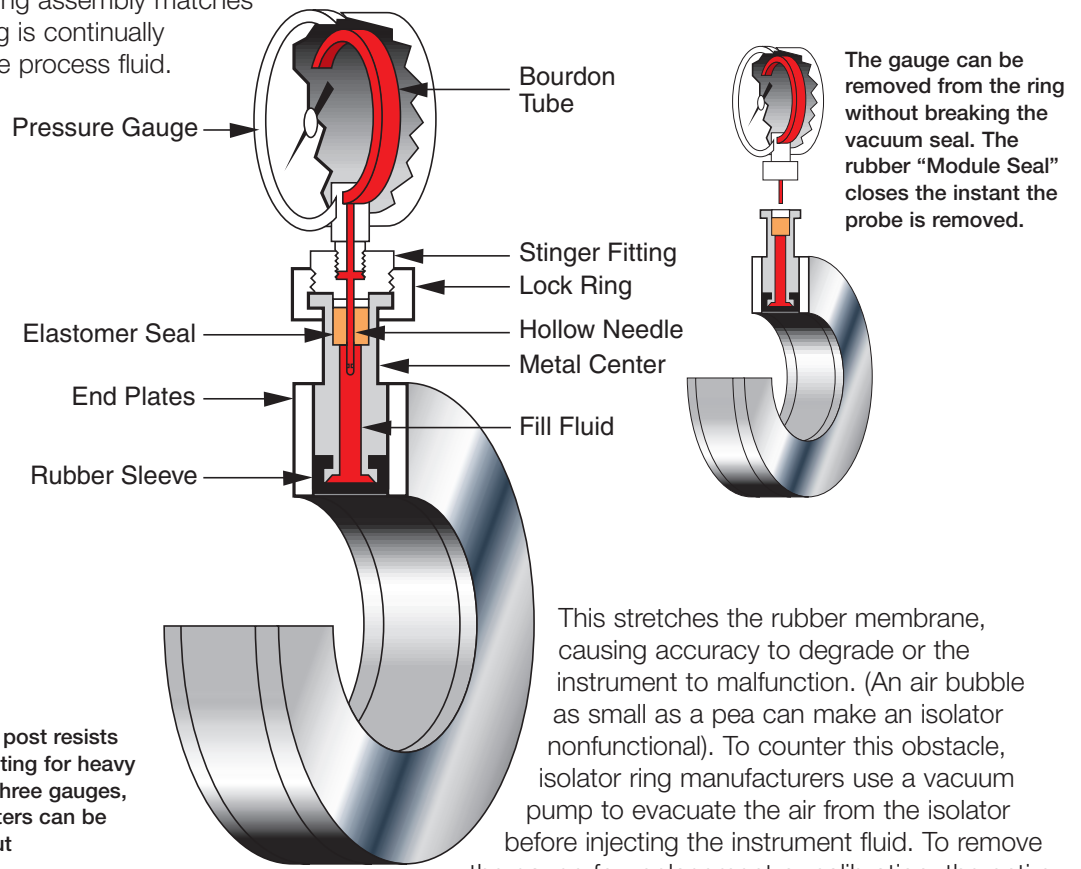
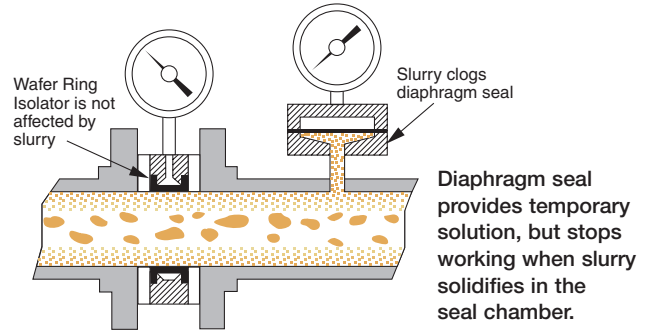
New Patented Design Assures Accuracy  
and Maintenance-Free Operation  
Patent #5,708,201



# The Onyx Isolator Ring

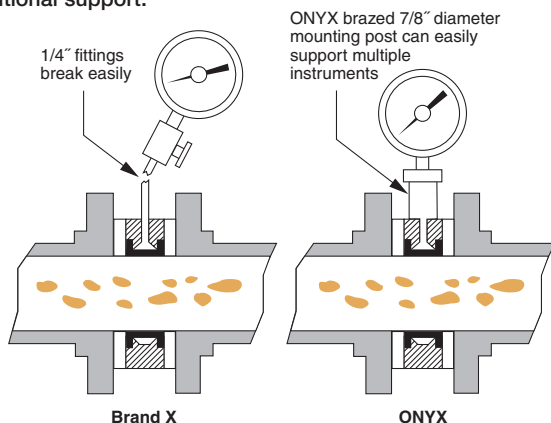
## Outperforms Conventional Isolator Rings and Standard Diaphragm Seals

Obtaining accurate pressure readings on pipelines is difficult because slurries, abrasives, and solids clog gauges, switches, and transmitters. Standard diaphragm seals—drilled or welded at a point on the pipeline—provide a temporary solution, but are vulnerable to plugging and stop working when slurry solidifies in the seal chamber. Conventional isolator rings consist of a rubber “inner tube” captured in a steel ring. The assembly is installed between flanges in the process pipe. Clear instrument fluid behind the rubber membrane transmits pressure to the gauge. The inside diameter of the ring assembly matches the adjacent pipe so the ring is continually cleaned by the motion of the process fluid. A common problem with this type of isolator ring is that any air inside the instrument will compress when pressurized.



**Robust 0.87” diameter mounting post resists breakage. Provides sturdy mounting for heavy gauges and instruments. Up to three gauges, pressure switches, and transmitters can be combined on one isolator without additional support.**

This stretches the rubber membrane, causing accuracy to degrade or the instrument to malfunction. (An air bubble as small as a pea can make an isolator nonfunctional). To counter this obstacle, isolator ring manufacturers use a vacuum pump to evacuate the air from the isolator before injecting the instrument fluid. To remove the gauge for replacement or calibration, the entire ring and gauge assembly must be removed from the process pipe and the gauge and ring have to be drained, evacuated, and refilled. The customer for this type of isolator ring will experience much downtime and expense. Some manufacturers try to circumvent this problem by adding a valve to the ring assembly. This holds the fluid in the ring, but attempting to fill the gauge by turning it upside down and pouring fluid into it traps an air pocket at the tip of the Bourdon tube. Also, attempting to remount the gauge by covering the connection with your finger while turning it upright and screwing it into the isolator is rarely successful.



# Smart Box

## The Preengineered Pump Protection Package

### Features

- Over Pressure Protection
- Run Dry Protection
- Functions as a Local Control Station
- Simple Two-Button Operation
- Panel Lights Show Pump Status
- Microprocessor Based
- Preprogrammed Ready to Run
- Corrosion Resistant Fiberglass NEMA-4X Enclosure for Indoor or Outdoor Service
- Easy Interface with Fixed Speed or Variable Speed Pumps
- Easy Interface to Remote Controls
- Broken Wire Detection
- Safe 24 Volt Signal Wiring

### Applications

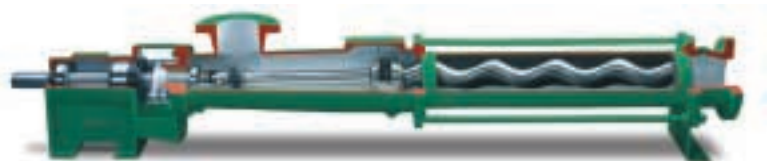
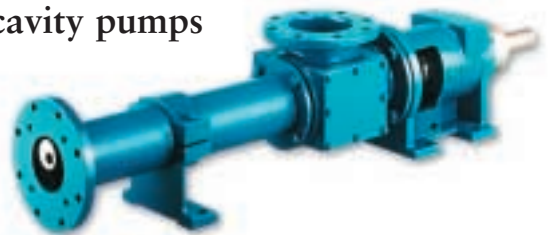
The Onyx Smart Box protects pumps from damage and downtime caused by run dry or over pressure conditions. It can be combined with our Isolator Ring for dependable operation with viscous, abrasive, corrosive, or volatile fluids or suspensions and slurries.



***Onyx Smart Box*** ensures that progressing cavity pumps operate within design parameters.

### Options:

- Audible Alarm
- Explosion Proof Enclosure
- Seal Flush Kit
- Fused Disconnect
- Circuit Breaker
- Key Lock on STOP Button
- Motor Starter
- VFD
- Level Control Package



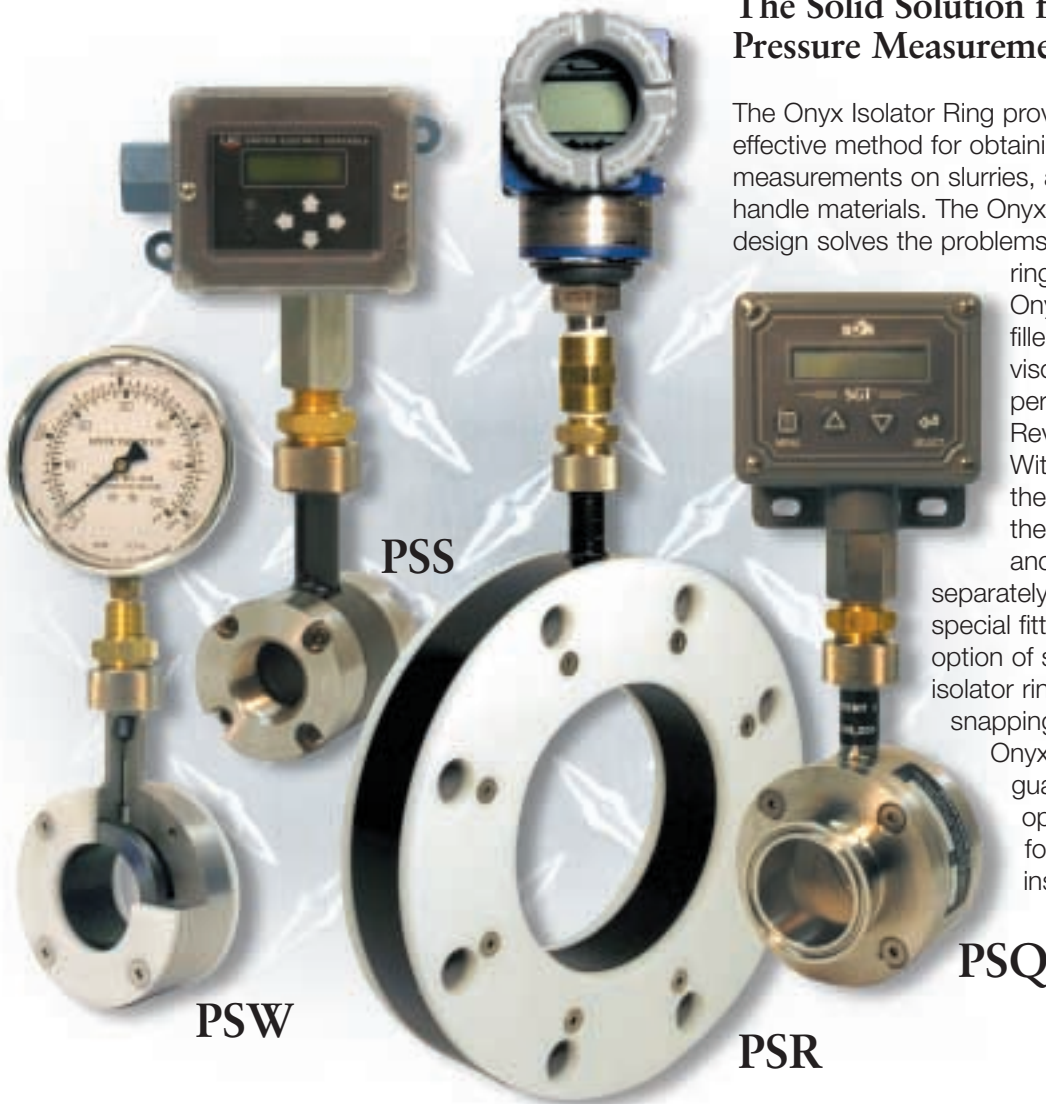
# The Onyx Isolator Ring:

## The Solid Solution for Solving Your Pressure Measurement Problems

The Onyx Isolator Ring provides a practical, cost-effective method for obtaining accurate pressure measurements on slurries, abrasives, and hard-to-handle materials. The Onyx Isolator Ring's new patented design solves the problems associated with isolator

rings on the market today. The Onyx Isolator Ring is vacuum-filled at the factory with high-viscosity silicone fluid; then permanently sealed with Onyx's Revolutionary "Module-Seal".

With the Onyx Isolator Ring, there is no fill port anywhere on the assembly: gauges, switches, and transmitters are supplied separately, are prefilled with Onyx's special fitting attached. You have the option of selecting any combination of isolator ring and gauge and simply snapping them together. With the Onyx Isolator Ring, you are guaranteed hassle-free operation and added protection for your sensitive indication instrumentation.



### Practical Applications of The Onyx Isolator Ring

The Onyx Isolator Ring can be used in a variety of industries such as chemical, food & beverage, mining, pulp & paper, and wastewater treatment. Typical applications include:

- Pressure measurement of slurries, corrosives, and difficult fluids
- Tank level indication
- Monitoring pressure on long distance pipelines to detect line breakage
- Monitoring pressure drop across a filter or pump using two sensors with a differential pressure switch
- Measuring the output pressure of a pump
- Sending a signal to stop a pump or open a by-pass valve

### Proven Benefits of The Onyx Isolator Ring

- Gauges can be removed or replaced without interrupting process
- Gauges can be replaced without vacuum filling
- No tools required to change pressure instrument (simply remove and replace by turning the lock ring)
- No snubber required (needle functions as built-in snubber)
- Improved safety (process liquid cannot escape if gauge is removed, even if process pipe is under pressure)
- High accuracy (because air can never get into the system)
- No isolation valve required
- Gauges can be rotated by hand to face any direction
- Isolation rings and gauges can be stocked separately (combine as needed on the spot)

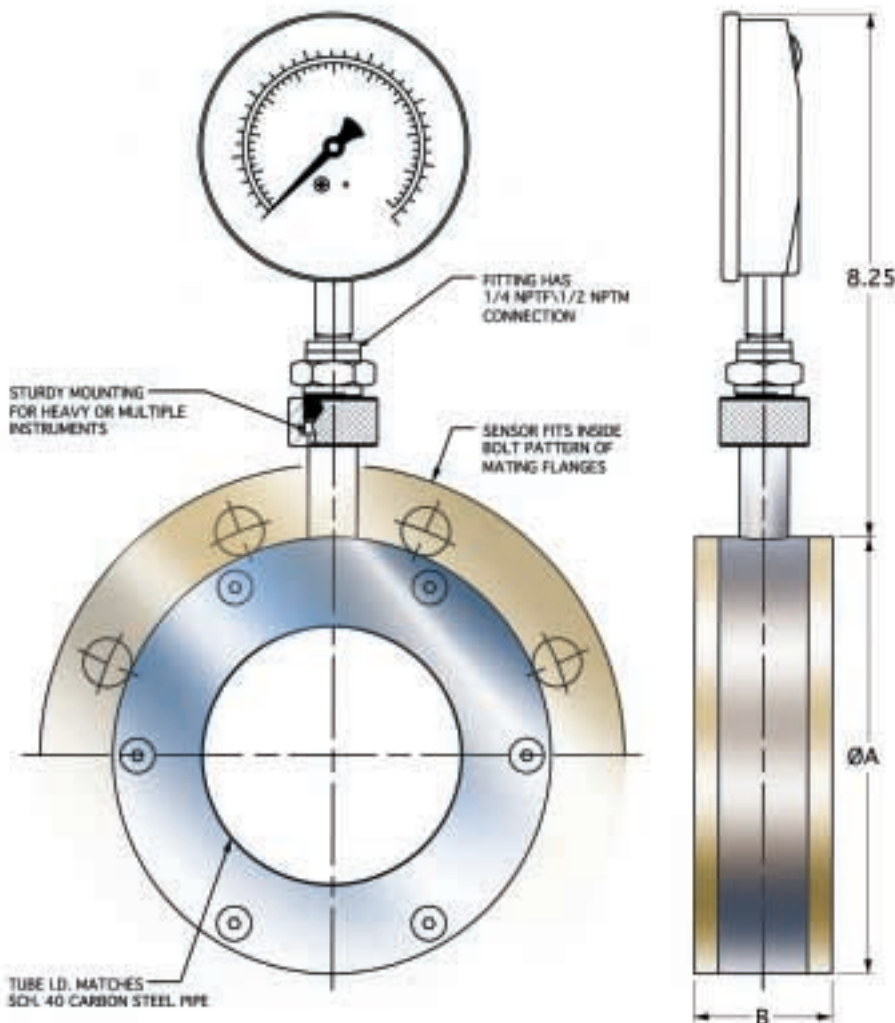


# Technical Specifications of The Onyx Isolator Ring

Center Section:	<ul style="list-style-type: none"> <li>• Carbon Steel*</li> <li>• 316 Stainless Steel</li> <li>• Carpenter-20</li> </ul>	
End Plates:	<ul style="list-style-type: none"> <li>• Acetal</li> <li>• 316 Stainless Steel</li> <li>• Teflon®</li> </ul>	<ul style="list-style-type: none"> <li>• Kynar®</li> <li>• Titanium</li> <li>• Carpenter-20</li> </ul>
Elastomer:	<ul style="list-style-type: none"> <li>• Neoprene</li> <li>• Nitrile (Buna-N)</li> <li>• EPDM (Nordel®)</li> <li>• Fluoroelastomer (Viton®)</li> <li>(Available with optional Teflon coatings)</li> <li>• Chlorosulfonated Polyethylene (Hypalon®)</li> </ul>	<p>-20°F → 220°F</p> <p>-20°F → 180°F</p> <p>-20°F → 300°F</p> <p>-20°F → 375°F</p> <p>-20°F → 250°F</p>
Fill Fluid:	<ul style="list-style-type: none"> <li>• Silicone Fluid</li> <li>• Food Grade Silicone (Optional)</li> </ul>	<p>-40°F → 400°F</p> <p>-20°F → 400°F</p>
Pressure Range:	Vacuum to +1,000 psi	The Onyx Isolator has been tested by an independent lab to 1,500 psi

\*Coatings available. Consult factory.

Sizes, dimensions, and materials may vary depending on series.



SIZE	ØA	B
1	2.50	1.87
1-1/2	3.25	1.87
2	4.00	1.87
2-1/2	4.75	1.87
3	5.25	1.87
4	6.75	2.12
5	7.62	2.25
6	8.62	2.25
8	10.87	2.25
10	13.25	2.81
12	16.00	3.12
14	17.62	3.12
16	20.12	3.12
18	21.50	3.12
20	23.75	3.12
24	32.00	3.12

#### Center Material:

- Carbon Steel
- 316 Stainless Steel
- Carpenter-20 Stainless Steel

#### End Plate Material:

- Acetal
- 316 Stainless Steel
- Carpenter-20 Stainless Steel
- Teflon

#### Sleeve Elastomer:

#### Module Seal Stinger Fitting Material:

- Brass (Std)
- 316 Stainless Steel

#### Pipe Fittings Material (1/2 NPT Std):

- Carbon Steel
- 316 S.S.

#### Fill Fluid:

- Silicone (Std) (-40°F TO 400°F)
- Vegetable Oil (FDA)

Other \_\_\_\_\_

Pressure Rating: 1,000 PSI

All dimensions are in inches.

## Series PSW

## Function

The Smart Box is a preprogrammed, microprocessor based controller. It monitors a 2-point pressure switch to ensure that pumps operate within design limits.

If pump discharge pressure exceeds safe limits, the Smart Box stops the pump, sounds the (optional) alarm, and the HIGH TRIP indicator lamp comes on. Pressing the STOP button silences the alarm and permits a restart. The Smart Box blocks any attempt to restart the pump until excess pressure is relieved.

If the pump runs dry, discharge pressure falls below the low threshold. In this case the Smart Box stops the pump, sounds the (optional) alarm, and the RUN DRY indicator lamp comes on. Pressing the STOP button silences the alarm and permits a restart. Each time the pump starts, the Smart Box allows a 90 second grace period for the pump to prime itself.



Onyx Isolator Ring and Smart Box protects peristaltic hose pumps from over pressure which could rupture the hose. They can also monitor level of the lubricant in the hose chamber to prevent damage from operating without oil.

## Operation

The STOP/RESET button is a 2-position maintained button. Push the STOP/RESET button to stop the pump. If there are remote controls connected to the Smart Box, pressing STOP/RESET locks out all "run" commands from all sources. In this condition the READY light will be out.

Twist the STOP/RESET button to unlock it. It pops into the "out" position, and the READY light turns on. This automatically puts the Smart Box into "remote" mode, allowing the Smart Box to respond to remote "run" commands.

In normal mode, the operator starts the pump by twisting the STOP button and pressing the green START button. The READY light goes out and the green RUN button lights.

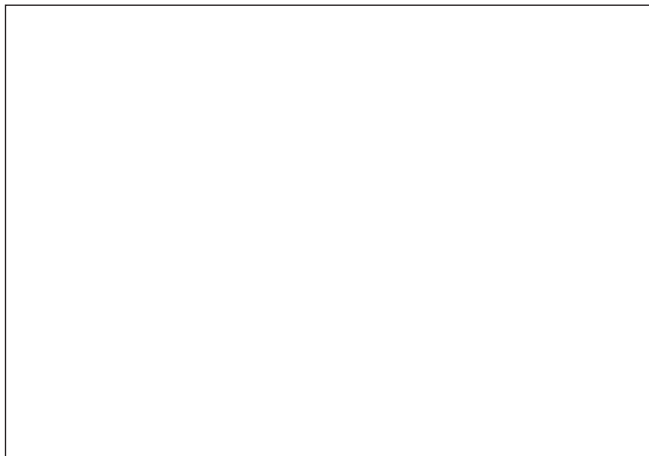


# ONYX VALVE

835 Industrial Hwy • Cinnaminson, NJ 08077

Phone: 856/829-2888 • Fax: 856/829-3080 • [www.onyxvalve.com](http://www.onyxvalve.com)

Your local representative is:



Pinch Valves  
Manual/Pneumatic/Electric

Pump Connectors  
and Expansion Joints