

ISO-RING[®] GAUGE ISOLATION RING

The OPW Engineered Systems patented ISO-Ring Gauge Isolation Ring is designed to isolate gauges or pressure switches from solids in process flow and to insure accurate pressure readings.

Why ISO-Ring? Clogging or fouling typically associated with diaphragm seals used in viscous fluid applications result in erroneous pressure readings. This is never a problem with the OPW ISO-Ring[®]

SPECIFICATIONS

Housing:	Carbon Steel	
	316 Stainless Steel	
Assembly Flanges:	Carbon Steel	
	316 Stainless Steel	
	CPVC	
	Ultra High Molecular Weight polyethylene (UHMW)	
Inner Flexible Wall:	Buna-N	EPDM
	PFTE ¹	
	Silicone	
	Fluorocarbon	
	White Neoprene	
	Natural Rubber	
Captive Sensing Liquid:	Propylene Glycol	Vegetable Oil
	Silicone Oil (FDA Approved)	Glycerine
	Fluorosilicone	Fluorolube
	Mineral Oil	
	Distilled Water	

¹ Not Available in sizes 12" or larger
 Other materials combinations are available upon request.



WHY ISO-RING?



Direct

Diaphragm Seal

ISO-Ring[®]

WARNING

Read & Understand this instruction before starting installation.

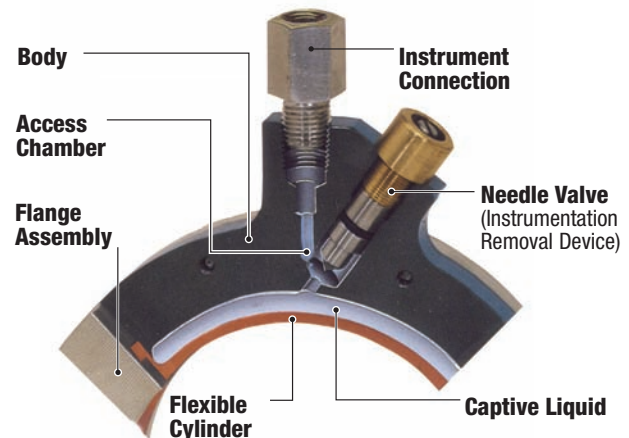
- ISO-Ring to be used for its designated purpose only
 - Local regulations must be followed at all times
 - OPW instructions must be followed for installation at all times
- Make sure to use adequate personal protection at all times during operation**

RING OR SPOOL	BODY MATERIAL	END FLANGE MATERIAL	TYPE	FILL	GAUGE	SIZE	CYLINDER MATERIALS
R = ISO Ring®	CS = carb. stl.	1 = carb. stl.	N = without IRD**	00 = less fill**	00 = less gauge, 1/4" conn.	010 = 1"	1 = Buna-N
S = ISO Spool®	SS = 316 SST	2 = 316 SST	I = with IRD**	11 = propylene glycol	01 = less gauge; 1/2" conn.	015 = 1.5"	2 = Fluorocarbon
B = Bolt-Thru ISO-Ring®		3 = carb. stl. w/ PTFE envelope	T = Threaded*	12 = distilled water	02 = 0-60 psi	020 = 2"	3 = PTFE
		4 = 316 SST PTFE envelope	F = Flngd/150 Lb.*	13 = mineral oil	03 = 0-100 psi	025 = 2.5"	4 = EPDM***
		5 = CPVC (flat faced flange)	G = Flngd/300 Lb.*	14 = silicone oil	04 = 0-200 psi	030 = 3"	5 = silicone*
		6 = CPVC - ISO-Spool only (flat faced flange)	*Spool Only	15 = vegetable oil	05 = 0-400 psi	040 = 4"	6 = white neoprene
		7 = other	** IRD = Instrument Removal Device	16 = glycerine	06 = 0-600 psi	050 = 5"	7 = natural rubber
		8 = carb. stl. Fully Wetted PTFE (Bolt-Thru ISO-Ring)		17 = fluorolube	08 = customer supplied	060 = 6"	8 = other
		9 = 316 SST Fully Wetted PTFE (Bolt-Thru ISO-Ring)		18 = fluorosilicone	09 = other	080 = 8"	*Spool Only
				19 = other		100 = 10"	***Ring Only
						120 = 12"	
						140 = 14"	
						160 = 16"	
						180 = 18"	
						200 = 20"	

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BENEFITS

- Protect your instrumentation – Gauge (or switch) is in contact only with captive liquid and never directly with the process liquid.
- Insures accurate measurements – isolating the instrumentation from solids in process flow results in accurate readings.
- Easy maintenance – Instrument Removal Device (IRD) allows instrumentation to be easily removed for calibration, repair or replacement without interrupting process flow.
- Will not clog – unlike diaphragm seal.

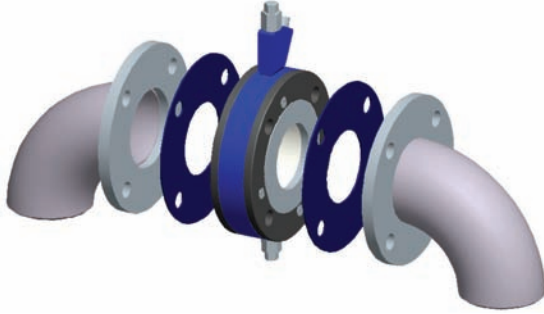


DIMENSIONAL DRAWINGS ARE AVAILABLE FROM THE DOWNLOAD SECTION OF OUR WEBSITE - WWW.OPW-ES.COM

INSTALLATION*

Step 1

- Secure whatever device ISO-Ring will be mounted to (e.g., piping).
- Align bolt holes so that nothing will get in the way of the instruments connected to the ISO-Ring once installed.



Step 2

- The ISO-Ring uses a single set of bolts to secure the unit to both of the flanges it will be mounted to.
- The bolts pass through both flanges and therefore, you must align both flanges with gaskets at the same time.
- With everything in alignment, insert the bolts, followed by lock washers and nuts on the other side.
- Torque per standard bolting requirements.



* Bolt-through unit shown. Similar instructions for Ring (Wafer) and Spool type units.

DISMANTLING ISO-RING

Attention: Dismantling must be performed by authorized and trained personnel only. At some time (maintenance, etc.) it may become necessary to remove or transplant the ISO-ring.

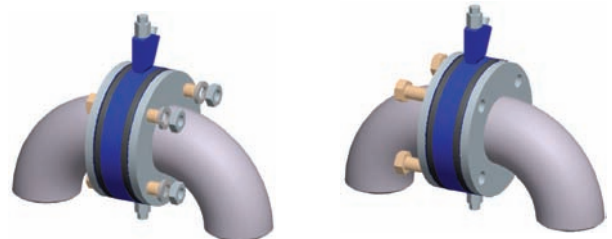
Before dismantling the ISO-Ring take some necessary preparations.

- Make sure to use adequate personal protection at all times during the operation.
- Clear the surrounding area and shut off any working devices.
- Relieve all pressure from the system.
- Make sure that the surrounding area is clear from obstacles
- Barricade the surrounding area, so no unauthorized people can access the work floor.
- Arrange necessary permits or paperwork with the plant holder, owners or local authorities, before taking any actions
- Drain connected piping and air out.

When the piping is clean and dry and secured from movement, and the necessary preparations are made, the ISO-Ring can be removed from the piping it is attached to.

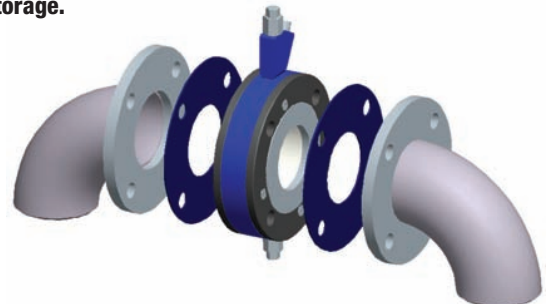
Step 1

- Loosen the nuts securing the ISO-Ring to the flanges.
- Remove the bolts, nuts, and washers.



Step 2

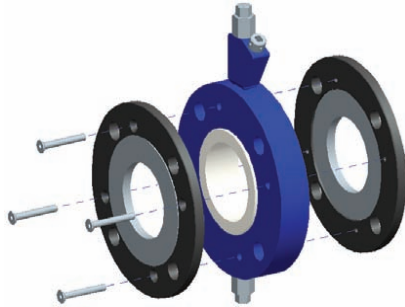
- The mating flanges should separate from each other.
- Remove the gasket between the flanges and place the detached piping in the proper crate for storage/transport.
- Place the ISO-Ring into the proper crate for shipment/storage.



DETAILED DISASSEMBLY (SEAL REPLACEMENT)

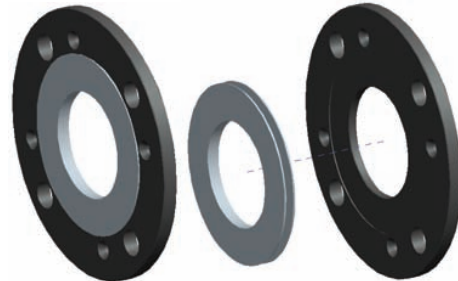
Step 1

- Remove plug on bottom of unit to drain entrapped fluid into container.
- Unthread and remove bolts securing the sealing flanges.



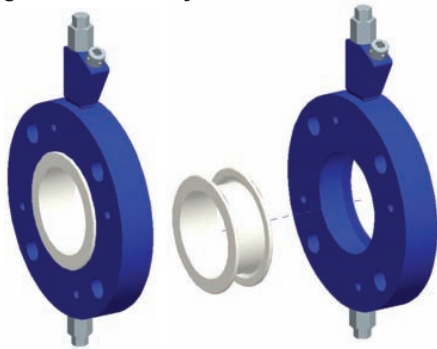
Step 2

- Remove the sealing flange seal (if provided) from each flange, by folding down one side and pushing it out of the flange.



Step 3

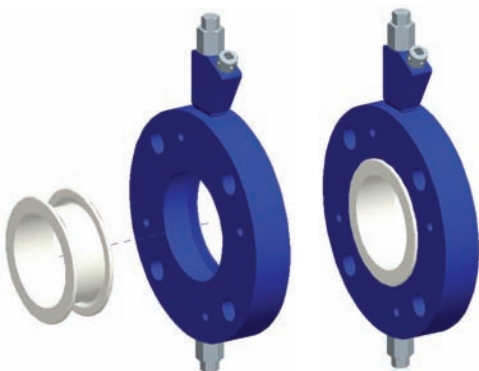
- Remove the bladder, by folding down one side and pushing it out of the body.



DETAILED REASSEMBLY

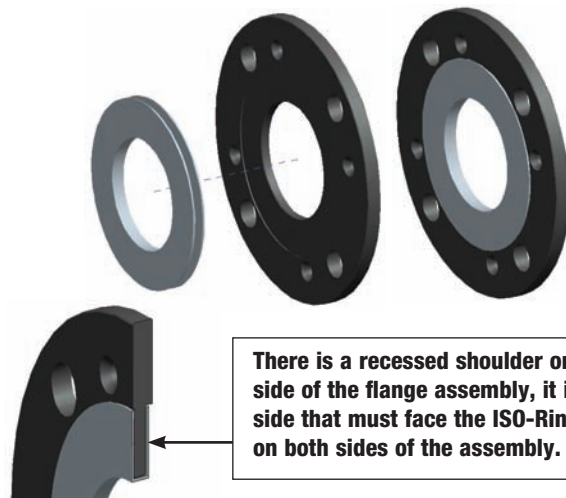
Step 1

- Install ISO-Ring bladder by folding down one of its flexible sides, and passing it through the body.
- Once released the flexible side should slowly spring back into position.



Step 2

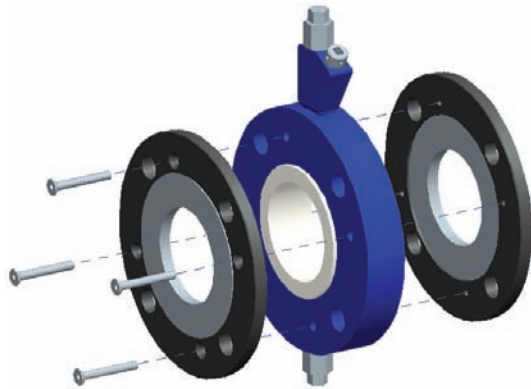
- Apply the same technique for installing the flange seals (if required) onto the outer sealing flanges.



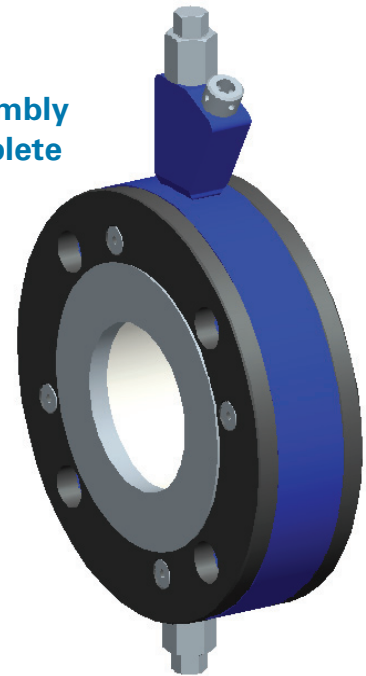
There is a recessed shoulder on one side of the flange assembly, it is this side that must face the ISO-Ring body on both sides of the assembly.

Step 3

- Sandwich the ISO-Ring body assembly in between both sealing flanges (orientated as explained above) and run the bolts through the sealing flange that is not tapped first, and thread into the sealing flange that is tapped on the other side.
- Tightening sequence: 12-6-3-9 o'clock. Should go through sequence more than once.



Assembly complete



Note: ISO-Rings are routinely ordered less fill and installed with a gauge and/or pressure switch at site. Before these can be installed, it is imperative that the bourdon tube of the gauge, the capillary tube of the pressure switch, and all fittings used to attach these to the ISO-Ring are completely filled with the same fluid the ISO-Ring will be filled with. If any air remains in the gauge, pressure switch, or fittings, the gauge and/or pressure switch readings will be in error or, in worst case, the flexible cylinder of the ISO-Ring will rupture.

NON-VACUUM FILLING INSTRUCTIONS

Step 1: Remove Instrumentation (gauge, switch, etc.).

Step 2: Using an ordinary hypodermic syringe, fill the bourdon tube or capillary tube with fill fluid. Place finger over point of fill and tilt gauge side to side to dislodge trapped air. If fill fluid is thick, it may be necessary to allow gauge to sit for 10-15 minutes to allow time for the bubbles to propagate to the top of the fill opening. Assemble fittings to the filled gauge and/or pressure gauge and/or pressure switch and then fill them. Be sure all air has been removed from any equipment attached to the ISO-Ring.

Step 3: Install Instrumentation.

Step 4: Secure ISO-Ring with Instrumentation (gauge, etc.) pointing down and remove fill plug from bottom.

Step 5: Fill unit with desired fluid through fill plug port.

Step 6: Insure all air is removed from ISO-Ring.

If air is not removed from ISO-Ring, damage to the flexible cylinder may occur (See note above).

- Push flexible cylinder with fingers 6-8 times to dislodge and remove air bubbles.
- If the fluid is thick, it is recommended that the ISO-Ring be allowed to set for 10-15 minutes, AFTER pushing on cylinder, to allow air bubbles to propagate to the fill port.

Step 7: After all air has been removed from ISO-Ring, top off fill port with fill fluid.

Step 8: Install pipe plug in fill port.

Note: To prevent plugging, use PTFE paste, not tape, on plug threads.

Note: Vacuum filling of ISO-Ring recommended when facilities and circumstances permit.

Equipment:

1. Vacuum pump with 20 inches of mercury limiting device.
2. Transparent reservoir for ISO-Ring fill fluid.
3. Tubing to withstand vacuum.
4. Shut off valve
5. Fittings to attach equipment to ISO-Ring

Notes: The following instructions are intended for ISO-Rings prior to testing and installation. All PTFE units with less than 10 psi gauge must be filled via Non-Vacuum Instructions.

Step 1: If ISO-Ring is to be equipped with gauge and/or pressure switch, in most cases, they can be vacuum filled with the ISO-Ring. ISO-Rings being filled with a thick fluid can NOT be vacuum filled.

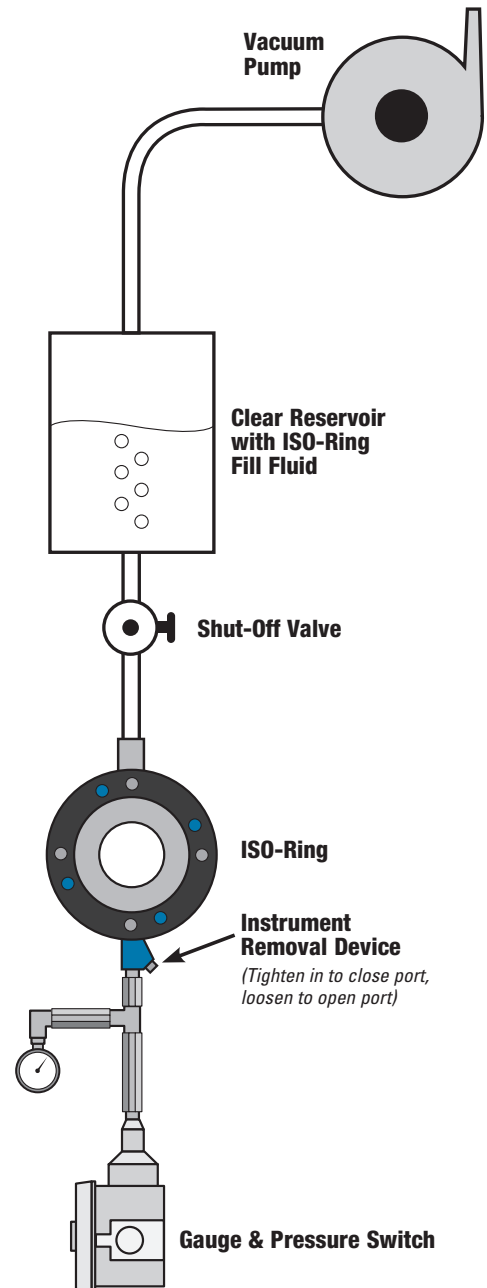
Step 2: Assemble filling equipment as shown in diagram. All connections must be leak free. The shut-off valve should be as close to the ISO-Ring as possible. If ISO-Ring was supplied with the Instrument Removal Device (IRD) it must be in its open position.

Step 3: Start vacuum pump. **DO NOT** allow vacuum to exceed 20 inches of mercury or damage to flexible cylinder will result. 10-20 inches of mercury is sufficient, in most cases, to fill ISO-Ring. Bubbles will appear in reservoir as vacuum is applied. As air is drawn out of ISO-Ring, fill fluid replaces it.

Step 4: Remove vacuum. Re-apply vacuum four or five times until no bubbles are present in reservoir.

Step 5: Close shut-off valve and remove vacuum pump, reservoir and tubing. Slowly open shut-off valve and remove from ISO-Ring. ISO-Ring should now be full.

Step 6: Gauge and/or pressure switches **MUST BE** completely full of fill fluid before they are installed on ISO-Ring. The same fill instructions can be used on them.



WARNING

Failure to follow these warnings could result in serious personal injury, property damage or product failure.

1) Do not attempt any maintenance service while the equipment is in operation. System pressure must be relieved and the product drained before attempting any service on the unit. The line must be locked out while service is in progress. Proper thermal relief must be provided at all times while equipment is in service.

2) OPW products do not eliminate possible exposure to hazardous substances. The conditions of handling and use are beyond our control, and we make no guarantee and assume no liability for damages or injuries related to the use of our products. Follow the safety precautions outlined in the Material Safety Data Sheets for the material being used. It is the responsibility of the user to comply with all federal, state and local regulations. Always employ proper safety precautions and handling techniques.

3) Proper seal and wetted material part selection is critical for safe operation. To assure maximum life for the service intended, use only those materials compatible with the fluids being handled. Please note material being supplied and make certain that it is suited for the intended service.



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