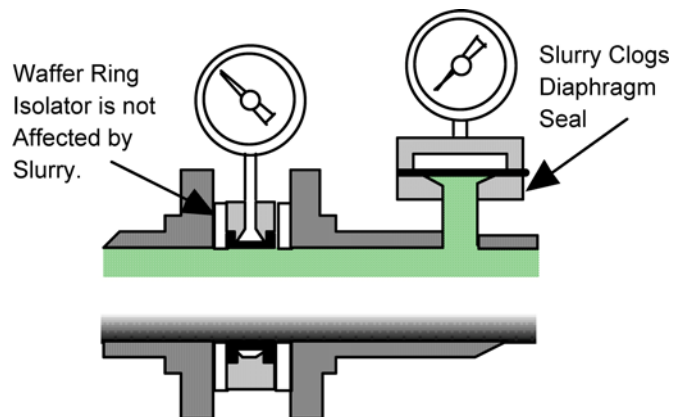


D81 Installation and Maintenance

Principle of Operation

Obtaining accurate pressure readings on waste water treatment and slurry lines is difficult because the solids present in the process media can block pressure elements such as gauges, switches and transmitters.

Isolation rings consist of a “rubber inner tube” captured in a steel ring. The assembly is installed between flanges in the process pipe. The space between this rubber membrane, housing ring and pressure instrument is vacuum filled with clear silicone oil as standard (other fluids are available on special order). As the process media flows past the isolation ring it presses against the rubber membrane causing it to bend in slightly. This pressure input is subsequently transferred via the fill fluid to the pressure instrument. The isolation ring is rated up to 1,000 psi input pressure.

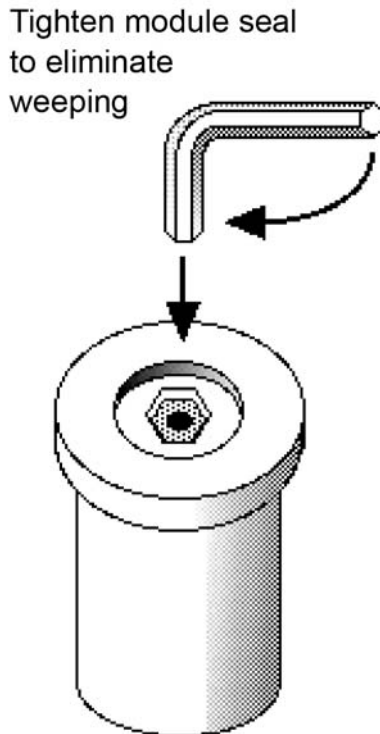


The inside diameter of the ring assembly is based on ASME B36.10 pipe specifications and is sized so that it matches the adjacent pipe. This enables the isolation ring to be continually cleaned by the motion of the process fluid without any resultant build-up caused by step changes in pipe inner diameter.

Maintenance

The isolation ring is fitted with pressure instrumentation such as gauges, transducers/transmitters and pressure switches. Please refer to Winters' specification literature and pressure instruments installation, operation and maintenance guide found on www.winters.com for these accessories. The isolation ring also has a “module seal” which prevents the fill fluid from leaking out, even when the fitted pressure instruments are removed. The pressure instruments are fitted into module seal and held in place through tightening a locking ring. There should be no trace of silicone liquid present in

the area of the module seal. However, if fill fluid is seen to be weeping from under the lock ring, then the module seal may require further adjustment. To adjust the module seal:



1. Loosen the lock ring and carefully remove the pressure measuring instruments.
2. Insert a 1/4" Allen key into the module seal set screw and turn clockwise 1/8 revolution.
3. Reinstall the pressure measuring instruments and tighten the locking ring.

Turning the set screw clockwise eliminates weeping but makes the fit around the needle tighter. If the module seal is too tight to reinstall the pressure measuring instrument, do not force the needle in or you risk bending/breaking the needle. Instead, loosen the set screw until the needle can be inserted easily. If fluid weeping persists, it may be necessary to tighten the set screw further. When tightening the set screw, try 1/8 turn at a time.

Storage

Correct storage of the isolation ring extends the service life. Rubber membranes are perishable if the following precautions are not taken prior to installation.



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- 1. Keep isolation rings cool. They can be stored in an unheated area, but allow maximum ventilation in storage areas subject to high ambient temperatures. Trailers and storage sheds can become very hot during summer months. Avoid these locations where possible.**
- 2. Avoid sunlight. UV light deteriorates rubber. Leave the isolation ring in its box.**
- 3. Avoid ozone. DO NOT STORE isolation rings near electrical equipment.**
- 4. If the isolation ring already has instrumentation fitted then be careful where the assembly is stored so these external devices are not physically damaged.**
- 5. These separate instruments may be fitted with a “STINGER” fitting attached. DO NOT REMOVE THE RUBBER TIP PROTECTOR FROM THE “STINGER” FITTING NEEDLE UNTIL ATTACHING THE FITTING TO THE ISOLATION RING.**

Installation

1. Safety Considerations :

- a. Pressure isolation rings often handle chemically reactive (eg chlorine) and abrasive fluids. Applications such as these can result in the elastomer sleeve wearing out over time.**
 - b. Make sure that the fitted pressure instruments (gauges, switches, transmitters etc) have pressure & temperature ratings suitable for actual operating conditions. Note that isolation ring's maximum pressure rating is 1,000psi, so the pressure instruments can only be used up to this maximum rating. Process fluid that exceeds these design pressures may result in equipment damage or personal injury.**
 - c. The rubber sleeve elastomer must be chemically compatible and temperature compatible with the process fluid.**
- 2. Inspect isolation ring prior to installation. Do not install if it is has been damaged in shipment. The isolation ring should not show any indication of leakage and the elastomer should be free from cuts or puncture holes.**
 - 3. The isolation ring can be installed at any altitude with liquid flow in either direction. Install in a straight pipe run at least 5 pipe diameters from “tees” and elbows where possible.**
 - 4. To install, sandwich the isolation ring between two flanges in the process pipe line. Center as carefully as possible. Install gaskets on both sides of the isolation ring. Insert the flange bolts. Tighten these bolts in criss-cross pattern.**



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Operating Instructions

- 1. The isolation rings are vacuum filled at the factory.**
 - a. Do not disassemble the ring except to replace the rubber membrane.
 - b. Do not break connections between the “Stinger” fitting and pressure instruments.
 - c. Do not remove the rubber protector from the “Stinger” needle until ready to attach the instrument to the isolation ring.

- 2. To attach a pressure instrument (with a “Stinger” fitting) to the Isolation ring:**

NOTE: Pressure measuring element and “Stinger” fitting must be pre-assembled and vacuum filled prior to attaching to the isolation ring.

 - a. Instruments can be attached to an isolation ring installed in the pipe line while the system is pressurised.
 - b. Hold the pressure instrument and “Stinger” fitting assembly upright above the installation ring.
 - c. Remove the rubber tip protector from the “Stinger” needle (see drawing below, item #5D).... Save the rubber tip protector for future use.
 - d. Gently push the needle (item #5D) through the rubber module seal (item #5) until it hits bottom.
 - e. Thread the coupling ring (item #5C) onto the “stinger” fitting (item #5E). **HAND TIGHTEN.**
 - f. The gauges can be rotated to face any direction by loosening the coupling ring, turning the gauge and then re-tightening the ring.

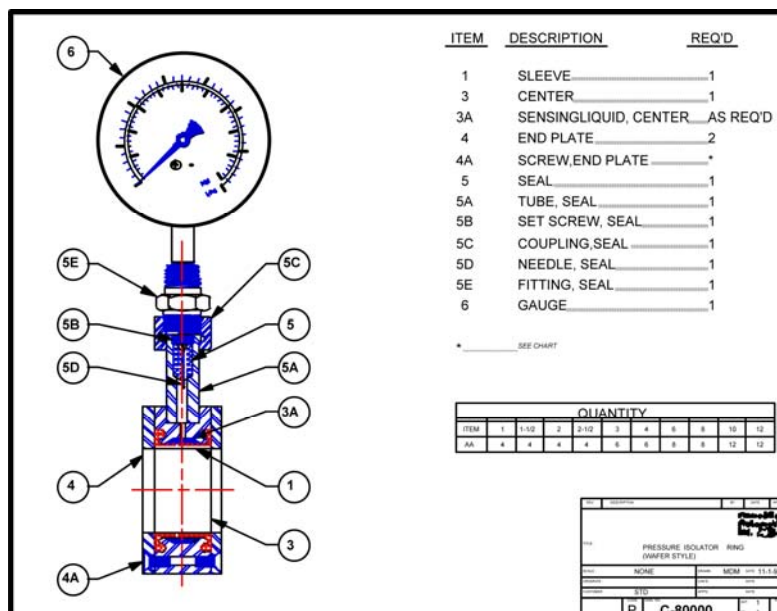
- 3. To remove pressure instruments from the isolation ring:**
 - a. It is not necessary to remove the isolation ring from the process pipe.
 - b. In order to minimize fill fluid loss, reduce process pressure as low as possible or turn the system off before removing gauges or other instruments from the isolation ring. Turn off process fluid upstream pump prior to removing instrument from the isolation ring. The interruption will be brief, instruments can be removed in a few seconds.
 - c. Loosen knurled coupling ring (item #5C).
 - d. Gently lift the gauge and “Stinger” assembly out of the module seal.
 - e. Immediately attach a rubber tip protector to the end of the “Stinger” needle.
 - f. Tighten module seal to eliminate weeping (maintenance section).
 - g. The pump can be switched back on and the pipe re-pressurized without losing fluid from the isolation ring.

- 4. Elastomer Sleeve and module seal replacement:**
 - a. Remove isolation ring from process line.

- b. Remove gauge and/or auxiliary equipment accessory (items #6, 5E).
- c. Remove screws, end plate (item #4A).
- d. Remove end plate (item #4).
- e. Remove old sleeve (item #1).
- f. Use 1/4" hex (Allen) key to remove the seal screw (item #5B).
- g. Use a packing extractor to remove the old rubber seal (item #5).
- h. Clean all components thoroughly.
- i. Press new rubber seal (item #5) into the stem (item #5A). Drive all the way to bottom of bore. Replace seal screw (item #5). Do not over tighten.
- j. Collapse new sleeve (item #1), push through housing (item #3) and work seal lips into housing grooves.
- k. Reinstall end plates (item #4).
- l. Replace end plate screws (item #4A).
- m. Connect a separate "stinger" fitting (items #5E) to vacuum filling system, evacuate air from the ring assembly, and refill with fresh instrument fill fluid (silicone).
- n. The isolation ring can now be refitted into the pipe for service.

5. To attach "Stinger" fitting to pressure instruments:

- a. Attach gauge or other instrument to the "Stinger" fitting (item 5E).
- b. Connect module seal adaptor to the vacuum filling system.
- c. Attach the instrument assembly to the adaptor fitting.
- d. Evacuate all the air from the instrument and fill with silicone fill fluid.
- e. Detach the instrument from the filling system. Protect the "stinger" needle with a rubber tip protector.
- f. The instruments can now be attached to an isolation ring or stored for future use.





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