Sentry®
Operation and Maintenance Instructions

Important Information

<table>
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<tr>
<th>Note to Supervisor</th>
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<tr>
<td>Please share this information with your employees and make sure they have received training on closures prior to operation and/or maintenance.</td>
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//\ WARNING: Do not attempt to open the closure while system is under pressure. Failure to relieve all pressure will allow the contents to escape forcefully and may cause severe injury or even death. Follow these instructions.

Closure Installation Instructions are available under separate cover and are included with each closure shipment. For a copy of these instructions, please contact our Customer Service Department at one of the following numbers.

Tomball, TX. U.S.A.
Phone (800) 654-5603 or (281) 351-2222
Fax (281) 351-6557
E-mail: sales@rmenergy.com

Or visit our web site: www.rmenergy.com
NOTE: Prior to operating the closure, it is recommended that the following guidelines are reviewed and that personnel become familiar with the closure components and operation.

![Horizontal Closure Diagram]

**Figure 1**

**Horizontal Closure**

(*Typical*)
Figure 2

Vertical Closure
(Typical)
SECTION ONE: Opening Procedure for Sentry® Closure

1. Relieve internal pressure from the pipeline or vessel in a safe manner and completely drain contents.

2. After the venting and draining is complete, slowly unscrew the Pressure Alert Valve (PAV) while observing for product or internal pressure.

3. If any product or internal pressure is detected, return PAV to closed position and repeat step one.

   **Note:** The PAV is only intended to warn the operator of residual pressure in the pipeline or pressure vessel. Under no circumstances should the PAV be used to relieve pressure from the pipeline or pressure vessel.

4. If no product or internal pressure is detected, unscrew the PAV completely.

5. Remove the PAV and Safety Segment Assembly from the hub.

6. Rotate the handle on the Lock Ring Latch Assembly counter clockwise to retract the Lock Ring Assembly into the open position. Integral fixed stops are provided to ensure complete travel of the mechanism. **Note:** The Lock Ring Assembly has a natural spring tendency and it is recommended that a tight handgrip be maintained on the handle of the Lock Ring Latch Assembly throughout this operation.

7. Visually verify that all locking segments are completely disengaged from hub.

8. The Door may now be swung to the open position. **Caution:** Do not place hands or fingers between the Door and Hinge Assembly while opening the closure.

**Figure 3**
SECTION TWO: Closing Procedure for Sentry® Closure

1. Clean and inspect the Seal, sealing surfaces, and contact surfaces on the Lock Ring Assembly, Hub and Door.

2. Clean and inspect PAV. Replace the o-ring on the PAV if necessary.

3. Replace Seal if damaged. See page 9 of these instructions (or refer to Product Bulletin P0403).

4. Apply a thin coat of grease to all seal surfaces and to the Beveled Land on the Door.

5. Slowly, swing the Door to the closed position. **Caution:** Do not place hands or fingers between the Door and Hinge Assembly or between the Door and Hub while closing the closure.

6. While applying hand force to hinge handle, rotate the Lock Ring Latch Assembly clockwise to the closed position. **Note:** The Lock Ring Assembly has a natural spring tendency and should not be allowed to snap into position. It is recommended that a tight handgrip be maintained on the handle of the Lock Ring Latch Assembly throughout this operation.

7. Visually verify that all Locking Segments are in the fully closed position and are fully engaged around the circumference.

8. Install Safety Segment Assembly and PAV. Tighten PAV to approximately 50ft. lbs.

**Note:** Safe and prudent procedures must be followed during pressurization of the vessel. If any leakage is detected, the pressurization process must be stopped immediately and the vessel must be completely vented and drained. Leakage from the Closure indicates either a damaged Seal or contaminated Sealing Surface. Both the Seal and mating Surface should be inspected in accordance with Section Three – Maintenance.
SECTION THREE: Maintenance of Sentry® Closure

Sentry® closures require limited maintenance that can be performed with minimal downtime and effort. On a routine basis, the following procedures should be followed:

**Lock Ring Segments:**

1. With the Door in the open position rotate the Lock Ring Latch Assembly clockwise to allow the Lock Ring Assembly to expand to the closed position. Carefully lift the Lock Ring Assembly from the Door and rest on the Hinge Assembly (Fig. 1) or Socket (Fig 2).

2. Clean contact surfaces (see Fig. 4) of any grease, paint and debris. Take care to remove any debris on the inner surface of the Lock Ring Segments and Rod Band. Accumulations and moderate surface corrosion can be removed by hand sanding effected areas with medium grade emery paper.

3. Apply a light coating of grease to the contact surfaces.

4. Return the Lock Ring Assembly to the Door ensuring the open ends of the Lock Ring Assembly are positioned between the stops (see Fig. 3) on the Door. Rotate the Lock Ring Latch Assembly counter clockwise to contract the Lock Ring Assembly to the open position.

![Figure 4](image)

**Note:** The Lock Ring Segments and Rod Band are constructed of stainless steel material and do not require paint. The Contact Surfaces shall not be painted.
Closure Hub:

1. Clean the closure Hub internal contact surfaces, paying particular attention to the Lock Ring Assembly Groove and Seal Area. Carefully inspect surfaces for damage. If necessary, hand sand affected areas with medium grade emery paper.

2. Ensure all internal contact surfaces are clean and free of any debris and apply a light coating of grease to these surfaces.

Note: Vertical closures are supplied with three Drain Holes (see Fig 5) to prevent the accumulation of water. During general maintenance ensure that these Drain Holes are free of debris.

Figure 5
Closure Door:

1. Clean the closure Door contact surfaces, paying particular attention to the Beveled Land and Seal Area. Carefully inspect surfaces for damage. If necessary, hand sand affected areas with medium grade emery paper.

2. Ensure all contact surfaces are clean and free of any paint or debris. Apply a light coating of grease to these clean surfaces.

*Figure 6*

Pressure Alert Valve (PAV):

1. Remove the O-Ring from the PAV and inspect for damage. Replace if necessary.

2. Clean and inspect the PAV threads and the mating threads in the Door. Apply a light coating of grease to the o-ring and threads.

Note: The PAV is constructed of stainless steel material and does not require paint.
Installing the Closure Seal

Sentry® closures utilize a one-piece molded sealing system consisting of a special rubber Seal with an encapsulated stainless steel Back-Up Ring.

<table>
<thead>
<tr>
<th>STEP 1</th>
<th>Each time the closure Door is opened:</th>
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<tbody>
<tr>
<td></td>
<td>1. Remove the Seal.</td>
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<td>2. Inspect for damage and replace as necessary.</td>
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<td>3. Thoroughly clean the Seal Groove.</td>
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<td>4. <strong>IMPORTANT:</strong> Apply a thin coat of lithium grease to the Seal Groove.</td>
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<tr>
<th>STEP 2</th>
<th>1. Install the seal into the groove by initially inserting Surface “A” (as shown) and rolling in Surface “B” to seat it completely into the Groove.</th>
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<td>2. <strong>IMPORTANT:</strong> The Seal Lip must be pointing towards the center of the closure.</td>
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<tr>
<th>STEP 3</th>
<th>1. After the seal is inserted in the groove (as shown), make sure the seal is firmly seated by pressing around the entire circumference of the seal lip.</th>
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<tr>
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<td>2. Thoroughly clean the Mating Seal Surface.</td>
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<td>3. <strong>IMPORTANT:</strong> Spray the Mating Seal Surface with a high quality, light lubricating oil or medium viscosity lithium grease.</td>
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<td>4. The Seal is now properly installed.</td>
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SECTION FOUR: Sandblasting and Painting Precautions

1. Mask off the Lock Ring Assembly, Safety Segment and Beveled Land on the Door.

2. Avoid directing the sandblasting at the masked off area.

3. Clean thoroughly after sandblasting and apply a thin coat of grease to the Beveled Land on the Door prior to painting.
SECTION FIVE: Storage of Sentry® Closure

Sentry® closures are supplied with protection for both short and long term storage. This protection includes:

**Exterior surfaces:** Painted with red shop primer finish.

**Locking surfaces:** All machined and unpainted surfaces are protected with a coating of grease.

**Weld bevel:** Protected by suitable plywood end cap or wooden skid base.

**Recommended storage for Sentry® Closures:**

**Short term**
- **Preferred:** Indoors away from fabrication activities.
- **Acceptable:** Outdoors with suitable protection (such as plastic sheeting or tarpaulin) from moisture or rain.

**Long term**
- **Preferred:** Indoors away from fabrication activities.
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