

Tech Fact



Reverse Osmosis Membrane

Handling Recommendations for Elements with iLEC™ Interlocking Endcaps

Key Points

1. When installing elements with iLEC™ interlocking endcaps:
 - Wet down the inside of the vessel with water for easier loading.
 - Observe the flow arrow on the element label so that the smaller endcap always points downstream.
 - Check for particles on the O-rings and opposing surfaces.
 - After locking, check the alignment marks to ensure full connection.
2. Shim between the upstream adapter and the vessel permeate port using spacers provided by the vessel manufacturer.
3. Elements may become disconnected inside the vessel during unloading, so use caution when pushing or pulling elements from the vessel.

Element Loading

Please see the recommended methods for installing interlocking elements, below. The special tools shown are optional, but we recommend them to prevent damage to the membrane elements. As always, steel-toed shoes, gloves, and safety glasses are recommended when handling reverse osmosis membrane elements. Refer to the element handling guide for more information.

1. Prepare the vessel by installing the downstream thrust ring and end plate.
2. For easier loading, the brine seal of the element may be lubricated with an approved lubricant; Molykote® 111 Compound is recommended for easier loading.
3. The recommended band clamp has a heavy-duty strap that grips the element securely but will not damage the element's outer shell. The band clamp Figure 1 is lightweight, durable and offers exceptional hold in almost any condition.



Figure 1: Band Clamp



Figure 2: iLEC™ Pull Tool

4. Insert the first element, downstream end first, and push it into the vessel in the same direction as the feed water flow.

5. Leave enough of the element protruding from the vessel to allow attachment of the band clamp. This is a good time to check the condition of the O-ring.
6. Attach the second element, taking care to hold the element horizontal when applying clockwise torque. Rather than gripping the outer shell, apply torque by gripping the spokes on the upstream endcap with one hand, while supporting the element with the other hand. The band clamp should be secured to prevent rotation.
7. After the elements are snapped together, verify that the markings are properly aligned.
8. By the time the third or fourth element has been installed, the band clamp may be unnecessary. The band clamp is helpful until friction generated by the installed elements is greater than the force required to snap the elements together.
9. Push the elements deeper into the vessel. Repeat this process until all of the elements have been installed in the vessel.
10. Finally, add the upstream vessel adapter to the last element, and push the elements to their final position in the vessel.
11. Apply lubricant to the adapter O-ring, and add shims as required. Operators producing ultra-pure water may choose to omit the lubricant.
12. The job is completed with the installation of the vessel end-plate.

Element Removal

1. With the vessel end-plate removed, the downstream vessel adapter can be disconnected. This is done by reaching into the vessel and applying counter-clockwise torque to the downstream adapter.
2. Attach the optional pulling tool (Figure 2) with a clockwise twisting motion.
3. Pull the stack of elements far enough out of the vessel so that the first element can be removed. Remember, elements may become disconnected inside the vessel during unloading, so use caution when pushing or pulling elements from the vessel.
4. With the element supported, de-couple the element with a counterclockwise twist. Sometimes, it works best to face away from the vessel when unlocking.
5. Repeat this operation until the vessel is emptied. As an alternative to pulling the elements from the vessel, the entire stack can be pushed from the opposite end of the vessel with a push rod, or with replacement elements.

Optional Loading Tools

1. Puller Tool for elements with iLEC™ Interlocking Endcaps. P/N 245831
2. Band Clamp for elements with iLEC™ Interlocking Endcaps. P/N 299916.



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