

**7-2. Element Removal and Loading**

Do not proceed the steps for removing elements until all pressure has been relieved from the vessel and both heads have been removed from the vessel.

**STEP 1. REMOVE ELEMENT INTERFACE HARDWARE**

1. Remove thrust ring from downstream (concentrate) end.
2. Remove adapters from elements at each end.

**STEP 2. ELEMENT REMOVAL**

3. Remove elements from vessel. Clean off any excess lubricant from vessel inside diameter before removing elements. Elements must be removed in direction of feed flow.
4. Flush out the vessel with clean water to remove all dust and debris.
5. Examine membrane element surfaces for any imperfection which could scratch the vessel bore. Pay particular attention to edges of anti-telescope device (ATD/brine seal carrier). If any defects are found which cannot easily be corrected, contact the element manufacturer for corrective action.
6. Using an approximate 50% mixture of glycerine in water, lubricate the inside of the vessel. This may best be accomplished using a suitably sized swab soaked in the mixture. This procedure will ease membrane element loading and reduce chance of scratching the vessel bore.
7. Load the first element into the upstream end of the vessel. Leave a few inches of the element projecting from the vessel to facilitate interconnection to the next element.
8. Apply a light film of a non-petroleum based lubricant, such as Parker Super O-Lube, to the inter connector O-ring. (The amount of O-lube should be just enough to give a luster to the O-ring. Excess O-lube must be removed to prevent possibility of element contamination).
9. Assemble the inter connector to the loaded element.
10. Line up the next element to be loaded and assemble it to the inter connector already assembled on first element.

### CAUTION

Maintain element alignment carefully during assembly process. Do not allow element weight to be supported by interconnector.

Misalignment can result in damage to interconnectors or permeate tubes or to element outer surface.

11. Push both elements into the vessel until a few inches are projecting from the vessel. Repeat loading process until all elements are installed.
12. When the final element is installed, push the element stack forward until the face of the first(downstream) element is at dimension D as shown in figure 2. Take care to avoid pushing elements too far as it can be difficult to push the stack in a reverse direction.

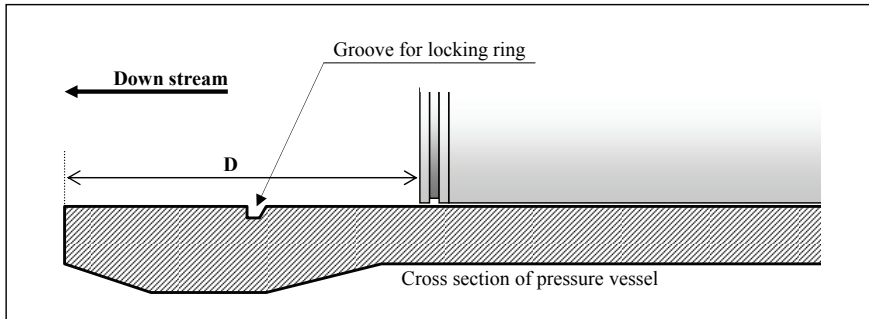


Figure 2

Table 6. Representative vessel type dimension "D" (see figure 2.)

Pressure vessel type	E8U/SP	E8L/SP	E8B/SP	E8B/SP
Dimension "D" in inches	8.40	8.65	9.15	9.90

### Alternate To Measurement Method

13. Insert a clean thrust ring into downstream end of vessel.
14. Insert head assembly, without quad seal or adapter, into downstream end of vessel.



## Procedures for Replacing Elements

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### 3. Closing Vessel

15. Place the two square ended sections of locking ring into locking ring groove (with squared ends together, stepped side outwards.)
16. Load elements as described in 5 through 9.
17. Install upstream adapter per Step 4 and head assembly per section on "Closing Vessel."

#### **STEP 4. INSTALL ELEMENT INTERFACE HARDWARE**

18. Assemble adapter to element permeate tube at each end of vessel.