MILLENIUM MEMBRANE EVALUATION (PROFILING) PROCEDURE

Tools and Materials Required

- Screwdriver (flat & Phillips)
- 1/4 or 3/8 inch drive ratchet wrench
- 7/16 inch socket (thin-wall)
- 8 to 10 inch socket extension
- Container (small bucket or large graduated cylinder) with a 1-2 liter minimum.
- Hand-held TDS meter, Low Range Conductivity Meter (calibrated).
- O-rings seals (optional)
- New fittings (optional)

Initial Preparation

1. Turn off Millenium.

2. Turn off water supply at source.

3. Briefly turn ON the Inlet Water Valve switch. Allow system (including, if present, carbon tank(s), softener, pre-filter housing, etc.) to fully depressurize.

4. Disconnect water lines: Product, Feed, and Waste.

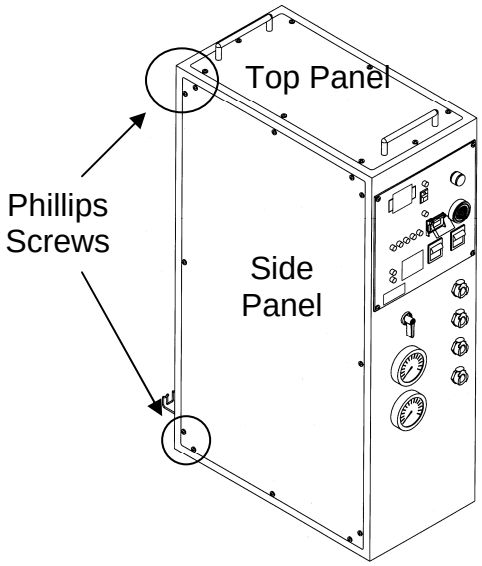
5. Unplug power cord.

WARNING: Ensure power cord is disconnected to prevent risk of electric shock, which could result in injury or death.

6. Remove Millenium from cart.

7. Remove large side panel/cover.

8. Remove Top cover.



MEMBRANE PROFILING PROCEDURE

1. Restore the feed water, electrical power, product water hose and waste hose connections.

2. Route the product water hose and waste water hose to drain.

3. Turn ON the source water and the Inlet Water Valve switch.

4. Confirm water is flowing from the waste hose.

5. Turn ON the RO Pump Power switch.

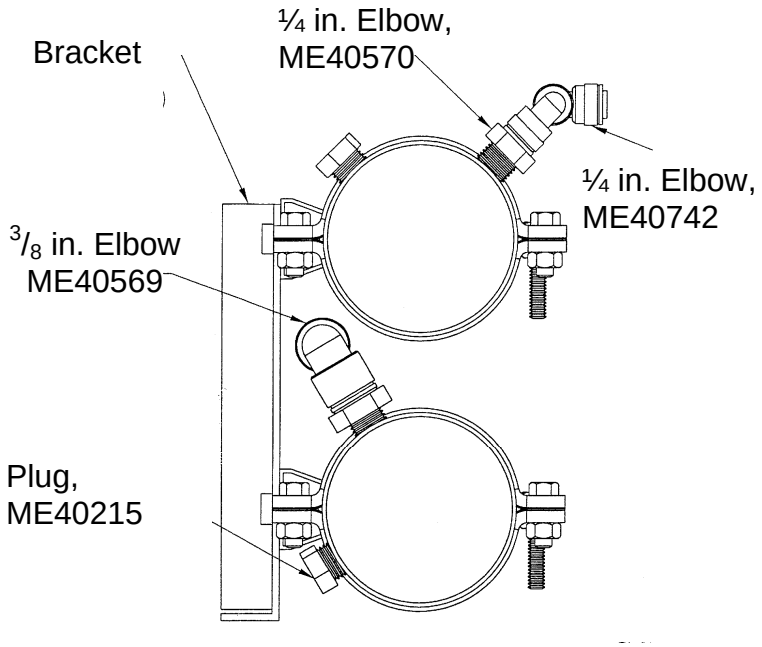
6. Operate the RO for 5-10 minutes to stabilize product water quality.

7. Observe and record the TDS and % rejection display readings for later reference.

8. Turn RO Pump Power switch to OFF.

9. Turn Inlet Water Valve switch to OFF.

10. Allow 60-180 seconds to de-pressurize unit.



11. Locate the two green product water outlet tubes that are connected to the ¼ in. elbow fitting (ME40742) on the upper end caps of the membrane housings.

12. Follow the green tubes to the 'collection tee' fitting where both are connected.

13. Disconnect both green tubes from the 'collection tee' and from the elbows on the end caps.

14. Connect the two 24 inch pieces of ¼" polyethylene tube to the ¼ inch elbow fitting on the upper end caps. (These will be the temporary product water tubes.)

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15. Direct the temporary product tubes to the container sitting out side of/next to the machine.

16. Seal both ports of the collection tee by connecting the short piece of 1/4 inch polyethylene tube to the ports, simply looping the tube from one port to the other. This prevents the pump from possibly drawing in air during subsequent steps.

17. Direct the two green tubes into the container.

18. Turn the RO ON per normal procedures (see steps 3-6 above). Product water will flow through the temporary product tubes into the container.

19. Measure the product water quality from each temporary product tube with a calibrated hand-held meter. Record the product water quality result for each individual membrane housing assembly.

20. Compare the individual product water quality readings for the separate membrane assemblies with the TDS reading observed and recorded in step 19.

NOTE 1: If there is a significant difference in the product water readings from the two different housings, i.e., one is 'normal' (low TDS) and one is 'high', it is likely an indication of a problem in the housing with the high result. This problem could be a defective membrane, a defective O-ring seal, or a failed brine seal (missing, slipped, or installed at the wrong end of the housing).

NOTE 2: Typically, if the membranes are in good condition and the O-ring seals are all intact, the readings obtained with the hand-held meter will be similar to the readings displayed on the TDS display of the Millenium RO unit. The readings will almost never be exactly the same, due to differences in the Millenium monitoring and display circuitry and the hand-held meter's circuitry and calibration.

21. Based on the evaluation, disassemble housing(s) to inspect O-rings, brine seals and membranes as appropriate and repair. Reference Tech Note 202 - **MILLENIUM MEMBRANE REPLACEMENT**.

22. Prepare for leak testing, restore water and power connections and then reference Tech Note 207 **MILLENIUM START UP PROCEDURE.**.