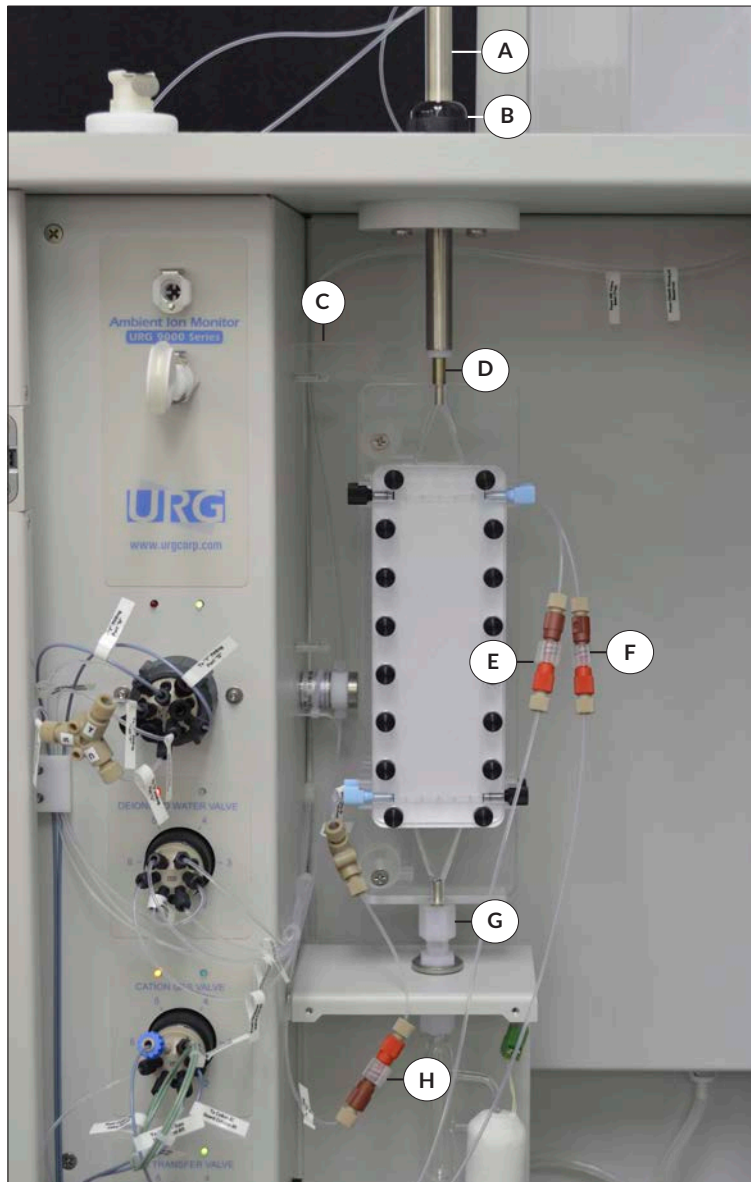


General

Following are detailed instructions on how to change the denuder membrane. It will require approximately 10 to 15 minutes to perform this procedure. Powder free gloves should be worn during the entire procedure.



Denuder Identification Key

Removing Used Denuder From the AIM

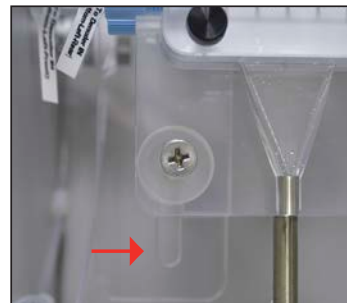
NOTE Please refer to the Denuder Identification Key on page 1.

1. Loosen the black compression fitting on top of the AIM sampler (see B).
2. Slide the inlet tubing (see A) up through the compression fitting until there is at least 1 inch of clearance between the inlet tubing and the 1/4" stainless steel stub (see D) on the top of the denuder.
3. Tighten the black compression fitting to hold the inlet tubing stable.
4. Uncouple the quick release luer fitting coming from the output of the NR Valve (see H).
5. Uncouple the quick release luer fittings coming from the output of the front denuder plate (See E).
7. Uncouple the quick release luer fitting coming from output of rear denuder plate and cap the end (see F).
8. Loosen the Teflon® fitting on top of the Steam Generator enclosure (see G).
9. Lift the denuder up and out of the bracket keyhole mounting plate and out of the AIM enclosure (see C).

Installing New Denuder Into the AIM

NOTE If new denuder was sealed in a plastic bag for future use, remove from the bag and remove the end caps from the inlet and outlet tubes.

1. Insert the mounting shoulder bolts on the back of the denuder frame into the bracket keyhole slots on the side of the valve tower so the denuder is pushed down into the lowest position.



2. Connect the red quick connect fitting at the bottom left of the denuder to the quick connect fitting attached to the line labeled "NR Valve to Y-fitting G" (See H).
3. Connect the red quick connect fitting at the top right front of the denuder to quick connect fitting attached to the line labeled "Denuder Out to Gas Transfer Valve Port 1" (See E).
4. Connect the red quick connect fitting at the top right back of the denuder to quick connect fitting attached to the line labeled "Denuder Out to Gas Transfer Valve Port 2" (See F).

Priming Denuder

In order for the denuder to function properly, a uniform layer of fluid must be present between each membrane and its respective plate. Priming the denuder will hydrate the membrane and get rid of any air. The denuder priming bypass assembly was developed to quickly prime the denuder. All AIMs sold after June 2014 come standard with the denuder priming bypass assembly.

Equipment and Materials

- Denuder Priming Bypass Assembly
- Priming Syringe

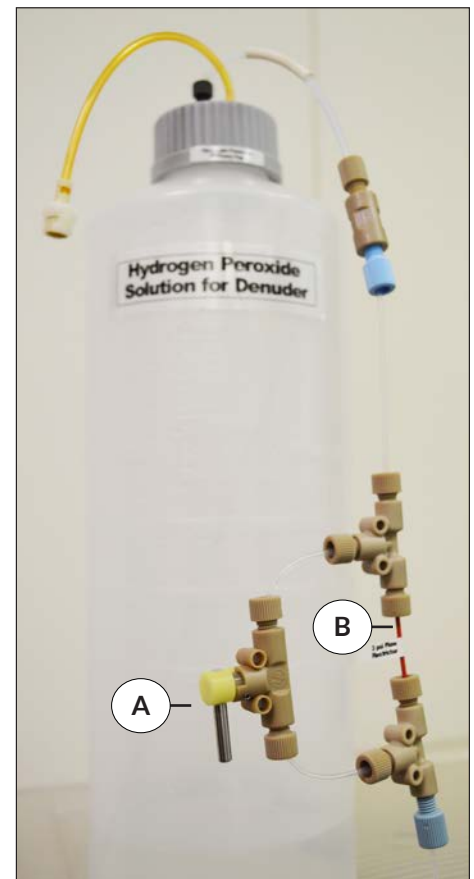
Replacement Parts

- URG-9000-02PA, Denuder Priming Bypass Assembly

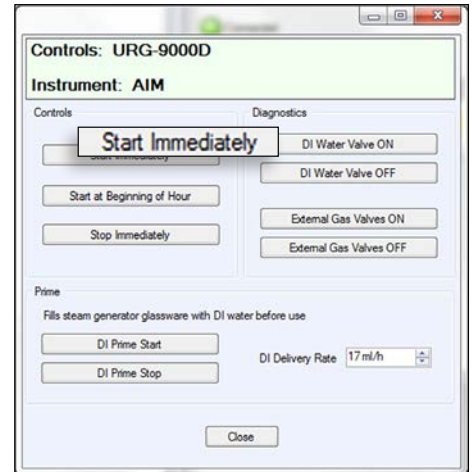
NOTE The denuder solution should be full at the start of this process.

1. Open the Priming Bypass Valve (see A) by moving the handle parallel to the flow restrictor (see B) as shown to the right.

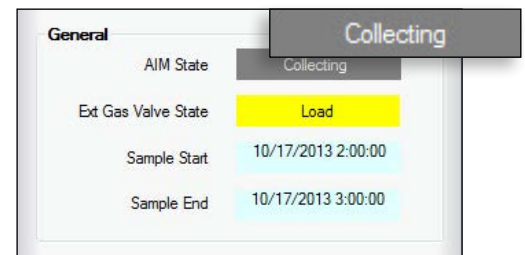
NOTE If the queued sequence is running (i.e. already in "Collect" mode) you may skip Steps 2 and 3.



2. In Chromeleon, click on the "Controls" button on the AIM Display.
3. Click "Start Immediately" under the Controls heading.



NOTE The AIM State will change from "Idle" to "Collecting." If the AIM State changes to "Loading," wait for the AIM State to change to "Collecting" before proceeding. This may take up to five minutes.



NOTE When in "Collecting" state, the red LEDs will be illuminated directly above the "Gas Transfer" and "Particle Transfer" valves.



4. Uncouple the quick release luer fitting coming from the output of the NR Valve.

NOTE You may skip the next step if fluid is already in the line.

5. Attach the priming syringe to the uncoupled luer fitting and pull back the syringe plunger until the syringe begins to fill with the denuder solution.



6. Remove the priming syringe and reconnect the coupling.
7. Remove the luer fitting attached to the Anion Gas Syringe located in the Sample Collection Syringe Pump and attach it to the priming syringe.

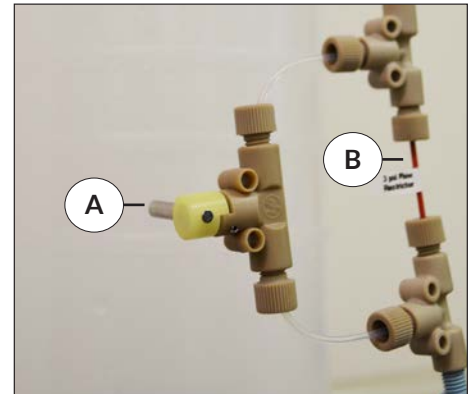


8. Draw denuder solution slowly until the fluid approaches the priming syringe.
9. Re-attach the luer fitting to the Anion Gas Syringe.
10. Repeat Steps 11 through 13 for the Cation Gas Syringe.

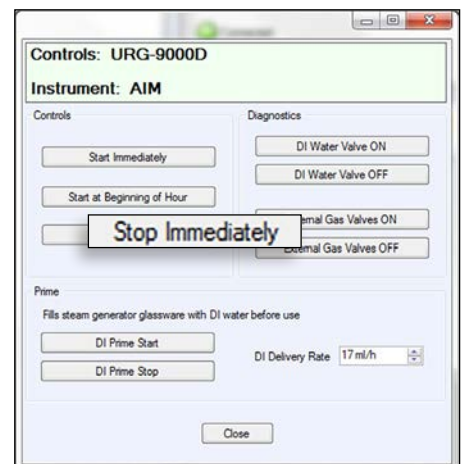


- Close the Priming Bypass Valve (see A) by turning it perpendicular to the flow restrictor (see B) as shown to the right.

NOTE If the queued sequence is running (i.e. already in "Collect" mode) you may skip Step 13.



- To resume running or start a queued sequence, click "Stop Immediately" in the "Controls" window in Chromeleon prior to the 55 minute mark of the hour. The sequence should now start or resume in the Chromeleon queue panel.
- If a queued sequence is not already running, start the AIM in "Collecting" mode again by clicking "Start Immediately" in the "Controls" window in Chromeleon.



Denuder Membrane Replacement

After approximately 6 weeks the denuder membrane needs to be replaced. Maintaining a second denuder will allow operators to prepare the denuder in advance. This will allow the user to replace the denuder membrane without stopping the AIM sampler operation.

Equipment and Materials

- Parallel Plate Denuder with attached fittings, lines, (16) thumbscrews and (16) washers
- Membrane (2)
- Sterile Gloves
- 18.2 MΩ Water
- Sterile Polyethylene Resealable Bag

Replacement Parts

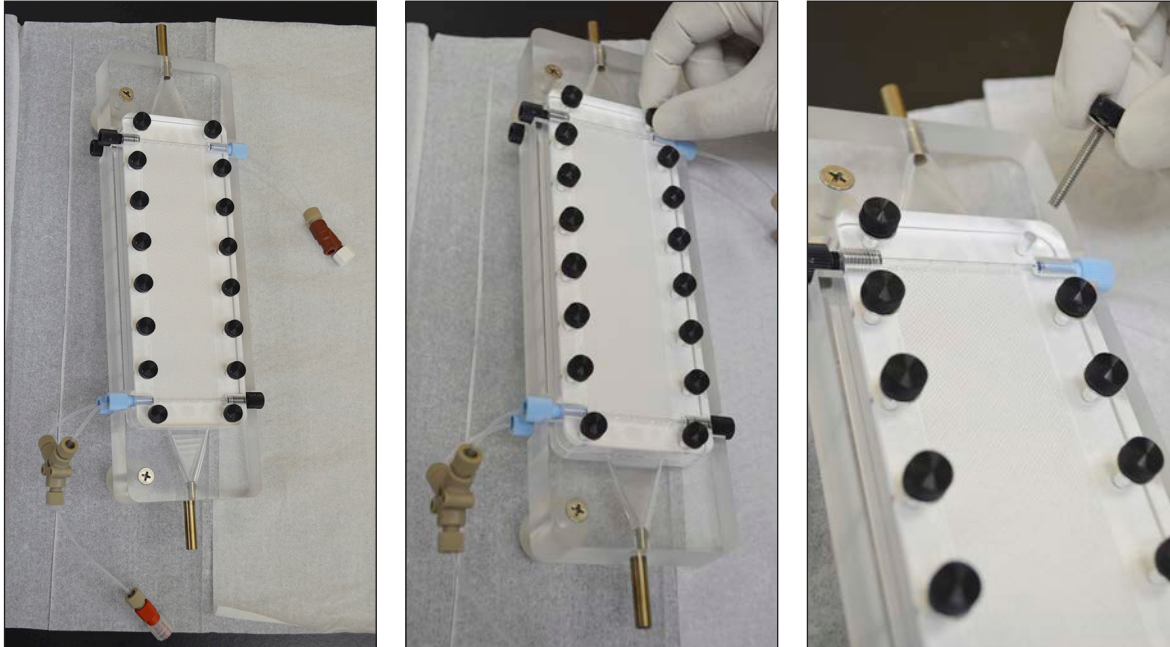
- **URG-9000-02**, Cross-Hatched Parallel Plate Denuder for Ambient Ion Monitor, Includes: (1) Body Portion (2) Cross-Hatched Plates
- **URG-9000-02N-1**, Set of Pre-cut Membrane Material for Version 1 Parallel Plate Denuder, (2) Pieces per Set
- **URG-9000-02N-2**, Set of Pre-cut Membrane Material for Version 2 Parallel Plate Denuder, (2) Pieces per Set

Instructions

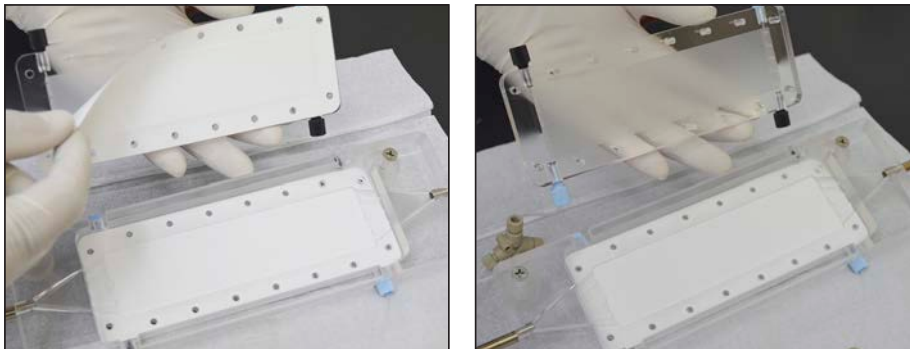
1. In a sterile resealable polyethylene bag, soak two pieces of membrane in 18.2 MΩ water for approximately one hour.



2. Meanwhile, place the used parallel plate denuder on a clean flat surface and unscrew the (16) thumbscrews with your fingers. Set aside the thumbscrews and washers.



3. Remove the front denuder plate from the frame and remove the used membrane.



4. Place the front plate back into the frame and flip the denuder carefully over to access the rear denuder plate.

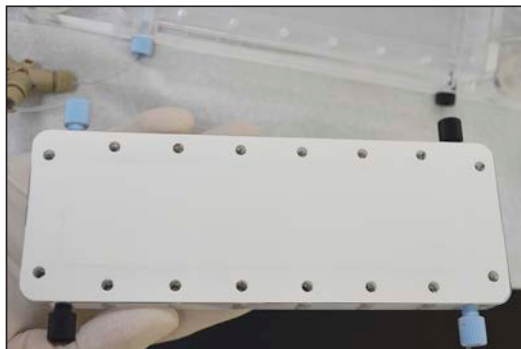
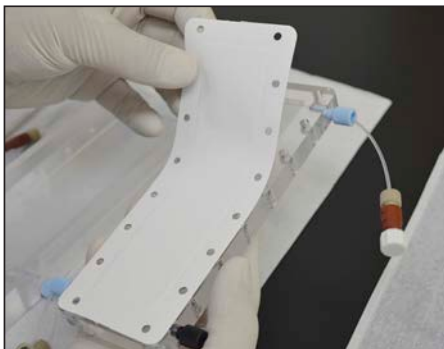


5. Carefully remove the rear plate from the frame and remove the used denuder.



6. Rinse the denuder plates and frame with 18.2 MΩ water to clean.

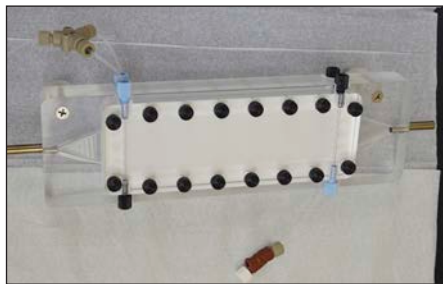
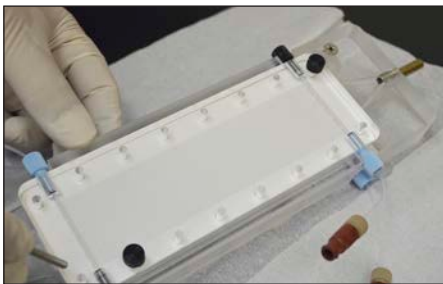
7. Once the membrane has soaked for one hour, remove it from the bag and immediately place over the cross-hatched surface of the rear denuder plate so the holes in the membrane align with the matching holes of the denuder plate.



10. Once both denuder plates are in the frame, insert the set aside thumbscrews and washers one at a time through the front denuder plate and screw into the threads in the rear denuder plate.

NOTE To distribute the force evenly over the denuder frame and plates, hand tighten every other thumbscrew, then come back and hand tighten the ones you skipped the first time.

CAUTION Do NOT overtighten. Overtightening will cause the denuder plates to crack.



11. If denuder is not needed immediately, plug and cap all fittings as well as inlet and outlet tubes. Place the denuder in a sealed plastic bag inside another sealed plastic bag to prevent drying of the membranes.