Rotofor® and Mini Rotofor Cell Assembly Guide

For more details, refer to the Instruction Manual.

Equilibrate the Ion Exchange Membranes

The black cathode assembly holds the Anion Exchanger Membrane (the lighter color when dry)–equilibrate in 0.1 M NaOH.

The red anode assembly holds the Cation Exchange Membrane (the darker color when dry)–equilibrate in 0.1 M H_3PO_4.

Assemble the Electrodes

1. Place a small o-ring in the central hole on the flat side of the inner assembly (Figure 1), and a large o-ring in the large groove around the central ring on the other side of each electrode assembly.
2. Place a gasket over the alignment pins and seat it on the flat surface of the inner assembly. Make sure the three oblong holes in the gray gaskets align with the six holes of the electrolyte chamber.
3. Place the proper ion exchange membrane on each gasket. Align the notches in the membrane around the pins and place a second gasket on top of the membrane. (Figure 2). There is only one way to correctly align this membrane.
4. Make sure that there is a small o-ring inset in the central shaft of the large, outer portion of the electrode assembly and fasten the halves together with the captive, threaded sleeve.
5. Repeat this proceedure with the other assembly chamber.
6. Fill the electrode chambers with electrolytes immediately after assembly to prevent the membranes from drying. Add 25–30 ml of the appropriate electrolyte to each chamber. The electrolytes should just barely cover the central shafts of the chambers.

Assemble the Focusing Chamber

1. Slide the assembled anode electrode assembly over the ceramic cooling finger so that the two protruding screw heads fit into the holes in the black plastic base of the cooling finger support assembly (Figure 3).
2. Slide the membrane core onto the ceramic cooling finger to abut the anode chamber.
3. Slide the focusing chamber over the membrane core with the metal pin in the small hole in the anode chamber (Figure 4). Position the focusing chamber so that each membrane screen lies between two adjacent ports. Lightly tighten the black, nylon retaining screws.
4. Slide the assembled cathode compartment over the cooling finger with the metal pin in the hole in the cathode chamber and tighten the nylon retaining screws (Figure 5).

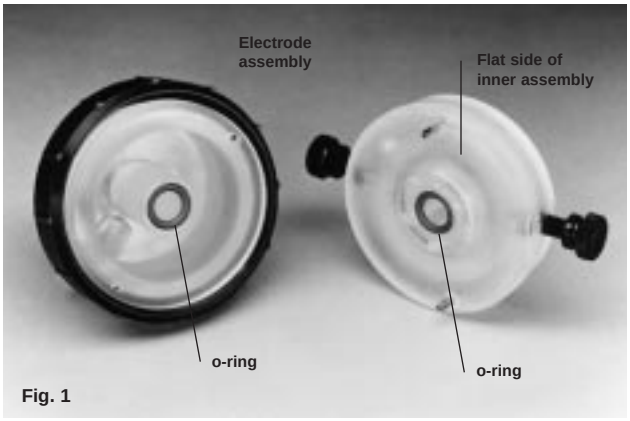

Fig. 1

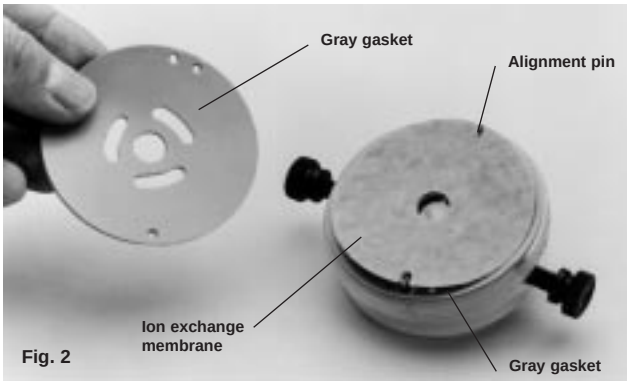

Fig. 2

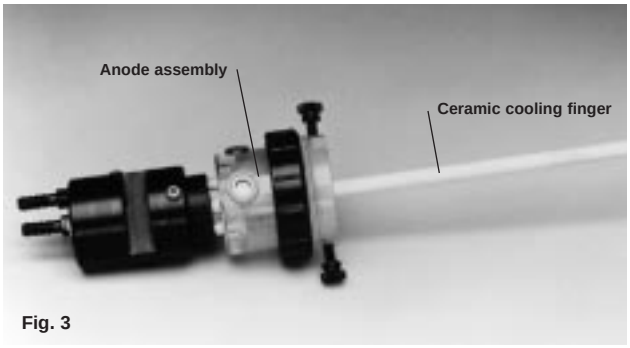

Fig. 3

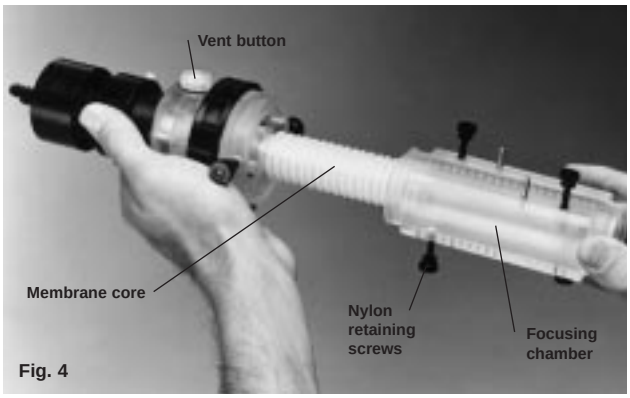

Fig. 4

5. Mount the assembled focusing chamber on the stand. Engage the gear on the electrode assembly with the gear on the stand.
6. Attach the power cord to the back of the unit and connect it to an electrical outlet.

Prepare the Focusing Chamber

Mount the cell on the stand. Rotate the cell so the 20 collection ports, identified by the two metal alignment pins, are facing up. Cover the ports with a piece of the sealing tape. Reinforce the taped ports with one of the two acrylic cell-cover blocks and lightly tighten the screws.

Load the Sample

Rotate the cell so the filling ports face up. Fill the cell with sample through the ports using a 60 ml syringe with a 1-1/2 inch 19-gauge needle (Figure 6). The sample will spread into the adjoining compartments. For the 60 ml focusing chamber cover the cooling finger (load between 40–55 ml). For the mini focusing chamber, load 18–20 ml.

Seal the Loading Ports

A. Mini Rotofor chamber: Place the gray, rectangular, silicone gasket over the loading ports, then place a cell-cover block over the gasket (tape is unnecessary).

B. Standard Rotofor chamber: seal the filling ports with only a cell-cover block (tape is unnecessary).

Remove the Air Bubbles

Remove the assembled, loaded cell from the stand, turn it vertically, and vigorously tap the electrode chamber to dislodge bubbles. Then turn the cell 180° and vigorously tap the other chamber. If any air bubbles remain in the 6 ports between the sample and the ion exchange membrane, repeat this process.

Start the Fractionation

Connect the ports of the cooling finger to a source of recirculating coolant and begin coolant flow. It is usually sufficient to set the chiller at 4 °C. At 12 W constant power (normal operating mode for the Mini Rotofor cell, 15 W constant power for the standard Rotofor cell) the coolant temperature should be set at 10 °C less than the temperature desired for the sample. Attach the cover of the unit. Allow the system to come to thermal equilibrium at the cooling temperature before beginning the run, approximately 10–15 minutes. The run is complete 30 min after the voltage stabilizes (within 3–5 hours).

Fraction Collection

1. Load the test tube rack with twenty 12 x 75 mm culture tubes and place it inside the harvest box. Connect a vacuum source to the vacuum port on the box and turn on the vacuum.
2. When focusing is completed, move the black toggle switch to the harvest position. Proceed as quickly as possible to minimize mixing.
3. Disconnect the power supply, remove the cover, and move the Rotofor cell next to the harvesting box. Remove both the two cell cover blocks. Mount the needle array on the two alignment pins on the bottom of the chamber. Quickly push the needles firmly and uniformly all the way through the sealing tape into the chamber (Figure 7).
4. Turn off the vacuum source and remove the test tube rack.

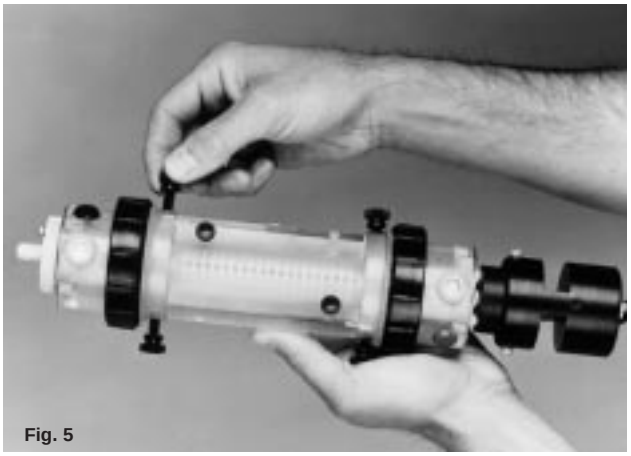

Fig. 5

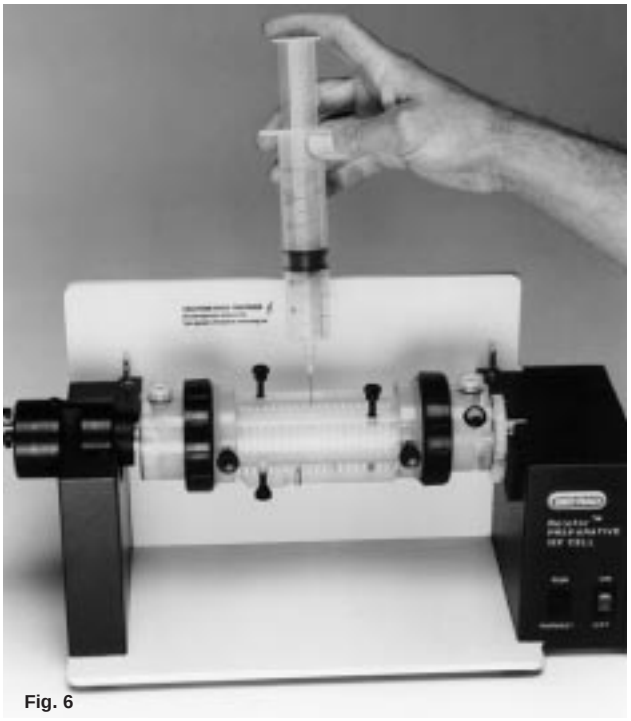

Fig. 6

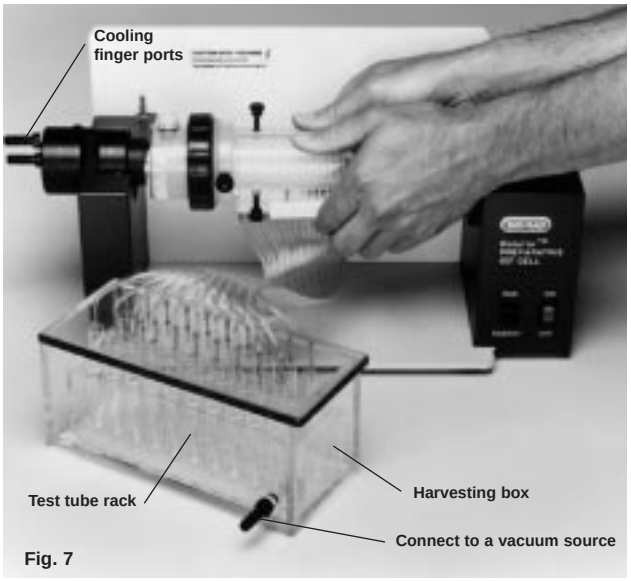

Fig. 7