

**CARE AND USE OF THE VP 177AD
 ASPIRATION/DISPENSE MANIFOLD**

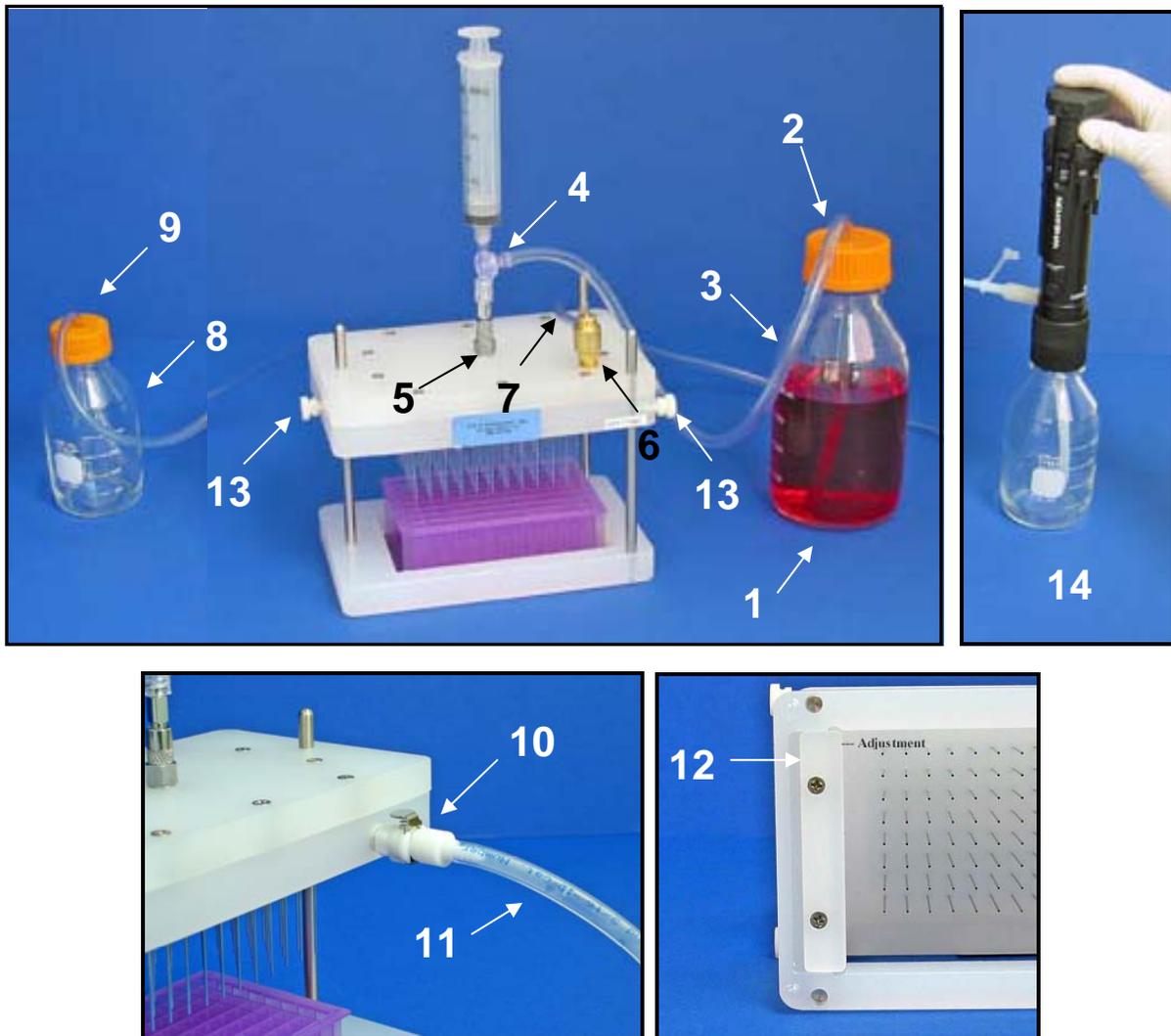


Figure 1. Parts of the VP 177AD Aspiration and Dispensing Manifold

PARTS GUIDE

- | | | |
|---------------------------------------------|----------------------------|----------------------------------------------|
| 1 – Source Bottle | 6 – Bleed Valve | 12 – Plate Registration Bar |
| 2 – Source Bottle Cap | 7 – Bleed Tube | 13 – Thumb Screws for Z
Height Adjustment |
| 3 – Manifold Feed Tube | 8 – Collection Bottle | 14 – Bottle Top Dispenser |
| 4 – Two-Way Valve | 9 – Collection Bottle Cap | 15 – Spacer (page 2) |
| 5 – Male Luer Fitting
(w/Female adapter) | 10 – Quick Connect Fitting | 16 – Rubber Pad (page 4) |
| | 11 – Tube to Vacuum Trap | |

SETUP PART 1:

Setting the Space between Manifold Tubes and Bottom of Plate (Figure 2)

1. Make sure all tubes are clear by aspirating distilled water from a microplate. If any tubes are clogged use the rapier (provided) to clean them out. See "Cleanup" section for more details.
2. Place the Spacer (red paper in Figure 2a) under a microplate. Place the VP 177AD on top of the microplate as in Figure 2b.
3. Loosen the three thumbscrews and slide the aspirator down until the tubes rest on the bottom of the wells of the microplate as in Figure 2c. Tighten the thumbscrews to lock the aspirator into place.
4. Lift the VP 177AD from the microplate and spacer. The VP 177AD is now configured so the tubes are 0.50 millimeters above the bottom of the wells of a microplate. For greater separation, use a thicker spacer.

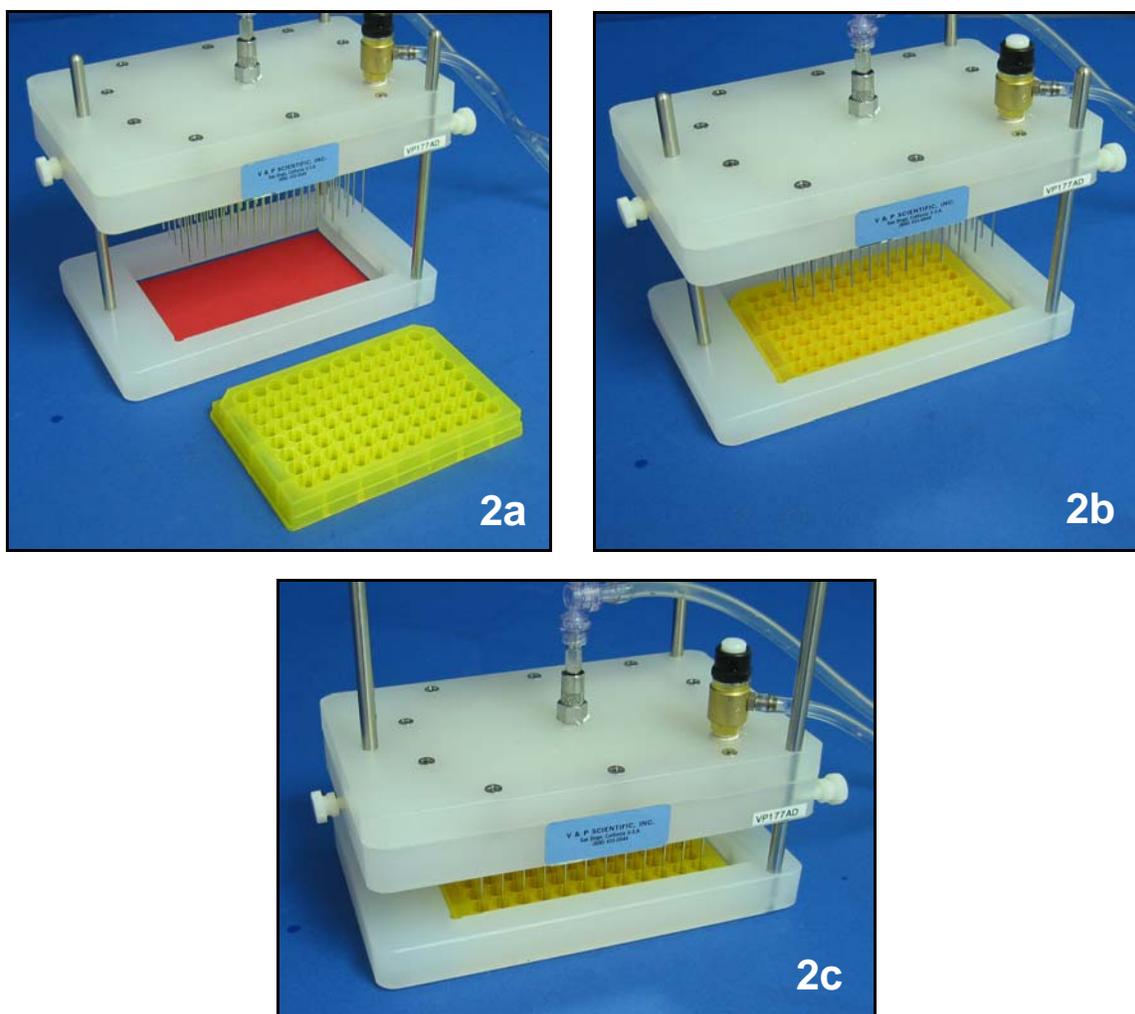


Figure 2. Use of Spacer in Manifold Setup Part 1.

SETUP PART 2: Bleeding Air from Manifold (Figure 4)

1. Attach one end of a vacuum hose to the nozzle Quick Connect Fitting (10) on the manifold and other end to a valve connected to a vacuum source (Figure 3, below).

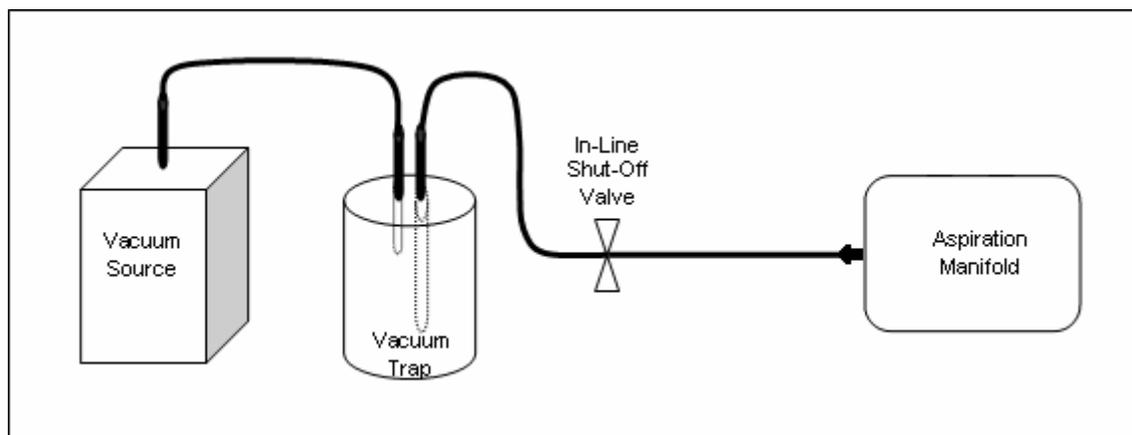


Figure 3. Manifold Setup: Connection to Vacuum Source.

2. Make sure all tubes are clear by aspirating distilled water from a microplate. If any tubes are clogged use the rapier (provided) to clean them out. See "Cleanup" section for more details.
3. Make sure Quick Connect Fitting is disconnected before bleeding air from the system. Once disconnected, the fitting is closed.
4. Attachment of dispenser, either Syringe or Bottle Top Dispenser, to Manifold:
 - a. Syringe method: Attach the Two-Way Valve (4) to the Luer-Lock Fitting (5) on the top of the unit using the female adapter. Next, attach a Luer-lock syringe and the Manifold Feed Tube (3) to the Two Way Valve. If you are unable to read the volume markings on the syringe unscrew the syringe, rotate it 180°, then screw the syringe back into position. Insert the Manifold Feed Tube (3) into the hole in the Source Bottle Cap (2). Screw cap onto the Source Bottle (1). If the Feed Tube does not fit loosely in the hole of the lid, the cap will need to be unscrewed slightly so a vacuum does not form in the Source Bottle. (Note: ensure the level of liquid does not fall below the tube depth or air will enter into the system)
 - b. Bottle Top Dispenser: Assemble Dispenser according to manufacturer's instructions. Use the Luer Nut Tube Fitting (supplied) to connect the Bottle Top Dispenser's dispensing tubing to the Manifold. The Two Way Valve is not needed.
5. Place the Collection Bottle (8) beside the manifold. Place the Bleed Tube (7) in the cap hole of the bottle (9).
6. Place red Rubber Pad (15) on top of a microplate covered with a lid and lower the Manifold until the Dispense Tubes are pressed slightly into the pad (see Figure 4). To hold Manifold into position, tighten the Thumb Screws or press down with moderate force.

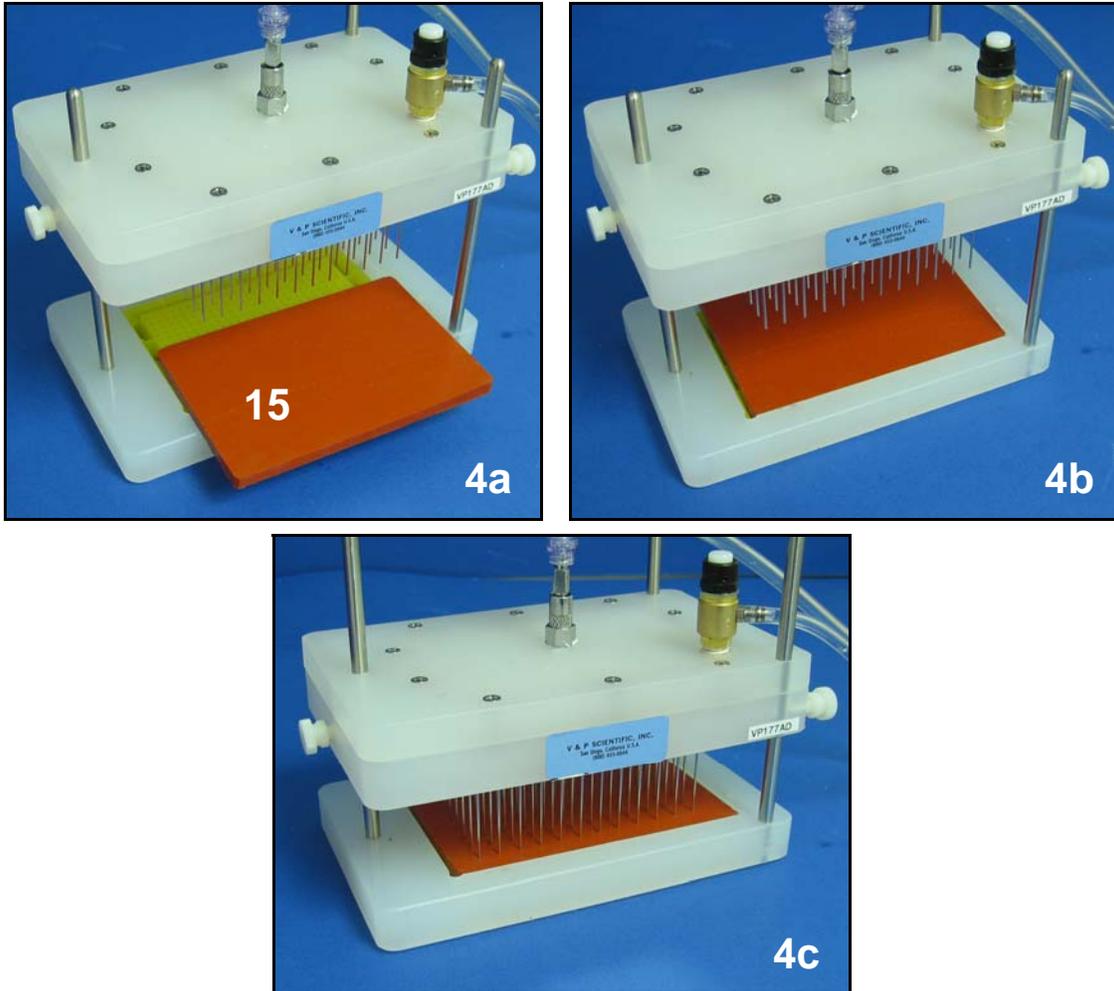


Figure 4. Use of Rubber Pad in Manifold Setup Part 2.

7. Lift Syringe/Dispenser plunger to fill with fluid. Depress the Bleed Valve Button (6).
8. Compress the Syringe/Dispenser plunger in a steady stroke. Release the Bleed Valve Button shortly before reaching the bottom of the stroke.
9. The Manifold has a 150 ml dead volume. Repeat the previous steps several times depending on the volume of the Syringe/Dispenser. Stop when a steady stream of liquid comes out of the Bleed Tube (11) into the Collection Bottle (8).
10. To ensure there is no air remaining in the metal dispense tubes, replace the Red Rubber Pad with a tip box lid (or other suitable container) depress the Syringe/Dispenser plunger vigorously in 10ml increments (without touching the Bleed Valve Button) until streams of liquid are observed coming from all the metal dispense tubes.

OPERATION:

IMPORTANT NOTE:

The Aspiration/Dispense Manifolds are chemically resistant to some common laboratory solvents (such as ethyl alcohol, methyl alcohol, isopropanol, DMSO) but not all (acetone or chloroform, for example). Please contact V&P Scientific for more information if there is any question regarding the chemical resistance of the Manifold to the solution to be aspirated or dispensed.

Dispensing Liquid into Microplate

1. Place 96-well plate under the tubes of the Manifold.
2. Make sure Manifold is in desired Z position (see Set-up Part 1).
3. Make sure Quick Connect Fitting (10) is disconnected. Once disconnected, the fitting is closed.
4. Draw the desired volume of liquid into the Syringe or Bottle Top Dispenser (volume drawn into dispenser = volume/well X # of wells).
5. Compress Syringe or Dispenser plunger in a rapid but steady motion.
6. Leaving Thumb Screws tightened, lift the Manifold and base to remove the 96-well microplate.

Aspirating Liquid from a Microplate

1. Connect the vacuum source through the Quick Connect Fitting (10) on the Manifold (Figures 1 and 3).
2. Place the Manifold and base over the microplate that is to be aspirated.
3. Make sure Manifold is set up for the desired Z height position (see Set-up Part 1).
4. With vacuum shut off valve in closed position, turn on vacuum. When a great enough vacuum has been created, open the shut-off valve to allow the wells to be aspirated.
5. Remove the Manifold and base from the microplate after it has finished. Close the vacuum shut-off valve.
6. Remove the microplate and place the Manifold and base over the next microplate to be aspirated.

Cleaning the System by Aspirating

1. Position a tip lid box under the Dispense Tubes. Insert Bleed Tube (7) in Liquid Collection Bottle (8) and remove the Source Tube (3) from liquid.
2. While depressing the Bleed Valve (6), use the Syringe or Bottle Top Dispenser to pump air into the system until the Bleed Tube (7) is clear of liquid.

3. Connect the vacuum source through the Quick Connect Fitting (10) on the Manifold (Figures 1 and 3).
4. With in-line shut-off valve closed, turn on vacuum. When a great enough vacuum has been created, open the valve to allow liquid to be aspirated.
 - a. Use the vacuum to aspirate liquid out of Manifold.
 - b. Use the vacuum to aspirate a wash liquid (distilled water first, then 100% alcohol) from a tip lid box through tubes of the Manifold.
5. It is also recommended that the Syringe or Bottle Top Dispenser be rinsed by distilled water followed by alcohol. Insert the Source Tube into wash liquid and fill the Manifold as described previously. Repeat Steps 1-4 above.

STORAGE

1. For short-term storage, keep the tips of the metal aspirate tubes in the liquid you are using in the plates or distilled water. This will prevent the liquid from drying and clogging the tubes.
2. For long-term storage, drain the Manifold and aspirate three separate 100 ml distilled water aliquots through the system. **DO NOT USE DE-IONIZED WATER.** De-ionized water will corrode the stainless steel tubes with prolonged use.
3. Tip the system back and forth after each aliquot to ensure all water is aspirated from the Manifold on each rinse.
4. Aspirate two separate 50 ml aliquots of alcohol (methanol, ethanol or isopropyl alcohol) through the Manifold. Tip the system back and forth to ensure all the alcohol is removed.
5. Pull air through the Manifold for 1- 2 minutes by leaving the vacuum on and valve open.
6. Store in a clean dry area.
7. To autoclave, simply place the entire system into the autoclave. It is not necessary to remove any parts.

TROUBLESHOOTING

PROBLEM: Not all wells being aspirated or not filling all wells evenly.

SOLUTIONS:

1. Use rapier to clear tubes.
2. Create a greater vacuum.
3. Wiggle the manifold while aspirating. Sometimes the tubes may be touching the bottom of the wells, which leads to incorrect aspiration.
4. Make sure that air is not introduced into system by Syringe or Bottle Top Dispenser.
5. If still not functioning properly, contact V&P Scientific for more technical assistance.