

CARE AND USE OF THE VP 179A JIG WITH ASPIRATION OR DISPENSE MANIFOLD

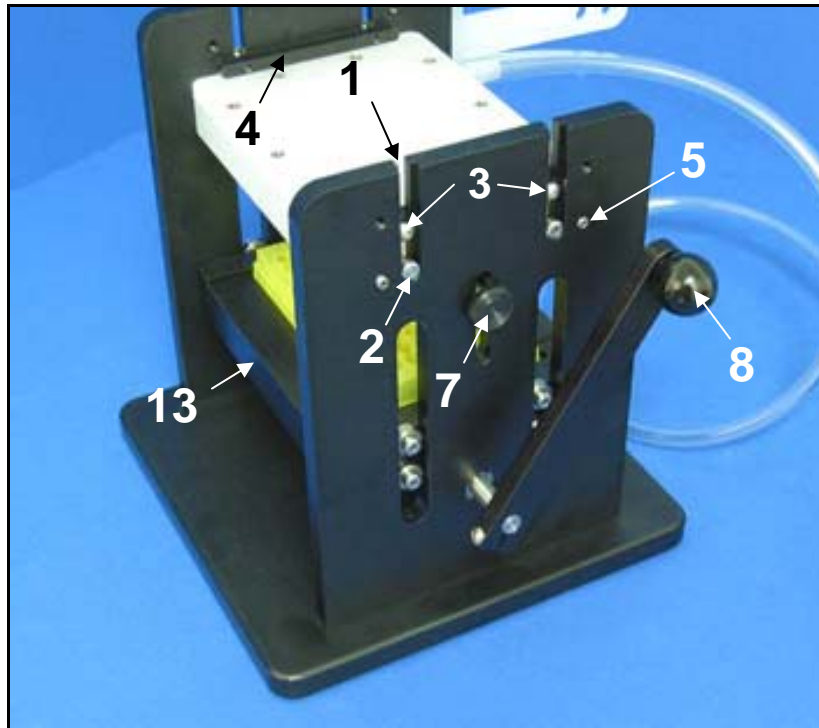


Figure 1: VP 179A Jig with Aspiration Manifold

PARTS GUIDE FOR VP 179A MANIFOLD JIG

1 – Jig Slot for Shoulder Bolt	6 – Y Position Screw	11 – Vacuum Tube Support Arm
2 – Shoulder Bolt Head	7 – Z Bar Stop Thumb Screw	12 – Vacuum Tubing
3 – Manifold Hold-Down Screw	8 – Z Arm Lever	13 – Microplate Platform
4 – Manifold Hold-Down Bar	9 – Z Arm Nylon Pressure Screw	14 – Spacer
5 – X Positioning Screw	10 – Vacuum Outlet Fitting	15 – “Rapier” (not shown)

MANIFOLDS USED WITH VP 179A JIG

Aspiration

VP 178BJ
VP 178EJ
VP 178J
VP 179BJ
VP 179CJ

Dispensing

VP 178BJD
VP 178JD
VP 179BJD

SETUP FOR ASPIRATION MANIFOLD ON JIG

Attaching the Manifold

1. Loosen Manifold Hold-Down Screws (3) using the 1/16 Allen wrench and remove the Manifold Hold Down Bars (4) (Figure 1).
2. Place the shoulder bolt heads (2) of the Manifold into the Jig slot (1) and slide down into the slots until shoulder bolts hit the bottom of the slots.
3. Place the Manifold Hold-Down Bars (4) on top of the Manifold and tighten the Manifold Hold-Down Screws (3) to secure the Manifold in the Jig (Figure 2a).

Setting the X and Y Positions

1. Slide a microplate into the Microplate Platform (13). Use the Allen wrench provided to adjust the X and Y Manifold position so it is in the center of the wells of the microplate (Figure 2a and b).
2. When adjusting the X Position always loosen the X Positioning Screws first in the direction the manifold is to be moved before tightening the opposing X Positioning Screws. Failure to do this can pull the Shoulder Bolt (2) out of the Manifold and strip the threads.

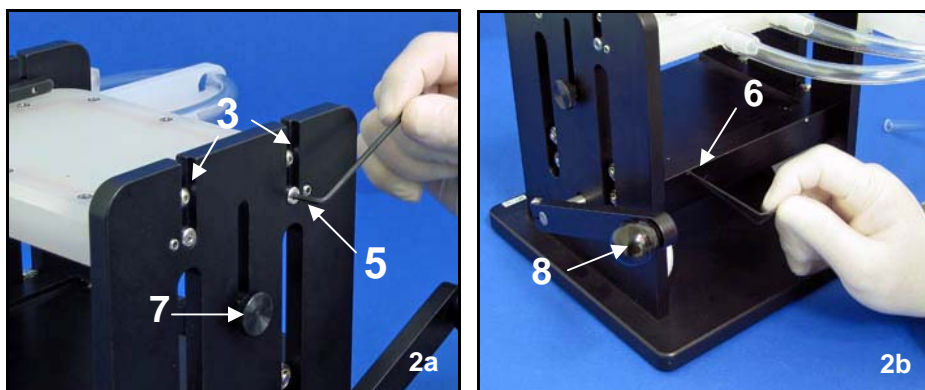


Figure 2: Securing Manifold in Jig (a). Adjusting X (a) and Y (b) Positions.

3. For more precise positioning use one of the Registration Plates VP 903R-96, VP 903R-384 or VP 903R-1536 (Figure 3). Place the Registration Plate into the Microplate Platform (13) where the microplate would go and push against the back wall. Pull the Z Arm Lever (8) down until the Manifold tubes are just over the Registration Plate. Tighten the Z Arm Nylon Press Screw (9) to hold the Microplate Platform (13) in position (Figure 4). Line up the white 1mm corner spots of the Registration Plate with the corner tubes on the Manifold. This is done by using the provided 0.5 Allen wrench to adjust the X and Y Position Screws (5 and 6) as shown in Figure 2.

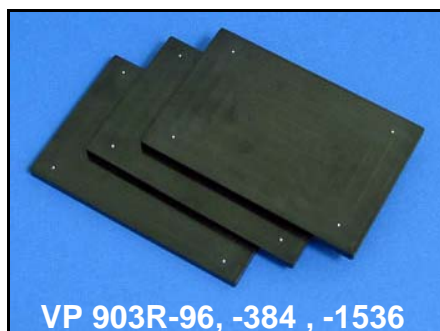


Figure 3: Registration Plates

Setting the Z Height

1. Use the thumbscrew to loosen the Z Bar Stop (7) (Figure 4a).

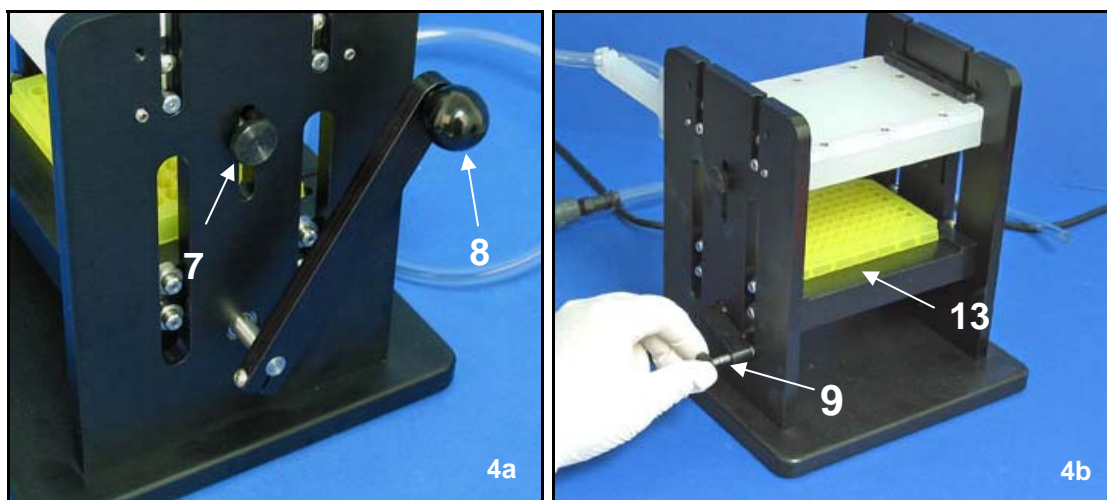


Figure 4: (A) Adjusting Z Bar Stops. (B) Adjusting Nylon Pressure Screw for Z Arm control.

2. Slide an empty microplate into the Microplate Platform (13). To set the plate height where the pins stop ~1mm from the bottom of the wells, place a 1mm thick piece of paper, or “Spacer” (14) under the microplate. Raise the Z Arm Lever (8) until the metal tubes just touch the bottom of the wells.

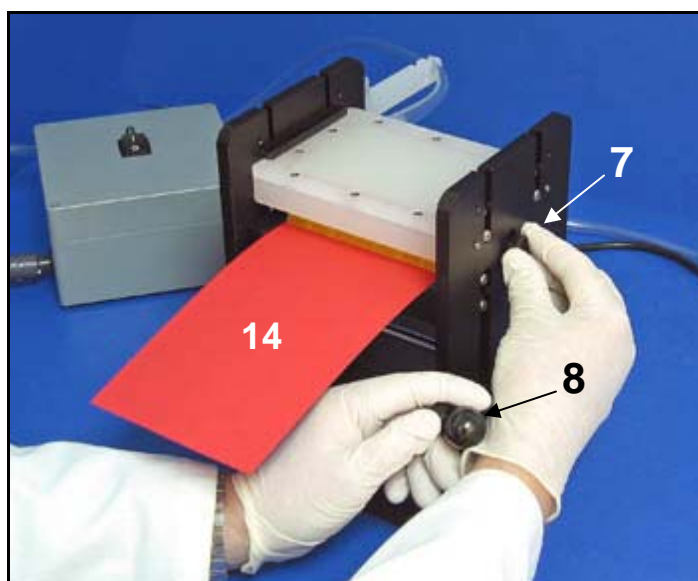


Figure 5: (A) Adjusting Z height using a Spacer

3. To hold Microplate Platform (13) in this “up” position, tighten Z Arm Nylon Pressure Screw (9).
4. Tighten the Z Bar Stop Thumb Screws (7) to lock the maximum microplate position in place.
5. Loosen the Nylon Pressure Screw (9), lower the Microplate Platform and remove the microplate.
6. Remove the paper spacer from the Microplate Platform and a 1mm space will be set in the system.

Connecting the Manifold to Vacuum System

1. Connect the vacuum source to a vacuum trap (Figure 5).

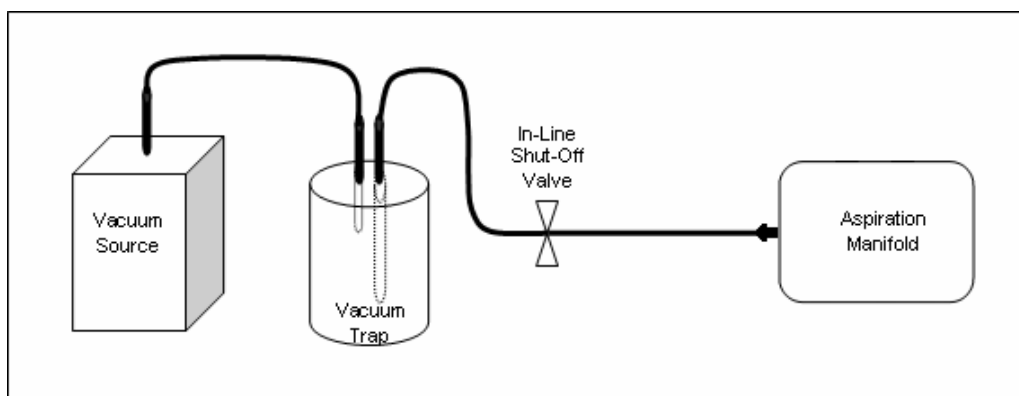


Figure 5: Vacuum System Connection

2. Connect the vacuum trap to an in-line shut-off valve such as stop cock valve or a VP 600 Push Button (both are shown in Figure 6). The V&P 600 provides the ease of turning off and on with the push of a button or by computer/robot. The stopcock valve requires two hands to operate.

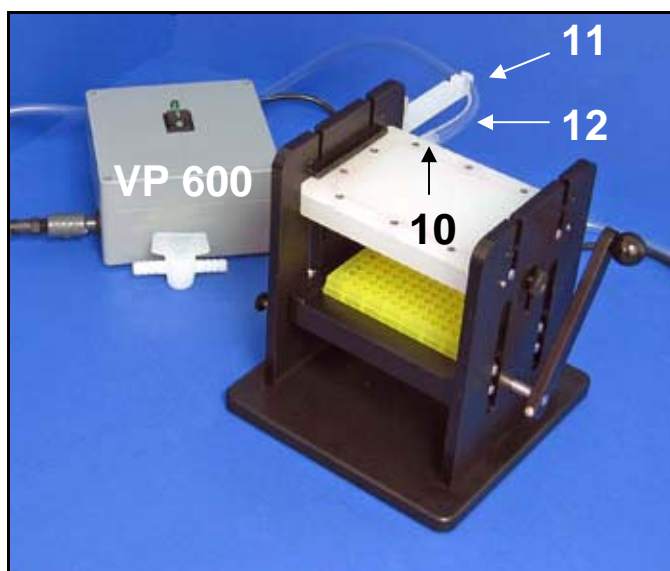


Figure 6: VP 600 Push Button In-Line Shut-Off Valve.

4. Connect the in-line shut-off valve to the Vacuum Outlet Fitting (10) with Vacuum Tubing (12).
5. Place the Vacuum Tubing (12) in the Support Arm (11) secure to the Jig.

USING ASPIRATION MANIFOLDS

1. Close in-line shut-off valve. Turn on vacuum pump
2. Place the microplate to be aspirated into the Microplate Platform (13) under the Manifold.
3. Raise the Z Arm Lever (8) to the pre-set Z Height Stop Bar (see Setting Z Height section).

4. Open the shut-off valve to aspirate samples from wells.
5. Lower Z Arm Lever (8) and remove the microplate from the Microplate Platform (13).
6. Close in-line valve to allow pressure to build up in the vacuum trap before aspirating from the next plate.
7. Blot tubes with VP 540DB lint free pads or rinse pins with appropriate fluid in a tray or tip lid box before aspirating from next plate.

TROUBLESHOOTING ASPIRATION MANIFOLDS

1. If you notice a single well not emptying properly, locate the clogged tube corresponding to the well. Insert the “rapier” (metal wire included with the Manifold) into the clogged tube. This should remove the obstruction. Wash the system well after performing this step.
2. Alternatively, the top portion of both the aspiration and dispense Manifolds can be removed; the Manifold examined for clogged tubes and cleaned. Use care not to damage the gasket when removing and replacing the top Manifold section.

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 (for example, acetone or chloroform). 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.

STORAGE

1. For short-term storage, keep the tips of the metal aspirate tubes in the liquid you are using 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**, as de-ionized water will corrode the stainless steel tubes.
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 50-100 ml aliquots of 100% 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 shut-off 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.

SETUP FOR DISPENSE MANIFOLD ON JIG

Note: The steps for attaching the Dispensing Manifold and adjusting the, X, Y and Z positions in the VP 179A Jig are the same as for the Aspiration Manifold (described above).

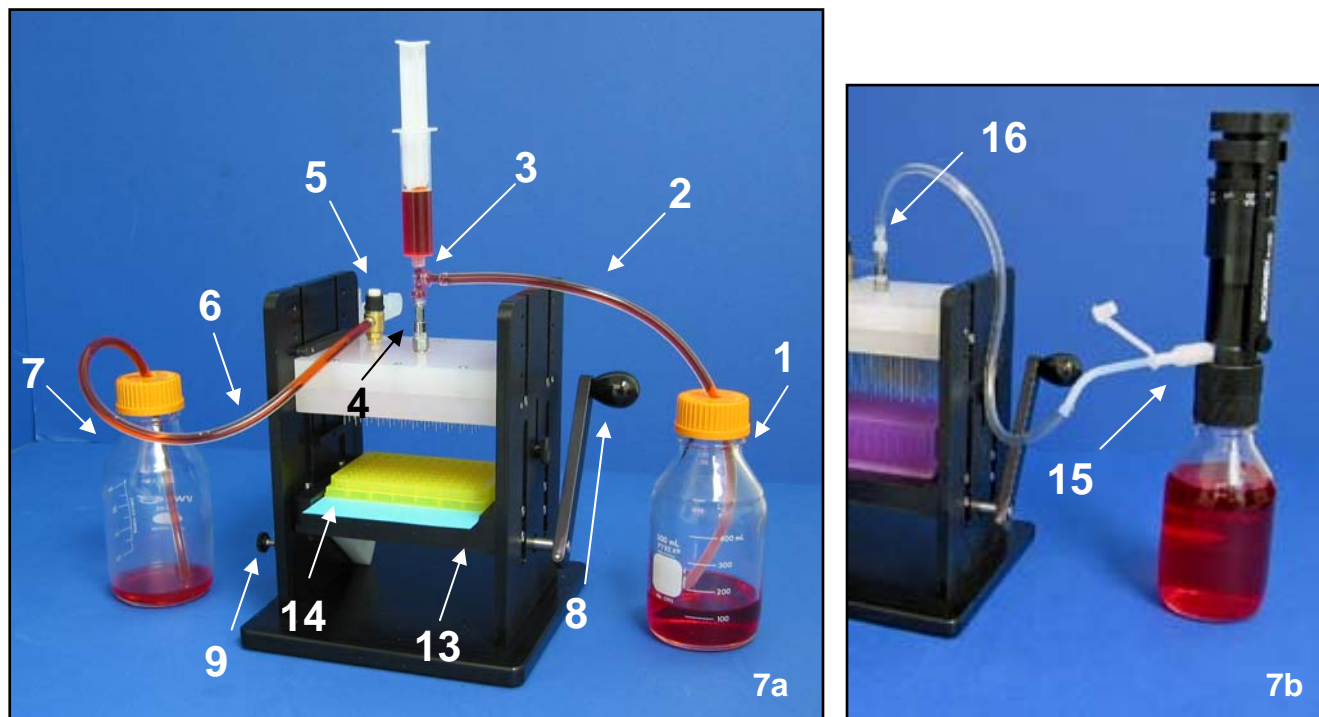
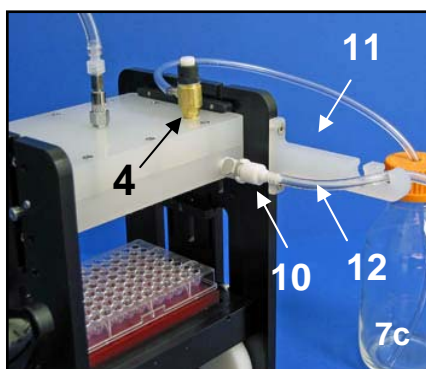


Figure 7: Dispensing Manifold on VP 179A Jig.



PARTS GUIDE FOR DISPENSE MANIFOLD ON JIG

- | | | |
|--|--------------------------------|----------------------------|
| 1 – Source Bottle and Cap | 6 – Bleed Valve Tubing | 12 – Vacuum Tubing |
| 2 – Manifold Feed Tubing | 7 – Collection Bottle and Cap | 13 – Microplate Platform |
| 3 – Two-Way Check Valve | 8 – Z Arm Lever | 14 – Spacer |
| 4 – Male Luer-Lock Fitting
(w/Female Adapter) | 9 – Z Arm Nylon Pressure Screw | 15 – Bottle Top Dispenser |
| 5 – Bleed Valve | 10 – Quick Connect Fitting | 16 – Luer Nut Tube Fitting |
| | 11 – Vacuum Tubing Support Arm | |

1. Attachment of dispenser, either Syringe or Bottle Top Dispenser, to Manifold (Figure 7):
 - a. Syringe method: Attach the Two-Way Check Valve (3) to the Luer Lock Fitting (4) on the top of the unit using the female adapter. Then attach a Luer Lock syringe and the Manifold Feed Tube (2) to the Two-Way Valve. If unable to read the volume markings on the syringe unscrew the syringe, rotate and screw the syringe back into the Two-Way Valve. Insert the other end of the Manifold Feed Tube (2) into the hole in the cap of the Source Bottle (1). If the Feed Tube does not fit loosely in the hole in the cap then it will need to be unscrewed slightly so a vacuum does not form in the Source Bottle.
 - b. Note: take care that the level of liquid in the Source Bottle does not fall below the Feed Tube depth or air will enter into the system
 - c. Bottle Top Dispenser (15): Assemble Dispenser according to manufacturer's instructions. The supplied Luer Nut Tube Fitting (16) is used to connect the Bottle Top Dispenser's dispensing tubing to the Manifold.
2. Place the Collection Bottle (7) beside the Manifold. Place the Bleed Tube (6) in the hole of the Collection Bottle's cap.
3. Attach one end of Vacuum Tubing (12) to the Quick Connect Fitting (10) on the back of the Manifold and other end to a shut-off valve connected to a vacuum source (see Figure 8 below). Make sure Quick Connect Fitting is disconnected before bleeding air from the system, once disconnected the fitting is closed.

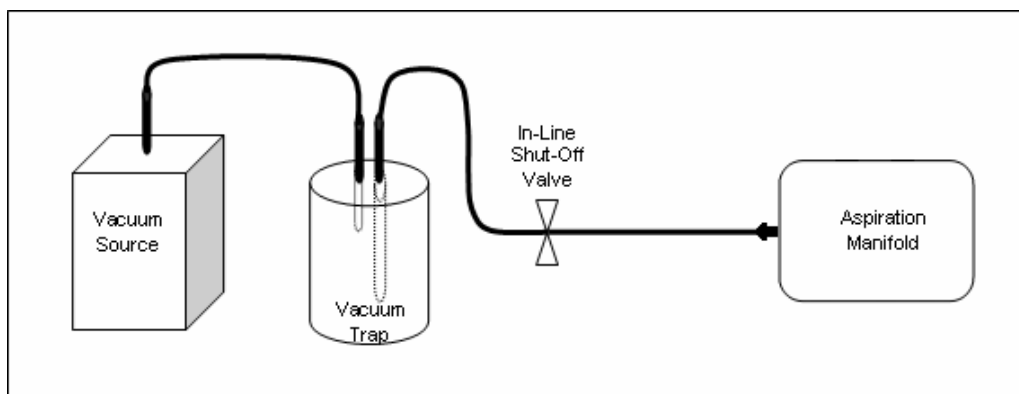


Figure 8: Vacuum System Connection

4. Place red Rubber Pad in place of microplate and raise the Microplate Platform (13) until the Dispense Tubes are pressed slightly into the pad. Tighten Z Arm Pressure Screw (9) to hold Microplate Platform in position or maintain downward pressure on Z Arm Lever (8).
5. Lift syringe/dispenser plunger to fill with fluid. Depress button on the Bleed Valve (5).
6. Compress the syringe/dispenser plunger in a steady stroke, and then release the Bleed Valve button shortly before reaching the bottom of the stroke.
7. The Manifold has an approximate 150 ml dead volume, so repeat the previous steps several times depending on the volume of the Syringe/Dispenser. Stop when a steady stream of liquid coming out of the Bleed Tubing (6) into the Collection Bottle (7).
8. 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 seen coming from all of the metal dispense tubes.

USING DISPENSE MANIFOLD

1. Place 96 well plate into the Jig on the Microplate Platform (13).
2. Raise the Z Arm Lever (8). To hold Microplate Platform in this “up” position, tighten Z Arm Nylon Pressure Screw (9).
3. Draw the desired volume of liquid into the syringe/dispenser plunger.
4. Compress syringe/dispenser plunger in a rapid but steady motion.
5. Loosen the Nylon Pressure Screw (9), lower the Microplate Platform (13) and remove the microplate.

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 (for example, acetone or chloroform). 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.

CLEANING THE SYSTEM

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 or replace Source Bottle with an empty one.
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. Use the vacuum to aspirate a wash liquid (distilled water first, then 100% alcohol) from a tip lid box through tubes of the Manifold.
 - a. Connect the vacuum source through the Quick Connect Fitting (10) on the Manifold (Figures 7c and 8).
 - b. With vacuum shut off valve in closed position, turn on vacuum. When sufficient vacuum has been created, open the shut off valve to allow the liquid to be aspirated out of tip lid box and through the Manifold.
4. Aspirate three separate 100 ml distilled water aliquots through the system. **DO NOT USE DE-IONIZED WATER**, as de-ionized water will corrode the stainless steel tubes.
5. Tip the system back and forth after each aliquot to ensure all water is aspirated from the Manifold on each rinse.
6. Aspirate two separate 50-100 ml aliquots of 100% alcohol (methanol, ethanol or isopropyl alcohol) through the Manifold. Tip the system back and forth to ensure all the alcohol is removed.

7. It is also recommended that 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. Then follow steps 1-4 above.

MAINTENANCE

1. The VP 179A is made from anodized aluminum, stainless steel screws and bearings. Wipe off surface spills and store dry. Clean with mild detergents, rinse with distilled water and drying with a soft cloth.
2. The various aspiration and dispensing Manifolds are made from polypropylene shells, foamed silicone rubber gaskets, brass bleed valve, stainless steel tubing and stainless steel screws.

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TROUBLESHOOTING DISPENSE MANIFOLDS

1. If you notice a single well not filling properly, locate the clogged tube corresponding to the well. Then insert the metal wire (included with the dispenser) into the clogged tube. This should remove the obstruction.
2. If you experience problems with aspiration and dispensing or leaking inside the system, it is most likely a problem with the two-way valve. This valve connects the syringe, Manifold and the Source Tubing. Visually inspect the valve. If the valve is loose, it may cause air to get into the system or leakage to occur. If the valve is not connected properly, re-attach tightly by hand (if using a wrench or pliers do not over tighten). If the valve threading is no longer functional then replace the valve.
3. If still not functioning properly, contact V&P Scientific for more technical assistance.