

# 96 WELL PLATE POSITIVE PRESSURE MANIFOLD OPERATING INSTRUCTIONS



## 96 WELL PLATE POSITIVE PRESSURE MANIFOLD OPERATING INSTRUCTION

### Theory of Operation

The 96 Well Plate Positive Pressure Extraction Manifold (PPM) is a mechanical workstation that is used to facilitate the process of sample preparation using a 96 well plate. The PPM utilizes pressurized gas (i.e. compressed nitrogen or air) to move sample solvent through each SPE well at a controlled rate of flow. The PPM has two (2) adjustable regulators designed with restrictors to allow a fine (lower) (Regulated Flow) and a coarse (higher) (Dry / Full Flow) adjustment during the extraction procedure.

### SHIPPING CONTENTS

(1) 96 well plate Positive Pressure Manifold (UCT Part#: VMF96PPM)

### ACCESSORIES REQUIRED FOR OPERATION

- ¼" O.D. plastic rigid tubing rate for a minimum of 80 to 100 psi.
- Clean Gas source (Nitrogen or Air) available at 40 to 60 psi.
- ¼" compression fitting for attachment to gas source.
- In-line gas filter (optional - suggested if using unfiltered compressed gas.)

### DESCRIPTION OF PPM UNIT & CONTROLS

**Dimensions of unit:** The positive pressure manifold is 9" wide, 9" deep, and 14" high.

**Regulator** – This knob is located on the back of the system. It regulates the total flow of gas entering the unit. The regulator should be set between 40 and 45 psi. Excess pressure is vented out of the instrument in order to avoid damage to the equipment.

**Raise and Lower switch** - This switch is located on the right hand side of the sample shelf. It is used to lower and raise the restrictor plate into proper position during sample preparation. Pressurized gas moves the plate up and down depending on the switch position.

**Dry / Full Flow Adjustment Knob** – This knob is located on the front of the base on the right hand side. This knob can generally be set between the 5<sup>th</sup> & 8<sup>th</sup> hash marks. This allows a generous flow of gas from the regulator to flow through the well plate. This function is used for drying the sorbent prior to sample elution. To adjust the gas flow turn the right hand knob counterclockwise to increase flow and clockwise to decrease the gas flow.

**Fine Flow Adjustment** – This knob is located on the front of the unit on the left hand side. This gauge is considered a 'fine adjustment' because it has a restrictor which will not allow excessive flow through the manifold plate. The adjustment knob is used to regulate the flow during the sample load and analyte extraction portions of the procedure. To adjust, turn the knob counterclockwise to increase and clockwise to decrease the gas flow to the desired rate.

The fine flow should be adjusted to obtain a flow rate between 1-2 mL/ minute. A flow rate of 1 mL/min is about 1 drop per minute. You can determine the drip rate looking at the base of the collection plate. You should be able to see the splash as each drip hits the bottom. With an aqueous sample solution this flow is generally achieved with the dial set between the 5<sup>th</sup> and 7<sup>th</sup> hash marks.

**On-Off Switch** - This switch is located on the left hand side of the sample shelf. The on and off switch cuts off pressure to the regulated flow. The pressure is always on when the restrictor plate is lowered.

## USING THE MANIFOLD FOR EXTRACTION

- After connecting the ¼" gas line to the back of the manifold (quick hose connect), adjust the pressure to between 35-45 psi from the gas source. Test the manifold's restrictor plate lift and lowering mechanism by switching the 'Raise / Lower' toggle switch. The plate should lower and raise as the toggle switch is adjusted. There will be a low hissing sound from the pneumatic piston system.
- A 96 well plate should be placed on top of a 96 well waste collection plate. The unit should then be placed into the black holder on the base of the PPM. The collection plate and 96 well plate should be pushed back until it bumps into the back wall of the plate holder. This will ensure that the reservoirs are lined up over the holes in the PPM.
- With the 96 well plate and waste container in place, the restrictor plate can be lowered onto the 96 well plate. This will create a seal.
- After the sample load and wash step are completed the 96 well waste plate is replaced with a 96 well sample collection plate. With the sample collection plate installed the 96 well plate set up is ready for sample elution.
- All reservoir conditioning, sample loading, wash solvents, and elution solvents are applied off-line from the unit.

## MANIFOLD MAINTENANCE

- The manifold requires regular upkeep to preserve the full functionality of the unit.
- Daily cleaning of any solvent or spills (as needed) on any of the manifold surfaces is suggested. Use solvents such as Methanol, Water, or Iso-propanol to wash the surface of the manifold. It is recommended to use water first followed by an alcohol to help dry the unit.
- Ensuring clean air (free of oil, water, and particulates) is important for the manifolds proper function. The in-line air filter (UCT Part#: **VMFPPMRAF**) should be monitored for condensation or other contamination issues. If the filter looks worn or filled with water, replacement is required.
- It is recommended that the brown gasket (UCT Part#: **VMF96PPMGSK**) at the bottom of the restrictor plate be replaced every 6 months. Gasket Replacement:
  1. Lower the restrictor plate
  2. Turn off the gas to the manifold unit
  3. Using a 7/64" Allen Wrench loosen the 2 set screws on the right hand side of the restrictor plate. Turn the screws clockwise to loosen.
  4. Slide the entire restrictor plate forward until it comes free of the manifold.
  5. Ensure that the black o-ring on the top of the restrictor plate does not come loose or fall out.
  6. Peel the old gasket from the bottom of the restrictor base.
  7. Remove the backing from the new gasket.
  8. Line up the holes in the gasket with the holes in the base of the restrictor plate and stick the new gasket to the base; ensure that there are no wrinkles in the gasket.
  9. Slide the restrictor plate back into position. The black o-ring should be towards the rear of the manifold. Tighten the set screws.
  10. Turn the gas flow to the manifold back on.
  11. The manifold is now ready for use.

## REPLACEMENT PARTS AND ACCESSORIES:

Name	Part Number
• Installation Kit: <ul style="list-style-type: none"><li>- 25' of ¼" O.D. tubing</li><li>- 2 x ¼" compression fittings</li><li>- 1 in-line air filter</li></ul>	VMFPPMIK
• Replacement Restrictor Plate Gasket	VMF96PPMGSK
• 96 Well Plate Waste Collection Plate	WSH96WT
• 96 Well Sample Collection Plate	WSH96CP

### Warranty Program

After the initial 90 day period, a service agreement with UCT can be arranged.

#### The service agreement will entail the following:

Upon the need for repair, the owner of the manifold will submit an open PO to UCT for repair. UCT will ship a 'temporary loaner' manifold (at no charge) to the customer to be used until their manifold can be repaired.

- The total cost of shipping to and from UCT's facility for the customer's manifold will be the responsibility of the customer
- The total cost of parts needed to repair manifold(s) will be the responsibility of the customer
- The total cost of shipping of the loaner manifold will be incurred by UCT
- UCT will perform a thorough inspection of the manifold which at minimum will include:
  - o Each position of the individual (4) plates of the PPM will be checked for flow through. If there is significant restricted flow to any of the sample positions, the plate will be cleaned and re-tested.

- o The piston's lubrication will be checked to insure proper operation.
- o The gaskets will be examined for wear or fracturing.
- o The individual plates will be inspected for any loose screws holding the plates to the body of the manifold.

Any additional maintenance or repair beyond the scope of this agreement will be charged at the discretion of UCT, Inc.

### RETURN POLICY

Our Quality Manager will handle all returns. Before returning merchandise, please call to obtain a return authorization number from the quality manager. We will need to know the reason for the return, date of purchase, purchase order number and invoice number in order to issue a return authorization number. Return merchandise must be received before a credit can be issued. Returns will not be accepted after 90 days. A restocking fee of 25% of the price paid, or a minimum of \$25.00 (whichever is greater) will be charged on all returns.

### Contact Us

Phone: 215.781.9255  
800.385.3153  
Fax: 215.785.1226

UCT, Inc.  
2731 Bartram Rd.  
Bristol, PA 19007

Email: [info@unitedchem.com](mailto:info@unitedchem.com)  
Web: [www.unitedchem.com](http://www.unitedchem.com)



4101-28-02

