FORENSICS

UCT

OPERATING MANUAL

POSITIVE PRESSURE MANIFOLD

POSITIVE PRESSURE EXTRACTION OPERATION INSTRUCTION

Theory of Operation

The Positive Pressure Extraction Manifold (PPM) is a mechanical workstation that is used to facilitate the process of sample preparation using solid phase extraction (SPE) cartridges. The PPM utilizes pressurized gas (i.e. compressed nitrogen or air) to move sample solvent through SPE cartridges 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) 4 x 12 position Positive Pressure Manifold
(1) Waste collection rack, stopcock and tubing
(1) Elution rack (16 mm or 13 mm collection tubes)
(1) ¾" 4 x 12 position Solid Phase Extraction plate (Standard 10 mL/15 mL rack included with each system. See page 10 for available adaptor plates).

ACCESSORIES REQUIRED FOR OPERATION

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

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DESCRIPTION OF PPM UNIT & CONTROLS

Dimensions of unit: The positive pressure manifold is 16.25” wide, 13” deep, and 20” high.

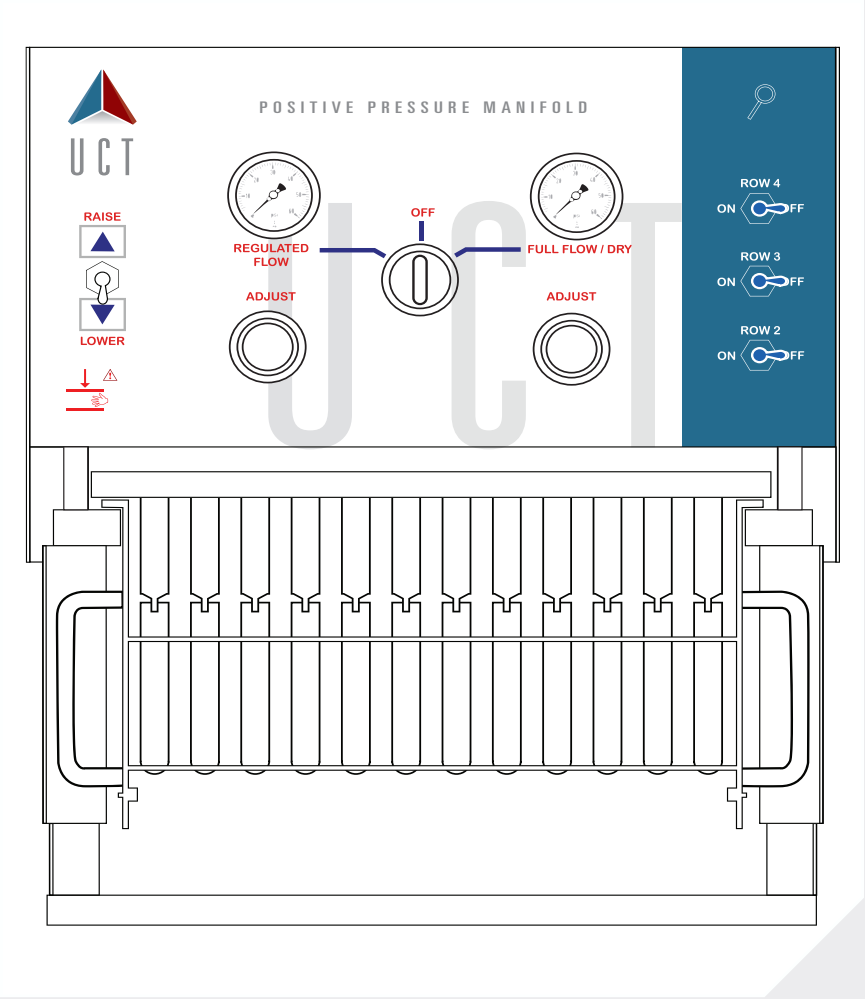
The ‘Raise and Lower’ switch is used to put the extraction rack into proper position during sample preparation. The pressurized gas will move the solid black plastic extraction rack up or down depending on the switch position.

3-Position Toggle Switch – This switch is used to adjust the flow mechanism to one of the three (3) desired positions (Regulated, Off, or Dry/Full). By turning the knob to each position, the PPM will allow the rate of flow through the manifold plate as adjusted and shown on the pressure gauge.

Regulated Flow Adjustment – 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 extraction procedure.

To adjust, pull the knob out and turn clockwise to increase and counter-clockwise to decrease the gas flow to the desired rate. Push the knob in to lock the adjustment knob into position. By turning the center toggle switch to Regulated Flow’ the gas will begin to flow at the rate in relation to the pressure gauge under the adjustment dial. (It is recommended to use 80-100 psi gas flow from the main gas source to maximize the PPM efficiency. The regulated flow should be adjusted to approximately 10-20 psi to obtain a rate of flow between 1-2 ml/ minute.)

(Note: This is a guideline; an actual flow setting must be made since the rates through the columns could change based on source gas pressure, sorbent type, sorbent amount, extraction fluid, sample matrix, etc.)



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Dry/ Full Flow Adjustment – This gauge is used to maximize the amount of gas flow through the PPM and extraction tubes. There is a wider range flow restrictor associated with this gauge that allows a larger volume of gas to flow at a higher rate through the PPM. This setting is used during the drying step or when higher flow rates are required for samples due to sample matrix or procedure requirements. The adjustment knob is used to regulate the flow during the extraction procedure. To adjust, pull the knob out and turn clockwise to increase and counterclockwise to decrease the gas flow to the desired rate. Push the knob in to lock the adjustment knob into position. By turning the center toggle switch to 'Dry/ Full Flow' the gas will begin to flow at the rate in relation to the pressure gauge under the adjustment dial.

Row Toggle Switches – These switches are used to turn On/Off the flow to rows 1-4. The rows 1-4 can be turned On/Off as desired during the extraction procedure. The switch for row 1 is mounted on the back of the unit*. This allows for on / off control for row 1. The rows are counted 1-4 starting from front to back facing the PPM. The rate flow through each row is determined by the toggle switch set to Regulated, Dry/Full or Off.

* For any models purchased after 2016, the Row 1 switch has been relocated to the front of the unit in succession with switches for rows 2, 3, and 4.

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USING THE MANIFOLD FOR EXTRACTION

• After connecting the ¼ inch gas line to the back of the manifold (quick hose connect), adjust the pressure to between 80-100 psi from the gas source. Before putting on the manifold racks and plates, test the manifolds support arms by switching the 'Raise / Lower' toggle switch. The black support arms should raise and lower as the toggle switch is adjusted. There will be a low hissing sound from the pneumatic piston system.

• The manifold waste rack is fitted with a drain and stopcock / hose assembly to be used to collect waste during the extraction procedure.The waste container has two pin connects on the underside that fit into the two screw tops on the manifold rack. This will ensure the stability of the waste rack when the rack is moved during the extraction process. The column plate (e.g. ¾" metal plate with 4 x 12 drilled openings) is placed on the top portion of the rack. These reversible plates are also pre-drilled to fit onto the top of either the extraction or collection rack with the position pins.

• With the waste container and top plate in place, position the rack on top of these black support arms and easily slide into and out of the working manifold position. There are also two pins on the front of the black support arms. These pins are positioned so as to not allow the rack to come off the support arms during the extraction procedure.

• An important point regarding the manifold rack: There are handles on either side of the extraction / collection rack for gripping the racks for positioning and removal. These racks will only fit properly into the working manifold if the handle positions are forward to the front of the manifold. It becomes obvious if it is incorrectly placed on the black support arms because the 4 x 12 frit openings on the underside of the chassis will not align properly with the extraction columns.

MAINTENANCE OF MANIFOLD

- 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 to the manifolds proper function. The in line air filter (Part Number VMFPPMRAF) attached to the back of the manifold should be monitored for condensation or other contamination issues. If the filter looks worn or filled with water, replacement may be required.

- The brown rubber gaskets (VMFPPMGSKBL) on the underside of the manifold are recommended to be replaced at least two (2) times a year. (A)

    - (B) To replace these gaskets simply peel back the old gasket from the bottom of the manifold. Then continue by removing the plastic peel from the bottom of the gasket and attaching the gasket to the bottom of the frit plate.

(A)

(B)

- If any position on the manifold becomes clogged it may be necessary to replace the restrictor plate.

    - To replace the restrictor plate, turn the manifold upside down and remove the base plate. Peel back the brown gasket from the frit plate.
    - Loosen the 12 screws with a Phillips screw driver or power drill.
    - Remove the restrictor plate by simply pulling it off of the manifold. (Note – it may be necessary to use a flat head screw driver to pry up the plate if it is not separating from the manifold).
    - Replace the orange gasket on the top of the new restrictor plate. Clean as much of the remaining adhesive with a razor to get a good seal of the orange gasket. It is best to attach this directly to the frit plate before re-securing it to the manifold.
    - Place the restrictor plate back on the unit by replacing the 12 screws. (Do not over tighten screws).
    - Replace the brown rubber gasket on the bottom of the restrictor plate making sure the holes on the gasket line up with the holes on the manifold.

If the lift arms are hesitating or not moving freely, lubricate the piston inside the back of the unit with either silicone grease, or some other type of metal lubricant. This will help insure proper movement of the lift arms.

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REPLACEMENT PARTS AND ACCESSORIES

Description	Part Number
Adapter extraction plate to accommodate 1 mL extraction tubes.	VMFPPMRKA1
Adapter extraction plate to accommodate 3 mL extraction tubes.	VMFPPMRKA3
Adapter extraction plate to accommodate 6 mL extraction tubes.	VMFPPMRKA6
Installation kit (25 ft ¼" O.D. tubing, in line air filter, 2 - ¼" compression fittings	VMFPPMIK
Waste container (pre-drilled)	VMFPPMWBND
16 x 100 mm elution rack	VMFPPMCRKG16
13 x 100 mm elution rack.	VMFPPMCRKG13
Replacement in line air filter	VMFPPMRAF
Replacement column sealing gasket (brown)	VMFPPMGSKBL
Replacement column sealing gasket (orange)	VMFPPMGSKOR
Arm	VMFPPMARM
Restrictor Plate	VMFPPMFRPLT
Lift Plate	VMFPPMLPLT
PPM Waste tray draining kit: 10 ft tube and stopcock	VMFPPMWTDK

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PRICES AND TERMS

Our prices are subject to change without notice. The price in effect when we receive your order will apply. All prices are in US Dollars and are F.O.B. Lewistown, PA 17044. Terms of payment are net 30 days.

MINIMUM ORDERS

We welcome all orders, therefore, we do not have a minimum order requirement. When ordering, please include your purchase order number, complete "Ship To" and "Bill To" address, catalog number, quantity, and description of product(s). Also include your name and a phone number where you can be reached should we have any questions concerning your order.

SHIPMENTS

Normal processing is within 24 hours after receipt of an order. Unless special shipping requests have been made, our trained staff will send all orders by UPS Ground service. The appropriate shipping charges (freight & insurance costs) will be added to the invoice, unless otherwise instructed by the customer.

SPECIAL PRICING

We offer special pricing for volume purchases and standing orders. These discounts apply to bonded phase extraction column purchases only. Please call a sales representative for more information on special pricing qualifications.

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, LLC.

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.

SAFETY

This equipment, when used properly, is safe. Proper PPE, as determined by your organization, should be worn at all times while using this equipment. Proper handling techniques for chemicals and biological agents should be followed at all times.

Compressed gas or nitrogen is used to operate the equipment. Compressed gas or nitrogen tubing should be securely fitted and locked into the equipment to prevent the compressed gas or nitrogen tubing from loosening and potentially striking the operator. Compressed gasses and equipment should be handled under proper ventilation to prevent oxygen displacement or toxic atmospheres.

Operators of this equipment must be aware of the possible pinch points. Pinch points are located on the restrictor plate, as it is raised and lowered and on the waste tray and extraction plate points of connection.

Contact Us

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