

instructions

Universal Vacuum Manifold – P/N 228020

The vacuum manifold is precision machined from crystal clear acrylic (top Plate) and acetal copolymer (plenum chamber). The acrylic top plate allows visual access to the plenum chamber for checking progress on the separation process. Reduced weight and design allow use with compatible robotic systems. Optional acrylic adapter plates allow the use of various SPE/Filtration plates.

Each unit comes fitted with a needle control valve and gauge to ensure accurate adjustment of vacuum level in the manifold. The unit is designed to be used with reservoir trays to collect extraneous sample and wash solution for removal and disposal before collection plates are installed.

Description

Lower plate, comprising of vacuum (plenum) chamber with lever operated gate valve, vacuum gauge and needle control valve. Fitted with custom O-ring in upper surface allowing air tight interface between plates during operation. The plenum chamber can be used either as a simple sump for waste filtrate using a disposable reservoir tray or as a receptacle for a standard 96-well Microplate (capture plate).

Upper plate comprising machined recess to fit Porvair Sciences Microlute™, with custom neoprene gasket and custom O-ring to allow use of adapters.

Adapter plates comprising machined recess to fit various SPE/Filtration plates, with custom neoprene gasket

Operation with Microlute™ (without optional adapters)

Remove top plate and install disposable reservoir tray. Replace top plate and place Microlute™ on gasket within recess on top plate. After sorbent washing is completed, remove top plate (with Microlute™ in place). Remove reservoir tray and discard. Place required collection plate in plenum chamber using spacer if required. Replace top plate, ensuring Microlute™ drain spouts are in line with wells in collection tray.

Collection plate/spacer options

350µl, 1ml or 2ml deep well collection plates

Porvair Sciences offer three types of ANSI/SBS¹ compliant deep square well Microplates to fit the vacuum manifold. These plates will fit into the plenum chamber without adapters.

If round-well versions of the 1ml plate or tube racks are used, a spacer (supplied with the manifold kit), must be placed at the bottom of the plenum chamber before inserting the collection plate/rack. If 350µl microplates are used an optional spacer plate is available.

Different manufacturer's collection plates may be slightly shorter than the Porvair Sciences 2ml deep well plate. If these slightly shorter plates are used there is a risk of the SPE plate drain spouts being too high in the manifold to deliver a clean sample into the well below on the application of vacuum. To overcome this risk a silicone sheet spacer is included in the kit. This is to be placed at the bottom of the plenum chamber before inserting the collection plate.

Note: This spacer is only to be used if the collection plate well tops are not close enough to the SPE plate drain spouts and does not need to be used with Porvair 2ml deep well plates.

¹ ANSI/SBS 1-2004: Microplates – Footprint Dimensions,

ANSI/SBS 3-2004: Microplates – Bottom Outside Flange Dimensions

ANSI/SBS 4-2004: Microplates – Well Positions

Vacuum control

The vacuum control system comprises a pipe inlet and a lever operated ON/OFF valve to the right of the vacuum gauge and a needle control valve to the left of the tee-piece to adjust the level of vacuum in the plenum chamber.

- The knurled control knob on the needle valve should be turned anti-clockwise to the fully open position. The chamber is vented to atmosphere.
- The vacuum source should be connected to the inlet on the ON/OFF valve and the valve opened (lever parallel to valve body).
- Carefully turn the knurled control knob on the needle valve clockwise until the required level of vacuum is indicated on the gauge.
- Vacuum can be shut off at any time by closing the ON/OFF valve (lever at right-angles to the valve body).
- The needle valve can be used to 'vent' the chamber, releasing any vacuum, by rotating anti-clockwise to the fully open position.

Important: Damage may result if excess force is used opening or closing the needle valve.

Maintenance and Cleaning

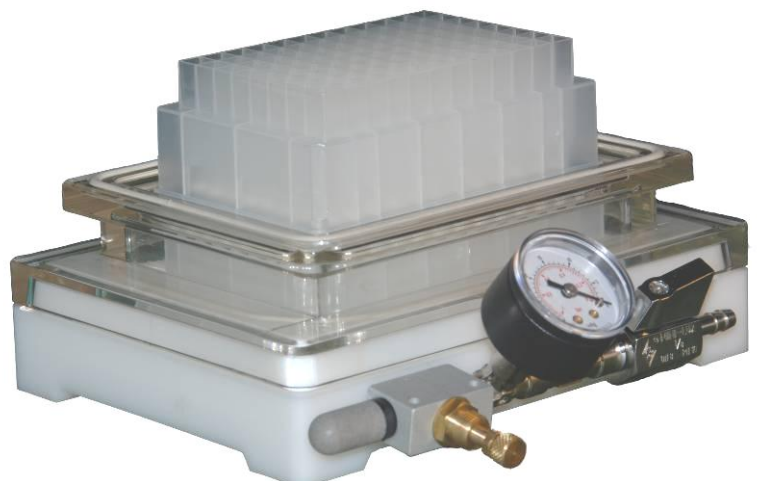
To clean, simply wipe all components with a dampened paper towel and dry. DO NOT USE ALCOHOLS or SOLVENTS TO CLEAN COMPONENTS.

The acetal plenum chamber has moderate resistance to alcohols, weak acids, etc. but should be cleaned as soon as possible if the above solutions are spilled on it.

If alcohols or solvents are spilled on the acrylic top plate, rinse immediately with water and dry. To ensure the sealing rings and gaskets are not contaminated, rinse with water and dry with paper towels. The vacuum manifold should not be autoclaved or subjected to high temperatures

In the event of any valves becoming damaged, it is recommended that the unit is returned for servicing.

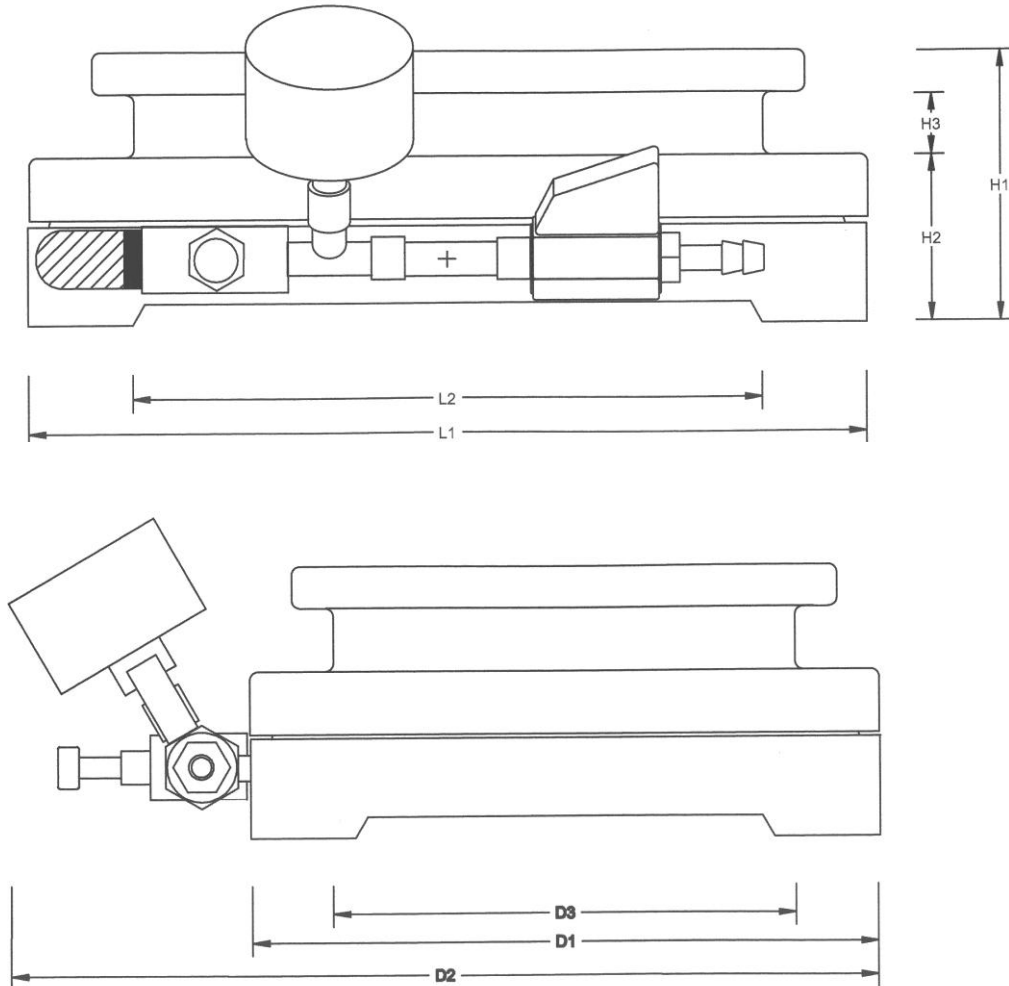
If contaminated by radiation, units will not be accepted for servicing, repairs or restocking.



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Component Information



Key Dimensions

L1	Length	200
L2	Length of undercut	150
D1	Depth	150
D2	Depth, including valve assembly	215
D3	Depth of undercut	110
H1	Height	70
H2	Height to undercut	45
H3	Height of undercut	15
Dimensions in mm		

M1	Mass – complete	1.65
M2	Mass – Acrylic Top Plate	0.30
Weights in kg		

Note: Height will reduce when vacuum is applied

Kit Contents – P/N 228020

- Manifold complete with valve/gauge assembly
- 1ml Spacer
- Silicone Rubber Pad
- Disposable Reservoir Tray
- 2ml Deep Well Microplate

Spare Parts / Accessories

- P/N 228007 Replacement profile gasket to fit between top plate and vacuum chamber
- P/N 228009 Replacement gasket to fit top plate and optional Adapters (P/N 228021 and 228022)
- P/N 228010 1ml Spacer
- P/N 228012 350µl Spacer
- P/N 228015 Silicone rubber Pad
- P/N 219010 Disposable Reservoir Trays, pack x 25

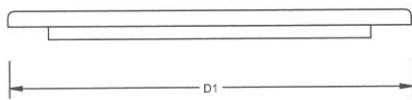
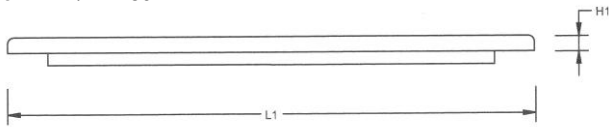
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Optional components

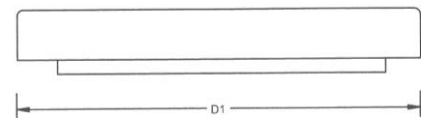
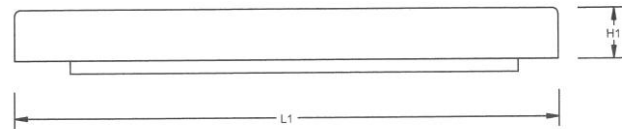
Adapters are available which allow the use of alternative SPE/Filtration plates when used in conjunction with the Universal Manifold

Adapter 1 – P/N 228021

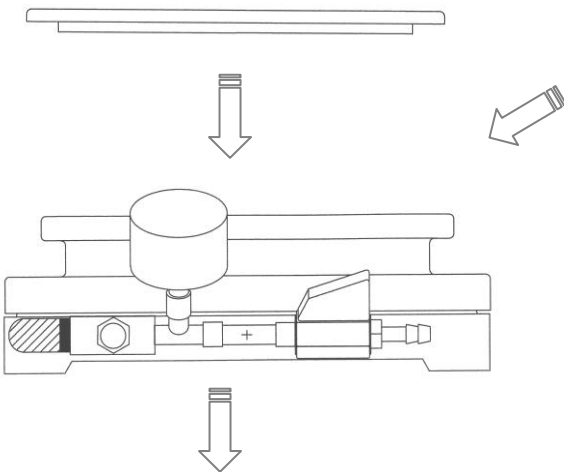


L1	Length	170
D1	Depth	130
H1	Height	5
Dimensions in mm		
M1	Mass	0.08
Weight in kg		

Adapter 2 – P/N 228022



L1	Length	170
D1	Depth	130
H1	Height	17
Dimensions in mm		
M1	Mass	0.26
Weight in kg		

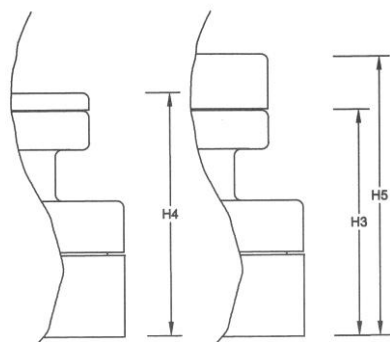


H3	Height – Universal Manifold	70
H4	Height – Universal Manifold + Adapter 1	75
H5	Height – Universal Manifold + Adapter 2	87
Dimensions in mm		

Height will reduce when vacuum is applied

Compatibility:

SPE/Filtration Plate	Manifold P/N 228020	Adapter P/N 228021	Adapter P/N 228022
Qiagen	✓		✓
Waters	✓		
Waters μ Elution	✓		✓
Biotage	✓		
Varian	✓		
Phenomenex	✓		
Axygen	✓	✓	
Seahorse	✓		
Porvair	✓		



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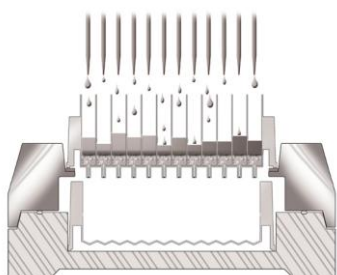
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Microlute™ and Vacuum Manifold

Use of vacuum manifold with MICROLUTE™ for SPE

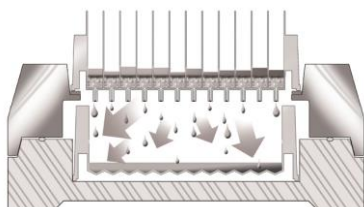
Stage 1

Remove the manifold top plate. Insert a disposable reservoir tray (Porvair P/N 219010) into the plenum chamber and replace the top plate. Place the MICROLUTE™ plate in the recess on the top of the vacuum manifold, ensuring it is level and a snug fit to the gasket. Condition the MICROLUTE™ columns by passing suitable volumes of an appropriate solvent through the columns, followed by a volume of liquid similar in nature to the sample.



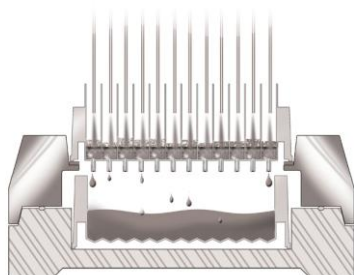
Stage 2

The samples should now be added to the MICROLUTE™, thus allowing the analyte, and possibly some other components, to become retained on the sorbent surface. A suitable short period of delay may be necessary to allow efficient binding of the analytes to the sorbent surface.



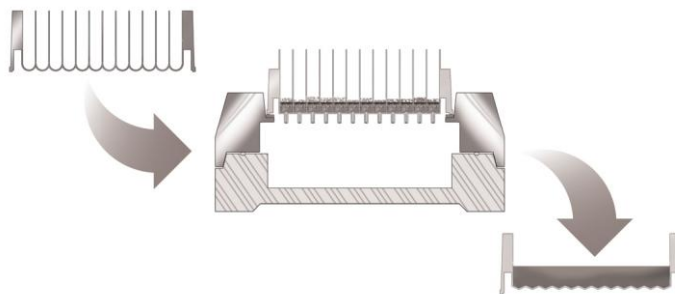
Stage 3

The interfering components can now be removed by washing with a suitable solvent while leaving the analyte retained on the sorbent. The waste solvent and interferences are collected in the reservoir tray.



Stage 4

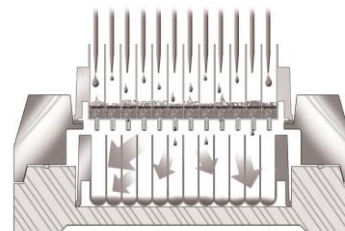
Once the interferences have been removed, the reservoir tray should be removed from the plenum chamber and a collection plate can be inserted. Please ensure that you have the correct combination of collection plate and spacer in the manifold. Two depths of spacer are provided. Using the correct spacer, the MICROLUTE™ drain spouts



should protrude into the tops of the collection plate wells.

Stage 5

The samples (analytes) can now be eluted off the MICROLUTE™ into the collection plate by washing with a specific solvent to disrupt the analyte - sorbent interaction.



Stage 6

Finally the collection plate containing the analyte can be removed from the vacuum manifold.



IMPORTANT Vacuum Information:

The vacuum should only be applied sparingly after each reagent and/or sample has been added to the complete block. At all times, care should be taken not to allow the sorbent/packing to dry out before the next stage. It is recommended that the vacuum is pulsed, used sparingly and in some cases not at all, leaving gravity to take effect, especially when using a MICROLUTE™ device with small packed columns.