User Guide

MultiScreen® HTS Vacuum Manifold

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Contents

Introduction

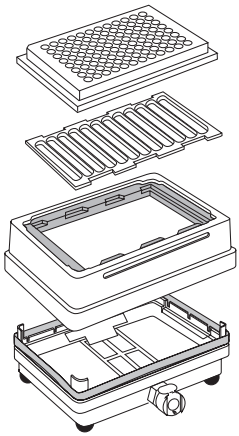
The MultiScreen®$_{HTS}$ Vacuum Manifold is designed for use with 96- and 384-well MultiScreen®$_{HTS}$ filter and collection plates. With alternative collars (cat. nos. MSVMHTS0D or MSVMHTSHV), the manifold can also accommodate 96-well deep well or high volume collection plates. The manifold enables rapid washing and/or collection of samples for a large number of applications, both manual and robotic.

The MultiScreen®$_{HTS}$ Vacuum Manifold's compact size and unique design make it an excellent choice for use with most robotic systems. The dimensions of the manifold base are the same as those for standard microplates so the manifold will fit most deck locations. Manifold collars can be handled by robotic gripper systems, and the collar holder accessory (cat. no. MSVMHTS0H) creates a stable position for placement of the manifold collar during assembly/disassembly routines.

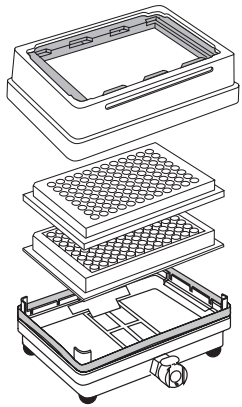
Constructed from solvent resistant components, the MultiScreen®$_{HTS}$ Vacuum Manifold connects to a vacuum pump (preferred vacuum source) or to "house" vacuum. The manifold's external On/Off valve, vacuum control valve, and vacuum pressure gauge allow users to set and reliably measure the vacuum force on the filter plate. The vacuum manifold collar is sealed top and bottom with solvent-resistant silicone gaskets.

For filter-to-waste applications, the filter plate rests on top of the manifold collar. For filtrate collection applications, the MultiScreen®$_{HTS}$ Vacuum Manifold employs DirectStack™ technology, which allows the filter plate to be stacked on top of the collection plate and placed into the base of the vacuum manifold. By eliminating the gap between the flow directors and the collection wells, the potential for cross contamination between the wells is eliminated and the overall reliability of the vacuum system is greatly enhanced.

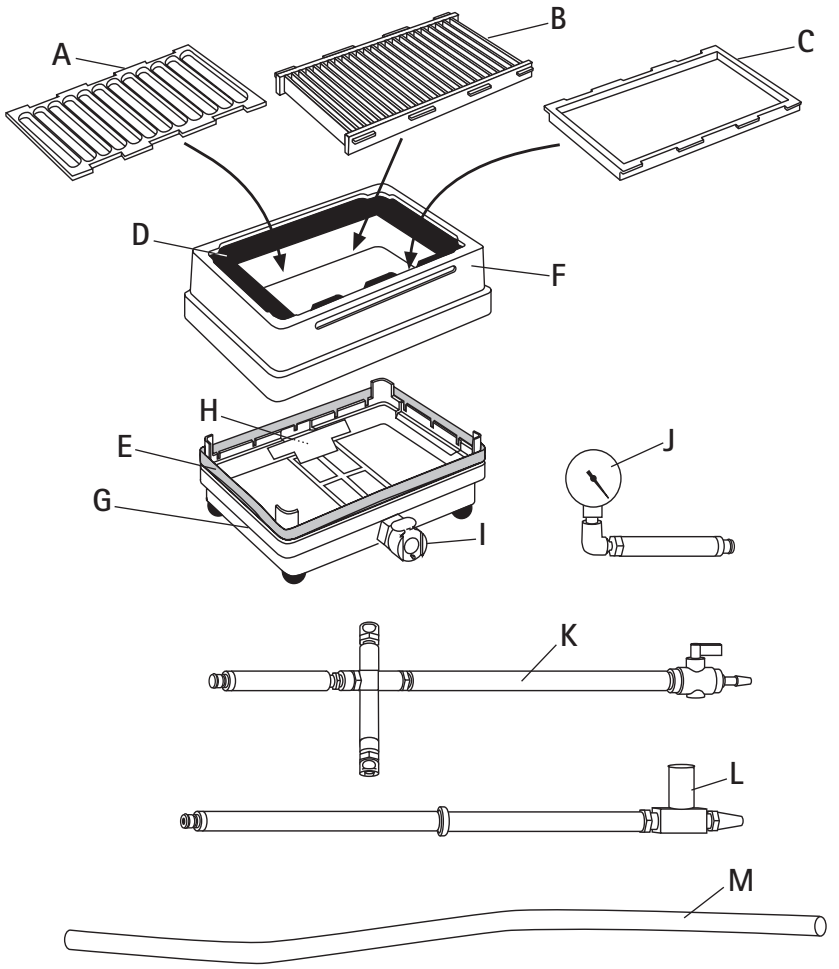
Filter-to-waste mode



DirectStack™ mode



Parts and Functions of the MultiScreen®$_{HTS}$ Vacuum Manifold



Parts and Functions of the MultiScreen®$_{HTS}$ Vacuum Manifold, continued

Letter	Part	Function
Gasket Inserts		
A	Standard support grid (silver)	Supports the plate during filtration; must be used for MultiScreen® 96-well plates with removable underdrains
B	Droplet trap array (gray)	Replaces the standard support grid when membrane bottom plates for genomic sample prep or MultiScreen®$_{HTS}$ 384-well plates are in use; wicks droplets away from the bottom of the plate and directs flow into the manifold base
C	Collar gasket frame (clear)	Replaces the standard support grid for Solvinert™, Ultracel®, or deep well filter plates (filter-to-waste only); supports collar gasket
Gaskets		
D	Collar gasket	Allow plates, collar, and base to seal and maintain vacuum
E	Base gasket	
F	Manifold collar	Supports collar gaskets, enabling vacuum seal Supports plates for filter-to-waste applications
G	Manifold base	Supports collar and positions plates for filter and collection applications; feet are removable for use on robotic decks
H	Bleeder valve (under baffle)	Releases the vacuum after the manifold is turned off
I	Quick-disconnect fitting	Allows four-way connector to be attached to manifold base
J	Vacuum pressure gauge	Allows measurement of vacuum pressure in the manifold
K	Four-way connector with On/Off valve	Connects manifold base to vacuum pressure gauge, vacuum control valve, and vacuum source; On/Off valve controls access to vacuum source
L	Vacuum control valve	Controls the amount of vacuum pressure
M	Tubing, 6.4 mm (1/4 in.) ID × 1.2 m (4 ft)	Connects assemblies to vacuum source

Additional Equipment Required to Use the MultiScreen®$_{HTS}$ Vacuum Manifold

To use filter plates with this vacuum manifold, the following additional equipment is necessary:

- Vacuum pump (cat. no. WP6111560, WP6110060, or WP6122050) or other uniform vacuum source

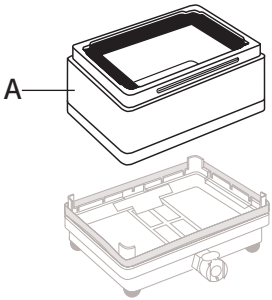
  NOTE: The preferred vacuum source for the MultiScreen®$_{HTS}$ Vacuum Manifold is a vacuum pump. A pump is able to maintain uniform vacuum pressure, yielding consistent and reproducible results. The pump's direct connections allow the use of the On/Off valve to control vacuum. Using another form of vacuum (house vacuum source) may cause problems, since pressure can vary depending on system load.

- Millex®-FA$_{50}$ filter (cat. no. SLFA05010 or equivalent)
- 1 liter vacuum flask

  NOTE: Use a Millex®-FA$_{50}$ filter (or equivalent) and 1 liter vacuum flask to protect the vacuum source from contamination.

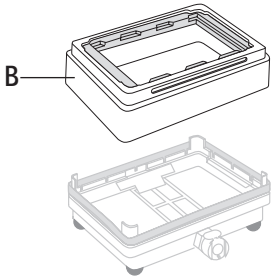
Adapters

With the addition of various adapters, the standard MultiScreen®$_{HTS}$ Vacuum Manifold kit can be modified to accommodate other applications, plate types, and equipment setups. Adapters include the following:



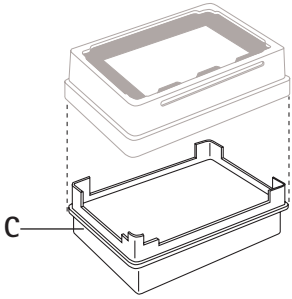
Deep Well Collar (cat. no. MSVMHTS0D)

The deep well collar (A) is designed to accommodate the use of 2 mL deep well collection plates. For collection plates handling other volumes, contact Technical Service.



High Volume Collar (cat. no. MSVMHTSHV)

The high volume collar (B) is designed to accommodate the use of high volume collection plates. For collection plates handling other volumes, contact Technical Service.



Collar Holder (cat. no. MSVMHTS0H)

The collar holder (C) can be used on most robotic systems and creates a stable position for placement of the manifold collar during assembly/disassembly routines.

For the most current information about robotics and robotic adapters, contact Technical Service.

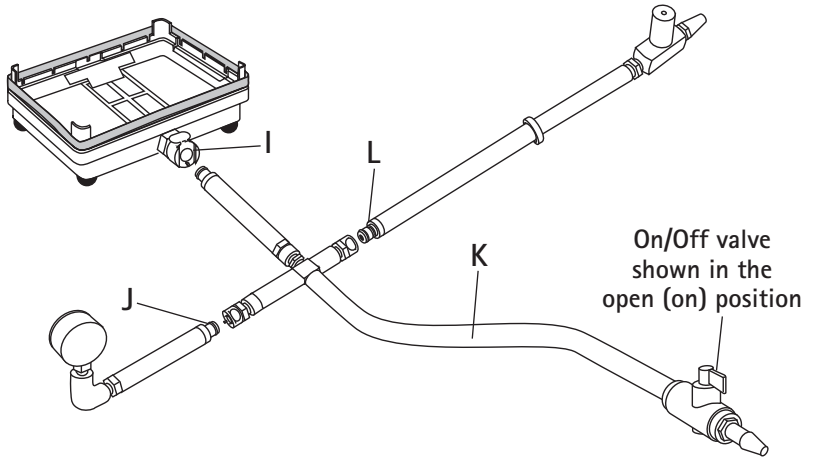
Preparing the MultiScreen®$_{HTS}$ Vacuum Manifold for Manual Use

Before using the MultiScreen®$_{HTS}$ Vacuum Manifold, unpack the components and set them up according to the procedures below.

Assembling the Vacuum Manifold

1. Push the coupling insert on the end of the four-way connector (K) with On/Off valve into quick-disconnect fitting (I) until it clicks.
2. Push the coupling insert on the end of the vacuum control valve tubing (L) into the quick-disconnect fitting on the **shorter** arm of the four-way connector.
3. Push the coupling insert on the end of the vacuum pressure gauge tubing (J) into the quick-disconnect fitting on the **longer** arm of the four-way connector.

   CAUTION: Connecting the assemblies to the wrong arms of the four-way connector can cause liquid to collect in the tubing, which may damage the vacuum pressure gauge.



4. Place the collar assembly on top of the manifold base.

Attaching the Manifold to the Vacuum Source

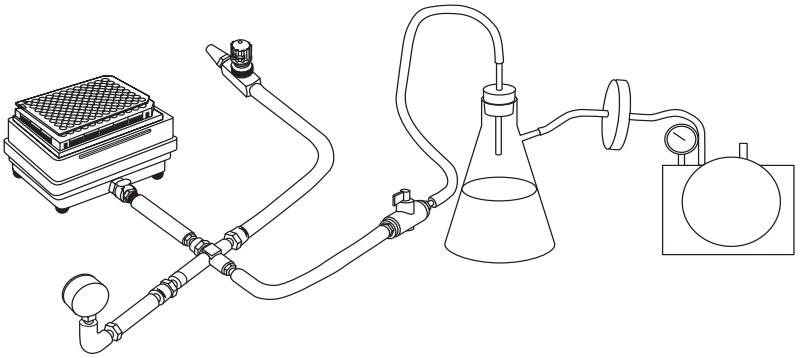
1. Place the vacuum manifold on a lab bench in a stable area unaffected by vibrations from the pump or any type of shaker.

   NOTE: Do not place vacuum pump on the same surface as the manifold.

2. Connect the vacuum source to the vacuum manifold using the tubing provided.

   NOTE: Set up the system so that the tubing does not pinch, as this can reduce vacuum flow.

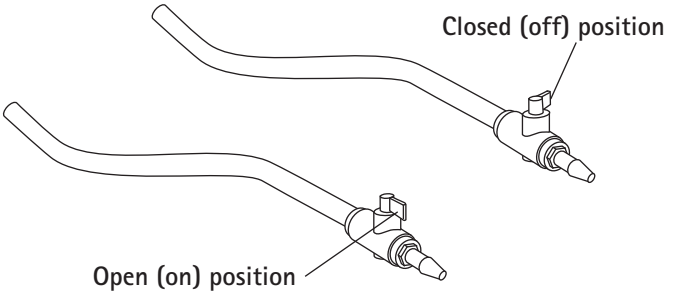
3. Place a Millex®-FA_{50} filter and a 1 liter vacuum flask trap in the vacuum line to protect the vacuum source from contamination. Extra tubing is supplied; cut as needed. The configuration should look like this:



CAUTION: When filtering solvents, it is possible for the Millex®-FA_{50} filter to "wet out", allowing liquid to enter the pump. Use a second vacuum trap to provide additional protection for the pump.

Test for Proper Gasket Seating

Turn the On/Off valve to the closed position (handle turned 90 degrees from valve body). Then turn the vacuum source on to maximum vacuum.



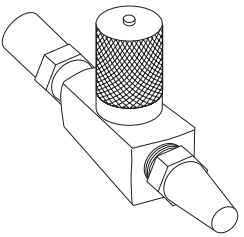
Gasket Seating Test for Filter-to-Waste Applications

1. Place a standard, solid-bottom collection plate on the manifold collar.
2. Turn the On/Off valve to the open position (handle in line with valve body) and apply vacuum for one minute to test the system. The plate should self seal.
3. Turn the On/Off valve to the closed position.

Gasket Seating Test For DirectStack™ (Filtrate Collection) Applications

1. Remove the collar and place two standard, solid-bottom collection plates inside the manifold base.
2. Turn the On/Off valve to the open position and apply vacuum for one minute to align the base gasket. The collar should self seal.
3. Turn the On/Off valve to the closed position.

Controlling Vacuum Pressure

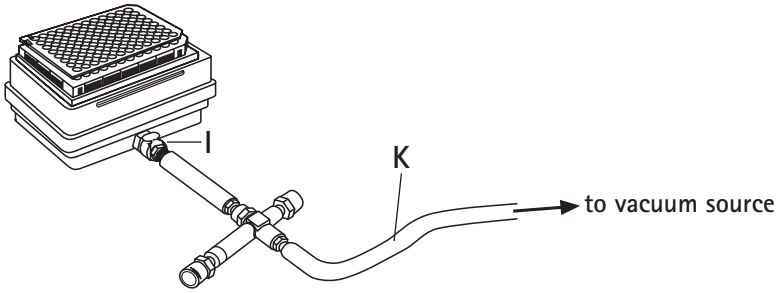


The vacuum control valve uses a system of numbers and colors to allow the user to monitor the vacuum pressure during specific filtration procedures.

NOTE: Turn the knob on top of the vacuum control valve **counterclockwise** to open the valve and lower the vacuum pressure. Turn the knob **clockwise** to close the valve for maximum vacuum pressure.

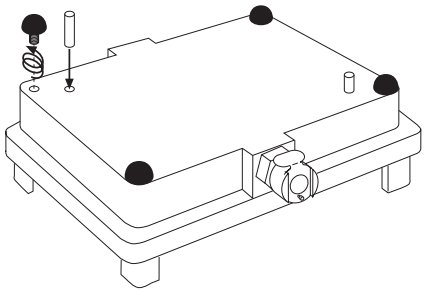
Preparing the MultiScreen®$_{HTS}$ Vacuum Manifold for Robotic Use

Assemble the vacuum manifold as shown below. First, unscrew the rubber feet and remove them from the manifold base. Then, push the coupling insert on the end of the four-way connector with On/Off valve (K) into the quick-disconnect fitting (I) until it clicks. Connect the tubing to a stable vacuum source.



NOTE: The quick-disconnect fittings on the four-way connector allow the manifold to maintain vacuum pressure without the vacuum pressure gauge or the vacuum control valve being connected.

The collar holder accessory (cat. no. MSVMHTS0H) is recommended for use with robotic systems to create a stable position for placement of the manifold collar during assembly/disassembly routines. Detent pins are supplied with the collar holder for use with Beckman® systems. After removing the rubber feet from the manifold base, the pins are placed in holes on the underside of the base to hold it in place on the robotic deck.



Operating the MultiScreen®$_{HTS}$ Vacuum Manifold

The MultiScreen®$_{HTS}$ Vacuum Manifold operates in two modes: DirectStack™ mode for filtrate collection applications, and filter-to-waste mode.

NOTE: For manual use, initiate vacuum using the supplied On/Off valve to optimize the ability of the manifold to self seal.

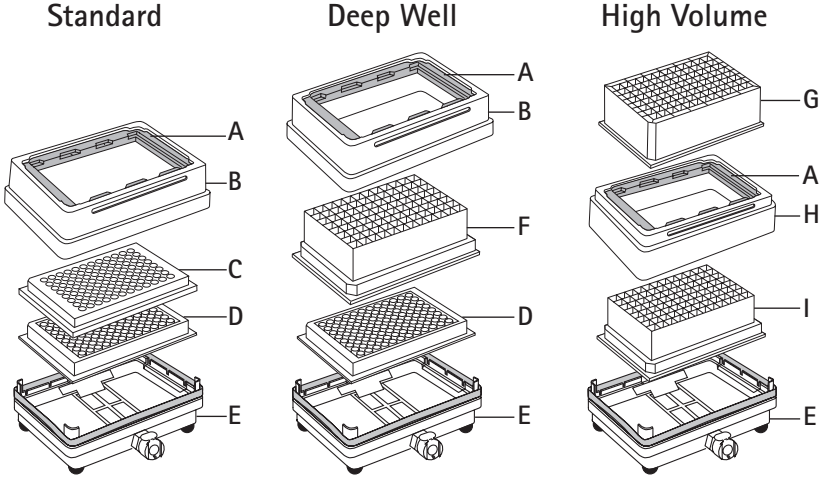
DirectStack™ Mode for Filtrate Collection

To run DirectStack™ mode for filtrate collection applications using a standard collection plate, stack the filter plate on top of the collection plate and place them into the base of the manifold. Firmly place the manifold collar onto the base.

For high volume collection plates, place the collection plate into the base, then place the high volume collar over the collection plate. Place the high volume filter plate on top of the collar.

NOTE: Lower the collar straight down onto the base using two hands to correctly align the collar to the base. Using one hand may cause misalignment.

Once the manifold is configured correctly, follow the protocol for the specific application.



- **A** Collar gasket
- **B** Manifold collar
- **C** MultiScreen®$_{HTS}$ filter plate
- **D** Collection plate
- **E** Manifold base
- **F** MultiScreen®$_{HTS}$ deep well filter plate
- **G** MultiScreen®$_{HTS}$ high volume filter plate
- **H** High volume collar
- **I** High volume collection plate

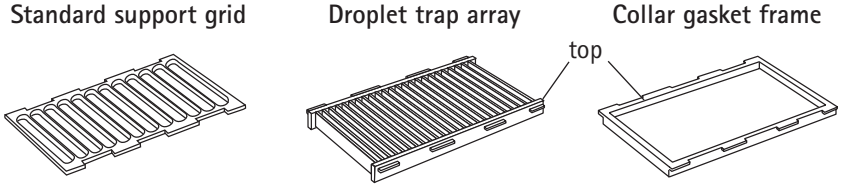
Filter-to-waste Applications

For filter-to-waste applications, place the filter plate on top of the manifold collar. Depending on the type of plate being used, install the standard support grid, the droplet trap array, or the collar gasket frame. The table in the "Gasket Insert Configurations for Filter-to-Waste Mode" section summarizes the options available for each plate type.

WARNING: When using MultiScreen®$_{HTS}$ plates with removable underdrains, do not operate the vacuum manifold unless the standard support grid is properly seated on the gasket. This ensures proper suction and prevents separation of the underdrain from the plate.

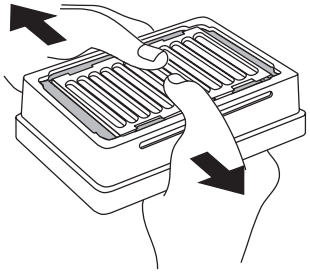
Installing the Gasket Inserts

The standard support grid provides both alignment and support for the filter plate during vacuum filtration procedures. The droplet trap array replaces the standard support grid when membrane bottom plates for genomics applications or 384-well HTS plates are in use, to wick droplets away from the bottom of the plate and direct the flow into the manifold base. The collar gasket frame is used with Solvinert™, Ultracel®, and deep well filter plates to reinforce the collar gasket.



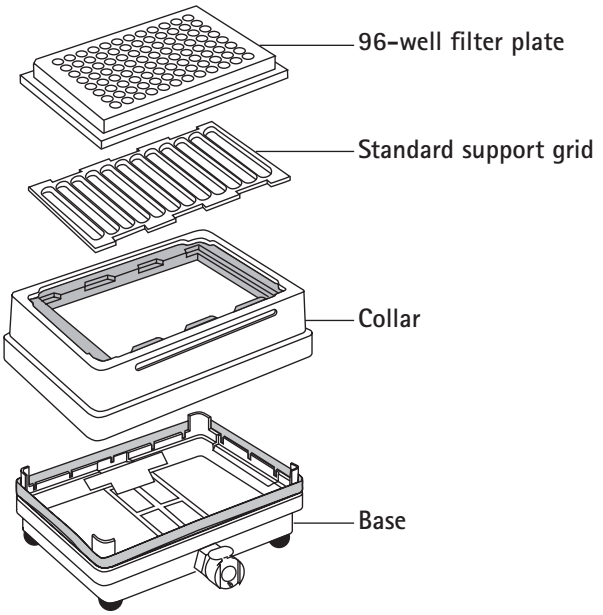
All three gasket inserts have tabs that align to the slots in the collar gasket. The tabs on collar gasket frame and the droplet trap array should be oriented toward the top side of the gasket insert when it is placed into the collar as shown below. The standard support grid has "UP SIDE" stamped on the top side. When correctly oriented, this label should be visible to an operator looking down at the assembled manifold.

To install the gasket insert, pull out on the sides of the collar and gasket while simultaneously pressing down on the insert. When properly installed, the insert and the gasket will mate tightly and remain in place during routine procedures.



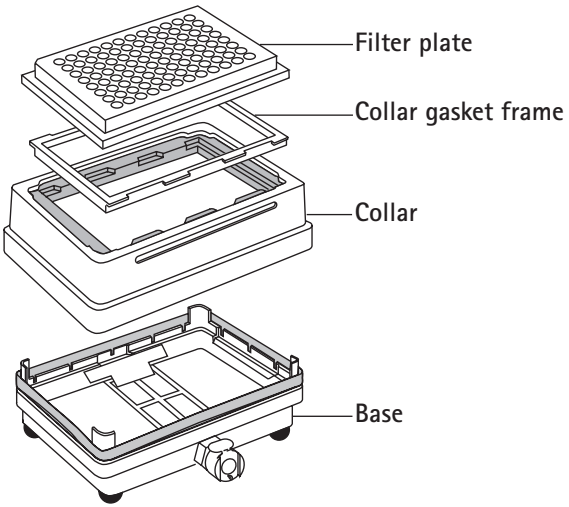
Filter-to-waste Configuration with Standard Support Grid

For filter-to-waste applications using MultiScreen® 96-well plates with removable underdrains (Groups A and G as defined in the "Determining Plate Type" section), install the standard support grid into the collar of the manifold. Place the plate onto the support grid. Once the manifold is configured correctly, follow the protocol for the specific application.



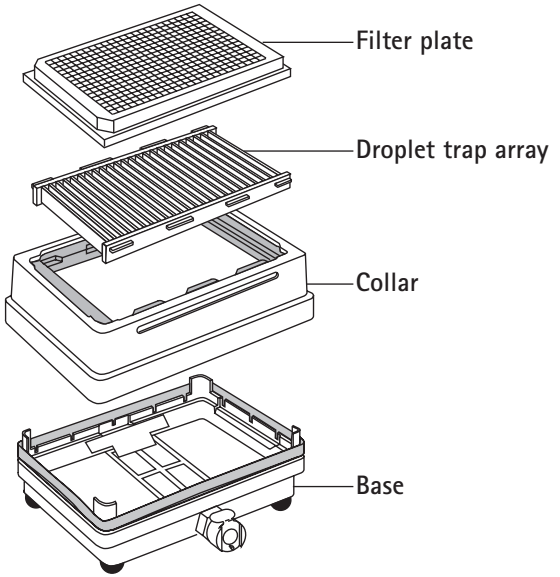
Filter-to-waste Configuration with Collar Gasket Frame

For filter-to-waste applications using Solvinert™, Ultracel®, or deep well filter plates (Groups C and D as defined in the "Determining Plate Type" section), replace the standard support grid with the collar gasket frame. Place the plate onto the collar. Once the manifold is configured correctly, follow the protocol for the specific application.



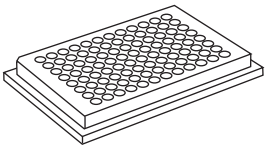
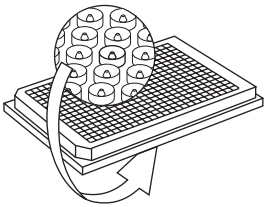
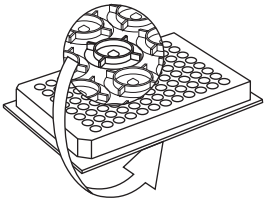
Filter-to-waste Configuration with Droplet Trap Array

For filter-to-waste applications using MultiScreen®$_{HTS}$ 384-well plates or Genomic Sample Prep plates (Groups B and F as defined in the "Determining Plate Type" section), replace the standard support grid with the droplet trap array. Place the plate onto the collar. Once the manifold is configured correctly, follow the protocol for the specific application.

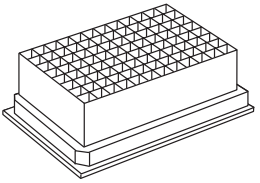
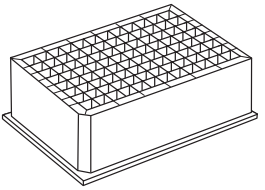
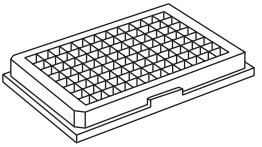
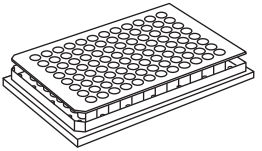


Determining Plate Type

The MultiScreen®$_{HTS}$ Vacuum Manifold works well with MultiScreen® filter plates and a variety of collection plates. This table describes the various plate types and lists examples of MultiScreen® plate catalogue numbers for each. For a complete listing of MultiScreen® plates, go to www.millipore.com/multiscreen.

Plate Group	Description	Example catalogue numbers begin with:
Group A	MultiScreen®$_{HTS}$ 96-well filter plates 	MSBV, MSDE, MSDV, MSFB, MSFC, MSGV, MSHA, MSHV, MSIP, MSPH, MSSL
Group B	MultiScreen®$_{HTS}$ 384-well filter plates 	MZFB, MZFC, MZHV, MZPH
Group C	MultiScreen® Solvinert™ or Ultracel® filter plates 	MSRL, MSRP, MAUF

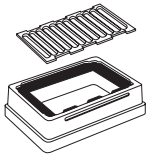
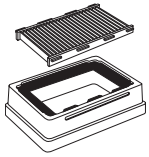
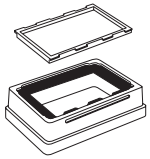
Determining Plate Type, continued

Plate Group	Description	Example catalogue numbers begin with:
Group D*	MultiScreen®$_{HTS}$ 96-well Deep Well filter plates 	MDRL, MDRP
NOTE: The MultiScreen® Deep Well Collar (cat. no. MSVMHTS0D) is required to collect into deep well collection plates. No adapter is necessary to collect into standard collection plates.		
Group E	MultiScreen®$_{HTS}$ High Volume filter plates 	MVHV, MVFC
NOTE: The MultiScreen® High Volume Collar (cat. no. MSVMHTSHV) is required to collect into high volume collection plates. For filter-to-waste applications, the MultiScreen® Standard Collar (cat no. MSVMHTS08) or MultiScreen® Deep Well Collar (MSVMHTS0D) can be used.		
Group F	Genomic Sample Prep filter plates 	LSKMPCR, MSNU, S384PCR, S384SEQ
Group G*	MultiScreen® Classic 96-well filter plates 	MABV, MADV, MAFB, MAFC, MAGV, MAHA, MAHV, MAIP, MAPH

** Recommended for manual use only (not for automation)*

Gasket Insert Configurations for Filter-to-Waste Mode

This table summarizes the gasket insert configuration for each plate type for filter-to-waste mode. See "Determining Plate Type" section for definitions of each plate group. A gasket insert is **not** required for DirectStack™ mode filtrate collection.

Plate Group	Standard Support Grid 	Droplet Tray Array 	Collar Gasket Frame 
Group A MultiScreen®$_{HTS}$ 96-well filter plates	●		
Group B MultiScreen®$_{HTS}$ 384-well filter plates		●	
Group C MultiScreen® Solvinert™ or Ultracel® filter plates			●
Group D MultiScreen®$_{HTS}$ 96-well Deep Well filter plates[1]			●
Group E MultiScreen®$_{HTS}$ High Volume filter plates[2]			**Do not use collar gasket frame**
Group F Genomic Sample Prep filter plates		●	
Group G MultiScreen® Classic 96-well filter plates	●		

[1] To filter into a deep well collection plate, replace the standard collar with the deep well collar (cat. no. MSVMHTS0D).

[2] To filter into a high volume collection plate, replace the standard collar with the high volume collar (cat. no. MSVMHTSHV).

Maintaining the MultiScreen®$_{HTS}$ Vacuum Manifold

To keep the MultiScreen®$_{HTS}$ manifold running properly, it should be cleaned regularly. Frequency of cleaning depends on frequency of use and reagents being used. The manifold should be rinsed with water after exposure to solvents. Liquid should be cleared from the vacuum control valve assembly after each vacuum session. The collar and base gaskets may need to be reseated or replaced occasionally. These procedures are outlined in this section.

Cleaning the Manifold

Use mild soap or standard laboratory detergent, a dilute solution of sodium hypochlorite, or ethyl alcohol to clean all surfaces of the manifold. After cleaning, remove residual cleaning agent by rinsing, or use a soft cloth or paper towel dampened in clean water, then wipe dry.

NOTE: Do not autoclave the MultiScreen®$_{HTS}$ Vacuum Manifold.

Run a wash (buffered saline or pure water) through the system periodically to clean it. Contaminants that dry in-line can change or reduce vacuum flow over time.

WARNING: If the equipment was used for contaminated samples or radioisotopes, follow proper safety regulations when cleaning and disposing of waste.

Clearing Liquid from the Tubing

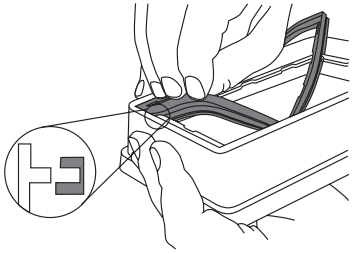
At the end of each vacuum session, clear the liquid from the vacuum control valve assembly by opening the control valve and applying full vacuum.

Liquid trapped in the vacuum pressure gauge assembly can be caused by incorrect assembly (connecting vacuum pressure gauge and vacuum control valve to wrong arms of the four-way connector). To clean the pressure gauge assembly, detach it from the quick-disconnect fitting on the four-way connector. Shake out the liquid and rinse the inside of the tubing using pure water. Detach the vacuum control valve assembly from the four-way connector. Then reconnect the assemblies following the procedure in the "Assembling the Vacuum Manifold" section.

Replacing or Reseating the Gaskets

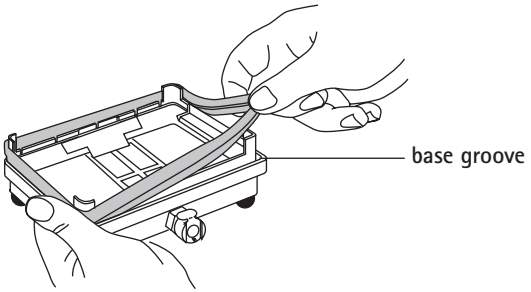
Collar Gasket

1. Remove the collar from the vacuum manifold base.
2. If a gasket insert (support grid, droplet trap array, or collar gasket frame) is installed, push it out with your fingers. To remove the collar gasket, pull an edge of the gasket horizontally towards the center of the opening and then upward.
3. To install a new collar gasket, push the groove in each side of the new gasket onto the inside edge of the collar structure, starting with the four corners and then pressing the sides in. The slots that correspond to the outline of the standard support grid should be facing up.
4. Replace the gasket insert if necessary, by following the procedure in the "Installing the Gasket Inserts" section.

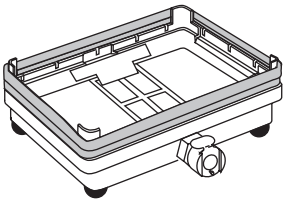


Base Gasket

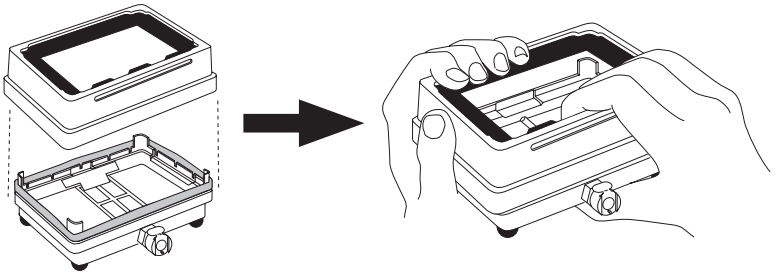
1. To remove the base gasket, gently pull up on the edge of the gasket to loosen it. Then, pull the whole gasket up and off the manifold base. To replace the base gasket, follow the steps below.
2. Lubricate the base groove area with a solution of 1% benzyl alcohol to help install the base gasket. Use a small foam-tipped swab to get solution into base groove all around the base. Follow standard safety precautions for handling solution.



3. Place the base gasket with the thin edge facing upwards onto the base on the outside of the corner posts. Align the base gasket with the base groove.



4. Once the gasket is in place, put the collar onto the base. Firmly and evenly press down on the top of the collar to secure (seat) the gasket completely in the base.



Base Gasket, continued

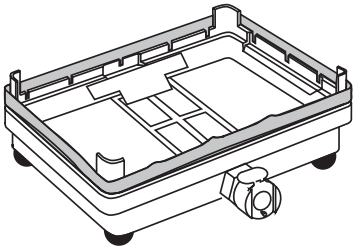
5. Take the collar off and examine the base gasket. Gasket should be free of wrinkles or waves. If the base gasket has not seated correctly, remove it and repeat steps 1-5 before proceeding.
6. Place the collar on the base assembly and follow steps in the "Seating the Gaskets" section.

Seating the Gaskets

1. Place a solid-bottom collection plate onto the collar (filter-to-waste mode) and apply full vacuum for one minute.

   NOTE: Make sure that the gasket does not wrinkle or warp, as this can affect the ability of the manifold to seal and draw a vacuum properly.
2. Stack two solid-bottom collection plates in the manifold base and replace the collar (DirectStack™ mode). Apply full vacuum for one minute.

If the base gasket is wavy or warped, remove and reseat it in order to correct the problem.



Troubleshooting the Vacuum Manifold

This section describes possible problems that may be encountered when using the MultiScreen®$_{HTS}$ Manifold, and solutions to these problems.

NOTE: If problems continue after trying the suggested solutions, contact Technical Service.

Symptom	Possible Cause	Solution
System unable to achieve sufficient vacuum for filtration to proceed	Pump not turned on/pump malfunctioning	Turn on pump/confirm pump is generating vacuum
	Manifold On/Off valve in "off" position	Turn to "on" position
	Vacuum trap filled	Empty trap
	Millex® filter clogged	Replace filter
	Vacuum control valve opened too far	Close valve until desired pressure is achieved (See "Controlling Vacuum Pressure" section)
	Bleeder valve missing (hissing sound will be heard)	Replace bleeder valve under baffle in base
	Gaskets worn or compromised	Replace gaskets (See "Replacing or Reseating the Gaskets")
	Gasket insert installed upside down or incorrectly	Ensure support grid is oriented correctly and seated firmly in gasket (See "Installing the Gasket Inserts")
	Lid on plate	Remove lid
	Some wells not wet or unused wells not covered or sealed	Wet unused wells with Milli-Q® water, or tape the unused rows or columns with sealing tape
	Poor alignment of plate with gasket	Align plate
Self sealing does not occur	Base gasket unseated or not seated correctly	Reseat base gasket (See "Replacing or Reseating the Gaskets")
	Vacuum trap flask is too small	Increase flask size to 1 liter or greater
	Not using supplied On/Off valve for initiation of vacuum in manual use	Use supplied On/Off valve (See "Parts and Functions of the MultiScreen®$_{HTS}$ Vacuum Manifold")
	Manifold not configured correctly	Set up manifold as shown in "Preparing the MultiScreen®$_{HTS}$ Vacuum Manifold for Manual Use"
Vacuum pressure gauge releases slowly	Coupling body on four-way connector too tight	Unscrew coupling body one full turn counterclockwise. The coupling body is the quick-disconnect attached to the four-way connector

Troubleshooting the Vacuum Manifold, continued

Symptom	Possible Cause	Solution
Wells do not empty at the same time/ uneven flow	Lid on plate	Remove lid
	Vacuum line turned off or clogged	Turn vacuum line On/Off valve to "On". Replace Millex® filter.
Unable to lower vacuum	Incoming vacuum pressure too high	Lower pressure at vacuum source Partially close the On/Off valve
Liquid in control valve assembly	Control valve closed while vacuum is on	Open control valve
Liquid in vacuum gauge assembly	Incorrect connection of assemblies to four-way connector	Clear liquid from assembly (See "Clearing Liquid from the Tubing") and confirm that assembly connections are correct

Specifications

This section lists specifications for the MultiScreen®$_{HTS}$ Vacuum Manifold including chemical compatibility, materials of construction, storage conditions, and dimensions.

Chemical Compatibility

The MultiScreen®$_{HTS}$ Vacuum Manifold is compatible with most aqueous solutions. The chemical compatibility presented in the following table is based on information from technical publications, materials suppliers, and laboratory tests. However, because of variability in temperature, concentrations, duration of exposure, and other factors outside of our control that may affect the use of the unit, no warranty is provided or implied with respect to such information. Agents not listed below should be tested with the MultiScreen®$_{HTS}$ Vacuum Manifold prior to use. This data is intended to provide expected results when the vacuum manifold is exposed to chemicals under static conditions for 24 hours at 25 °C (77 °F), unless otherwise noted.

HDPE High density polyethylene

PP Polypropylene

EPDM Ethylene propylene diamine

PTFE Polytetrafluoroethylene

Chemical Compatibility of MultiScreen® HTS Vacuum Manifold Components

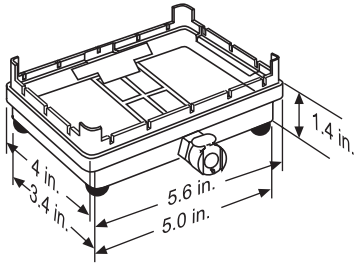
	Manifold Base/ Collar Gasket Frame	Gaskets/ Tubing	Standard Collar	Support Grid	Tubing Fittings	Droplet Trap Array
Materials of Construction	HDPE, PP, Polyolefin	Silicone	Nylon	Stainless Steel	PP with EPDM or fluoroelastomer seals	PTFE-coated aluminum
Acetone	R	G	G	E	G	E
Acetonitrile	E	G	E	E	G	E
Dimethyl formamide (DMF)	E	G	R	E	G	E
Dimethyl sulfoxide (DMSO)	E	G	E	E	G	E
Ethyl acetate	E	G	E	E	G	E
Ethanol	E	G	G	E	E	E
Formic acid	E	G	NR	G	G	R
Hexane	NR	NR	R	E	G	E
Hydrochloric acid (37%)	E	R	NR	R	R	R
Isopropanol	E	E	R	E	E	E
Methanol	E	E	R	E	E	E
Methylene chloride	NR	NR	R	E	R	E
Sodium hypochlorite	E	G	NR	G	G	R
Tetrahydrofuran (THF)	R	NR	E	E	NR	E
Toluene	NR	NR	E	E	R	E
Triclororacetic acid (TCA)	E	NR	G	G	R	R
Trifluoroacetic acid (TFA)	E	NR	R	R	G	R

Key: E= Excellent G = Good R = Rinse after contact NR = Not recommended

Storage Conditions

Store in a clean environment at room temperature.

Dimensions

Standard collar	Length × width	15 cm × 10.9 cm (5.9 in. × 4.3 in.)
	Height	3.8 cm (1.5 in.)
Vacuum manifold base	Outer flange	14.2 cm × 10.2 cm (5.6 in. × 4.0 in.)
	Footprint	12.7 cm × 8.6 cm (5.0 in. × 3.4 in.)
	(meets standard microplate dimensions)	
	Height	3.6 cm (1.4 in.)
		
Assembled manifold height (without plate)	With feet: 6.4 cm (2.5 in.) Without feet: 5.7 cm (2.25 in.)	
Working height for DirectStack™ applications	Stack height of filter plate plus collection plate must be 2.6–2.8 cm (1.02–1.10 in.)	

Product Ordering Information

This section lists the catalogue numbers for the MultiScreen®$_{HTS}$ Vacuum Manifold and accessories. See the Technical Assistance section for contact information. You can purchase these products on-line at www.millipore.com/products.

Description	Cat. No.	Qty/Pk
MultiScreen®$_{HTS}$ Vacuum Manifold Standard Kit (Includes manifold base, standard collar, gaskets, gasket inserts, all tubing, valves, and pressure gauge)	MSVMHTS00	1
Adapters for MultiScreen®$_{HTS}$ Vacuum Manifold (MSVMHTS00)		
Deep Well Collar (includes gasket and collar gasket frame)	MSVMHTS0D	1
High Volume Collar (includes gasket)	MSVMHTSHV	1
Collar Holder, for automation	MSVMHTS0H	1
Spare Parts for MultiScreen®$_{HTS}$ Vacuum Manifold		
Replacement Gasket Set (includes collar gasket and base gasket)	MSVMHTS04	1
Standard Support Grid	MAVMXXA05	1
Droplet Trap Array	MSVMHTS0A	1
Collar Gasket Frame	MSVMHTS0F	1
On/Off Valve Kit (includes valve, tubing, connectors, four-way connector)	MSVMHTS06	1
Control Valve Kit (includes valve, tubing, connectors)	MSVMHTS10	1
Vacuum Gauge Kit (includes gauge, tubing, connectors)	MSVMHTS07	1
Standard Collar (includes gasket)	MSVMHTS08	1
Replacement Tubing, 3 m (10 ft)	MSVMHTS09	1
Accessories		
Chemical Duty Pump, 115 V, 60 Hz	WP6111560	1
Chemical Duty Pump, 100 V, 50/60 Hz	WP6110060	1
Chemical Duty Pump, 220 V, 50 Hz	WP6122050	1
Vacuum Flask, 1 liter	XX1004705	1
Millex®-FA$_{50}$ Filter Unit	SLFA05010	10
Plate Sealing Tape, clear	MATAHCL00	100
Plate Sealing Tape, opaque	MATAH0P00	100
#8 Stoppers	XX2004718	5

Technical Assistance

For more information, contact the office nearest you. In the U.S., call 1-800-221-1975. Outside the U.S., go to our web site at www.millipore.com/offices for up-to-date worldwide contact information. You can also visit the tech service page on our web site at www.millipore.com/techservice.

For help in determining which MultiScreen® plate is best suited for your application, please go to www.millipore.com/multiscreen or contact your local Technical Service office.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at www.millipore.com/terms ("Conditions of Sale").