

User manual

November 27th, 2020

CHROMABOND[®] SPE vacuum manifolds for simultaneous preparation of 12 or 24 samples

CAUTION: Do not operate the manifolds without first reading and fully understanding the user manual. In case of doubt, please contact our technical support.

Glass: Handle with care!

This user manual is valid for the following two products:

REF 730150N

CHROMABOND SPE vacuum manifold for 12 positions, complete consists of:

glass cabinet with lid, lid gasket, exchangeable needles, vacuum gauge, control valve, Luer valves and caps, PP tank and variable rack (6 plates)

REF 730151N

CHROMABOND SPE vacuum manifold for 24 positions, complete consists of:

glass cabinet with lid, lid gasket, exchangeable needles, vacuum gauge, control valve, Luer valves and caps, PP tank and variable rack (4 plates)

1. Introduction

If several samples are to be treated simultaneously, we recommend our vacuum manifolds. MACHEREY-NAGEL supplies such manifolds in two different versions for up to 12 or 24 CHROMABOND[®] columns or CHROMAFIX[®] cartridges, respectively. The manifolds consist of a rectangular glass cabinet with vacuum gauge and a polypropylene lid, which can hold the columns or cartridges. With the control valve the vacuum in the chamber can be adjusted and read from the gauge. The replaceable valves / stopcocks on the lid allow individual vacuum control for each solid phase extraction column, if required.

The cabinet is fitted with a variable rack with exchangeable partitions, which accept a wide variety of vessels like test tubes, measuring flasks, scintillation vials, autosampler vials, plastic vials and many more. There are several possibilities for applying different sample volumes: small samples can be applied directly to the CHROMABOND[®] column. For larger samples you may use the polypropylene sample reservoirs (30 or 70 mL) from our program of SPE accessories, which can be fitted onto the CHROMABOND[®] column with the aid of an adaptor. Sample reservoirs fit directly onto the upper Luer fitting of the CHROMAFIX[®] cartridges. For large sample volumes we recommend our CHROMABOND[®] tubing adaptors, which fit onto the CHROMABOND[®] columns. The other end of the tubing is placed into the sample, which, by applying vacuum, is continuously drawn into the CHROMABOND[®] column.

2. Vacuum manifold assembly

1. Attach the four black legs to the manifold lid (on lower side of lid).
2. Check to ensure that the white plastic lid gasket is properly seated in the lid.
3. Attach the needles to the male Luer connection fittings on the lower side of the manifold lid.
4. Remove the Luer caps and insert the flow control valves (stopcocks) into the female Luer fittings on the lid.
5. Rotate the valves slightly to ensure positive seating.

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Rack and adjustable shelves

The rack and shelf assembly consists of three attachment posts and a support platform.

1. Screw the three posts into the platform.
2. Select and position one or more of the shelves supplied with the unit that best accommodates your collection vessel. The dimple shelves are used when utilizing test tubes as collection vessels.
3. Align the three small holes in the shelf with the three posts attached to the platform. The shelves are then secured on the rack posts by attaching the "C" shaped support clips to the slots in the support posts directly under the shelf that is to be supported. Adjust the height of the shelf so that the delivery needles in the manifold lid will be inside the collection vessels.
4. Place the rack and shelves with appropriate collection vessels into the glass vacuum chamber. Attach the lid, and you are ready to attach your SPE columns in the stopcocks, and proceed with sample preparation.
5. Replace the collection vessel prior to the final elution of your target compound. Replace the lid, being careful to ensure the needles are inside each collection vessel. Proceed with your final elution.

Using the disposable solvent waste tank

For 12 port and 24 port manifolds, there is a disposable solvent waste collection tank (PP tank) supplied with the manifold. There are small handles at each end of the waste tank to facilitate its removal.

1. To collect sample preparation solvents in the tank, place it in the glass vacuum chamber.
2. Attach the lid and you are ready to place your SPE columns in the stopcocks and proceed with your sample preparation.
3. Just before you do your final elution, remove the lid, and take the waste tank containing the waste solvents out of the glass vacuum chamber. Proceed as described in section 4 (Rack and adjustable shelves, page 2).
4. Waste solvents should be properly discarded from the waste tank. The tank can be rinsed and re-used a number of times before discarding. Using the waste tank will save time, and greatly simplify manifold clean-up following a sample run, by eliminating the necessity for cleaning the vacuum chamber between sample runs.

3. Vacuum connection and manifold operation

1. Install a liquid trap between the manifold vacuum chamber and the vacuum source.
2. Use vacuum tubing to connect the vacuum source to the filter or trap, and from the trap or filter to the manifold.
3. Apply vacuum and adjust vacuum at the manifold by using the knurled bleed valve ring adjacent to the vacuum gauge on the manifold. Do not allow the absolute vacuum to go below 20 inches of mercury (68 kPa, 680 mbar, 510 Torr, 0.66 atm, 0.67 bar, 9.8 psi). This means that the pressure difference displayed on the manometer must not exceed the value 10 inches Hg. Exceeding this vacuum will void the manifold warranty. The bleed valve ring also permits vacuum release for the purpose of changing collection vessels.
4. We recommend to use vacuum pumps with a maximum flow rate of at least 25L/min (12-port manifold) and 50L/min (24-port manifold), respectively.
5. Proper operation of the manifold involves regulation of vacuum levels by using the vacuum bleed valve to achieve the desired flow rates. Individual flow control valves (stopcocks) at each port must also be regulated to control the flow through each individual column.
6. The individual stopcocks should be in the closed position prior to removal of SPE columns or cartridges when under vacuum. Failure to completely bleed the vacuum from the chamber prior to venting the manifold may result in splashing or spillage of collected eluates.

4. Storage and clean-up

The glass cabinet of the CHROMABOND® SPE vacuum manifold is made of standard laboratory glass, not from borosilicate glass. Therefore the mechanical and thermal properties cannot be compared to usual laboratory glass products. This glass cabinet must be cleaned by hand; the use of a Laboratory dish washer can cause damage or even destruction. The lid of the CHROMABOND® SPE vacuum manifold has a limited lifetime. For normal use, we can give a one year guarantee. Depending on the solvents used, and contamination by acids or bases, the lifetime may be even shorter. We recommend, not to let the lid get in direct contact to solvents and acids / bases. In order to achieve this, we recommend stainless steel or plastic connectors. They prevent the direct contact of solvents with the lid, or the plastic fittings. An additional advantage is that the lid is not contaminated, and a cleaning of the lid after use is therefore not necessary. If cleaning of the lid with organic solvents is necessary, do not leave it in a solvent bath for more than 10 minutes! The lid may become twisted after this treatment! Do not store or use the CHROMABOND® SPE vacuum manifold in direct sun light (e.g. on a window-sill). Furthermore UV light or temperatures above 40 °C can cause an irreversible twisting of the lid.

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