Millipore®

User Guide

90 mm Glass Vacuum Filter Holders

Glass Filter Holder with Stainless Steel Support and 1 L Funnel

Cat. no. XX1019020

Glass Filter Holder with Fritted Glass Support and 1 L Funnel

Cat. no. XX1019022

Introduction

Clamped 90 millimeter (mm) vacuum filter holders are for use in the vacuum filtration of liquids to produce clarified or particulate-free filtrate, or to analyze particulate or biological contamination retained on the filter surface.

Cat. No.	Typical Applications	Filter Size	Funnel Volume	Filter Support	Flask Attachment
XX1019020	Production of clarified/particulate-free filtrate[1] HPLC solvent preparation[2] Particle contamination analysis of aqueous and organic or corrosive liquids	90 mm	1 L	PTFE-coated stainless steel (0.2–0.3 mm)	Ground glass
XX1019022	Analysis of suspended solids in water (using 90 mm depth filters) Particle contamination analysis of aqueous and organic or corrosive liquids	90 mm	1 L	Coarse-frit glass (40–60 µm)	Ground glass

[1] Do not use XX1019022 to produce particulate-free filtrate because it is more difficult to clean the coarse-frit glass filter support thoroughly and this may introduce contaminants from previous filtrations.

[2] To avoid solvent and buffer cross-contamination, we recommend a dedicated filtration system for each solvent and use of a new filter to process each batch of solvent.

⚠**WARNING:** Do not use glass 90 mm filter holders (XX1019020 or XX1019022) for filtering flammable liquids. Instead, use the Hydrosol™ Stainless Steel Filter Holder (XX2004720), fitted with grounding screw and ground wire set for this application.

For more information on choosing an appropriate filter holder for your application, refer to AD030 Air and Fluid Particle Monitoring Guide at www.sigmaaldrich.com (enter *AD030* in the search box).

Additional Equipment Required

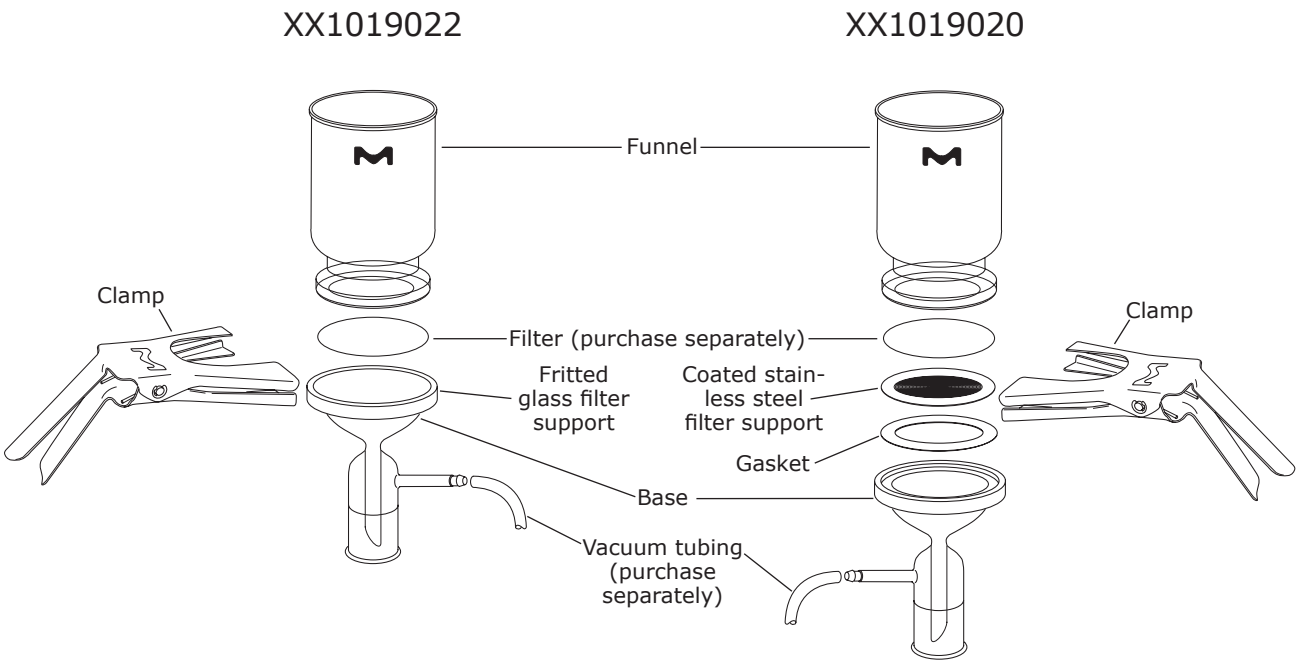
- 90 mm filter appropriate for your application; see the product catalogue for options
- Filter forceps (cat. no. XX6200006P)
- Vacuum filtering flask with ground glass attachment. Refer to **Ordering Information**.
- Vacuum source, either central laboratory vacuum or a portable vacuum pump. See **Ordering Information** for available models.
- Vacuum tubing, 3/16 inch (in.) (4.8 mm) inner diameter (ID) silicone rubber (cat. no. XX7100004)

Precautions

- Use appropriate personal protective equipment when working with vacuum filter holders.
- Follow safe handling guidelines for laboratory glassware when working with the glass vacuum filter holders. Information on safe handling of glassware can be found at www.sigmaaldrich.com/labware/glassware.
- Although these products are rated for 948 mbar (28 in. Hg), it is not necessary to apply maximum vacuum pressure to achieve a reasonable filtration rate. Whenever possible, operate at lower vacuum pressure in order minimize the potential for glassware breakage due to implosion.
- Before use, soak new glassware in 1% hydrochloric or nitric acid for several hours, then wash and rinse thoroughly with laboratory grade water. This neutralizes the slight alkalinity of new glass and ensures that loose particles are removed from the fritted glass filter support. Refer to the **Cleaning** section for further details on cleaning after use.

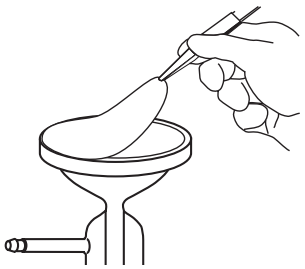
  NOTE: The PTFE-coated stainless steel filter support and gasket supplied with cat. no. XX1019020 do not need to be soaked in acid.

Components of a 90 mm Clamped Vacuum Filter Holders

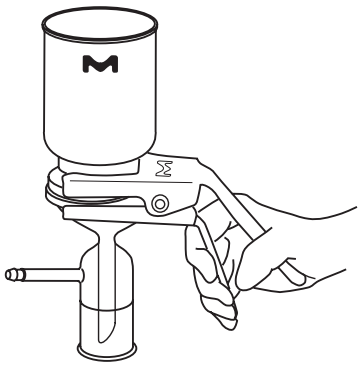


Operation

1. Connect filter holder base to appropriate filtering flask via the ground glass connection.
2. If using the PTFE-coated stainless steel filter support, install it in the base, making sure that the supplied PTFE gasket is installed under the support.
3. With smooth-tip forceps, center a 90 mm filter disc on the support surface (gridded side up if you are using a gridded filter).



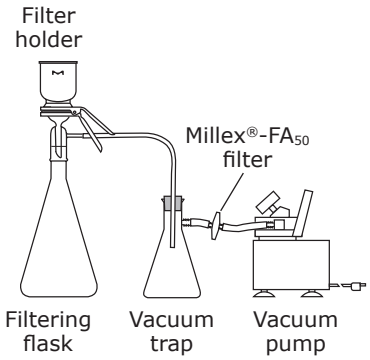
4. Without disturbing the filter, center the flange of the funnel on top of the base and lock the funnel and base together with the spring clamp.



Operation, continued

5. Connect the filtering flask to the vacuum source with silicone tubing.

   CAUTION: To ensure vacuum line protection from liquids, install a second sidearm flask between the filtering flask (or manifold) and the pump and place a Millex®-FA_{50} filter (cat. no. SLFA05010) in the vacuum line.



6. Pour the sample into the funnel and apply vacuum to filter the sample. Do not exceed 948 millibar (mbar) (28 in. mercury [Hg]). Rinse funnel walls, if required, with 50–100 mL of filtered water or appropriate solvent when the sample level reaches the neck of the funnel. Using a Solvent Filtering Dispenser (cat. no. XX6602500), direct the stream along the funnel walls, taking care not to splash the filter surface. This flushes residue from the walls and helps to ensure uniform contaminant distribution on the filter surface.
7. After all of the sample and flushing fluid have passed through the filter, shut off the vacuum. Vent the vacuum by removing the filter holder assembly from the flask.
8. Remove the spring clamp and lift the funnel off the base.
9. With smooth-tip forceps, transfer the filter to a clean petri dish for visual particle counting.

Sterilizing Procedures and Aseptic filtration

The 90 mm filter holders can be used in bacteriological analysis by presterilizing them in an autoclave, then aseptically installing a sterile filter. Assemble and autoclave as follows:

1. Wrap components in autoclave paper or nonwoven HDPE material.
2. Autoclave the wrapped components for 15 minutes at 121 °C, 1 bar (250 °F, 15 psi [pounds per square inch]) with slow exhaust. Glass filter holders can be autoclaved for at least 10 cycles, however, due to variables beyond our control, no warranty is provided or implied for more than 10 cycles.

   CAUTION: To ensure the accuracy of the autoclave cycle, follow the instructions provided with the autoclave.
3. When the components have cooled, unwrap and connect the filter holder base to appropriate filtering flask or manifold via the rubber stopper.
4. Aseptically install a sterile filter.
5. Pour the sample into the funnel and proceed with filtration, according to steps 6–9 in the **Operation** section. Use aseptic technique when rinsing and disassembling filter holder for filter analysis.

Cleaning

1. Immediately after use, disassemble the filter holder and clean the components with a sponge, hot water, and a nonabrasive laboratory detergent. Use a plastic bristle brush to remove residue from recesses and orifices.

   CAUTION: Never use steel wool or abrasive materials on any part of the holder.

   NOTE: When cleaning the filter holder with the PTFE-coated filter support, take particular care not to damage the filter support or PTFE gasket that lies under the filter support. Do not use the bristle brush on these components, as it can scratch the PTFE.
2. For the filter holder with the porous glass frit filter support, clean the filter support by back-flushing with warm tap water. If necessary, soak in an acid cleaning solution such as NOCHROMIX® cleaning reagent (Sigma-Aldrich® cat. no. 328693-10PAK). Follow the soaking with another back-flushing.
3. After cleaning and rinsing thoroughly with tap water, rinse the components with laboratory-grade water.

   NOTE: Final rinse water can leave residues that affect critical tests. Use rinse water suitable for your application.

Cleaning, continued

4. Allow components to air dry while disassembled.

   CAUTION: Do not wipe dry with paper or cloth, as this leaves fibers and lint on the surfaces and also generates electrostatic forces that can attract more dirt. A suitable oven or filtered compressed air can be used to facilitate drying.

Specifications

Materials	
Funnel and base	XX1019020: Borosilicate glass with PTFE-coated stainless steel filter support and PTFE gasket XX1019022: Borosilicate glass with coarse-frit glass filter support
Clamp	Anodized aluminum
Filter diameter	90 mm
Effective filter area	Approximately 45.3 square centimeters (cm^2) (7.0 in^2)
Funnel capacity	1 L
Maximum pressure	Vacuum only: 948 mbar (28 in. Hg)
Connection	Ground glass connection (ȿ 40/35)
Approximate dimensions	Assembled height: 31 cm (12.2 in.) Filter holder diameter (excluding side arm): 11 cm (4.3 in.)

Ordering Information

This section lists catalogue numbers for glass 90 mm filter holders, replacement parts, and accessories. See the **Technical Assistance** section for contact information. You can purchase these products online www.sigmaaldrich.com/products.

Product Description			**Cat. No.**
Glass Filter Holder, 90 mm, with stainless steel filter support, 1 L funnel			XX1019020
Glass Filter Holder, 90 mm, with fritted glass filter support, 1 L funnel			XX1019022
Replacement Parts for Filter Holders Listed Above			
	XX1019020	**XX1019022**	
Base	XX1019004	XX1519002	
Funnel	XX1019000	XX1019000	
Clamp	XX1019003	XX1019003	
Filter support	XX1009002	-	
Filter support gasket	XX1009010	-	
Accessories for 90 mm glass filter holders			
Flasks with ground glass connections			
Vacuum filtering flask, 1 L, flat bottom			XX1514705
Vacuum filtering flask, 2 L, conical bottom			XX1614705
Vacuum filtering flask, 4 L, flat bottom			XX1014745
Vacuum filtering flask, 5 L, conical bottom			XX1614706
Flasks with stopper attachment for use as vacuum trap			
Vacuum filtering flask, 1 L			XX1014705
Vacuum filtering flask, 1 L, threaded side arm			XX1514706
Vacuum filtering flask, 4 L			XX1014744
Pumps			
Chemical Duty Pump, 115 V, 60 Hz			WP6111560
Chemical Duty Pump, 100 V, 50/60 Hz			WP6110060
Chemical Duty Pump, 220 V, 50 Hz			WP6122050

Ordering Information, continued

Product Description	Cat. No.
Miscellaneous	
Millex®-FA$_{50}$ filter, 1.0 µm hydrophobic PTFE, 50 mm, 10/pk	SLFA05010
Tubing, 3/16 in. (4.8 mm) ID x 4.6 ft (140 cm), silicone with Luer adapter	XX7100004
Filter forceps, stainless steel, smooth-tip	XX6200006P
Solvent Filtering Dispenser	XX6602500

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

Contact Information

For the location of the office nearest you, go to www.sigmaaldrich.com/offices.

Technical Assistance

Visit the tech service page on our web site at www.sigmaaldrich.com/techservice.

Standard Warranty

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

20252000, Rev. 08/18