User Guide

47 mm Glass Vacuum Filter Holders

Glass Filter Holder with 300 mL Funnel

Cat. no. XX1014700

Glass Filter Holder with 500 mL Funnel

Cat. no. XX5014700

PTFE-faced Glass Filter Holder with 300 mL Funnel

Cat. no. XX1014720

Stainless Steel Screen Glass Filter Holder with 300 mL Funnel

Cat. no. XX1014730

All Glass Filter Holder with 300 mL Funnel and 1 L Flask

Cat. no. XX1514700

All Glass Filter Holder with 500 mL Funnel and 1 L Flask

Cat. no. XX5514700

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Introduction

Clamped vacuum filter holders are available in a variety of sizes and configurations 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. When using cat. no. XX1014700 or XX5014700 glass filter holders in sterile procedures, you must aseptically install a sterile filter in the separately sterilized filter holder. The polytetrafluoroethylene (PTFE)-faced glass 47 millimeter (mm) filter holder (XX1014720) may be autoclaved with the filter in place.

Typical Applications	Correct Filter Holder to Use	Funnel Volume	Filter Support	Flask Attachment
Bacteriological analysis of water (using 47 mm sterile membrane filters)	XX1014700 *or* XX5014700	300 mL *or* 500 mL	Coarse-frit glass (40–60 micron [µm])	Silicone stopper
Analysis of suspended solids in water (using 47 mm depth filters)				
Bacteriological analysis applications where autoclaving filter holder with membrane in place is required	XX1014720	300 mL	PTFE-faced coarse-frit glass (40–60 µm)	Silicone stopper
Particle contamination analysis of oils and hydraulic fluids by gravimetric or particle counting methods	XX1014730	300 mL	Stainless steel (125 µm mesh)	Silicone stopper
Production of clarified/particulate-free filtrate[1]				
Particle contamination analysis of aqueous and organic or corrosive liquids	XX1514700 *or* XX5514700	300 mL *or* 500 mL	Coarse-frit glass (40–60 µm)	Ground glass
HPLC solvent preparation[2]				

[1] Do not use filter holders with coarse-frit glass filter supports to produce particulate-free filtrate because they are more difficult to clean thoroughly and may introduce contaminants from previous filtrations.

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

⚠ **WARNING:** Do not use glass 47 mm filter holders (XX1014700, XX1014720, XX1014730, XX1514700, XX5014700, and XX5514700) 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.millipore.com (enter *AD030* in the search box).

Additional Equipment Required

- 47 mm filter appropriate for your application; see the product catalogue for options
- Filter forceps (cat. no. XX6200006P)
- For filter holders with a silicone stopper: 1 liter (L) vacuum filtering flask (cat. no. XX1014705 or XX1514706) or a filtering manifold (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)

For sterile applications:

- Funnel cover for 300 milliliter (mL) funnel (cat. no. XX2504754)
- Autoclave pouch/paper or nonwoven high density polyethylene (HDPE) material, autoclave tape

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.

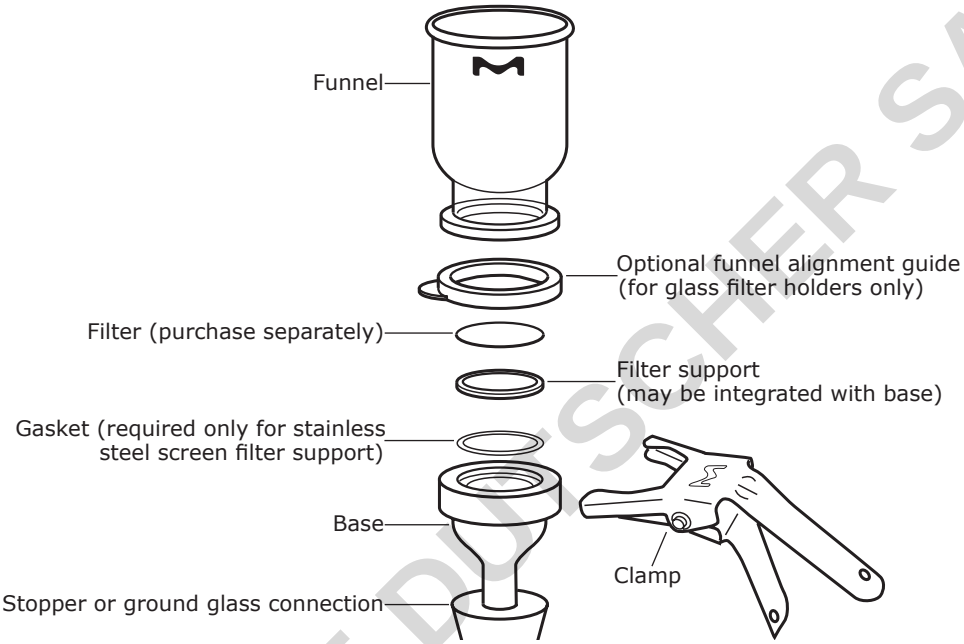
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Precautions, continued

- 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 stainless steel screen filter support and gasket supplied with cat. no. XX1014730 do not need to be soaked in acid.

Components of a Typical Clamped Vacuum Filter Holder

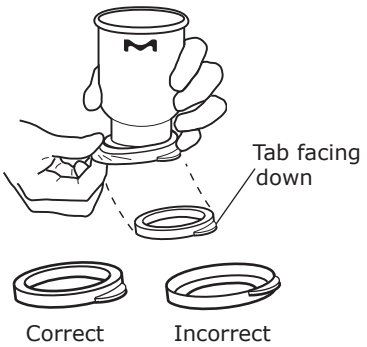


Operation

1. Connect filter holder base to appropriate filtering flask or manifold via the rubber stopper or ground glass connection.
2. If using the stainless steel screen filter support, install it in the base, making sure that the supplied PTFE gasket is installed under the support.
3. **Optional**: Stretch the funnel alignment guide over the bottom of the funnel with the **tab facing down.**

   If the alignment guide covers the sealing surface of the funnel, it is upside down. Remove and change alignment guide orientation so that the sealing surfaces of the funnel and base can be assembled in direct contact with one another.

   NOTE: The alignment guide is helpful in aligning the funnel and base, but it is not required.



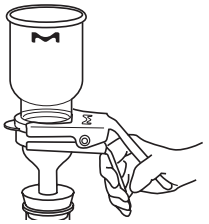
4. With smooth-tip forceps, center a filter disc with appropriate diameter on the support surface (gridded side up if you are using a gridded filter).



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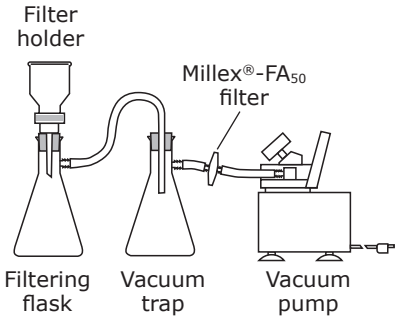
Operation, continued

5. 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.



6. If you are using a filtering manifold, repeat steps 1 through 5 with additional holders for all manifold positions, or seal off unused positions.
7. Connect the filtering flask or manifold 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.



NOTE: For filter holders with stoppers, orient the longer side of the outlet spout towards the filtering flask sidearm, as shown.

8. 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 about 30 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.
9. After all of the sample and flushing fluid have passed through the filter, shut off the vacuum. Vent the vacuum pressure by loosening the seal between the filter holder assembly and the flask or manifold.
10. Remove the spring clamp, and lift the funnel off the base.
11. With smooth-tip forceps, transfer the filter to a clean petri dish for visual particle counting, or to a prepared media pad or agar plate in a sterile petri dish for microbial contaminant culturing.

Sterilizing Procedures and Aseptic filtration

All of the filter holders can be used in bacteriological analysis by presterilizing the holder in an autoclave, then aseptically installing a sterile filter. Only the PTFE-faced glass 47 mm filter holder can be autoclaved with the filter in place. Assemble and autoclave as follows:

1. Temporarily mount the holder base in the filtering flask or manifold, and assemble as described in steps 1–5 in the **Operation** section.
2. Place a rubber funnel cover (cat. no. XX2504754) on the top of the funnel and cover the vent hole with place a piece of autoclave tape. Remove the assembly from the flask and wrap the outlet of the base with autoclave paper or nonwoven HDPE material to close the funnel opening. This step is essential to proper sterility testing, where the entire test filter is inoculated with culture media. Components can also be wrapped separately and assembled aseptically prior to filtration.
3. Autoclave the wrapped assembly 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.

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Sterilizing Procedures and Aseptic filtration, continued

4. When the assembly has cooled, unwrap the outlet tube of the holder assembly (if wrapped), taking care not to touch the outlet opening. Connect the filter holder base to appropriate filtering flask or manifold via the rubber stopper or ground glass connection.
5. If a filter was not installed prior to autoclaving, aseptically install a sterile filter.
6. Lift the funnel cover aseptically and pour the sample into the funnel. Cover the funnel immediately. Remove tape from vent hole and proceed with filtration, according to steps 7–11 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 stainless steel screen filter support, the filter support drops out easily when the base is inverted. Take care not to mislay or damage the PTFE gasket that lies under the filter support. Do not use the bristle brush on the support screen, as it can damage the screen mesh and cause a ruptured filter.
2. Clean the porous glass frit of 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.
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	XX1014700 and XX5014700: Borosilicate glass with coarse-frit glass filter support XX1014720: Borosilicate glass with coarse-frit glass filter support, PTFE-faced XX1014730: Borosilicate glass with stainless steel screen filter support and PTFE gasket XX1514700 and XX5514700: Borosilicate glass with coarse-frit glass filter support			
Clamp	Anodized aluminum			
Stopper	Parylene-coated silicone rubber			
Funnel alignment guide	Silicone			
Filter diameter	47 mm			
Effective filter area	Approximately 9.6 square centimeters (cm²) (1.5 in²)			
Funnel capacity	XX1014700, XX1014720, XX1014730, XX1514700: 300 mL XX5014700, XX5514700: 500 mL			
Maximum pressure	Vacuum only: 948 mbar (711 mm Hg)			
Connection	XX1014700, XX1014720, XX1014730, XX5014700: Size 8 stopper on filter holder base mounts in standard 1 L filtering flask or filtering manifolds. Refer to accessories in **Ordering Information** for available flasks and filtering manifolds. Stopper has a 15 mm (0.6 in.) hole. XX1514700 and XX5514700: Ground glass connection (ȿ 40/35)			
Approximate dimensions	**Cat. No.**	**Assembled Height**	**Filter Holder diameter**	**Flask diameter (max)**
	XX1014700	23.5 cm (9.25 in.)	7.6 cm (3.0 in.)	-
	XX1014720	23.5 cm (9.25 in.)	7.6 cm (3.0 in.)	-
	XX1014730	23.5 cm (9.25 in.)	7.6 cm (3.0 in.)	-
	XX5014700	30.5 cm (12 in.)	8.0 cm (3.1 in.)	-
	XX1514700	43.2 cm (17 in.)	7.6 cm (3.0 in.)	13.7 cm (5.4 in.)
	XX5514700	50.8 cm (20 in.)	8.0 cm (3.1 in.)	13.7 cm (5.4 in.)

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Ordering Information

This section lists catalogue numbers for glass 47 mm filter holders, replacement parts, and accessories. See the **Technical Assistance** section for contact information. You can purchase these products online www.millipore.com/products.

Product Description					**Cat. No.**	
Glass Filter Holder, 47 mm, with 300 mL funnel					XX1014700	
Glass Filter Holder, 47 mm, with 500 mL funnel					XX5014700	
PTFE-faced Glass Filter Holder, 47 mm, with 300 mL funnel					XX1014720	
Stainless Steel Screen Glass Filter Holder, 47 mm, with 300 mL funnel					XX1014730	
All Glass Filter Holder, 47 mm, with 300 mL funnel and 1 L flask					XX1514700	
All Glass Filter Holder, 47 mm, with 500 mL funnel and 1 L flask					XX5514700	
Replacement Parts for Filter Holders Listed Above						
	XX1014700	**XX5014700**	**XX1014720**	**XX1014730**	**XX1514700**	**XX5514700**
Base	-	-	-	-	XX1514702	XX1514702
Base + stopper	XX1014702	XX1014702	XX1014722	XX1014733	-	-
Base + stopper + filter support + gasket	-	-	-	XX1014732	-	-
Funnel	XX1014704	XX5014704	XX1014724	XX1014704	XX1014704	XX5014704
Clamp	XX1014703	XX1014703	XX1014703	XX1014703	XX1014703	XX1014703
Rubber stopper	XX1014708	XX1014708	XX1014708	XX1014708	-	-
Funnel alignment guide	ALIGNED05	ALIGNED05	ALIGNED05	ALIGNED05	ALIGNED05	ALIGNED05
Filter support	-	-	-	XX2004708	-	-
Filter support gasket	-	-	-	XX2004703	-	-
Flask	-	-	-	-	XX1514705	XX1514705
Accessories for 47 mm glass filter holders						
Bases						
Base for use with XX1514700 and XX5514700, includes stainless steel screen filter support and PTFE gasket, ground glass attachment					XX1514732	
Funnels						
Filter holder funnel (1 L), for use with XX1014700 and XX1014730					XX1014707	
Filter holder funnel (500 mL), for use with XX1014700 and XX1014730					XX5014704	
Flasks						
Vacuum filtering flask, 1 L					XX1014705	
Vacuum filtering flask, 4 L					XX1014744	
Vacuum filtering flask, 1 L, threaded sidearm					XX1514706	
Vacuum filtering flask, 4 L, ground glass attachment					XX1014745	
Filter Holder Manifolds						
EZ-Fit® Manifold, 3-place, stainless steel					EZFITH0LD3	
EZ-Fit® Manifold, 6-place, stainless steel					EZFITH0LD6	
Filter holder stainless steel manifold, 6-place					XX2504700	
Filter holder stainless steel manifold, 3-place					XX2504735	
Filter holder PVC manifold, 3-place					XX2604735	
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	
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	
Funnel cover, rubber (for 300 mL funnel)					XX2504754	

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Standard Warranty

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

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