

Polycap TF

Whatman™ disposable filter

Instructions for Use

Introduction

Important

Read these instructions carefully before using the products.

Intended use

The products are intended for research use only, and shall not be used in any clinical or *in vitro* procedures for diagnostic purposes.

Background

Description

Polycap TF is a disposable filter intended for filtration of solvents, in-line filtration of air or gas, protection of equipment from particulate and aerosol intrusion, and general venting applications. This product contains a chemically resistant hydrophobic polytetrafluoroethylene (PTFE) membrane in a range of pore sizes to provide selection for the correct flow rate and particle retention needed in various applications.

Polycap TF is intended for single use. Reuse is not recommended and can lead to cross contamination of solutions filtered.

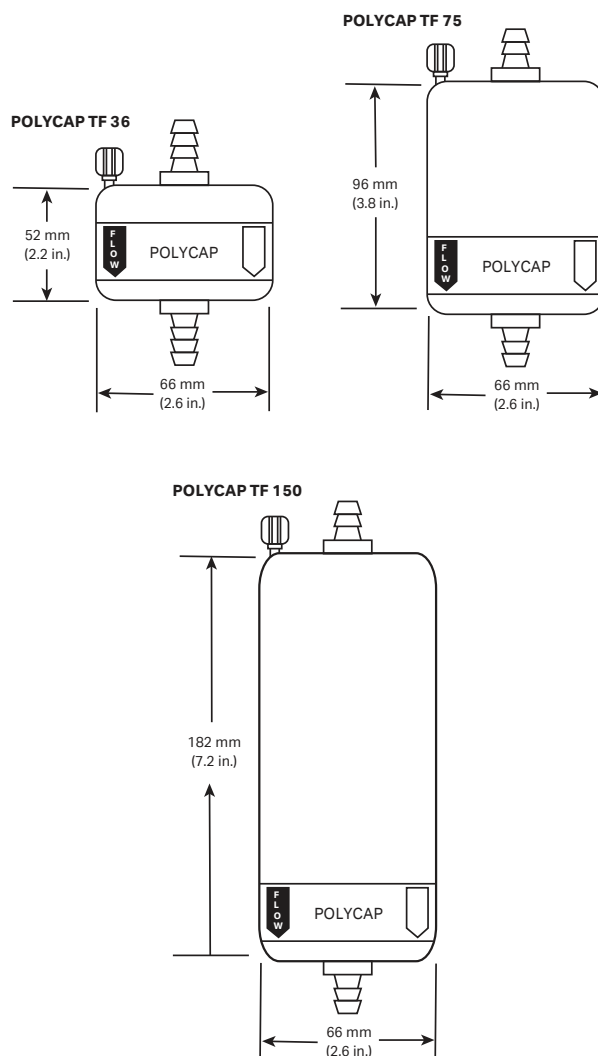
Typical applications

Polycap TF is widely used in scientific research and industrial environments within food and beverage, and electronic industries. This product is suitable for the following applications:

- Non-critical venting vessels used for filling, mixing, and holding
- In-line filtration of a gas/air/liquid stream such as found on instruments, incubators, and culture vessels
- Water barrier to protect instruments from intrusion and damage
- Filtration of solvents for particulate removal and reuse
- Filtration of solvents for fine particulate that could damage instrumentation and block small-bore tubing

Technical information

Illustration of Polycap TF

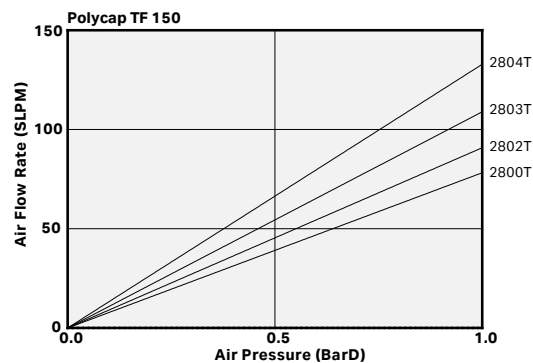
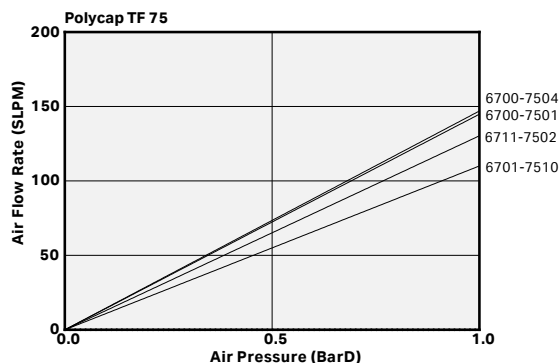
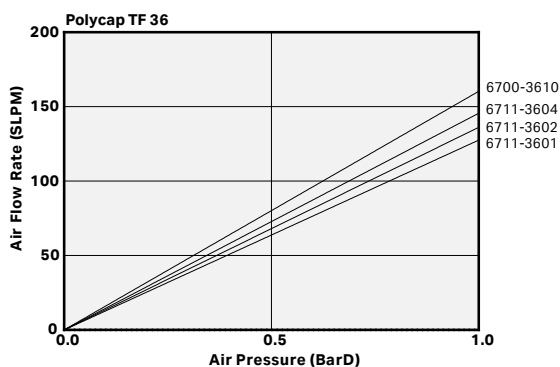


Technical data

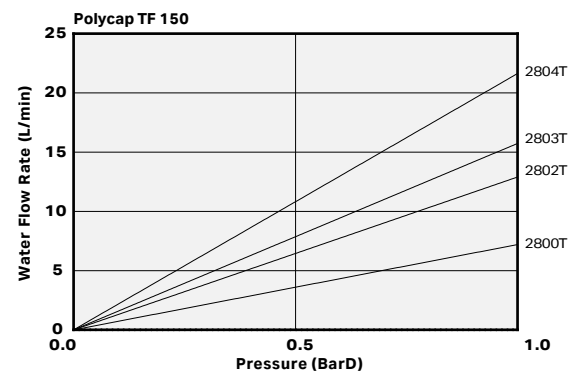
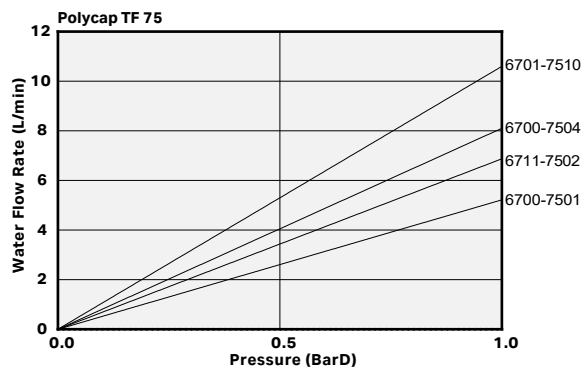
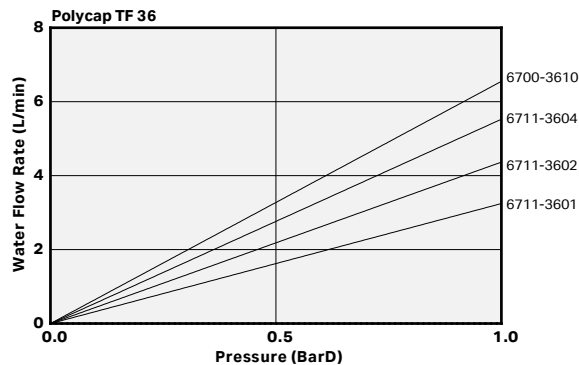
Housing and support:	Polypropylene
Filter media:	PTFE
Pore size:	See <i>Ordering information</i> for details

Hold-up volume:	Polycap TF 36 - 10 mL with air purge
	Polycap TF 75 - 22 mL with air purge
	Polycap TF 150 - 43 mL with air purge
Effective filtration area:	Polycap TF 36 - 430 cm ²
	Polycap TF 75 - 890 cm ²
	Polycap TF 150 - 1830 cm ²
Inlet/outlet connections:	See <i>Ordering information</i> for details
Total length with connections:	See <i>Ordering information</i> for details
Sealing method:	Heat-fused
Autoclavable:	Autoclavable at 121°C (250°F) for 20 minutes at 0.1 MPa (1.0 bar, 15 psi) Note: <i>Autoclaving not recommended for 0.1 µm PTFE</i>
Maximum operating pressure:	0.41 MPa (4.1 bar, 60 psi)
Minimum bubble point (isopropyl alcohol)	0.1 µm - 0.16 MPa (1.60 bar, 23 psi)
	0.2 µm - 0.09 MPa (0.90 bar, 13 psi)
	0.45 µm - 0.05 MPa (0.50 bar, 7 psi)
	1.0 µm - 0.02 MPa (0.20 bar, 3 psi)
Operating temperature:	Ambient
Flow direction:	Inlet to outlet for liquid applications.
	Bidirectional for venting applications with limited pressure in the reverse direction.
Biosafety:	Materials pass USP Class VI

Typical air flow rate



Typical water flow rate



Operating Instructions

Safety

When considering the specific factors of your application, see *Technical data* for correct use. Make sure not to exceed the Maximum operating pressure and follow temperature or chemical compatibility recommendations.

**CAUTION**

If the Maximum operating pressure is exceeded, bursting of the device can occur resulting in loss of sample or personal injury.

Venting**Step Action**

- 1 Securely connect the inlet port to the vessel, leaving the outlet open to the atmosphere.
 - a. For filters with stepped barb connections, secure connections using band clamps.
 - b. For filters with threaded connections, hand-tighten the connection to the vessel.
- 2 Change filter if there is condensation or contact with fluid preventing sufficient air flow.

In-line use**Step Action**

- 1 Securely connect both ports of the filter into the flow stream using flow arrows to guide orientation of the filter system.
 - a. For filters with stepped barb connections, secure connections using band clamps.
 - b. For filters with threaded connections, hand-tighten the connections of both ports.
- 2 Change filter if there is condensation or contact with fluid preventing sufficient air flow.

Preparing integrity test (bubble point test)**Step Action**

- 1 Securely connect the filter to the test stand.
 - a. For filters with stepped barb connections, secure connections using band clamps.
 - b. For filters with threaded connections, hand-tighten the connections.
- 2 Fill and flush the filter with the test fluid.
 - a. Open the flush valve and initiate flow into the filter at low pressure, ≤ 0.03 MPa (0.3 bar, 5 psi).
 - b. Remove vent trapped upstream air through the loosened cap.
 - c. Tighten the cap when trapped air has been completely expelled from the system.
 - d. Gently ramp up the pressure and allow the filter to flush for 2-3 minutes at approximately 0.03 MPa (0.3 bar, 5 psi), or flush minimum 2 L.
 - e. Close the flush valve.
- 3 Start the bubble point test.

Performing bubble point test**Step Action**

- 1 Immerse the outlet or tubing connected to the outlet below the test fluid surface in a suitable container for viewing a stream of bubbles.
- 2 Open the gas valve and slowly ramp the pressure to 0.03 MPa (0.3 bar, 5 psi) and hold for 30 seconds.
- 3 Slowly increase the pressure at a rate of 0.14 MPa (1.4 bar, 20 psi) per minute until you reach the minimum bubble point and hold for another 30 seconds. A steady stream of bubbles at or during the 30 second hold indicates an integral product.

Note:

The bubble point is the pressure at which you observe a steady stream of bubbles forming out of the end of the outlet. If you observe a rush of tiny bubbles that cease during the pressure hold or during the pressure ramp up, that may not be the bubble point but some residual trapped air downstream of the wetted membrane. Continue the procedure, observing for a steady stream of bubbles.

Note:

If you observe a steady stream of bubbles below the anticipated bubble point, the filter may not have wet properly. Return to step 2 in Preparing integrity test to flush the filter. If using water, it may aid wetting to warm the water to 79°C (175°F).

Note:

If a steady stream of bubbles is not observed and it is desired to take the filter to the bubble point, resume increasing the pressure at a rate of 0.14 MPa (1.4 bar, 20 psi) per minute until a steady stream of bubbles is observed and record that pressure.

Filtering solution**Step Action**

- 1 Securely connect both ports of the filter into the flow stream using flow arrows to guide the orientation of the filter system.
 - a. For filters with stepped barb connections, secure connections using band clamps.
 - b. For filters with threaded connections, hand-tighten the connections of both ports.
- 2 Fill the filter slowly and at a low pressure, allowing air to escape through the loosened vent valve until the filter is filled with fluid.
- 3 Tighten the vent valve.
- 4 Ramp the pressure slowly until the desired flow rate is achieved, taking care not to exceed the Maximum operating pressure of the filter.
- 5 When filtration is complete, make sure to release all pressure from the test stand before loosening band clamps or fittings, and removing tubing from the filter.

Ordering information

Product Code	Product Name	Pore Size (µm)	Inlet/Outlet Connections		Total length with connections	Qty./Pk.
			Inlet	Outlet		
6711-3601	Polycap TF 36	0.1	MNPT ¹	SB ²	96 mm (3.8 in.)	1
6700-3602	Polycap TF 36	0.2	SB	SB	92 mm (3.6 in.)	1
6710-3602	Polycap TF 36	0.2	½ SB ³	½ SB	99 mm (3.8 in.)	1
6711-3602	Polycap TF 36	0.2	MNPT	SB	96 mm (3.8 in.)	1
2601	Polycap TF 36	0.2	SB	SB	92 mm (3.6 in.)	5
2601T	Polycap TF 36	0.2	FNPT ⁴	FNPT	56 mm (2.2 in.)	5
6711-3604	Polycap TF 36	0.45	MNPT	SB	96 mm (3.8 in.)	1
2606S	Polycap TF 36	0.45	Sanitary ⁵	Sanitary	104 mm (4.2 in.)	5
6700-3610	Polycap TF 36	1	SB	SB	92 mm (3.6 in.)	1
2603	Polycap TF 36	1	SB	SB	92 mm (3.6 in.)	5
2603T	Polycap TF 36	1	FNPT	FNPT	56 mm (2.2 in.)	5
6700-7501	Polycap TF 75	0.1	SB	SB	138 mm (5.4 in.)	1
2700T	Polycap TF 75	0.1	FNPT	FNPT	101 mm (4.0 in.)	1
6700-7502	Polycap TF 75	0.2	SB	SB	138 mm (5.4 in.)	1
6710-7502	Polycap TF 75	0.2	½ SB	½ SB	101 mm (4.0 in.)	1
6711-7502	Polycap TF 75	0.2	MNPT	SB	140 mm (5.5 in.)	1
2702M	Polycap TF 75	0.2	FNPT	FNPT	141 mm (5.5 in.)	5
2702T	Polycap TF 75	0.2	MNPT	MNPT	101 mm (4.0 in.)	5
6700-7504	Polycap TF 75	0.45	SB	SB	138 mm (5.4 in.)	1
2703T	Polycap TF 75	1	FNPT	FNPT	101 mm (4.0 in.)	5
6701-7510	Polycap TF 75	1	SB	SB	138 mm (5.4 in.)	1
2800T	Polycap TF 150	0.1	FNPT	FNPT	180 mm (7.1 in.)	5
2801	Polycap TF 150	0.2	Sanitary	Sanitary	234 mm (9.2 in.)	5
2802T	Polycap TF 150	0.2	FNPT	FNPT	180 mm (7.1 in.)	5
2803T	Polycap TF 150	0.45	FNPT	FNPT	180 mm (7.1 in.)	5
2804T	Polycap TF 150	1	FNPT	FNPT	180 mm (7.1 in.)	5

¹ MNPT: ¼ in. male NPT threaded connection

² SB: 6 to 10 mm (¼ to ¾ in.) stepped barb

³ ½ SB: 10 to 12 mm (¾ to ½ in.) stepped barb

⁴ FNPT: ⅜ in. female NPT threaded connection

⁵ Sanitary: 1 ½ in. sanitary flange



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