cytiva

Laboratory manifold

Instructions for Use

1 Introduction

Intended use

Cytiva Lab Filtration products are designed for professional laboratory applications only. These products are not approved for use in medical, clinical, surgical or other patient protection applications. They are also not suitable for use in Biopharmaceutical manufacturing or production.

Application

The membrane filtration (MF) technique is a method of analyzing samples for microbial contamination. An aqueous solution is pulled through a membrane filter, the filter is placed on microbiology growth media and then incubated. After a prescribed incubation period, colonies are counted and reviewed for appropriate morphology. Results are reported in colony forming units (CFUs).

Bioburden testing of filterable products is performed to determine the number of viable microorganisms. By recovering the microorganisms on and in a membrane filter, raw materials are qualified, the effectiveness of the manufacturing process is monitored, and final product is released to assure that the product is not harmful to the intended recipient.

Detecting spoilage microorganisms is critical for food and beverages as they are responsible for the deterioration of the sensory quality, shorten shelf life, and cause spoilage that can potentially render the product harmful to the intended recipient. By using membrane filtration, the recovery and detection of the spoilage microorganisms keeps the contaminated items from reaching the market.

Monitoring for compliance to regulated water standards through detection of indicator and pathogenic microorganisms ensures the water is safe for drinking, recreation, or wastewater discharge. A variety of microorganisms can be detected using MF technique including total coliforms, fecal coliforms such as *Escherichia coli* (*E. coli*), *Pseudomonas aeruginosa*, and *Legionella*.

The Laboratory manifold is uniquely designed for easy adaptability to your microbiological method for the filtration of aqueous solutions by MF technique. The manifold features convenient interchangeable parts, a coupling device for modular connection as well as an attachment to any standard laboratory vacuum system. This provides maximum versatility to adapt to different testing needs and filter funnel platforms in busy microbiology labs.

Definitions

This user documentation contains safety notices (WARNING, CAUTION, and NOTICE) concerning the safe use of the product. See definitions below.

WARNING

WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury. It is important not to proceed until all stated conditions are met and clearly understood.

CAUTION

CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury. It is important not to proceed until all stated conditions are met and clearly understood.

NOTICE

NOTICE indicates instructions that must be followed to avoid damage to the product or other equipment.

2 Safety precautions

WARNING
To protect personal safety and to make sure of correct use of this equipment, make sure to read and understand this guide before use. Failure to follow the instructions can result in personal injury and damage to the manifold.

WARNING
Any use of Laboratory manifold which is not specified in this user guide can cause personal injury and can result in damage to the manifold.

CAUTION
Use personal protective equipment (PPE) when preparing, operating and maintaining the Laboratory manifold. PPE includes items such as eye protection, hearing protection, sterile gloves, heat tolerant gloves, or chemically resistant gloves.

3 Preparing system for use

The Laboratory manifold is constructed from 316L stainless steel for all components in the fluid path accompanied by anodized aluminum accents to minimize the overall weight. The manifold is provided non-sterile. It is recommended to follow the steps below to aseptically prepare the manifold for testing of microbiological samples:

Step	Action
1	Rinse the manifold and all the components of the manifold with deionized (DI) or purified water to remove any large debris on the exterior and interior.
2	Use autoclave paper or autoclave bags to thoroughly cover the manifold and all parts you intend to autoclave.
3	Place inside of an autoclave in a validated load pattern to maximize the sterilization of the manifold and components.
4	Autoclave the manifold and components at a temperature between 121°C to 123°C (250 to 253 °F) at 1.0 bar (100 kPa, 15 psi) for 15 to 20 minutes.

Step	Action
5	After autoclaving is complete, allow all pieces to cool to a safe handling temperature or use personal protective equipment (PPE) to remove. Carefully remove the manifold and components. Make sure to maintain the integrity of the autoclave paper and wrapping. Store sterile manifold and components in a secure location to prevent breach of protective wrapping until manifold and components are ready for testing.

4 System operation

When using the manifold for microbiological analysis, it is recommended to prepare the manifold as described in *Preparing system for use, on page 3* and assemble aseptically inside of a classified Laminar Flow Hood (LFH) or Biological Safety Cabinet (BSC).

Step	Action
1	Obtain manifold(s) and all components required to operate the manifold. • 3 valves per manifold • 3 adapters per manifold[1] • 1 hose barb end • 1 flat end cap • 1 coupler kit (if using more than one manifold at a time)

[1] Sold separately from Laboratory manifold

Step	Action
2	Slip on the end cap and hose barb end on either side of the manifold. Hose barb end must be closest to the vacuum source.

3	Locate groove at end of valve assembly, insert O-ring from bagged O-rings packaged in box along with valve assemblies.

Step	Action
4	Insert a valve into the valve body until valve assembly stops. Make sure that the cutout of the valve assembly is facing upwards and aligns with the pin.

5	Push the locking collar towards the valve body and rotate until bayonet fitting locks with the bottom pin.

Step	Action
6	Close the valve assembly by placing the knob in the horizontal position.
7	Repeat steps 3 to 6 for each additional valve.
8	Place appropriate set of adapters (sold separately) onto the manifold ports. Adapter is chosen based upon the Cytiva device you wish to use with the manifold.

Step	Action
9	Place Cytiva funnel on adapter.

10	Turn on the vacuum source.

11	Aseptically pour the aqueous solution into the Cytiva funnel.

Step	Action
12	Open the valve assembly by placing the knob in the vertical position.
13	Repeat steps 9 to 12 for the number of samples tested on the manifold.
14	When the aqueous solution has passed through the filter, close the valve assembly by placing the knob in the horizontal position.
15	Aseptically retrieve the membrane.

Step	Action
16	Remove spent Cytiva funnel from adapter and repeat steps 9 through 16 until all samples have been processed.
17	After all testing is complete, tip the manifold towards the vacuum source and open the port farthest from the drain hose barb to drain any remaining liquid then proceed as described in *Preparing system for use, on page 3*.

5 Maintenance

Cytiva recommends following the steps below on a monthly basis, at minimum, to disinfect the manifold for testing microbiological samples.

Step	Action
1	Rinse the manifold and all the components of the manifold with deionized (DI) or purified water in a sufficient volume to remove any large debris on the exterior and interior.
2	With the vacuum turned off, fill the manifold with approximately 155 mL of disinfectant of choice. The amount used must be enough to fill the manifold, valve stems and valve assembly. See disinfectant instructions to determine the amount of contact time.
3	After disinfectant hold, thoroughly rinse manifold, including ports and adapters, with DI or purified water. Manifold valves can be removed from the manifold or left in the open position to allow for air drying. Additional recommended cleaning methods: • Spray manifold components with water solution of 5% bleach, wait 10 minutes and rinse with water. • Spray manifold components with water solution of 35% hydrogen peroxide, wait 10 minutes and rinse with water.

Step	Action
	• Spray manifold components with water solution of 70% IPA, wait 24 hours and rinse with water

The instructions above for disinfection and sterilization of Laboratory manifold are the manufacturing recommendations. However, Cytiva advises to follow your internal procedures and risk assessments for disinfection and sterilization.

NOTICE
The use of Micro90 cleaning solution is not recommended as this removes the anodization of the aluminum components.

The O-rings used in Laboratory manifold have been tested for normal wear and tear. Cytiva recommends to change out all O-rings on an annual basis. However, Cytiva advises to follow your internal procedures and risk assessments.

NOTICE
Do not put into dishwasher. While the new Laboratory manifold (PN 4889) and its related accessories are easy to disassemble and clean, they must not be put into the dishwasher or exposed to the high alkaline detergents that are used in automatic dishwashers. The anodized aluminum of the Laboratory manifold end-stands, valve handles and locking hubs cannot hold up to the harsh alkaline conditions.

6 Troubleshooting

Problem	Corrective action
O-rings are pinching during assembly or components not inserting properly	• Allow manifold to return to room temperature after autoclaving • Spray valve assembly with 70% IPA then assemble • Replace O-rings

Problem	Corrective action
Fluid is not draining properly	• Make sure hose barb cap is inserted with the hose barb at the bottom • Verify tubing is not kinked or damaged • Verify waste trap is not full • Verify vacuum pump is functioning properly
Leaking of fluid at connection points	• Verify all components are inserted correctly • Replace O-rings
Fluid draining without vacuum turned on	• Verify valve assembly is inserted correctly • Spray valve assembly with 70% IPA then assemble • Replace O-rings

7 Ordering information

Parts

Part number	Description	Pkg
4889	3 Place manifold base 3 Manifold valves 1 End cap 1 Hose barb cap	1 set/pkg
4890	MicroFunnel™ filter funnel adapter	3 ea/pkg
4891	Sentino™ filter funnel adapter	3 ea/pkg
4892	Standard adapter	3 ea/pkg
4893	Coupling device for manifold	1 ea/pkg
4959	Elongated standard adapter	3 ea/pkg

Accessories and spare parts

Part number	Description	Pkg
4878	Spare O-ring kit	1 set/pkg
4894	Manifold valves	1 ea/pkg

8 Dimensions and materials of construction

Dimensions

Material description	Length	Width	Height	Weight
3-Place manifold (with end cap and hose barb cap)	437.1 mm (17.2 in.)	152.4 mm (6.0 in.)	99 mm (3.9 in.)	1.71 kg (3.76 lb)
Coupling device	34 mm (1.34 in.)	31.8 mm (1.25 in.)	31.8 mm (1.25 in.)	70 g (0.15 lb)
MicroFunnel filter funnel adapter[1]	-	-	117 mm (4.6 in.)	2.35 kg (5.17 lb)
Sentino filter funnel adapter with frit[1]	-	-	112 mm (4.4 in.)	2.28 kg (5.02 lb)
Standard tulip adapter[1]	-	-	128 mm (5.06 in.)	2.05 kg (4.53 lb)
Elongated tulip adapter[1]	-	-	170 mm (6.7 in.)	2.21 kg (4.87 lb)

[1] Includes the manifold

Materials of construction

Material description	Material
Piping, all adapters, end cap, hose barb cap and coupling device	316 L Stainless steel
Valve assembly	316 L Stainless steel
Valve locking collar and knob	6061-T6 Anodized Aluminum
Valve O-rings	Fluorocarbon elastomer
Adapter O-rings	Fluorocarbon elastomer
Tube O-rings	Silicone

9 Regulatory references

Standard Methods for the Examination of Water and Wastewater, 24th Edition, 9222B: Section 1 (Laboratory Apparatus).

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