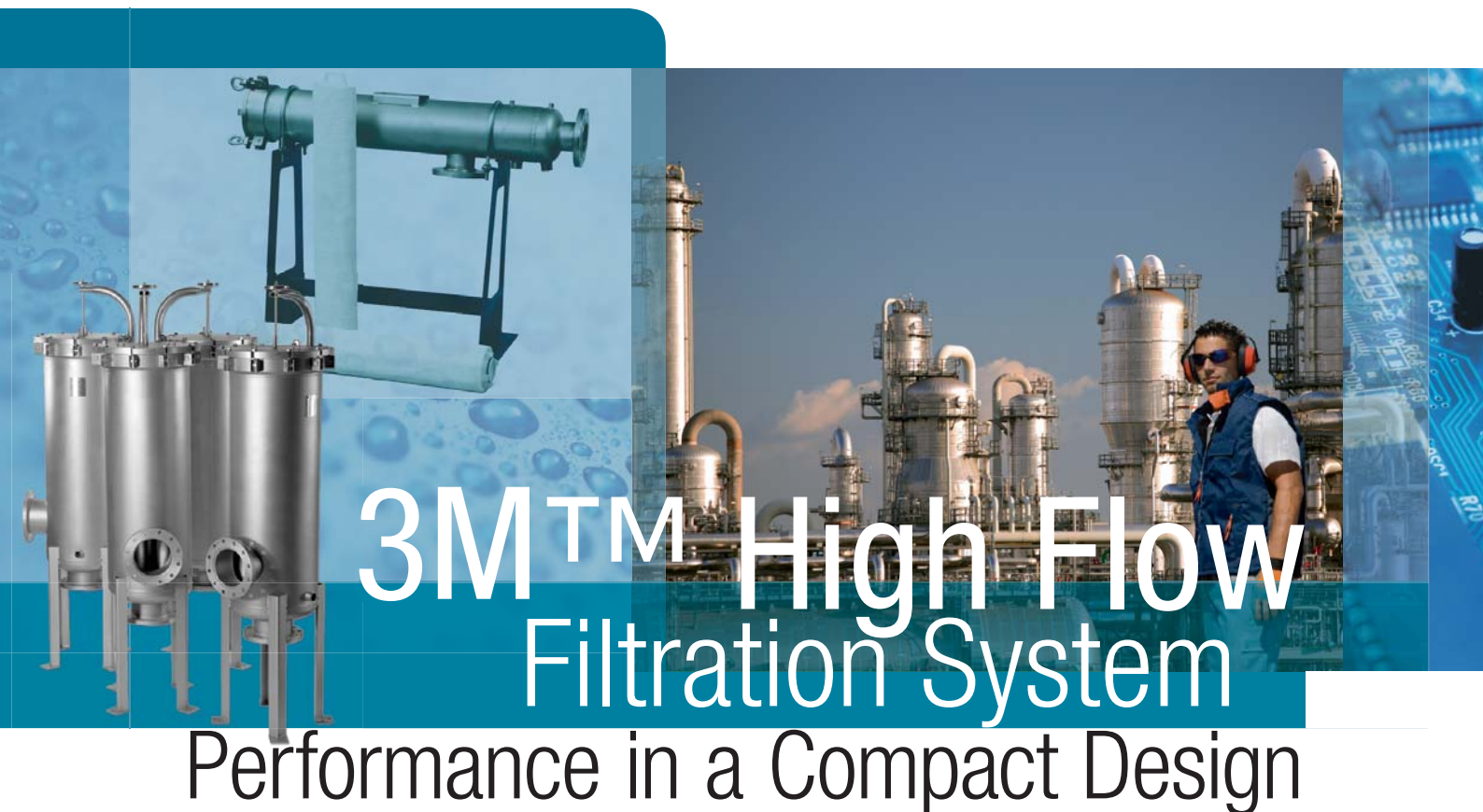




- ☑ Innovative technology to achieve flow rates up to 1884 lpm per element
- ☑ Absolute-rated for consistent product quality
- ☑ Operator-friendly cartridge and housing system
- ☑ Designed to reduce capital investment expenses



The 3M High Flow Filter System

The 3M™ High Flow Filter System is an advanced design that uses 3M innovation and 3M Purification's extensive filtration experience to deliver a high flow filter in a compact housing design. When compared to conventional cartridge systems, this system provides the following advantages:

High flow capability

The construction of 3M High Flow filter systems permits flow rates of up to 1884 lpm in a single cartridge. The result? Fewer filter elements to accommodate your flow requirements. In fact, the 3M High Flow filter systems require as few as one-tenth the number of elements as competitive 2.5" (63,5 mm) pleated cartridges (see Figure 1).

Compact design

Using fewer elements combined with an outside-to-in flow path enables a reduction in the size of housing required for your application. The 3M High Flow filter housing takes up as little as one-half the size of competitive housings for a given flow rate. The result is lower capital investment costs and a compact footprint that saves valuable plant space (see Figure 1).

Ease of Use

The 3M High Flow filter system is designed with ease-of-use in mind. From a user-friendly, ergonomically designed handle that makes cartridge installation and removal easier without the use of special tools or other hardware, to a "twist-to-lock" cartridge seating mechanism that provides a positive seal, the 3M High Flow filter system facilitates easy operation and maintenance of your filter system.

Applications

Industrial

- Municipal water, RO prefiltration, reclaimed water, coolants, nozzle protection, boiler condensate

Chemical

- Quench water, aqueous salt solutions, final products

Petrochemicals

- Waterflooding, produced water, enhanced oil recovery, completion fluids, amine sweetening, final products

Electronics

- RO prefiltration, process water

Food and beverage

- Process and blending water
- Bottled water

Pharmaceutical

- Process water

Features and benefits

High flow capability of up to 1884 lpm per cartridge

- Reduced filter usage – minimizes product loss, labour, disposal costs, operator exposure and downtime for filter change-out.

Compound radial pleat design

- High loading capacity for long life and lower cost filtration.

Compact design

- Smaller housing helps minimise capital expense requirements.
- Reduces system footprint.

Absolute rating

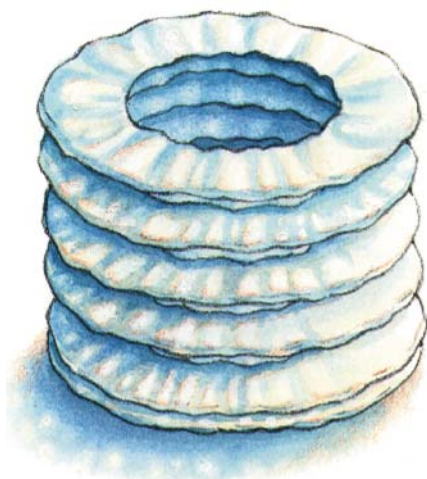
- Reproducible effluent quality throughout the filter's life.

Easy to use

- No special tools or hardware required for filter change-out – helps minimise downtime.
- "Twist to lock" seating mechanism provides positive seal.
- Ergonomically designed handle – facilitates easy cartridge installation and removal.

Approved for food contact use

-  Complies with European and US regulations.



Compound radial pleat design helps maximise usable media surface area

3M High Flow filter media

High performance media in an innovative design

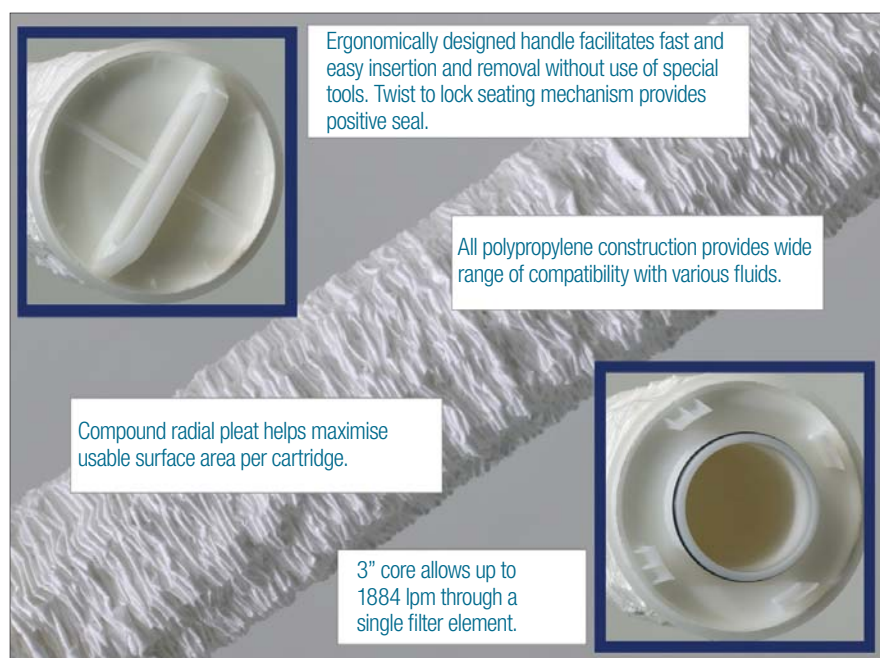
3M High Flow filters are designed using state-of-the-art technology, optimising both performance and effluent quality to provide customer satisfaction. The elements use a pleat design that results in a high usable filtering surface area per filter.

Radial pleat design

3M innovation is at the heart of the 3M High Flow filter. A compound radial pleat design helps maximise the usable surface area per filter. Blown microfibre forms the basis of the filter media, which is made to tightly controlled fibre diameter specifications to produce a media with absolute rated particle retention characteristics. Our 3M Purification manufacturing process embosses the media to produce a more uniform pleat pattern, which, in turn, allows greater utilisation of the media by evenly distributing the fluid throughout the entire filter structure. This results in consistent particle retention in a compact, space-saving design.

Design features

The 3M High Flow filter contains several features to combine high performance with easy operation.



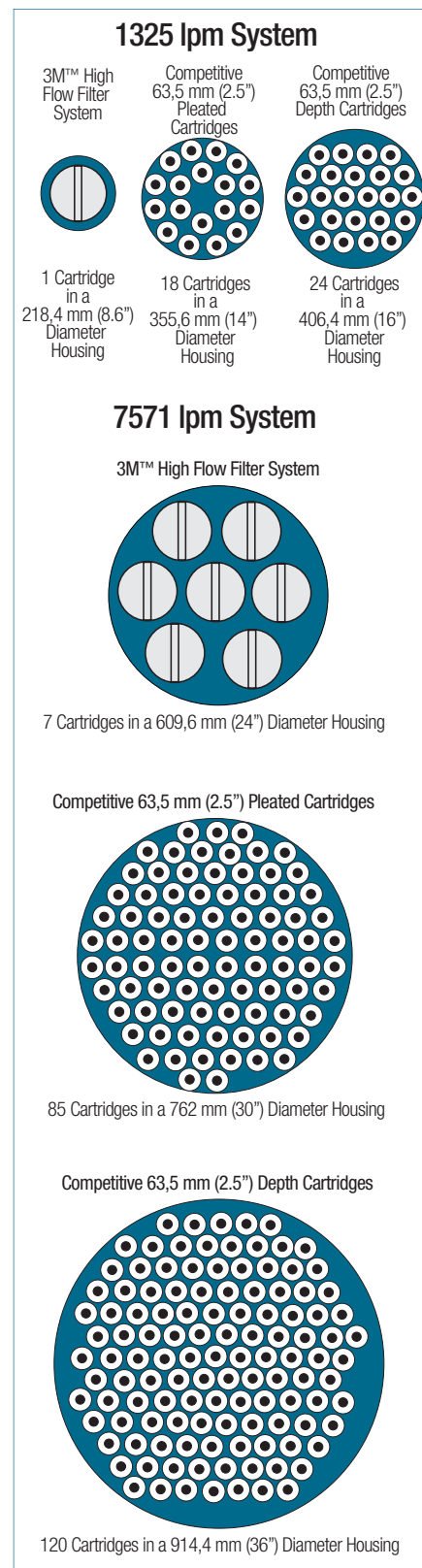
- A large diameter core allows up to 113 m³/hr through a single filter element.
- An ergonomically designed handle has been designed to facilitate fast and easy insertion and removal without the use of special tools. Cartridges are simply inserted over a built-in guide tube.
- The seating mechanism uses a “twist to lock” design to provide a positive seal.

Filter comparison

Consider the following benefits of the 3M High Flow filter system over competitive 2.5” (63,5 mm diameter) cartridges in a 1325 lpm and a 7571 lpm system* (see figure 1).

- The 3M High Flow filter system requires 90% fewer cartridges as competitive 2.5” (63,5 mm diameter) cartridge systems for a given flow rate.
- 3M High Flow housings are 33% to 50% smaller than competitively sized housings for a given flow rate.
- Fewer filters and a user-friendly housing design means faster change-outs than competitively sized systems.

Figure 1: Typical cartridges required and housing footprint comparison



* Comparison assumes fluid viscosity of 1 cP

Figure 2: Typical time/labour for change-out

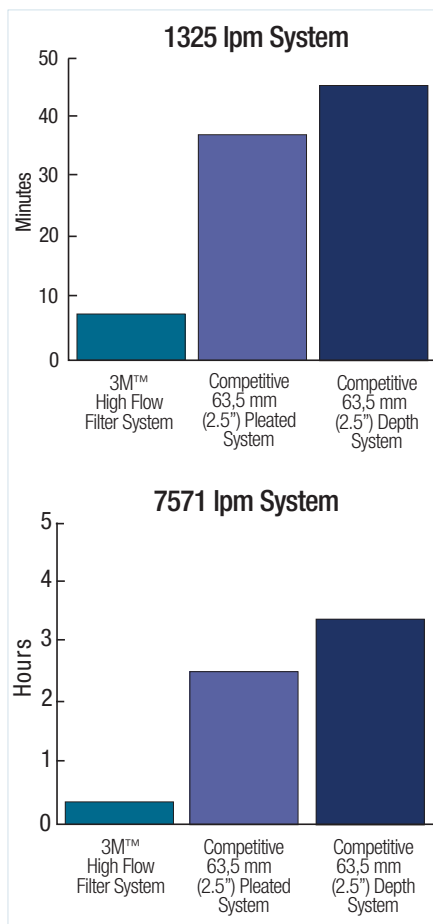
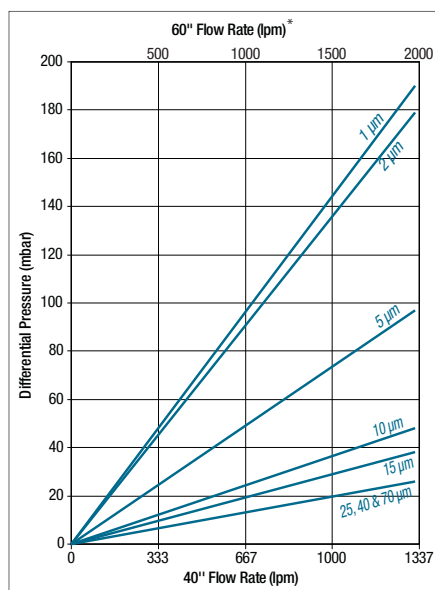


Figure 3: Typical cartridge flow rates



3M High Flow filter system specifications and operating parameters

Materials of construction

Filter Media - Each grade of the 3M High Flow filter system is manufactured from meltblown FDA compliant polypropylene microfibre media, providing high particle removal efficiency with broad chemical compatibility. No adhesives, binders or silicone are used in the manufacturing process. All support layers and hardware are constructed with polypropylene.

O-rings - O-rings are available in a variety of materials to suit your applications, including the standard nitrile, ethylene propylene rubber (EPR), silicone and fluorocarbon.

Table 1: 3M™ High Flow filter element specifications

Parameter	Element length (nominal)	
	40"	60"
Removal ratings (micron)	1, 2, 5, 10, 15, 25, 40 and 70	
Flow vs. differential pressure	See figure 3	
Filter diameter (cm)	16.5	
Filter length (cm)	101.6	152.4

Table 2: Operating parameters by cartridge length

Operating conditions	Elements length (nominal)	
	40"	60"
Maximum operating temperature (°C)	71	
Maximum recommended flow rate in water at 21 °C (lpm)	1334	1884
Maximum forward differential pressure	3.4 bar at 20 °C	
Recommended change-out differential pressure	2.4 bar at 20 °C	

Regulatory compliance

3M™ High Flow filter elements comply with the requirements of Regulation (EC) 1935/2004 for their intended food contact applications. All materials of construction comply with the requirements of the Food and Drug Administration's (FDA) Code of Federal Regulations (CFR), Title 21 parts 170-199 for contact with food. Contact 3M Purification for further information.

Table 3: Fluid compatibility

Chemical	Temperature	Chemical	Temperature	Chemical	Temperature
Acetic acid 20%	71 °C	Hydrogen peroxide	38 °C	Sodium carbonate	71 °C
Alkanolamines	60 °C	Methyl ethyl ketone	21 °C	Sodium hydroxide 70%	71 °C
Ammonium hydroxide 10%	71 °C	Mineral oil	21 °C	Sulfuric acid 20%	71 °C
Bleach 5.5%	49 °C	Nitric acid 20%	49 °C	Sulfuric acid 70%	71 °C
Ethylene glycol	71 °C	Potassium hydroxide	60 °C	Urea	71 °C

The thermal and chemical resistance data presented in this brochure is for guidance only. Factors such as duration of exposure, fluid concentration and temperature should also be considered. Thermal and chemical resistance should also be considered when choosing all materials exposed to fluids.

3M High Flow filter housings

The 3M High Flow housings are specifically designed to deliver all of the system's benefits in a compact footprint. Housings are available in standard designs, as well as customizable configurations to suit your specific needs. All standard 3M High Flow housings are designed, manufactured, tested and code-stamped in accordance with ATEX Group II, Category 2, T5 and PED 97/23/EC rated Category I. Stainless steel housing external surfaces are glass-bead blasted for a consistent, easy care finish.

The 3M High Flow housing is available in a variety of sizes to accommodate from 1 to 7 filter elements in both 40" and 60" lengths. Larger housings are available upon request.

Housings are also available in horizontal or vertical configurations, depending on your needs. Choose the horizontal option to help maximise ease of operation or the vertical to help minimise the system's footprint.



Table 4: Features

Horizontal	Vertical
• ATEX Code design • Robust cartridge centre-post design eliminates bulky support plates providing easy access to housing internals • Hinged cover for easy element change-outs • Handles liquid at pressures and temperatures of up to 10 bar and 90 °C • Manufactured from 304 or 316L stainless steel for excellent corrosion protection (carbon steel option available in multi-element housing) • Available for 40" and 60" element lengths • Upstream and downstream gauge ports and drains	• User-friendly cover lifting device for easy element change-outs • Available for 40" element lengths
Options	
• Corrosion allowance for carbon steel housing – consult factory • Choice of inlet/outlet flange size	

Table 5: 3M™ High Flow housing specification

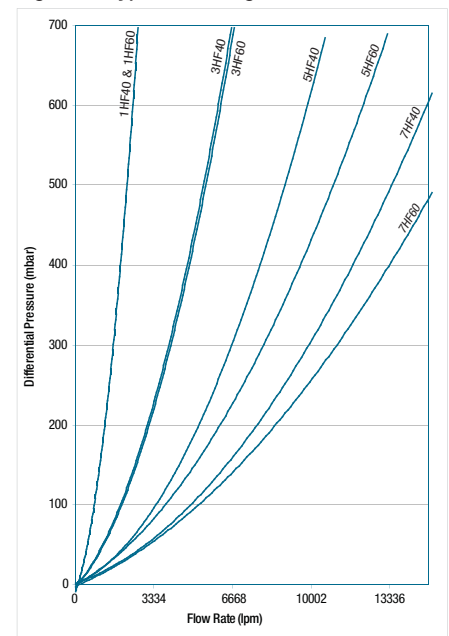
Model	Nominal diameter (mm)	Material	Inlet and outlet connection (DIN)		Recommended maximum flow lpm*		Maximum pressure and temperature	Vent and drain connections	
			40"	60"	40"	60"		Vent	Drain
1HF	219	316L	DN100	DN100	1337	1884	10 bar 90 °C	1/4" ***	1/2" ***
3HF	450	SS or 304 SS	DN150	DN200	3301**	5651		1/2"	1"
5HF	500		DN200	DN250	5868**	9269**		1/2"	1"
7HF	600		DN250	DN300	9269	13186		1"	2"

* Pressure drop across cartridge not included (see figure 3)

** Maximum flow rate based on nozzle size

*** Only for Vertical Housings and with plug

Figure 4: Typical housing flow rates



Housing dimensions

Table 6: 3M™ High Flow housing specifications

Materials of construction

316L (1.4404 or equivalent)

304 (1.4307 or equivalent)

This applies to materials in contact with the product. Other non-contact items (including bolts etc.) may vary from this.

**Pressure Equipment
Directive 97/23/CE
Operating conditions**

All vessels have been designed in accordance with the PED 97/23/CE for Group 1 and Group 2 fluids up to a maximum of 10 bar g and 90 °C. Restrictions will apply for gas or vapour applications. Please refer to supplier for specific cases.

ATEX 94/9/CE

Group II Category 2 – T5 (Other ratings are possible please refer to vendor)

**Recommended maximum
flow per cartridge: lpm**

40" – 1337

60" – 1884

(60" elements are available in horizontal vessel configuration only)

Table 7: 3M™ High Flow model housing

Dimensions (mm)

Vertical housing models (available for 40" cartridges only)

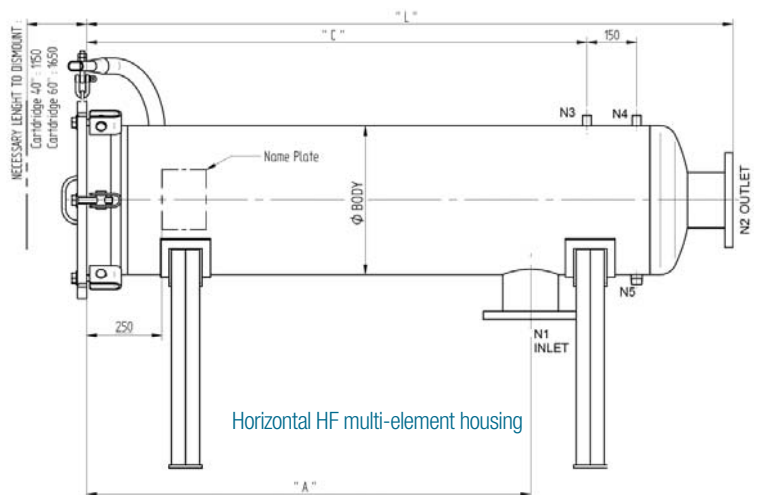
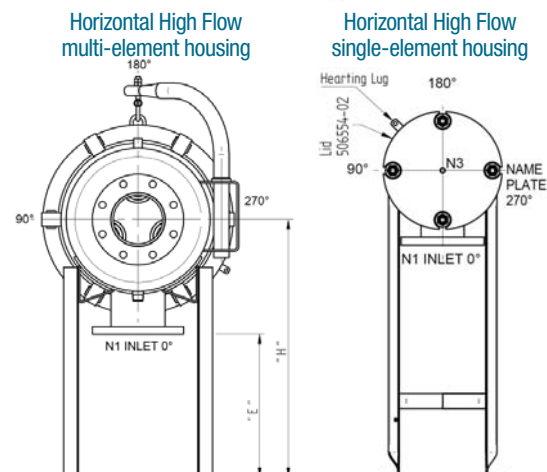
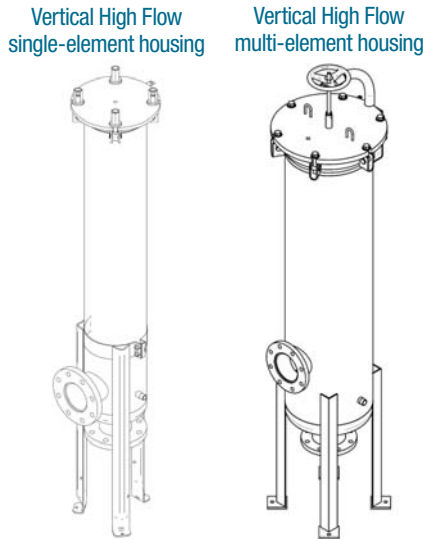
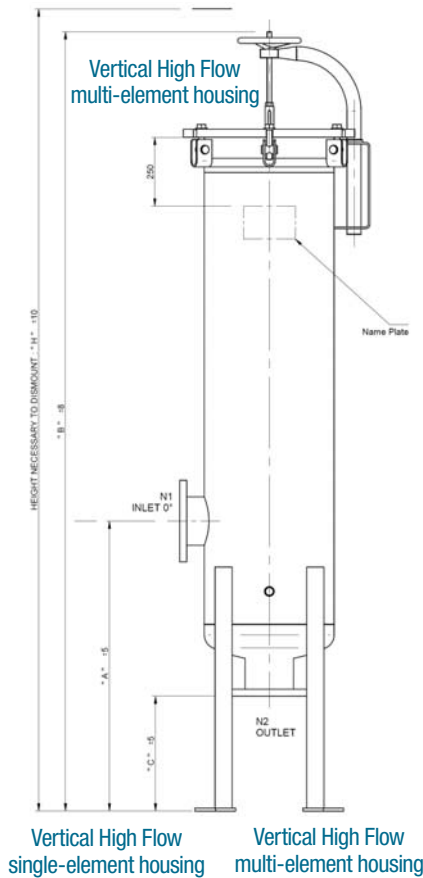
Model	A - Floor to inlet	B - Total height	C - Outlet to floor	H - Clearance
01HFB1V	680 ¹	1873 ¹	430 ¹	2860 ¹
03HFB1V	1010	2715	400	3500
05HFB1V	1115	2815	500	3600
07HFB1V	1210	2995	600	3700

Horizontal Housing Models

Model	A - Top to inlet	C - Top to vent	E - Inlet to floor	H - Middle to floor	L - Total length
01HFB1H	1170	-	614	814	1425 ¹
01HFB2H	1680	-	614	814	1935 ¹
03HFB1H	1340	1510	500	810	1950
03HFB2H	1850	2020	500	810	2500
05HFB1H	1340	1510	550	900	1950
05HFB2H	1850	2020	550	900	2500
07HFB1H	1340	1510	650	1060	1950
07HFB2H	1850	2020	650	1060	2500

NOTE: All Dimensions approximately for guidance only

¹ Maximum height



3M™ High Flow Series filter elements - Ordering guide

Filter designation	Element length (inch)	Material	Absolute removal rating (micron)	O-ring	Packaging options (per box)
HF – High Flow	40 – 40" 60 – 60"	PP - polypropylene	001 – 1 µm 002 – 2 µm 005 – 5 µm 010 – 10 µm 015 – 15 µm 025 – 25 µm 040 – 40 µm 070 – 70 µm	A – silicone B – fluorocarbon C – EPR D – nitrile	01 - 1 pack

3M™ High Flow Series housings - Ordering guide

Number of filter elements	Model	Closing	Size *	Configuration	Housing material	Gasket material **	Surface finish	Connections ***	Outlet	Elbow
01 03 05 07	HF	B - bolted	1 - 40 " 2 - 60 "	H - horizontal V - vertical	4 - 304 L 6 - 316 L	NB - nitrile	F0 - acid pickled and passivated/glass bead blasted	BP - flanged (ISO PN16)	D - bottom outlet	N - none

* 60" Elements are available for horizontal housings only

** For other gasket materials, please contact a 3M Purification representative

*** Flange size will vary with number of filter elements and element length (refer to table on page 6)

Examples: 03 HFB 2 H 6 NB F0 BP D N
or 05 HFB 1 V 6 NB F0 BP D N





Important Notice

The information described in this literature is accurate to the best of our knowledge. A variety of factors, however, can affect the performance of the Product(s) in a particular application, some of which are uniquely within your knowledge and control. INFORMATION IS SUPPLIED UPON THE CONDITION THAT THE PERSONS RECEIVING THE SAME WILL MAKE THEIR OWN DETERMINATION AS TO ITS SUITABILITY FOR THEIR USE. IN NO EVENT WILL 3M PURIFICATION BE RESPONSIBLE FOR DAMAGES OF ANY NATURE WHATSOEVER RESULTING FROM THE USE OF OR RELIANCE UPON INFORMATION.

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LENNTECH

info@lenntech.com Tel. +31-152-610-900

www.lenntech.com Fax. +31-152-616-289