

3M™ High Flow Series Elements

Performance in a Compact Design

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. The construction of the 3M High Flow filter systems permit flow rates of up to 1884 lpm in a single cartridge, so fewer filter elements are needed to accommodate your flow requirements. Using fewer elements combined with an outside-to-in flow path enables a reduction in the size of housing required. The result is lower capital investment costs and a compact footprint that helps save valuable plant space. The 3M High Flow filter system facilitates easy operation and maintenance of your filter system.

3M High Flow filter media

High performance media in an innovative design

3M High Flow filter elements 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 element. 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.

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.



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

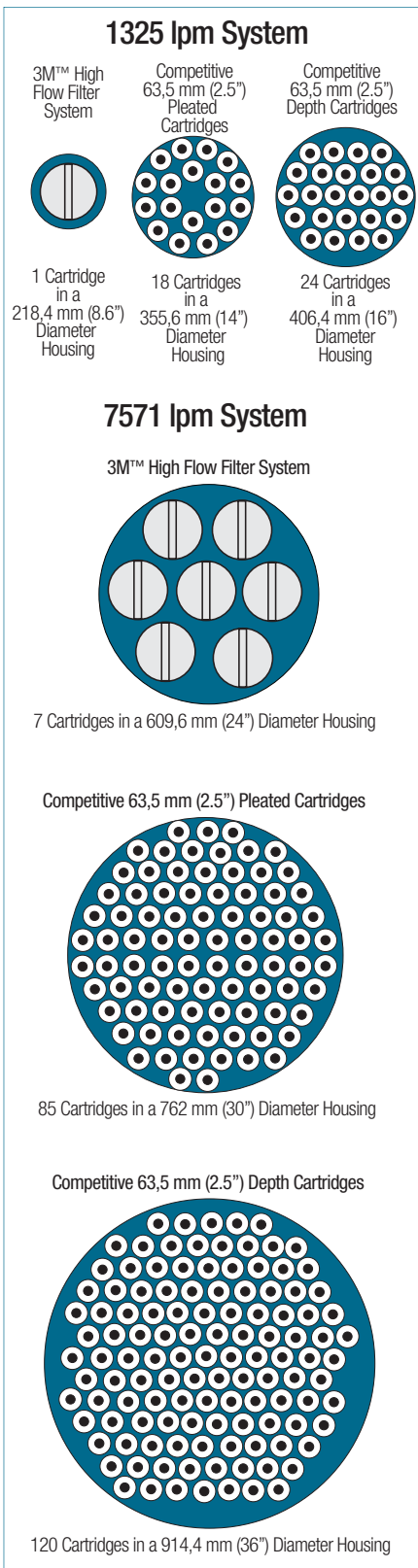
- Process and blending water
- Bottled water

Pharmaceutical

- Process water

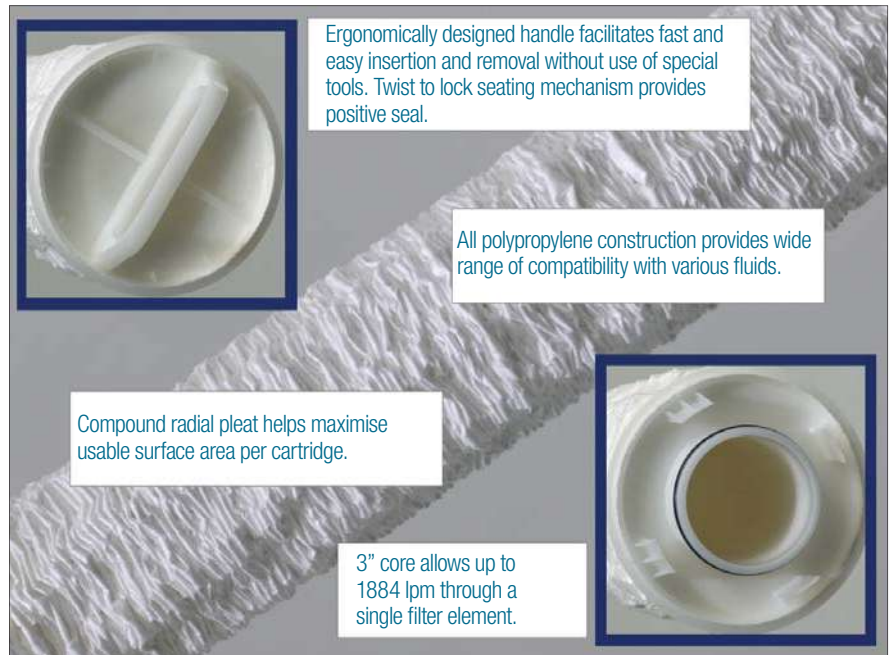


Figure 1: Typical cartridges required and housing footprint comparison



Design features

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



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 filter 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.



* Comparison assumes fluid viscosity of 1 cP

3M High Flow filter specifications and operating parameters

Materials of construction

Filter Media - Each grade of the 3M High Flow filter element 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.

Figure 2: Typical time/labour for change-out

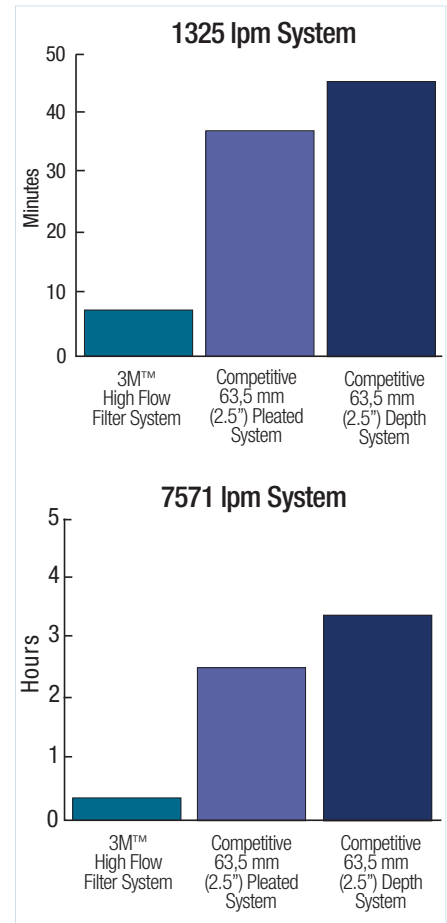
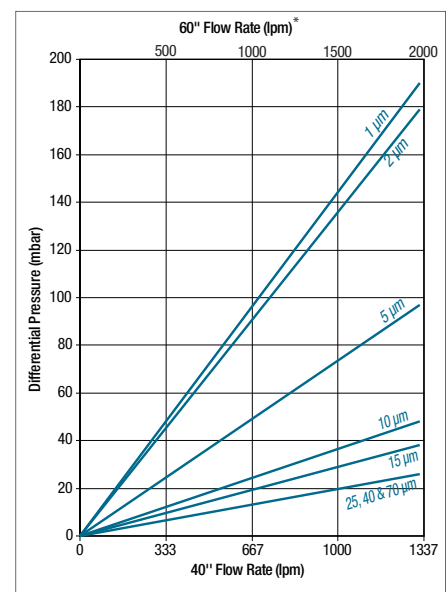


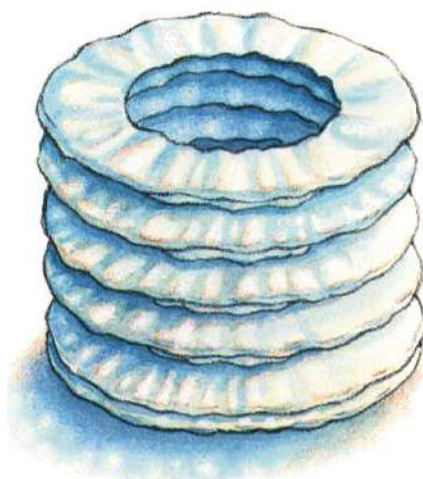
Figure 3: Typical cartridge flow rates



* estimated

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



Compound radial pleat design helps maximise usable media surface area

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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