



aerospace
climate control
electromechanical
filtration
fluid & gas handling
hydraulics
pneumatics
process control
sealing & shielding



Process Filtration

Filtration products for Industrial Applications



ENGINEERING **YOUR** SUCCESS.



WARNING - USER RESPONSIBILITY

FAILURE OR IMPROPER SELECTION OR IMPROPER USE OF THE PRODUCTS DESCRIBED HEREIN OR RELATED ITEMS CAN CAUSE DEATH, PERSONAL INJURY AND PROPERTY DAMAGE.

This document and other information from Parker-Hannifin Corporation, its subsidiaries and authorized distributors provide product or system options for further investigation by users having technical expertise.

The user, through its own analysis and testing, is solely responsible for making the final selection of the system and components and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met. The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from Parker or its subsidiaries or authorized distributors.

To the extent that Parker or its subsidiaries or authorized distributors provide component or system options based upon data or specifications provided by the user, the user is responsible for determining that such data and specifications are suitable and sufficient for all applications and reasonably foreseeable uses of the components or systems.

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Innovation

Leader in process filtration, separation and purification

Parker domnick hunter Process Filtration products set the highest standards for filtrate quality, product reliability and cost-effective use. Parker products provide optimal solutions for industrial applications and are available in lengths from 4 to 50 inches in configurations to retrofit all commonly installed filter housings. Our diverse line of products are offered in membrane, pleated, depth, bag, sorbent, and metallic media to meet the varying demands of production-, pilot- and laboratory-scale requirements. Removal ratings from 0.02 to >800 µm are available. All Parker products are backed by in-depth Technical Support, fast order turnaround and factory-trained local Distributors.

INDUSTRIAL APPLICATIONS



Chemicals
Inks, Paints and Coatings
DI Water
RO Prefiltration
Water Injection
Process Water

Magnetic Media
Petrochemicals
Specialty Chemicals
Prefiltration
Venting
Steam Filtration

Gel Removal
Haze Removal
Sediment Removal
Clarification

QUALITY MANAGEMENT

Quality is of paramount importance to Parker. All products are manufactured under controlled environmental conditions and are subjected to demanding programs of quality assurance.

The Parker domnick hunter Division is ISO 9001:2008 & ISO 14001:2004 Certified.



Industrial Filtration

A Core Expertise

Parker domnick hunter Process Filtration serves a vast range of applications such as inks, paints and coatings, industrial chemicals, petrochemicals, petroleum, as well as water treatment. Our top-performing products are backed by a global network of factory-trained distributors and technical support teams.

Through our Technical, R&D and Customer Service Teams, we offer a wide range of services and solutions to ensure total customer satisfaction.

TECHNICAL CAPABILITIES



Our Technical Support Group (TSG) is dedicated to the needs of industrial filtration users worldwide. We have an extensive range of state-of-the-art analytical instrumentation and a highly qualified team of scientists and engineers generating innovative solutions to a wide variety of filtration needs. We strive to optimize our customers' filtration applications by offering full technical support that includes:

- Process failure analyses
- Contamination analyses
- Process & cost improvement audits
- On-site testing services

RESEARCH AND DEVELOPMENT



Our R&D teams are constantly working to innovate new products through Parker's stage gate process called Winovation to discover technologies that will enhance the performance of process filtration, and keep us at the forefront of process filtration technology.



CUSTOMER SERVICE



An experienced team of professionals dedicated to respond quickly and comprehensively to orders – for both standard and customized products – and ensure their on-time delivery worldwide.

Toll free sales & technical support:

877.784.2234

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www.parker.com/processfiltration

Pleated Membrane Filter Cartridges

Clariflow®-G (General) Grade Pleated Membrane Filter Cartridge

Hydrophilic polyethersulfone (PES)
membrane for aqueous liquid
filtration applications

Evadur Membrane Filter Cartridge

High-flow, high-purity membrane

Fluoroflow® Pleated Membrane Filter Cartridge

All-fluoropolymer cartridge for
filtration of aggressive chemicals

Proflow™ II-G (General) Grade Pleated Membrane Filter Cartridge

Hydrophobic PTFE membrane for
gas and solvent purification



Toll free sales & technical support:
877.784.2234
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Clariflow®-G (General Grade) Filter Cartridges

Hydrophilic polyethersulfone (PES)
membrane for aqueous liquid
filtration applications

Clariflow® General grade cartridges are designed for general-purpose use in the filtration of high-purity liquids and aqueous chemicals.

The mirrored-anisotropic Polyethersulfone (PES) membrane is inherently hydrophilic and has a pore morphology that delivers exceptionally high flow rates.

Because there are no added surfactants or wetting agents, and the support layers and structure are all-polypropylene, the filter exhibits low extractables, broad chemical compatibility and good resistance to hydrolysis.

The Clariflow General Grade Cartridge is available in absolute ratings of 0.04, 0.1, 0.2, 0.45, 0.65 and 0.8µm pore sizes.



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Benefits

- High flow rate reduces processing time
- Broad chemical compatibility allows use in most applications
- Low differential pressure reduces system wear and tear

Applications

- Chemical filtration
- Liquid clarification
- Recirculating fluids
- General use water filtration
- Deionized water systems

Clariflow®-G (General Grade) Filter Cartridges

SPECIFICATIONS

Materials of Construction

Membrane: Polyethersulfone
 Support layers: Polypropylene
 Structure: Polypropylene

All components are thermally bonded to ensure integrity and to reduce extractables.

Effective Filtration Area

6.8ft² ± 0.3ft² / 0.63m² ± 0.0279m²
 per 10" (250mm) cartridge

Maximum Differential Pressure/ Temperature

Forward: 80psid (5.5bar) @ 75°F (24°C)
 40psid (2.8bar) @ 180°F (82°C)

Reverse: 50psid (3.4bar) @ 75°F (24°C)

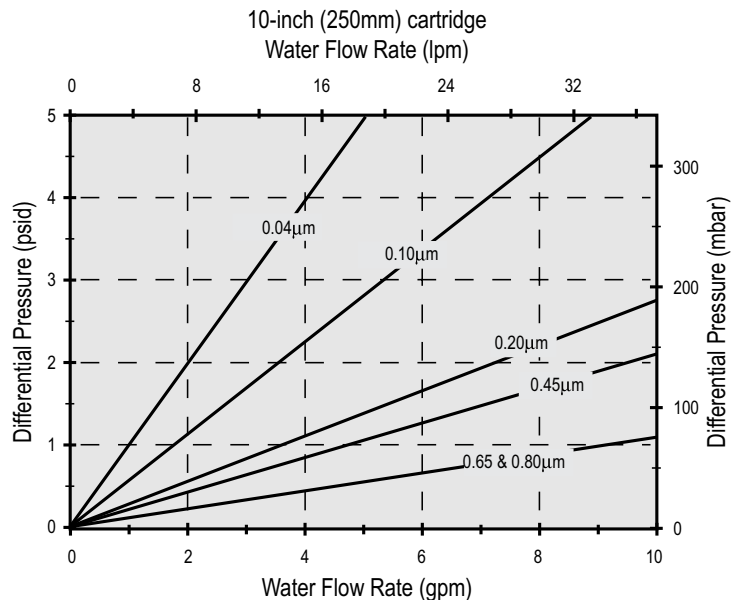
Maximum Operating Temperature

160°F (71°C)

Performance Attributes

Water flow rates, Typical*		
Micron	gpm/psid	lpm/100mbar
0.04	1.0	5.29
0.10	1.8	9.88
0.20	3.7	20
0.45	4.8	26
0.65	9.2	51
0.80	9.5	52

* Per 10-inch (250mm) cartridge equivalent with viscosity of 1cP.



Ordering Information

25 – 10 **G**

End Fitting		Nominal Length			Filter Rating		Gasket/O-Rings		Gasket		
Code	Description	Code	Inches	mm	Code	Micron	Code	Material	Code	Thickness	
0	DOE (Cuno®)	10	10	250	924	0.04	0	Buna-N	1	0.200	5
1	DOE	20	20	500	001	0.10	1	EPDM	2	0.125	3
2	226/Flat	30	30	750	002	0.20	2	Silicone	4	(1) 0.200	5
3	222/Flat	40	40	1000	004	0.45	4	Viton®	(1) 0.125	3	
6	020/Internal/Flat				006	0.65	5*	FEP-Encapsulated Viton®	N	No Gasket	
7	226/Fin				008	0.85	6*	FEP-Encapsulated Silicone			
8	222/Fin						N	None			

*O-Ring only

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 Cuno is a registered trademark of Cuno Inc.

DS_IP_Clariflow-G Rev. C

Evadur™ Filter Cartridges

High flow, high purity membrane cartridge
(General Grade)

Evadur™ is a high purity polyethersulfone membrane cartridge designed specifically for demanding water and chemical filtration applications. Evadur offers a unique pleat design and rugged construction for superior retention and filter life. The hydrophilic polyethersulfone membrane resists a wide variety of chemicals. Evadur achieves very high flow rates while maintaining a very low differential pressure. Evadur has also been designed to have extremely fast “flush-up” or clean up times. Rely on Evadur for your high flow, high purity membrane applications.



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Benefits

- High bacterial retention
- Complete product offering from 0.03 to 0.65 microns
- High purity polypropylene support structures
- Thermally bonded to exclude liquid capture and extractables
- All materials listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured in a clean room environment
- Manufactured with quality control that measures integrity testing
- ISO9001 registered company

Applications

- Pre and post RO filtration
- Point-of-use filtration
- Bottled water
- Specialty chemical

ENGINEERING YOUR SUCCESS.

Evadur™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Membrane:

Hydrophilic polyethersulfone

Membrane Support/Drainage:

Polypropylene

Structural components:

Polypropylene

Seal Material:

Various

Sealing Method:

Thermal welding

Dimensions:

Diameter: 2.7 in. (6.8 cm)

Lengths: 10-40 in. (25-102 cm)

Recommended Operating

Conditions:

Maximum Temperature: 176°F (80°C)

@ 30 ΔP (2.1 bar)

Maximum Differential Pressure

Forward:

70 psi (4.8 bar) @ 77°F (25°C)

30 psi (2.1 bar) @ 176°F (80°C)

Reverse:

50 psi (3.4 bar) @ 77°F (25°C)

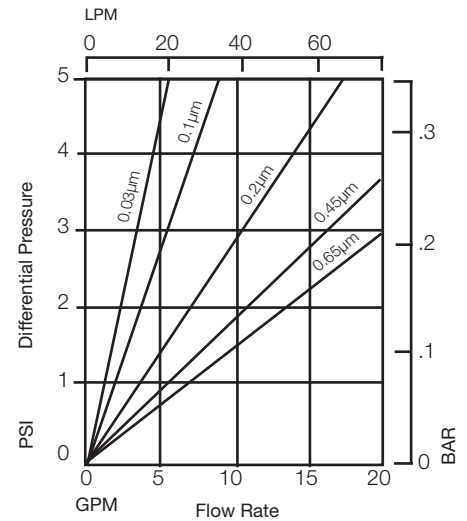
Sterilization/Sanitization Methods

- Isopropyl Alcohol
- Sodium Hydroxide
- Hydrogen Peroxide
- Hot Water: 190°F (88°C) @ 5 psid (0.3 bar)
- Autoclave: 250°F (121°C) for 30 minutes at 15 psi (1.0 bar)
- In Situ Steam: 284°F (140°C) for 60 minutes at 15 psi (1.0 bar)
- Chlorine
- Sodium Hypochlorite
- Sanitizing Agents
(refer to most recent Compatibility Guide for details)

Installation Rinse-In

Cartridges typically rinse to back ground resistivity in less than six minutes at 3.5 gpm/10" equivalent

Evadur flow rate vs. ΔP for 1 cps liquid @ 73°F (23°C)



Ordering Information

Cartridge Code		Pore Size		Diameter		Length		Seal Material		End Cap Configuration	
Code	Description	Code	Micron	Code	Inches	Code	Inches	Code	Material	Code	Description
EV	Evadur	T	0.03	B	2.7	10	10	E	EPR	HH	Double Open End
		S	0.1			20	20	B	Buna-N	DX	DOE w/extender
		F	0.2			30	30	S	Silicone	SC	226 O-ring/Flat Cap
		R	0.45			40	40	T	PFA Encapsulated Viton® (O-ring only)	SF	226 O-ring/Fin
		H	0.65					V	Viton® (O-ring only)	TC	222 O-ring/Flat Cap
								X	No seal material	TF	222 O-ring/Fin
										LL	120 O-ring (both ends)
										LR	120 O-ring/Recessed End
										PR	213 O-ring/Recessed
										AR	020 O-ring/Recessed

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Fluoroflow® Filter Cartridge

All-fluoropolymer cartridge for filtration of aggressive chemicals in industrial applications

Fluoroflow® pleated filter cartridges feature an all-fluoropolymer construction; this provides the highest chemical resistance when filtering acids, bases and solvents. Fluoroflow cartridges fit standard filter housings and are available in a variety of filter ratings, lengths and end-fittings for maximum versatility. Fluoroflow cartridges are available flushed with UPW to minimize extractables and wet-packed to eliminate the need for on-site wetting, to fit your needs.

The Fluoroflow cartridge is available in 0.05, 0.1, 0.2, 0.45, 1 and 100µm pore sizes.



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Benefits

- High chemical compatibility maximizes process capability
- Wet-packed option eliminates lengthy wetting procedure and minimizes equipment downtime
- Bio-safe in accordance with USP Class VI 121°C Plastics Test

Applications

- Aggressive chemicals and process fluids at temperatures up to 150°C
- Ozonated and/or hot UPW
- High-purity chemical and solvent manufacturing

Fluoroflow® Filter Cartridge

SPECIFICATIONS

Materials of Construction

100% Fluoropolymer construction

Effective Filtration Area

6.8ft² (0.63m²) per nominal 10" (250mm) cartridge

Metals Extractables*

Standard: <20ppb (total)

*In a 10% HNO₃ extraction

Maximum Differential Pressure/Temperature

Forward:

80psid (5.5bar) @ 75°F (24°C)

55psid (3.8bar) @ 167°F (75°C)

30psid (2.0bar) @ 257°F (125°C)

15psid (1.0bar) @ 300°F (150°C)

Reverse:

50psid (3.4bar) @ 75°F (24°C)

15psid (1.0bar) @ 250°F (121°C)

Cleanliness (particle shedding)

Wet-packed <2 particles/ml >0.2µm after 7gal @ 1gal/min

TOC/Resistivity Rinse-up (wet-packed)

TOC recovery within 3-5ppb of feed without additional rinse-up.

Resistivity recovery within 0.4megohm-cm of feed after 22gal @ 1gpm.

Performance Attributes

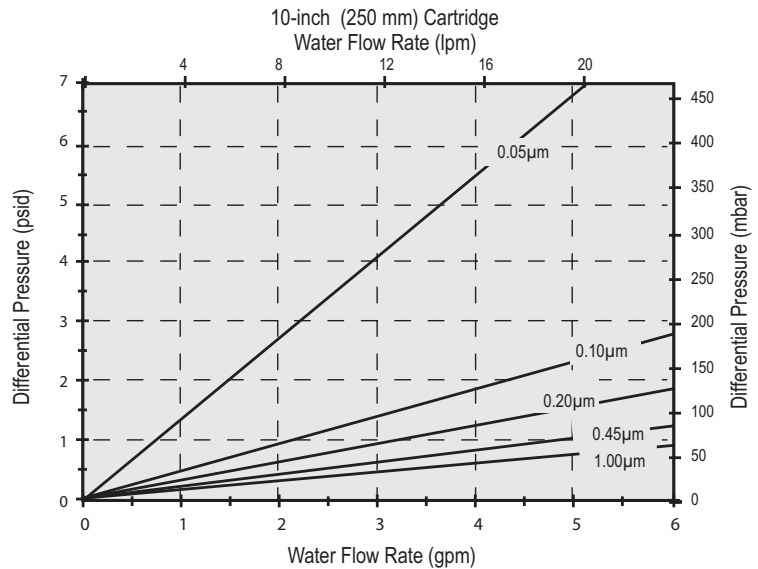
Water flow rates, Typical*		
Micron	gpm/psid	lpm/100mbar
0.05	0.9	4.9
0.1	2.3	13
0.2	3.2	18
0.45	4.7	26
1.0	6.7	37

*Per 10" (250mm) cartridge equivalent.

Integrity Test Values

Filter Rating	Bubble Point*	
Micron	psig	bar
0.05	≥40	2.8
0.1	≥21	1.5
0.2	≥13	0.9
0.45	≥7	0.5
1.0	≥3	0.2

*In 60/40 IPA/Water @ 25°C



Ordering Information

Each cartridge is identified with a product number, pore size and lot number for traceability.

33 - 14 - - - - **E**

End Fitting		Nominal Length			Filter Rating		O-Rings		Treatment	
CODE	DESCRIPTION	CODE	INCHES	mm	CODE	MICRON	CODE	MATERIAL	CODE	OPTIONS
2	226 Flat	04	4	102	925	0.05	2	Silicone	Blank	UPW Flush & Dry
3	222 Flat	10	10	250	001	0.1	4	Viton®	F	Ozone UPW Flush & Dry
7	226 Fin	20	20	500	002	0.2	5*	FEP-Encapsulated Viton®	W	Wet Packed
8	222 Fin	30	30	750	004	0.45	6*	FEP-Encapsulated Silicone		
		40	40	1000	010	1.0	7	Chemraz®		
					503	100 (Nominal)	N	None		

*O-Ring only

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Chemraz is a registered trademark of Green, Tweed Companies

Proflow™ II-G (General Grade) Filter Cartridges

Hydrophobic PTFE membrane for general purpose chemical, gas and solvent filtration

Proflow™ II-G (General Grade) filter cartridges provide an economic alternative for general applications where reliable gas and liquid flow rates are required. With 5.6 square feet of expanded PTFE membrane, Proflow II-G is a highly efficient hydrophobic barrier, for the production of dry gas, and will effectively filter aggressive liquids and organic solvents.

Proflow II-G filter cartridges are manufactured under cleanroom conditions and integrity tested before shipment to assure consistent performance and quality.

The Proflow II-G Cartridges are available in 0.05, 0.1, 0.2, 0.45, and 1.0µm pore sizes.



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Benefits

- Reliable air and liquid flow rates for effective performance
- Broad chemical compatibility enables use in many applications
- Broad range of micron ratings for user convenience
- Superior hydrophobicity for long life in vent/air applications
- Integrity tested to ensure quality
- Bio-safe in accordance with USP Class VI 121°C Plastics Test

Applications

- Photoresists
- Compressed gas
- Venting
- Electronic grade solvents
- Hot deionized water (less than 80°C)

Proflow™ II General Grade Filter Cartridge

SPECIFICATIONS

Materials of Construction

Membrane: PTFE
 Support Layers: Polypropylene
 Structure: Polypropylene

Effective Filtration Area

5.6ft² (0.52m²) per 10" (250mm) cartridge

Maximum Differential Pressure/Temperature

Forward:
 80psid (5.5bar) @ 75°F (24°C)
 40psid (2.8bar) @ 180°F (82°C)

Reverse:

50psid (3.4bar) @ 75°F (24°C)

Cleanliness (particle shedding)

Wet-packed <1 particles/ml >0.2µm after 6gal @ 1gpm.

Data is from open bag and installed, no additional installation flushing.

TOC/Resistivity Rinse-up (wet-packed)

TOC rinse-up to background plus 5 ppb of feed after 70gal@1gpm.

Resistivity rinse-up to background minus 0.2 megohm-cm of feed after 30gal@1gpm.

Performance Attributes

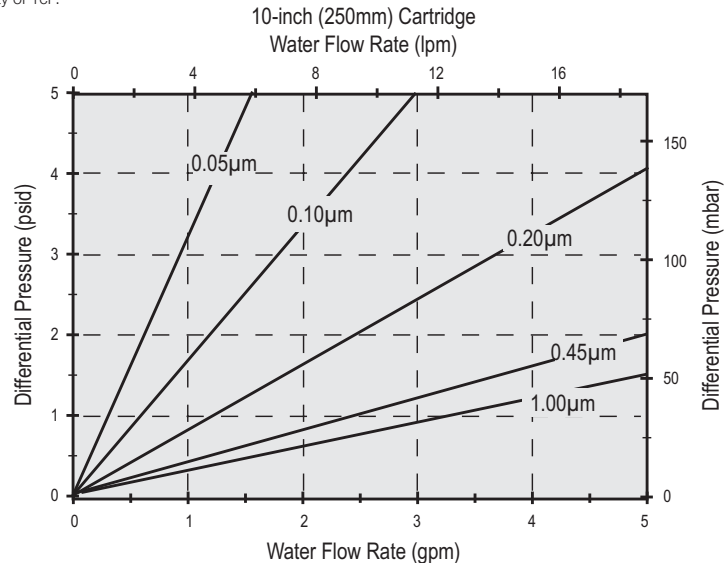
Water flow rates, Typical*		
Micron	gpm/psid	lpm/100mbar
0.05	0.6	3.29
0.1	1.2	6.59
0.2	2.5	14
0.45	5.1	28
1.0	6.2	34

* Per 10-inch (250mm) cartridge equivalent with viscosity of 1cP.

Integrity Test Values

Filter Rating	Bubble Point*	
Micron	psig	bar
0.05	≥40	2.8
0.10	≥21	1.5
0.20	≥13	0.9

* In 60/40 IPA/water @ 25°C



Ordering Information

Each cartridge is identified with a product number, pore size and lot number for traceability.

3 - [] [] 0 [] [] [] - [] [] [] - [] [] G

Treatment		Styles		End Fitting		Nominal Length			Filter Rating		Gasket/O-Rings		Gaskets Only		
Code	Options	Code	Description	Code	Description	Code	Inches	mm	Code	Micron	Code	Material	Code	Thickness	
4	Standard	1	No Insert (Std.)	0	DOE (Cuno®)	10	10	250	925	0.05	0	Buna-N	1	0.200	5
6	Flushed with 18 Megohm DI Water	5	Encapsulated Stainless Steel	1	DOE	20	20	500	001	0.1	1	EPDM	2	0.125	3
		6	Encapsulated Polysulfone	2	226 Flat	30	30	750	002	0.2	2	Silicone	4	(1) 0.200	5
A	½" Shortened on 222 Fitting	A	½" Shortened on 222 Fitting	3	222 Flat	40	40	1000	004	0.45	4	Viton®		N	(1) 0.125
				6	020 Internal Flat	6	020 Internal Flat	6	020 Internal Flat	010	1.0	5*	FEP Encapsulated Viton®		No Gasket
				7	226 Fin	7	226 Fin	G	120 Internal Recessed End cap	5*	FEP Encapsulated Viton®	6*	FEP Encapsulated Silicone		
				8	222 Fin	H	213 Recessed End cap (Ametek)	N	None						
				R	222/Recessed End cap										

*O-Rings only

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Pleated Depth Filter Cartridges



Fulflo® Abso-Mate™ Filter Cartridge

All polypropylene, absolute-rated, cost-effective filtration

Claripor™ Filter Cartridge

Polypropylene pleated depth media for critical process applications

Flo-Pac® Filter Cartridge

Pleated cartridges for superior industrial filtration

Flo-Pac® + Filter Cartridge

Construction for organic solvent filtration

Glass-Mate™ Filter Cartridge

Absolute-rated and economical filtration with pleated microglass

Fulflo® 336 Pleated Filter Cartridge

Pleated cartridge for improved efficiency, dirt-holding capacity & flow rates

Fulflo® 1401 Pleated Filter Cartridge

Pleated cartridge for high-efficiency, high-pressure, dirt-holding capacity & flow rate

Fulflo® PCC Filter Cartridge

Unique construction improves particle retention, service-life and flow rates

Fulflo® Poly-Mate™ Filter Cartridge

Quality, economical filtration for critical process applications

Fulflo® Poly-Mate™ Plus Filter Cartridge

High surface area and high efficiency all-polypropylene pleated cartridges



Toll free sales & technical support:
877.784.2234
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Fulflo® Abso-Mate™ Pleated Depth Filter Cartridges

All polypropylene, absolute-rated, cost-effective filtration

Parker's Fulflo® Abso-Mate™ Cartridges provide the ultimate in economical filtration for even the most critical process fluids. The proprietary melt blown media is rigidly controlled for reliable results time after time. Abso-Mate cartridges are produced without adhesives that can potentially contaminate fluids.

Abso-Mate Pleated Cartridges are available in 0.2µm, 0.45µm, 1µm, 2µm, 5µm, 10µm, 20µm, 40µm, and 70µm absolute rated pore sizes.



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Benefits

- Absolute ratings for consistent and reliable performance (99.98%; $\beta = 5000$)
- Back-washable media, reduces replacement maintenance and cartridge disposal costs
- Abso-Mate cartridges are non-fiber releasing and contain minimal extractables
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- One-piece construction eliminates bypass concerns on multi-length cartridges
- All-polypropylene construction offers wide chemical compatibility with most chemicals, acids, bases and solvents
- Fused construction and continuous lengths eliminate the need for adhesives and allow accurate bubble point integrity testing
- ISO9001 registered company

Applications

- Membrane Prefilter
- Chemicals
- Catalyst Recovery
- Precious Metal Recovery
- Waste Water

Abso-Mate® Cartridges

SPECIFICATIONS

Materials of Construction

Type of Construction

- Integrally sealed, all-polypropylene pleated media supported by all-polypropylene construction

Filter Media

- Melt blown polypropylene microfiber

Media Support Layers

- Non-woven or mesh polypropylene

Media Support Core

- Heavy wall high strength polypropylene

Media Support Cage and Thermally Welded

End Caps

- Molded polypropylene

Seal Materials

- Buna-N, EPR, Silicone, Viton®, PFA Encapsulated Viton®

Dimensions

Cartridge Outside Diameter

- 2 1/16 in.

Cartridge Inside Diameter

- DOE: 1 1/16 in.
- SOE: 1 3/32 in.

Maximum Recommended Operating Conditions

Temperature: 200°F (93°C)

Change Out ΔP: 35psi (2.4bar)

ΔP @ Ambient 70°F (21°C): 90psi (6bar)

ΔP @ 200°F (93°C): 20psi (1.4bar)

Flow Rate: 10gpm (38 lpm) per 10 in. length

Product Safety

- All components FDA listed per CFR, Title 21
- Non-fiber releasing per FDA Part 210.3B (5) and (6)
- Non-photo sensitive

Filtration Ratings

99.98% efficiency at 0.2, 0.45, 1, 2, 5, 10, 20, 40, & 70 μm pore sizes

Beta Ratio (β) =

Upstream Particle Count @ Specified Particle Size and Larger

Downstream Particle Count @ Specified Particle Size and Larger

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) 100$$

Performance determined per ASTM F-795-88, Single-Pass Test using AC test dust in water at a flow rate of 3.5gpm per 10 in. (13.2 lpm per 254 mm) cartridge.

Performance Attributes

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is psid/gpm at 1cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Liquid Particle Retention Ratings (μm) @ Removal Efficiency of:

Cart.	β=5000 Absolute	β=1000 99.9%	β=100 99%	β=50 98%	β=20 95%
PAB002	0.2	<0.2	<0.2	<0.2	<0.1
PAB004	0.45	0.4	0.2	<0.2	<0.1
PAB010	1	0.8	0.4	<0.2	<0.1
PAB020	2	1.9	0.8	<0.2	<0.1
PAB050	5	3.8	1.4	0.4	0.15
PAB100	10	7	2	0.5	0.25
PAB200	20	13	4	1.8	0.35
PAB400	40	22	7	3.2	0.8
PAB700	70	52	22	15	5.5

Abso-Mate Flow Factors (psid/gpm @ 1 cks)

Rating (μm)	Flow Factor
0.20	3.100
0.45	1.000
1	0.750
2	0.300
5	0.072
10	0.031
20	0.021
40	0.012
70	0.008

Abso-Mate Length Factors

In.	Factor
9	1.0
10	1.0
19	2.0
20	2.0
29	3.0
30	3.0
39	4.0
40	4.0

Ordering Information



Filter Rating		Nominal Length			Support Construction		Seal Material		End Cap Configuration				Special Options			
Code	Micron	Code	Inches	mm	Code	Material	Code	Material	Code	Description	Code	Description	Code	Description		
002	0.2	9	9 9/16	244	F	Glass-filled Polypropylene (core only)	P	Polyethylene Foam (DOE gasket only)	AR	020 O-ring/Recessed cap	SSC	SS inserted 226 O-ring/Closed	B	Bubble-point test		
004	0.45	10	9 13/16	249	G	304 Stainless Steel (core only)	E	EPR	DO	Double open end (DOE)	SSF	SS inserted 226 O-ring/Fin	R	DI water rinse (5 min.)		
010	1	19	19 9/16	498			N	Buna-N	DX	Double open end/extended core	TC	222 O-ring/Flat	Z6	Individual Poly bag only		
020	2	20	19 15/16	506	A	Natural Polypropylene (All support components)	S	Silicone	LL ²	120/120 (Filterlite LMO & Nuclepore Polymeric Vessels)	TF	222 O-ring/Fin				
050	5	29	29 1/4	743			T ¹	PFA-Encapsulated Viton® (222, 226 & O-ring only)*	LR ²	120 O-ring/Recessed (Nuclepore)	STC	SS inserted 222 O-ring/Closed				
100	10	30	30 1/16	764			V	Viton®	OB	Std. open end/Polypropylene spring closed end	STF	SS inserted 222 O-ring/Fin				
200	20	39	39	991			X	No seal material	PR ²	213 O-ring/Recessed cap (Ametek® & Parker LT Polymeric Vessels)	TX	222 O-ring/Flex Fin				
400	40	40	40	1016					SC	226 O-ring/Flat			XB	Ext. core open end/Polypropylene spring closed end		
700	70								SF	226 O-ring/Fin						

Specifications are subject to change without notification. For User Responsibility Statement, see www.parker.com/safety

²Available only in 9 9/16" (-9) and 19 9/16" (-10) lengths

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Claripor™ Pleated Depth Filter Cartridges

Polypropylene pleated depth media for critical process applications

The best of pleated and depth style technologies combine in Parker's Claripor™ pleated depth filter cartridges. The unique layered construction provides absolute retention with high flow rates and excellent gel removal. These features, in addition to Claripor's high contaminant holding capacity and exceptional clarifying ability make it an ideal choice for a wide array of critical process applications.

Claripor cartridges are available with polypropylene media in absolute (99.98%) micron ratings from 0.5 to 90 microns.



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Benefits

- Pleated construction yields high flow rates compared to traditional depth filters
- Rigid cage design permits superior strength
- Graded density layering for superior removal of amorphous particles
- Available with all industry standard end configurations
- Absolute retention ratings for critical filtration
- All materials listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO9001 registered company

Applications

- Critical coatings
- Inkjet inks
- Specialty chemicals

Claripor™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Media - Polypropylene

Support/Drainage - Polypropylene

Hardware - Polypropylene

O-Rings (SOE) - EPR, Buna-N, Viton®, Silicone, PFA Encapsulated Viton®

Gaskets (DOE) - EPR, Buna-N, Viton®, Silicone

Recommended Operating Conditions

Flow Rate - 5gpm (18.9 lpm) per 10" equivalent

Change-out Pressure - 35psid (2.4bar)

Retention Ratings (99.98%)

0.5, 1.5, 3, 4.5, 10, 20, 30, 40, 70, 90µm

Maximum Operating Conditions

Maximum Temperature:

176°F (80°C) @ 30psid (2.1bar)

Maximum Differential Pressure:

70psi (4.8bar) @ 77°F (25°C)

30psi (2.1bar) @ 176°F (80°C)

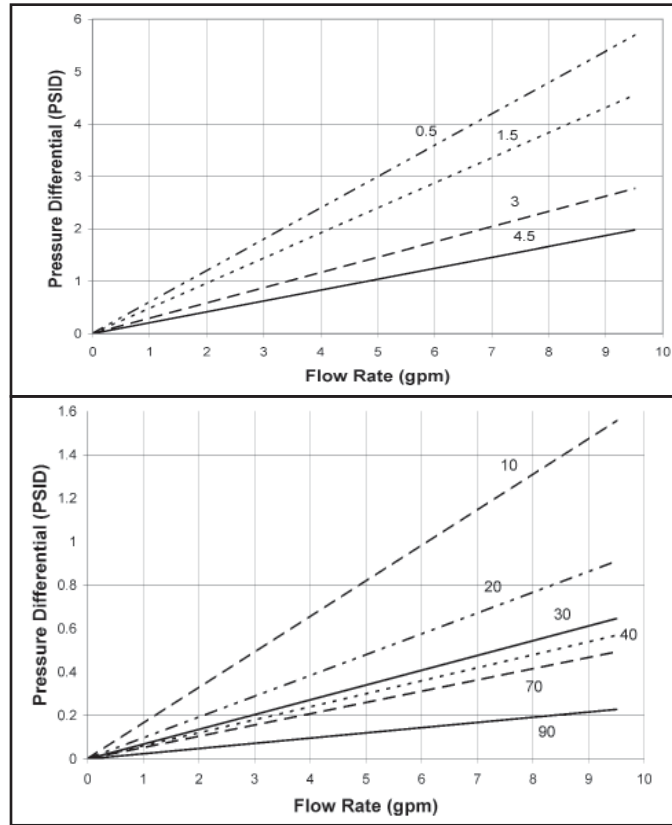
Dimensions (nominal)

Outside Diameter: 2.7" (6.86 cm)

Inside Diameter: 1" (2.54 cm)

Performance Attributes

Flow rate vs. ΔP for a 1cks liquid @ 73°F (23°C)*



*Consult Division for gas flow data 877-764-2234

Ordering Information

Cartridge Code		Pore Size		Nominal Length		Core Material		Seal Material		End Cap Configuration	
CP	Claripor	CODE	MICRON	CODE	INCHES (CM)	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION
		005	0.5	4	4" (10.16)	A	Natural Polypropylene	E	EPR	DO	Double open end (DOE)
		015	1.5	5	5" (12.7)	F	Glass-filled polypropylene	N	Buna-N	DX	Double open end/extended core
		030	3.0	10	10" (25.4)			S	Silicone	TC	222 O-ring/Flat
		045	4.5	20	20" (50.8)			T	PFA Encapsulated Viton® (O-rings only, not gaskets)	TF	222 O-ring/Fin
		100	10	30	30" (76.2)			V	Viton®	TX	222 O-ring/Flex Fin
		200	20	40	40" (101.6)					SC	226 O-ring/Flat
		300	30							SF	226 O-ring/Fin
		400	40							STC	222 O-ring/Flat cap w/SS insert
		700	70							STF	222 O-ring/Fin cap w/SS insert
		900	90							SSC	226 O-ring/Flat cap w/SS insert
										SSF	226 O-ring/Fin cap w/SS insert

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DS_IP_Claripor Rev. A

Flo-Pac® Pleated Depth Filter Cartridges

Pleated cartridges for superior industrial filtration

Parker Fulflo® Flo-Pac® Cartridges are the perfect choice for many industrial filtration requirements. Flo-Pac pleated cartridges contain premium grade, phenolic impregnated cellulosic filter media. Parker's line of pleated cartridges is designed for critical filtration applications, providing long service life, high flow rate and low pressure drop.

Flo-Pac Pleated Cartridges are available in 0.5µm, 1µm, 5µm, 10µm, 20µm, 30µm, and 60µm pore sizes (95% removal; $\beta = 20$).



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Benefits

- Pleated cellulosic media allow high flow capacity at low pressure drop
- Available in a variety of sizes and configurations to fit most industrial vessels
- Phenolic resin impregnated to provide strength, integrity and high contaminant capacity
- High strength spiral core withstands pressure surges to 100psid
- Suitable for operating temperatures to 250°F (121°C)
- Outer sleeve protects the media from damage
- ETP (Electro-tin-plated) steel metal components for both aqueous and oil-based applications
- Buna-N gaskets are standard, other materials are available

Applications

- Water Soluble
- Coolants
- Quench Oils
- Fuels
- Lubricating Oils
- Hydraulic Oils
- EDM Dielectrics
- Rolling Mill Oils
- Processing Liquids
- Gasoline

Flo-Pac® Filter Cartridges

SPECIFICATIONS

Filtration Ratings

95% at 0.5µm, 1µm, 5µm, 10µm, 20µm, 30µm, and 60µm pore sizes

Materials of Construction

Filter Media:

Phenolic impregnated cellulose

Core: ETP steel

End Caps: ETP steel

Sleeve:

300 series - Polypropylene
600 & 700 series - ETP steel

Adhesive: Thermosetting PVC

End Seals:

300 & 700 Series—Buna-N gaskets, 600 Series—Buna-N gaskets/grommets, 500 Series—fiber gaskets

Packaging

300 Series

310—24/carton (12 lb ≈ shipping wt)
320—12/carton (12 lb ≈ shipping wt)
330—12/carton (18 lb ≈ shipping wt)
340—12/carton (24 lb ≈ shipping wt)

500 Series

518—6/carton (14 lb ≈ shipping wt)

600 Series

614—6/carton (20 lb ≈ shipping wt)
629—4/carton (26 lb ≈ shipping wt)
644—4/carton (40 lb ≈ shipping wt)

700 Series

718—6/carton (20 lb ≈ shipping wt)
736—4/carton (26 lb ≈ shipping wt)
754—4/carton (39 lb ≈ shipping wt)

Maximum Recommended Operating Conditions

Temperature: 250°F (121°C)

Differential Pressure: 70psi (4.8bar)

Change Out ΔP: 35psid (2.4bar)

Flow Rate per Single Length Cartridge:

300 Series 7gpm
500 Series 50gpm
600 Series (3 1/2 in. ID) 50gpm
600 Series (1 9/16 in. ID) 35gpm
700 Series 50gpm

Dimensions

300 Series

2 1/2 in. OD x 1 in. ID x 9 5/8 in.,
19 3/4 in., 29 1/4 in., 29 5/8 in., 40 in.

500 Series

4 1/2 in. OD x 1 3/4 in. ID x 18 in.

600 Series

6 1/4 in. OD x 3 1/12 in., or 1 9/16 in. x 14 3/8, 29
or 43 3/8 in. long

700 Series

6 1/4 in. OD x 2 5/8 in. or 2 1/8 in. ID x 18, 36,
or 54 in. long

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.9%	β=100 99%	β=20 95%	β=10 90%
FP-0.5	12	10	3	0.5	<.0.5
FP-1	15	12	6	1	<1.0
FP-5	30	20	9	5	3.5
FP-10	50	35	18	10	7
FP-20	90	70	40	20	12
FP-30	100	85	50	30	21
FP-60	200	150	90	60	45

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

FP Flow Factor (psid/gpm @ 1cks)

Rating (µm)	Flow Factor
0.5	0.0260
1	0.0170
5	0.0020
10	0.0018
20	0.0010
30	0.0009
60	0.0005

FP Length Factors

Style	Length Factor
FP310	1.0
FP320	2.0
FP329	3.0
FP330	3.0
FP340	4.0
FP518	3.3
FP614	3.6
FP629	7.2
FP644	10.8
FP718	6.5
FP736	13.0
FP754	19.5

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Ordering Information

Cartridge Code		Outside Diameter		Length		Micron Rating (µm)	Inside Diameter		Seal Material		Body	
CODE	DESCR.	CODE	INCHES (Series)	CODE	INCHES (Series)		CODE	INCHES (SERIES)	CODE	DESCRIPTION	CODE	DESCRIPTION
FP	Flo-Pac	3	2 1/2" (300)	10	9 5/8" (300)	0.5	None	1" (300)	None	Buna-N Gaskets	None	Metal (500, 600, 700 Series)
		5	4 1/2" (500)	14	14 3/8" (600)	1	None	1 3/4" (500)	A	Vellumoid (300, 600, 700 Series)	None	Polypro (300 Series)
		6	6 1/4" (600)	18	18" (500, 700)	5	None	3 1/2" (600)	B	Fiber (500 Series Only)	M	Metal (300 Series)
		7	6 1/4" (700)	20	19 3/4" (300)	10	None	2 5/8" (700)	C	Cork (700 Series Only)	N	No Body
				29	29" (600)	20	1	1 9/16" (600)	G	Buna-N Grommets (600 Series 1 1/4" ID)		
				29	29 1/4" (300)	30	8	2 1/4" (700)	V	Viton®		
				30	29 3/4" (300)	30						
				36	36" (700)	60						
				40	40" (300)							
				44	43 3/8" (600)							
				54	54" (700)							

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DS_IP_Flo-Pac Rev. A

Flo-Pac® + Pleated Depth Filter Cartridges

Construction for organic solvent filtration

Parker Fulflo® Flo-Pac®+ pleated cartridges are the filters of choice for many industrial filtration requirements. These cartridges are manufactured with premium grade, phenolic impregnated cellulosic filter media for long service life, high flow rate and low pressure drop. Unique epoxy resin bonding of end caps, pleat side seal and gaskets provides excellent resistance to most organic solvents.

Flo-Pac+ pleated cartridges are available in 0.5µm, 1µm, 5µm, 10µm, 20µm, 30µm, & 60µm pore sizes (95% removal; $\beta = 20$).



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Benefits

- Epoxy bonding of end caps, pleat side seal and gaskets provides resistance to most organic solvents
- Premium pleated cellulosic media allow high flow capacity at low pressure drop
- Available in a variety of sizes & configurations to fit most industrial vessels
- Impregnated phenolic resin provides strength, integrity and high contaminant capacity
- Suitable for operating temps. to 250°F (121°C)
- Perforated outer metal sleeve protects media against damage
- ETP (Electro-tin-plated) steel metal components for aqueous and oil-based applications
- Gaskets provide positive seals and are available in Viton,* cork and standard Vellumoid

- Recommended range is pH 4-10.
(Please call for specific recommendation)
- Spiral core withstands pressure surges to 100psid

Applications

- Aromatic Hydrocarbons (toluene, xylene, benzene)
- Ketones (acetone, isophorone, methylethyl ketone)
- Ethers (THF, dioxane)
- Amines (DEA, TEA, DMEA)
- Glycols (ethyl acetate, cellosolve acetate)
- Aliphatic Hydrocarbons (hexane, pentane, naphtha)
- Halogenated Hydrocarbons (methylene chloride, perchloroethylene)
- Esters (EG, PEG, DEG)

Flo-Pac® + Filter Cartridges

SPECIFICATIONS

Materials of Construction

Filter Media

Phenolic impregnated cellulose

Core - ETP steel

End Caps - ETP steel

Sleeve - ETP steel

Adhesive - Epoxy

End Seals

Vellumoid (standard), Viton®, cork

Maximum Recommended Operating Conditions

Temperature: 250°F (121°C)

Change Out ΔP: 35psi (2.4bar)

Flow Rate per Single Length Cartridge:

300 Series	7gpm
600 Series (3 1/2 in ID)	50gpm
600 Series (1 9/16 in ID)	35gpm
700 Series	50gpm
Differential Pressure: 70psi (4.8bar)	

Dimensions

300 Series

2 1/2 in OD x 1 in ID x 9 5/8 in, 19 3/4 in, 29 1/4 in, 29 5/8 in and 40 in long

600 Series

6 1/4 in. OD x 3 1/2 in. ID or 1 9/16 in. ID x 14 3/8 in. long or 29 in. long

700 Series

6 1/4 in OD x 2 5/8 in or 2 1/8 in ID x 18 in or 36 in long

Packaging

300 Series

310-24/carton (12 lb ≈ shipping wt)
320-12/carton (12 lb ≈ shipping wt)
330-12/carton (18 lb ≈ shipping wt)
340-12/carton (24 lb ≈ shipping wt)

600 Series

614-6/carton (20 lb ≈ shipping wt)
629-6/carton (40 lb ≈ shipping wt)

700 Series

718-6/carton (20 lb ≈ shipping wt)
736-4/carton (26 lb ≈ shipping wt)

Filtration Ratings

95% at 0.5μm, 1μm, 5μm, 10μm, 20μm, 30μm, and 60μm pore sizes

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

FP+ Flow Factor (psid/gpm @ 1 cks)		FP+ Length Factors	
Rating (μm)	Flow Factor	Style	Length Factor
0.5	0.0260	FP310	1.0
1	0.0170	FP320	2.0
5	0.0020	FP329	3.0
10	0.0018	FP330	3.0
20	0.0010	FP340	4.0
30	0.0009	FP614	3.6
60	0.0005	FP629	7.2
		FP718	6.5
		FP736	13.0

Liquid Particle Retention Ratings (μm)

@ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.9%	β=100 99%	β=20 95%
FPE-0.5	12	10	3	0.5
FPE-1	15	12	6	1
FPE-5	30	20	9	5
FPE-10	50	35	18	10
FPE-20	90	70	40	20
FPE-30	100	85	50	30
FPE-60	200	150	90	60

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1 cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Ordering Information

Cartridge Code		Outside Diameter		Length		Micron Rating (μm)	Inside Diameter		Seal Material	
CODE	DESCR.	CODE	INCHES (Series)	CODE	INCHES (Series)		CODE	INCHES (SERIES)	CODE	DESCRIPTION
FPE	Flo-Pac +	3	2 1/2" (300)	10	9 5/8" (300)	0.5	None	1" (300)	A	Vellumoid (300, 600, 700 Series)
		6	6 1/4" (600)	14	14 3/8" (600)	1	None	3 1/2" (600)	C	Cork (700 Series Only)
		7	6 1/4" (700)	18	18" (700)	5	None	2 5/8" (700)	N	Buna-N
				20	19 1/4" (300)	10	1	1 9/16" (600)	V	Viton®
				29	29" (600)	20	8	2 1/4" (700)		
				29	29 1/4" (300)	30				
				30	29 5/8" (300)	60				
				36	36" (700)					
				40	40" (300)					

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DS_IP_Flo-Pac Plus Rev. A

Glass-Mate™ Cartridges

Absolute-rated and economical filtration with pleated microglass

Glass-Mate™ cartridges offer an economical choice for absolute-rated efficiency, high flow rate capability and long service life. A wide variety of construction components, end fittings and seal options make this product line ideal for pre-filtration and point-of-use filtration for many industrial applications.

Glass-Mate cartridges are available in 0.2, 0.45, 1.0, 2.0, 3.0, 5.0, 10, 20 and 40µm absolute-rated pore sizes.



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www.parker.com/processfiltration

Benefits

- Absolute-rated media provides reliable removal efficiency
- Thermal bonding eliminates particle bypass
- Laminated media/support layer maximizes flow capacity and media utilization and minimizes media migration
- Variety of construction/seal options for increased compatibility
- End fitting options provide competitive housing retrofit capability
- All FDA listed components bio-safe for edible and potable liquids

- High surface area yields high flow rate, low differential pressure
- Non-fiber-releasing media with minimal extractables provides high purity filtrate
- ISO9001 registered company

Applications

- Chemicals
- Coatings
- Water
- R.O. Pre-filtration

Glass-Mate™ Cartridges

SPECIFICATIONS

Effective Filtration Area

5 ft²/10 in. (0.46 m²/254 mm) minimum

Materials of Construction

Filter Medium:

Borosilicate microfiberglass w/ acrylic binder

Support/Drainage Layers:

Spunbonded polyester; laminated on the downstream side

Recommended Operating Conditions

Maximum Temperature

Glass Filled Polypropylene:

200°F @ 35ΔP (93°C/2.4bar)

Polyester:

140°F @ 35ΔP (60°C/2.4bar)

Stainless Steel:

275°F @ 35ΔP (135°C/2.4bar)

Change-out Differential Pressure

35psi (2.4bar)

Maximum Flow Rate

10gpm per 10 in. length (38 lpm/254 mm)

Design Flow Rate

5gpm per 10 in. length (9.5 lpm/254 mm)

Maximum Differential Pressure

Glass-Filled Polypropylene:

90psi @ 75°F (6.2bar/24°C)

Polyester:

70psi @ 75°F (4.8bar/24°C)

Stainless Steel:

75psi @ 275°F (5.1bar/135°C)

Biological Safety/Product Purity

- All components FDA listed per CFR, Title 21
- Non-fiber releasing per FDA

Sterilization/Sanitization

Hot water ("F" construction): 180°F (82°C) for 30 minutes at maximum 15psid (1bar).

In-Line Steam/Autoclave ("F" construction with stainless steel sleeve): 60 minutes at 255°F (140°C) at 2psid (0.14bar) maximum pressure.

Flow Rate and Pressure Drop Formulas

Flow Rate (gpm):

Clean ΔP x Length Factor

Viscosity x Flow Factor

Clean ΔP:

Flow Rate x Viscosity x Flow Factor

Length Factor

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Glass-Mate Flow Factor (psid/gpm @ 1cks)

Rating (μm)	Flow Factor
0.2	0.115
0.45	.108
1.0	.102
2.0	.095
3.0	.090
5.0	.072
10	.060
20	.042
40	.018

Flow Rate Capability Glass-Mate Length Factor

Length (in.)	Length Factor
9	1.0
10	1.0
19	2.0
20	2.0
29	3.0
30	3.0
39	4.0
40	4.0

Liquid Particle Retention Ratings (μm) @ Removal Efficiency of:

Cart.	β=5000 Absolute	β=1000 99.8%	β=100 99%	β=20 95%	β=10 90%
PMG002	0.2	0.15	<0.1	<0.1	<0.1
PMG004	0.45	0.3	<0.1	<0.1	<0.1
PMG010	1.0	0.6	0.2	<0.1	<0.1
PMG020	2.0	1.2	0.4	0.2	0.1
PMG030	3.0	1.8	0.6	0.3	0.2
PMG050	5.0	3	1.3	0.5	0.4
PMG100	10	7	3.5	1.6	1.2
PMG200	20	16	8	4	2.5
PMG400	40	32	20	11	8

Ordering Information

PMG [] - [] [] [] [] []

Particle Removal Rating		Nominal Length			Support Construction		Seal Material		End Cap Configuration				Special Options			
CODE	MICRON	CODE	INCHES	mm	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION		
002	0.2	9	9 5/8"	244	F	Glass-filled polypropylene core & pure polypropylene extruded outer cage	P	Polyethylene Foam (DOE gasket only)	AR	020 O-ring/ Recessed cap	TC	222 O-ring/Flat Cap	Blank	None		
004	0.45	10	9 13/16"	249			E	EPR	DO	Double open end (DOE)	TF	222 O-ring/Fin	Z6	Individual Poly bag only		
010	1.0	19	19 5/8"	498			N	Buna-N	DX	Double open end/ extended core	TX	222 O-ring/Flex Fin	Z15	Individual poly bag 15/ctn. (20", 30", 40")		
020	2.0	20	19 15/16"	506			S	Silicone	LL ³	120 O-ring/ Recessed Cap	XB	Ext. core open end/ Polypropylene spring closed end	Z30	Individual poly bag 30/ctn. (10")		
030	3.0	29	29 1/4"	743	P	Polyester core, end caps & outer netting	T ²	PFA Encapsulated Viton® (222, 226 O-ring only)	LR	120 O-ring/Recessed ³	SSC	SS inserted 226 O-ring/Closed				
050	5.0	30	30 1/16"	764			G ¹	304 Stainless Steel core with polyester outer netting	V	Viton®	OB	Std. open end/ Polypropylene spring closed end	SSF	SS inserted 226 O-ring/Fin		
100	10	39	39"	991	X	No seal material			PR	213 O-ring/ Recessed cap ³	STC	SS inserted 222 O-ring/Closed				
200	20	40	40"	1016	X	Coreless Cartridge					SC	226 O-ring/Flat Cap	STF	SS inserted 222 O-ring/Fin		
400	40										SF	226 O-ring/Fin				

¹Stainless steel end caps incl. only on DO code option

²PFA/Viton is O-ring only; for DOE

³Available only in 9 5/8" (-9) and 19 5/8" (-19) lengths

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Fulflo® 336 Pleated Cartridge

Pleated cartridge for improved efficiency, dirt-holding capacity & flow rates

Parker's Fulflo® Pleated 336 size filter cartridges provide highly efficient removal of solid contaminants from a variety of petrochemical, refinery and oil field applications. Cartridges are manufactured from premium grade phenolic impregnated cellulose and polypropylene blown media. These structures provide superior removal efficiency. The cartridges are available in 3µ, 10µ, 12µ, 22µ, 100µ and 150µ pore sizes (99.98% removal; $\beta = 5000$).



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Benefits

- Retrofits housings that use 3" OD x 36" long SOE cartridges with spring
- High surface area
- Low pressure drop
- Materials compatible with most applications
- High filtration efficiency
- High dirt-holding capacity
- Rugged construction

Applications

- Petrochemical
- Refineries
- Oil Fields
- Produced Water
- Amines
- Glycols

Fulflo® 336 Pleated Cartridges

SPECIFICATIONS

Materials of Construction

Cellulose:

- Phenolic impregnated cellulose media
- Polypropylene support core and end caps (Steel core optional)
- Buna-N gasket 316 st. stl. spring

Polypropylene:

Filter media and support layers

Recommended Operating Conditions

Maximum 33gpm per cartridge

Change Out: 35psid (25 km/cm)

Polypropylene Support

Maximum Temperature @ 10psid
(0.7 km/cm²): 200°F (93°C)

Maximum Temperature @ 35psid
(2.5 km/cm²): 125°F (52°C)

Maximum Temperature @ 60psid
(4.2 km/cm²): 75°F (24°C)

Steel Support

Maximum Temperature: 250°F (121°C)

Maximum ΔP: 50psid (3.5 km/cm²)

Optimum change out ΔP: 35psid
(2.5 km/cm²)

Dimensions

Length:

34 ¾ in. (883 mm) w/o spring
37 ⅛ in. (943 mm) with spring

OD: 3 in. (76 mm)

ID: 1 ⅙ in. (40 mm)

Flow Factor (psid/gpm @ 1 cks)

Rating (µm)	Flow Factor
PPC005	0.090
PCG020	0.026
PCC2	0.017
PCC10	0.002
PCC30	0.001
PCC60	0.005

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.7%	β=100 99%	β=50 98%	β@2 µm
PPC005	3	2.8	0.5	<0.5	400
PCG020	10	8.6	1.8	0.9	110
PCC2	12	10	3.2	1.7	64
PCC10	22	18	6	3.2	35
PCC30	100	85	11	4.5	25
PCC60	150	90	30	15.0	10

Style	Length Factor
336	4

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
4. Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Beta Ratio (β) =

$$\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$$

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) \times 100$$

Ordering Information

Cartridge Code (Absolute)		Length		Support Construction		Gasket		Spring Code	
CODE	MICRON	CODE	INCHES (MM)	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION
PPC005	3	336	34 ¾ (883)	A	Polypropylene	E	EPR	GSY	Stainless Steel w/Yellow Code (PPC005)
PCG020	10			C	Steel	N	Buna-N	GSR	Stainless Steel w/Red Code (PCG020)
PCC2	12							GSW	Stainless Steel w/White Code (PCC2)
PCC10	22							GS	Stainless Steel w/No Code
PCC30	100								
PCC60	150								

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DS_IP_336 Pleated Rev. A

Fulflo® 1401 Pleated Cartridge

Pleated cartridge for high-efficiency, high-pressure, dirt-holding capacity & flow rate

Parker's Fulflo® 1401 pleated cartridges are designed to replace similar competitive cartridges in high pressure water injection & disposal, gas streams and fluid processing. The cartridges are available in cellulosic and polypropylene media.

Fulflo® 1401's are available in absolute ratings of 3, 6, 10, 12, 22, and 100 microns ($\beta = 5000, 99.98\%$).



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Benefits

- Retrofits into compatible housing that use 1401 style cartridges
- Maximize surface area to prevent particle bridging
- High filtration efficiency
- Low pressure drops
- High flow rates
- Internal o-ring seal for positive sealing
- Rugged construction

Applications

- Water Injection
- Solvents
- Acids
- Chemicals
- Hydrocarbons
- Water

Fulflo® 1401 Pleated Cartridges

SPECIFICATIONS

Filtration Ratings

99.98% at 3µm, 6µm, 10µm, 12µm, 22µm, and 100µm pore sizes

Recommended Operating Conditions

Pressure rating - 50 psid

Temperature Rating - 275°F

Recommended flow rate - 75gpm

Change out ΔP - 35psid

Dimensions:

3¾" OD x 2½" ID x 38¾" long

Materials of Construction

Filter media

PCC - Phenolic impregnated cellulose

PCG - Phenolic impregnated cellulose with 14% glass fiber

PPC - Polypropylene

Core & End Cap - Steel

Outer Mesh Sleeve - Polypropylene

Internal O-Ring - Buna-N

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β = 5000 99.98%	β = 1000 99.9%	β = 100 99%	β = 20 95%	β = 10 90%
Pleated Polypropylene					
PPC005-1401	3	2.8	0.5	<0.5	<0.5
PPC010-1401	6	4.8	1.2	<0.5	<0.5
PPC020-1401	10	8	5	<1.0	<0.5
Pleated Cellulosic					
PCG020-1401*	10	8.6	1.8	0.9	<0.5
PCC3-1401	12	10	3	1.7	<0.5
PCC10-1401	22	18	6	3.2	<1.0
PCC30-1401	100	85	11	4.5	<1.0

Manufactured with 14% glass fiber

1401 Cross Reference	
Parker	Pall
PPC005-1401	MCC 1401J025 - H13
PPC010-1401	MCC 1401J060 - H13
PPC020-1401	MCC 1401 J100 - H13
PCG020-1401	MCC 1401 E100 - H13
PCC3-1401	-
PCC10-1401	MCC 1401E280 - H13
PCC30-1401	MCC 1401E500 - H13

Beta Ratio (β) =

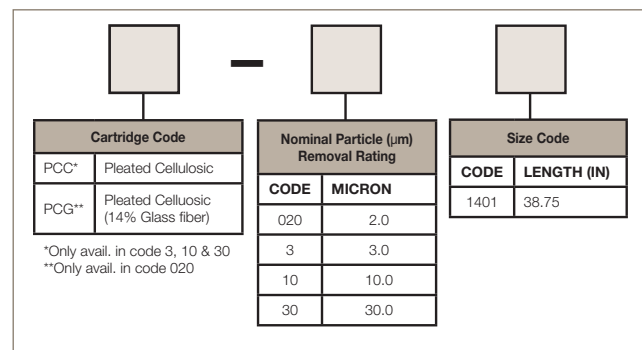
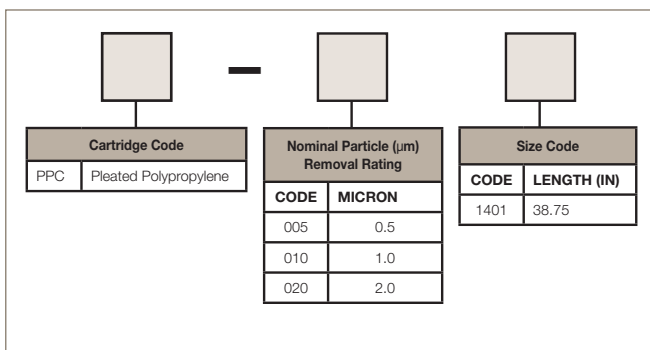
Upstream Particle Count @ Specified Particle Size and Larger

Downstream Particle Count @ Specified Particle Size and Larger

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) \times 100$$

Performance determined per ASTM F-795-88, single-pass test using AC test dust in water.

Ordering Information



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DS_IP_1401 Pleated Rev. B

Fulflo® PCC Filter Cartridge

Unique construction improves particle retention, service-life and flow rates

Parker Fulflo® Pleated Cellulosic Cartridges meet a broad range of critical filtration applications. Each cartridge in the Fulflo Pleated Cellulosic series is manufactured with premium grade, phenolic impregnated, cellulosic filter media. Phenolic resin locks the cellulosic fibers into a rigid, porous matrix. This structure provides superior particle removal and particle retention performance under the most severe conditions.

Fulflo Pleated Cartridges are available in 2µm, 3µm, 10µm, 30µm and 60µm pore sizes (99%+ removal: $\beta = 100$).



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Benefits

- Premium pleated cellulosic media allow high flow capacity at low pressure drop
- Available in a variety of cartridge lengths and end cap configurations to fit most industrial vessels
- Phenolic resin impregnated to provide strength, integrity and high contaminant capacity
- High flow rates permit the use of smaller vessels & fewer cartridges
- Lower ΔP reduces power requirements and pump wear and tear
- Longer cartridge life reduces frequency of filter change out resulting in less disposal costs, reduced inventory and less process interruptions

Applications

- Chemical
- Oil Field
- Photographic
- Film & Paper
- Metal Treatment
- Process Water
- Synthetic Fibers
- Process Gas
- Petroleum
- Coatings, Paint
- Ink & Resins
- Recording Media

Fulflo[®] PCC Filter Cartridge

SPECIFICATIONS

Materials of Construction

Phenolic impregnated cellulosic media (PCC)
 Polypropylene support
 Stainless steel support (optional)
 PCG is glass-modified cellulose

Recommended Operating Conditions

Maximum 10gpm per 10 in length
 (38 lpm/254 mm)
 Stainless Steel Support:
 Maximum Temperature: 250°F (121°C)
 Maximum DP: 50psi (3.5 kg/cm²)
 Optimum Change Out DP:
 35psi (2.5 km/cm²)

Polypropylene Support

Maximum Temperature @ 10psid
 (0.7 km/cm²): 200°F (93°C)

Maximum Temperature @ 35psid
 (2.5 km/cm²): 125°F (52°C)

Maximum ΔP @ 75°F (24°C):

60psi (4.2 kg/cm²)

Change Out DP: 35psi (2.5 km/cm²)

Filtration Ratings

99%+ at 2μm, 3μm, 10μm, 30μm,
 and 60μm pore sizes

Performance Attributes

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Beta Ratio (β) =

$$\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$$

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) \times 100$$

Performance determined per ASTM F-795-88, Single-Pass Test using AC test dust in water at a flow rate of 3.5gpm per 10 in (13.2 lpm per 254 mm) cartridge.

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

PCC/PCG Flow Factor (psid/gpm @ 1 cks)

Rating (μm)	Flow Factor
2	0.026
3	0.017
10	0.002
30	0.001
60	0.0005

Liquid Particle Retention Ratings (μm) @ Removal Efficiency of:

Cart.	β=5000 Absolute	β=1000 99.7%	β=100 99%	β=50 98%	β@2 μm
PCG020	10	8.6	1.8	0.9	110
PCC3	12	10	3.2	1.7	64
PCC10	22	18	6	3.2	35
PCC30	100	85	11	4.5	25
PCC 60	150	90	30	15.0	10

Ordering Information

Cartridge Code		Nominal Length		Support Construction		Seal Material		End Cap Configuration	
CODE	INCHES (MM)	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION	CODE	DESCRIPTION
PCG020	2	9	9 5/8" (244)	A	Polypropylene (DOE/SOE)	P	Poly Foam (DOE Gasket Only)	AR	020 O-ring/Recessed (Gelman)
PCC3	3	10	9 13/16" (249)	G	304 Stainless Steel (DOE)	E	EPR	DO	Double open end (DOE)
PCC10	10	19	19 5/8" (498)			N	Buna-N	DX	DOE w/Core Extender
PCC30	30	20	19 15/16" (506)			S	Silicone	LL	120/120 (Filterite LMO and Nuclepore Polymeric Vessels)**
PCC60	60	29	29 1/4" (743)			V	Viton®	LR	120 O-ring/Recessed (Nuclepore)**
		30	30 1/8" (764)					OB	Std. Open End/Polypro Spring Closed End
		40	40 (1016)					PR	213 O-ring/Recessed (Ametek & Parker LT Polymeric Vessels)**
								SC	226 O-ring/Flat
								SF	226 O-ring/Fin
								TC	222 O-ring/Flat
								TF	222 O-ring/Fin
								TX	222 O-ring/Flex Fin
								XB	Extended Core Open End/Polypro Spring Closed End

**Available only in 9 5/8" (-9) and 19 5/8" (-19) lengths

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DS_IP_PCC Rev. A



Fulflo® Poly-Mate™ Filter Cartridges

Quality, economical filtration for critical process applications



Parker's Poly-Mate™ Cartridges incorporate a unique combination of polypropylene melt blown and spun-bonded media to provide high surface area, finish-free and non-fiber releasing filtration. All-polypropylene construction maximizes chemical resistance to acids, bases, salts, and most organic solvents.

Poly-Mate™ Pleated Cartridges are available in 0.5µm, 1µm, 5µm, 10µm, 30µm, and 60µm pore sizes (99% removal; $\beta = 100$).



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Benefits

- High efficiency rated for critical process applications (99% efficiency)
- High pleated surface area for extended service life, low pressure drop and high flow capacity
- Poly-Mate™ Xtra Duty™ (PXD) cartridge features glass-filled polypropylene core for high temperature and high pressure use with rigid outer cage supporting pleated media in backwash applications
- Optional stainless steel O-ring adapter inserts provide added strength for *in situ* sterilization
- Poly-Mate™ Xtra Duty cartridges are available with backwashable construction, reducing replacement maintenance and cartridge disposal costs
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- One piece, continuous to 40 in length, integrally sealed pleated filter media

Applications

- Disposal Wells
- Photographic
- Wastewater
- High-Technology Coatings
- R.O. Membrane Pre-filtration
- Plating Chemicals
- Fine Chemicals
- Process Water
- Deionized Water



ENGINEERING YOUR SUCCESS.

Fulflo[®] Poly-Mate[™] Filter Cartridges

SPECIFICATIONS

Materials of Construction

Filter media and support layers

Polypropylene

Surface treatment

None (fusion-sealed), chemically inert and neutral

Media protection

PM – polypropylene netting;

PXD – polypropylene cage

Pleat pack side seal - Fused polypropylene

End caps - Polypropylene

Seals - Buna-N, EPR, Silicone, Viton[®], PFA encapsulated Viton[®] O-rings, Polyethylene foam gaskets

Recommended Operating Conditions

Poly-Mate Cartridges (Std.)

Change Out ΔP - 35psid (2.4bar)

Maximum Temperature - 200°F (93°C)

Maximum Temperature @

35psid (2.4bar) - 125°F (52°C)

Maximum ΔP @ 70°F (21°C)

60psid (4.1bar)

Maximum ΔP @ 200°F (93°C)

10psid (0.7bar)

Poly-Mate Xtra-Duty Cartridges

Change Out ΔP - 35psid (2.4bar)

Maximum Temperature - 200°F (93°C)

Maximum Temperature @

35psid (2.4bar) - 200°F (93°C)

Maximum ΔP @ 70°F (21°C)

90psid (6.1bar)

Maximum ΔP @ 200°F (93°C)

35psid (2.4bar)

Performance Attributes

Dimensions

Cartridge Outside Diameter

2 1/2 in (63.5 mm)

Cartridge Inside Diameter

DOE – 1 1/16 in (27 mm)

SOE – 1 in. (25.4 mm)

Filtration Ratings

99% at 0.5 μ m, 1 μ m, 5 μ m, 10 μ m, 30 μ m, and 60 μ m pore sizes

Effective Filtration Area

Up to 6.0 ft²/10 in (0.6m²/254 mm)

Recommended Maximum Flow Rate

Maximum 10gpm per 10 in. length

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Beta Ratio (β) =

Upstream Particle Count @
Specified Particle Size and Larger

Downstream Particle Count @
Specified Particle Size and Larger

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) 100$$

Performance determined per ASTM F-795-88. Single-Pass Test using AC test dust in water at a flow rate of 3.5gpm per 10 in (13.2 lpm per 254 mm) cartridge.

Notes:

1. **Clean ΔP** is psi differential at start.
2. **Viscosity** is centistokes. Use Conversion Tables for other units.
3. **Flow Factor** is ΔP /GPM at 1 cks for 10 in. (or single).
4. **Length Factors** convert flow or DP from 10 in (single length) to required cartridge length.

Liquid Particle Retention Ratings (μ m) @ Removal Efficiency of:

Cartridge	$\beta=5000$ 99.98%	$\beta=1000$ 99.9%	$\beta=100$ 99%	$\beta=50$ 98%	$\beta=20$ 95%	$\beta=10$ 90%
PM/PXD005	3	3	0.5	.25	<0.1	<0.1
PM/PXD010	5	4.5	1.0	0.5	0.2	<0.1
PM/PXD050	15	10	4	2.0	0.7	0.25
PM/PXD100	30	28	10	6	3	1.2
PM/PXD300	45	43	30	18	8	4.5
PM/PXD600	95	90	50	40	20	12

Poly-Mate Flow Factors (psid/gpm @ 1 cks)		Poly-Mate Length Factors	
Rating (μ m)	Flow Factor	Inches	Factor
		9	1
		10	1
0.5	0.0900	19	2
1.0	0.0530	20	2
5.0	0.0290	24	3
10.0	0.0068	30	3
30.0	0.0048	39	4
60.0	0.0030	40	4

Ordering Information

Cartridge Code		Pore Size		Nominal Length		Core		Seal Material		End Cap Configuration		Special Options	
PM	Standard	CODE	MICRON	CODE	INCHES (MM)	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION	CODE	DESCRIPTION
PXD	Xtra Duty	005	0.5	9	9 9/16 (244)	A	Natural Polypropylene (PM core only)	P	Polyfoam (DOE gasket only)	AR	020 O-ring/Recessed cap	B	Bubble-point test
		010	1.0	10	9 9/16 (249)	F	Glass-filled polypropylene (PXD core only)	E	EPR	DO	Double open end (DOE)	R	DI water rinse (5 minutes)
		050	5.0	19	19 9/16 (498)	G	304 stainless steel (core only)	N	Buna-N	DX	Double open end/extended core	Z6	Individual Poly bag only (PXD only)
		100	10.0	20	19 9/16 (506)			S	Silicone	LL	120/120 (Filterlrite LMO & Nuclepore Polymeric Vessels)**	Z15	Individual Poly bag 15/ctn. (20', 30', 40') (PXD only)
		300	30.0	29	29 1/4 (743)			T	PFA Encapsulated Viton [®] (222, 226 O-ring only)*	LR	120 O-ring/Recessed (Nuclepore)**	Z30	Individual Poly bag 30/ctn. (10') (PXD only)
		600	60.0	30	30 1/16 (764)			V	Viton [®]	PR	213 O-ring/Recessed cap (Ametek [®] & Parker LT Polymeric Vessels) **		
				40	40 (1016)			X	No seal material	TC	222 O-ring/Flat		
										TF	222 O-ring/Fin		
										SC	226 O-ring/Flat		
										SF	226 O-ring/Fin		

*PFA/Viton[®] is O-ring only, T is expanded PTFE gaskets

**Available only in 9 9/16" (9) and 19 9/16" (-10) lengths

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DS_IP_Poly-Mate Rev. A

Fulflo® Poly-Mate™ Plus Filter Cartridges

High surface area and high efficiency
all-polypropylene pleated cartridges

Fulflo® Poly-Mate™ Plus Cartridges, made of pleated polypropylene microfiber, provide high efficiency and high purity filtration. The high efficiency of the Poly-Mate Plus line makes it an ideal membrane pre-filter or cost-effective alternative

to membrane cartridges in a wide range of applications.

Poly-Mate Plus Pleated Cartridges are available in the following pore sizes (nominal rating at 90%): 0.25µm, 0.45µm, 0.8µm, 2.0µm, 3.0µm,



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5.0µm, 30.0µm, 50.0µm, 100.0µm.

Benefits

- All-polypropylene media and construction meet a broad range of performance requirements
- One-piece integral construction is 100% bonded for maximum cartridge integrity
- High surface area design provides superior flow rates and extended service life
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Fixed pore construction provides ultimate particle retention
- Major end seal options are available to fit most standard vessels
- Poly-Mate™ Plus cartridges are non-fiber releasing and ensure

consistent quality filtration
performance

Applications

- DI Water
- Process Water
- Magnetic Media
- Plating Chemicals
- Membrane Pre-filter

Fulflo® Poly-Mate™ Plus Filter Cartridges

SPECIFICATIONS

Materials of Construction

Filter Media

- Melt blown polypropylene microfiber

Media Support Layers

- Non-woven or mesh polypropylene

Core

- Heavy wall high strength polypropylene

Media Support Cage and Thermally

Welded End Caps

- Molded polypropylene

Seal Materials

- Buna-N, EPR, Silicone, Viton®, PFA Encapsulated Viton®

Dimensions:

Cartridge Outside Diameter:

- 2 1/16 in.

Cartridge Inside Diameter:

- DOE: 1 1/16 in.
- SOE: 1 3/32 in.

Maximum Recommended Operating Conditions:

Temperature - 200°F (93°C)

Temperature @ 35psid - 160°F (71°C)

Change Out ΔP - 35psi (2.4bar)

ΔP @ Ambient 70°F (21°C) - 70psi (4.8bar)

ΔP @ 200°F (93°C) - 20psi (1.4bar)

Flow Rate -10gpm (38 lpm) per 10 in. length

Product Safety:

- All components FDA listed per CFR, Title 21
- Non-fiber releasing per FDA Part 210.3B (5) and (6)
- Non-photosensitive

Filtration Ratings:

90% at 0.25, 0.45, 0.8, 2, 3, 5, 10, 30, 50 and 100 micrometer pore sizes

Performance Attributes

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor} \times \text{Length Factor}$$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is psid/gpm at 1 cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cart.	β=1000 99.9%	β=100 99%	β=50 98%	β=20 95%	β=10 90%
PMP002	2.2	1.6	0.90	0.45	0.30
PMP004	3.1	2.9	1.4	0.75	0.45
PMP008	9.2	8.0	3.2	1.5	0.8
PMP020	11.0	9.5	8.6	3.1	1.7
PMP030	12.0	11.0	6.1	4.6	3.0
PMP050	14.0	12.0	10.6	8.4	5.0
PMP100	21.0	17.0	15.0	12.0	10.0
PMP300	52.0	44.0	35.0	24.0	15.0
PMP500	71.0	68.0	62.0	56.0	50.0
PMP1000	138.0	126.0	117.0	109.0	100.0

Poly-Mate Plus Flow Factors (psid/gpm @ 1 cks)

Rating (µm)	Flow Factor
0.25	0.0900
0.45	0.0530
0.8	0.0290
2	0.0068
3	0.0060
5	0.0048
10	0.0040
30	0.0030
50	0.0025
100	0.0020

Poly-Mate Plus Length Factors

In.	Factor
4	0.4
10	1.0
20	2.0
30	3.0
40	4.0

Ordering Information

Cartridge Code		Pore Size		Nominal Length		Support Construction		Seal Material		End Cap Configuration		Special Options	
CODE	MATERIAL	CODE	MICRON	CODE	INCHES	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION	CODE	DESCRIPTION
PMP	Poly-Mate Plus	002	0.25	4	4	A	Natural Polypropylene (All support components)	E	EPR	AR	020 O-ring/Recessed cap	No Symbol	No Option
		004	0.45	10	9 1/16			N	Buna-N	DO	Double open end (DOE)	B	Bubble-point test
		008	0.8	20	19 1/16			S	Silicone	DX	Double open end/extended core	R	DI water rinse (5 minutes)
		020	2	30	30 1/16			T	PFA/Viton® (SOE)	LL	120/120 (Filterite LMO & Nuclepore Polymeric Vessels)**	Z6	Individual Poly bag only
		030	3	40	40			V	Viton®	LR	120 O-ring/Recessed (Nuclepore)**		
		050	5							PR	213 O-ring/Recessed cap (Ametek® & Parker LT Polymeric Vessels) **		
		100	10							TC	222 O-ring/Flat		
		300	30							TF	222 O-ring/Fin		
		500	50							SC	226 O-ring/Flat		
		1000	100							SF	226 O-ring/Fin		

**Available only in 9 9/16" (-9) and 19 9/16" (-10) lengths

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DS_IP_Poly-Mate Plus Rev. B

Large Diameter Pleated Depth Filter Cartridges



**Fulflo® HF Depthflo™
Filter Cartridge**
Microglass filter for high-flo and high
dirt holding

**Fulflo® MaxGuard
Filter Cartridge**
High capacity design

**Fulflo® MaxGuard SELECT
Filter Cartridge**
Ultra high capacity cartridge

**Fulflo® MegaFlow™
Filter Cartridge**
Pleated cartridges for high-flow
capacity

**Fulflo® MegaFlow™ Plus
Filter Cartridge**
Absolute-rated, high-flow capacity
pleated cartridge

Fulflo® ParMax Filter Cartridge
Large-diameter, high-flow cartridges

**Fulflo® ParMax SELECT
Filter Cartridge**
High-flow design



Toll free sales & technical support:
877.784.2234
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Fulflo® HF Depthflo™ Filter Cartridges

High capacity pleated microglass filter optimized for high-flow and high dirt-holding

The Fulflo® HF Depthflo™ microglass pleated filter cartridges are offered in 6" diameter x 80" lengths. The high surface area filter media is supported with a tin plated steel core and outer cage utilizing an external O-ring seal with a closed cap. The Fulflo® HF Depthflo™ pleated filter cartridge is targeted for natural gas, oil production, salt dome storage, and high dirt process applications.

The Fulflo® HF Depthflo™ pleated filter cartridge is designed to reduce the overall cost of filtration by minimizing the frequency of change-outs to lower labor time and production downtime.



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Benefits

- Fewer Element Change-outs
- Lower Maintenance Costs
- Lower Disposal Costs
- Smaller Filter Vessels

Applications

- Natural gas
- Salt dome storage
- Oil production
- High-dirt oil process applications

Features

- High performance depthflo media for gels and deformable particles
- Fine fibers provide maximum dirt holding, high-flow for long life
- Rates, and particle removal cut off
- Dual drainage layers prevent fiber migration and assure even flow distribution
- High efficiency

Fulflo® HF Depthflo™

SPECIFICATIONS

Materials of Construction

Filter Media Options

- Microglass with nylon support
- Microglass with polyester support
- Microglass with polypropylene support

Outer Cage/Inner core

- Tin plated steel

End cap

- Nylon high flow single open-end with handle and external O-ring

Seal Materials

- Buna-N, EPDM, Silicone, Viton®

Dimensions:

Cartridge Outside Diameter:

- 6 in.

Cartridge Inside Diameter:

- 3-½ in.

Cartridge Length:

- 80 in.

Maximum Flow Rate:

350 gpm

Maximum Differential Pressure:

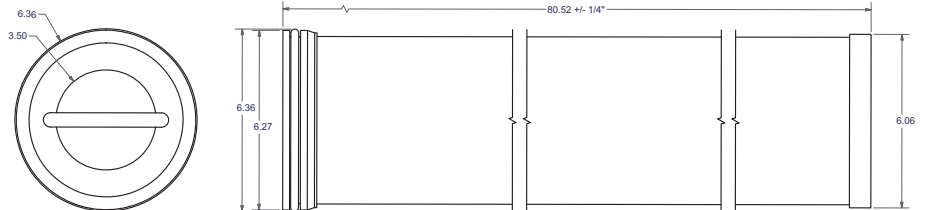
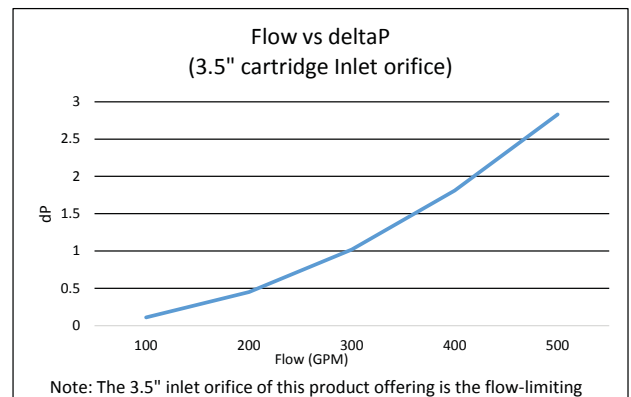
70 lb.

Maximum Recommended Operating Conditions:

- Glass media with Polypropylene support is recommended for most applications where the operating temperature is up to 180 °F with no presence of Hydrocarbons.
- Glass media with Polyester support is recommended for most applications where the operating temperature is up to 258 °F with no presence of Amines.
- Glass media with Nylon support is recommended for most applications where the operating temperature is up to 300 °F.

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

β=5000 Absolute	β=1000 99.9%	β=100 99%	β=50 98%	β=20 95%
0.45	0.3	<0.1	<0.1	<0.1
1	0.6	0.2	<0.1	<0.1
2	1.2	0.4	0.2	0.1
4.5	2.8	1	0.45	0.3
10	7	3.5	1.6	1.2
20	16	8	4	2.5
40	32	20	11	8
50	40	30	13	10
100	85	65	30	25



Ordering Information

Cartridge Series	Media		Micron Rating		Efficiencies		Length		Seal Material		Body Material	
High Flow 80"	Code	Description	Code	Micron	Code	Description	Code	Inches/mm	E	EPDM	CS	Tin plated steel
	GN	Microglass media with nylon support	0-45	.45	A	Absolute (β=5000)	80	80	N	Buna-N		
	GP	Microglass media with polyester support	1-0	1.0	N	Nominal (β=10)			S	Silicon		
	PP	Microglass media with polypropylene support	2-0	2.0					V	Viton®		
			4-5	4.5								
			10	10								
			20	20								
			40	40								
			50	50								
			100	100								

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DS_IP_HF80_Rev. A



Fulflo® MaxGuard™ Filter Cartridges

High-capacity cartridge

Parker's MaxGuard™ high capacity cartridge product line provides a cost effective alternative to bag media or standard 2½ inch cartridges for high flow applications. Each MaxGuard cartridge has a 6" nominal outside diameter and can handle flows up to 90gpm, significantly reducing the number of cartridges required for large flow applications.

MaxGuard cartridges are available in polypropylene, and cellulose media. All cartridges feature an industry standard 226 positive O-ring seal and easy-to-grasp integrated handle.



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Benefits

- High flow capacity means fewer cartridges and reduced labor costs associated with change-out
- High flow capacity allows for smaller housings and less capital expenditure
- Heavy wall core ensures superior strength
- Integrated handle makes change-outs fast, easy and safe
- Positive 226 O-ring seal assures filtration integrity
- Absolute retention ratings for critical filtration
- Polypropylene cartridges listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO9001 registered company

Applications

- Deep well injection
- Amines
- Commercial water
- Food and Beverage

Fulflo® MaxGuard™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Media:
MXGP (Polypropylene)
MXGC (Cellulose)

Support/Drainage
Polypropylene (MXGP/C)

Structural components
Polypropylene (MXGP/C)

Seal Material
Various

Recommended Operating Conditions

Maximum Temperature
MXGP/C - 176°F (80°C) @ 30psid (2.1bar)

Maximum Differential Pressure

Forward:
70psid (4.8bar) @ 77°F (25°C)
30psid (2.1bar) @ 176°F (80°C)

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.90%	β=100 99%	β=50 98%	β=20 95%
MXGC020	2	1.6	0.4	0.2	<0.1
MXGC100	10	6	1.4	0.5	<0.2
MXGC150	15	11	3	1.5	<0.6
MXGC700	70	53	8.5	3	<0.5
MXGP005	0.5	0.4	0.2	<0.2	<0.1
MXGP020	2	1.4	0.4	0.2	<0.1
MXGP050	5	3.8	1.2	0.3	<0.1
MXGP100	10	7	3	0.9	<0.2
MXGP200	20	18	5	2	<0.2
MXGP400	40	23	18	8	<0.7
MXGP700	70	50	30	20	10

MaxGuard Cartridge Flow Factors* (psid/gpm @ 1 cks)

Cart.	Flow Factor
MXGC020	0.00170
MXGC100	0.00110
MXGC150	0.00012
MXGC700	0.00007

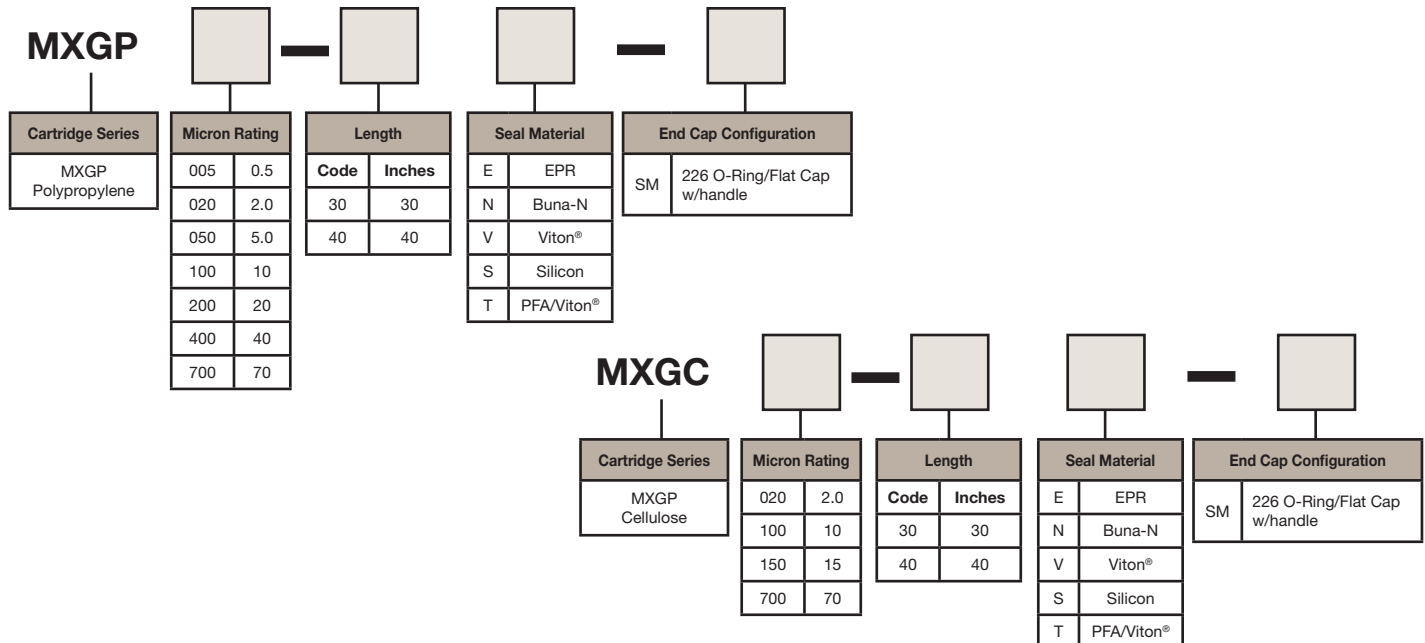
*Flow Factors based on water at ambient temperature

MaxGuard Cartridge Flow Factors* (psid/gpm @ 1 cks)

Cart.	Flow Factor
MXGP005	0.01086
MXGP020	0.00950
MXGP050	0.00619
MXGP100	0.00218
MXGP200	0.00051
MXGP400	0.00023
MXGP700	0.00011

*Flow Factors based on water at ambient temperature

Ordering Information



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DS_IP_MaxGuard Rev. A

Fulflo® MaxGuard™ SELECT Filter Cartridges

Ultra high capacity cartridge

Parker's new Fulflo® MaxGuard Select high-capacity cartridge product line provides a cost-effective alternative to bag media or standard 2½ inch cartridges for high flow applications. Each MaxGuard Select cartridge can handle flows up to 100gpm, significantly reducing the number of cartridges required for large-flow applications. MaxGuard Select contains up to 40% more dirt-holding capacity than the standard MaxGuard.

The MaxGuard Select Cartridge is available with polypropylene media. All cartridges feature an industry-standard 226 positive O-ring seal and an easy-to-grasp integrated handle.



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Benefits

- High flow capacity means fewer cartridges and reduced labor costs associated with change-out
- High flow capacity allows for smaller housings & less capital expenditure
- Cartridge is 100% thermally welded
- Heavy-wall core ensures superior strength
- Integrated handle makes change-outs fast, easy and safe
- Positive 226 O-ring seal assures filtration integrity
- Absolute retention ratings from 0.5 to 70 micron for critical filtration
- Polypropylene cartridges listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO9001 registered company

Applications

- Deep well injection
- Amines
- Commercial water
- Food and Beverage

Fulflo® MaxGuard™ SELECT Filter Cartridges

SPECIFICATIONS

Materials of Construction

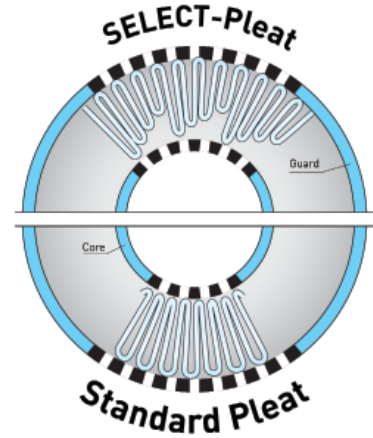
- Media: MGSP (polypropylene)
- Support/Drainage: Polypropylene (MGSP), stainless
- Structural components: Polypropylene (MGSP)
- Seal Material: Various

Dimensions

- 6.06 in. (154 mm) OD
- 1.92 in. (49 mm) ID
- 30 in. (762 mm) long
- 40 in. (1016 mm) long

Recommended Operating Conditions

- Maximum Temperature: MGSP - 176°F (80°C) @ 30psid (2.1bar)
- Maximum Differential Pressure: Forward: 70psid (4.8bar) @ 77°F (25°C) 30psid (2.1bar) @ 176°F (80°C)



With Select Pleating, there is more open area on the inside of the cartridge for additional contaminant-holding capacity.

MaxGuard Cartridge Flow Factors (psid/gpm @ 1cks):

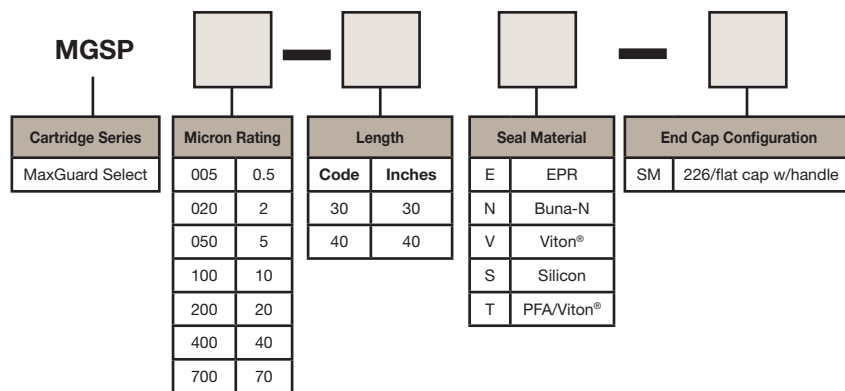
Cartridge	Flow Factor
MGSP005	0.00869
MGSP020	0.00760
MGSP050	0.00495
MGSP100	0.00174
MGSP200	0.00041
MGSP400	0.00018
MGSP700	0.00009

*Flow factors based on water at ambient temperature

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β = 5000 Absolute	β = 1000 99.9%	β = 100 99%	β = 50 98%	β = 20 95%
MGSP005	0.5	0.4	0.2	<0.2	<0.1
MGSP020	2	1.4	0.4	0.2	<0.1
MGSP050	5	3.8	1.2	0.3	<0.1
MGSP100	10	7	3	0.9	<0.2
MGSP200	20	18	5	2	<0.2
MGSP400	40	23	18	8	<0.7
MGSP700	70	50	30	20	10

Ordering Information



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DS_IP_ MaxGuard Select Rev. A

Fulflo® MegaFlow™ Filter Cartridges

Pleated cartridges for high-flow capacity

Parker's Fulflo® MegaFlow™ cartridges are a cost effective alternative to wound and other 2½ in. OD style filter cartridges in high flow applications, such as reverse osmosis pre-filtration, where nominal efficiency is sufficient. Each MegaFlow cartridge can handle flow rates up to 175gpm (662lpm), which reduces the number of cartridges required and allows for smaller housings. Each 6 inch (152 mm) diameter MegaFlow cartridge has flow capacity equal to 8 standard 2½ in. OD X 40 in. long cartridges. Positive O-ring seals and a built-in handle make cartridge installation reliable, fast & easy. MegaFlow cartridges are available in either pleated polypropylene or cellulose media with nominal ratings of 0.5, 1, 5 & 10 micron.



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Benefits

- High flow capacity means fewer cartridges & change-outs which reduces labor costs
- High flow capacity allows for smaller housings and less capital expenditure
- Built in handle makes change fast, easy and safe
- O-ring seal assures filtration integrity
- Choice of polypropylene or cellulose media allows use in both aqueous and non-aqueous fluid applications
- Thermally bonded polypropylene and phenolic resin bonded cellulose filter media prevent particle bleed through and unloading that commonly occurs with wound cartridges
- High surface area pleated design provides lower pressure drop and longer service life than other cartridges
- All materials of construction in polypropylene cartridges comply with FDA regs. per CFR Title 21
- Horizontal and vertical housings are available for flow rates up to 3,325gpm (12,586 lpm)

Applications

- Potable Water
- Waste Water
- Reverse Osmosis Pre-Filtration
- Lubricating Oil
- Coolants



ENGINEERING YOUR SUCCESS.

Fulfo® MegaFlow Filter Cartridges

SPECIFICATIONS

Materials of Construction

Media

Polypropylene microfiber (P Code);
Cellulose with phenolic binder (C Code)

Support Layers

Polypropylene (P Code); None (C Code)

End caps

Glass filled polypropylene

O-Rings

Buna-N, EPR, silicone, fluoroelastomer

Recommended Operating Conditions

Change out differential pressure

35psid (2.4bar)

Maximum flow rate - 175gpm (662 lpm)

Maximum temperature - 200°F (93°C)

Maximum differential pressure

150psid (10bar)

Nominal Filtration Ratings

(90%) 0.5, 1, 5 and 10 µm

Dimensions

6 in. (152 mm) OD, 3.5 in (89 mm) ID,
40 in. (1016 mm) long

Surface Area

55-60 ft² (5.1-5.6m²)

Cartridge Code	Nominal Rating	Media	Removal Rating (µm) @ Efficiency of:					Flow Factor* [(psid gpm (mbar lpm)]
			90%	95%	98%	99%	99.9%	
MCNP005	0.5	Polypropylene	0.5	1	2	5	10	0.003 (0.06)
MCNP010	1	Polypropylene	1	3	7	10	30	0.0007 (0.014)
MCNP050	5	Polypropylene	5	10	20	30	50	0.0004 (0.008)
MCNP100	10	Polypropylene	10	30	50	60	90	0.0003 (0.006)
MCNC005	0.5	Cellulose	0.5	1	2	3	10	0.002 (0.03)
MCNC010	1	Cellulose	1	2	3	5	20	0.0002 (0.003)
MCNC050	5	Cellulose	5	8	10	15	85	0.0001 (0.002)
MCNC100	10	Cellulose	10	12	15	30	100	0.00005 (0.0009)

*In water at 1cks

Flow Rate and Pressure Drop Formulas

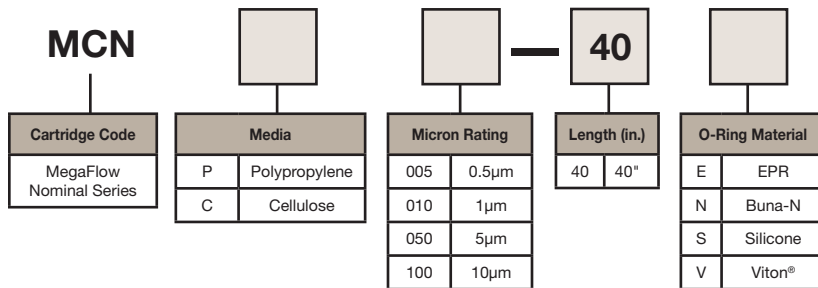
$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Ordering Information



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DS_IP_MegaFlow Rev. A

Fulflo® MegaFlow™ Plus Filter Cartridges

Absolute-rated, high-flow capacity
pleated cartridge

Parker's Fulflo® MegaFlow™ Plus cartridges are ideally suited for high flow applications where absolute particle removal is required. Each Mega-Flow Plus cartridge can handle flow rates up to 175gpm (662 lpm), significantly reducing the number of cartridges required as well as the housing size. Each 6 inch (152 mm) diameter MegaFlow+ cartridge has flow capacity equal to 8 standard 2 ½ inch OD X 40 inch long cartridges. Positive O-ring seals and a built in handle make cartridge installation reliable, fast and easy. MegaFlow Plus cartridges are available with pleated polypropylene media for use in a wide variety of fluids. Absolute ratings range from 1 µm to 150 µm.



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Benefits

- High flow capacity means fewer cartridges and less time to change
- High flow capacity allows smaller housings
- Built in handle makes change fast, easy and safe
- O-ring seal assures filtration integrity
- Choice of polypropylene media expands fluid compatibility
- High surface area pleated design provides low pressure drop and long service life
- Polypropylene cartridges comply with FDA regs. per CFR Title 21
- Horizontal and vertical housings available for flow rates up to 3325gpm (12,586 lpm)
- Reduces process interruptions

Applications

- Potable Water
- Vegetable Oil
- Wastewater
- Lubricants
- Food and Beverage
- Coolants



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Fulflo® Mega-Flow™ Plus Filter Cartridges

SPECIFICATIONS

Absolute Filtration Ratings (β_x = 5000; 99.98%)

Polypropylene - 1, 2, 5, 10, 20, 40, 70 μm
Cellulose - 10, 15, 25, 100, 150 μm

Materials of Construction

Media

- Polypropylene microfiber (P Code)
- Cellulose with phenolic binder (C Code)

Support Layers

- Polypropylene (P Code)

End caps

- Glass Filled Polypropylene

O-Rings

- Buna-N, EPR, Silicone, Fluoroelastomer

Recommended Operating Conditions

Change Out Differential Pressure

- 35psid (2.4bar)

Maximum Flow Rate

- 175gpm (662 lpm)

Maximum Temperature

- 200°F (93°C)

Maximum Differential Pressure

- 150psid (10bar)

Dimensions

- 6 in. (152 mm) OD
- 3.5 in. (89 mm) ID
- 40 in. (1016 mm) long

Surface Area

- 55 - 60 ft.² (5.1 - 5.6 m²)

Cartridge Code	Absolute Rating	Media	Removal Rating (μm) @ Efficiency of:				Flow Factor* [(psid gpm) (mbar lpm)]
			98%	99%	99.9%	99.98%	
MCAP010	1	Polypropylene	<0.2	0.45	0.8	1	0.078 (1.4)
MCAP020	2	Polypropylene	0.2	0.8	1.5	2	0.031 (0.6)
MCAP050	5	Polypropylene	0.45	1	4	5	0.008 (0.01)
MCAP100	10	Polypropylene	0.5	2	7	10	0.003 (0.06)
MCAP200	20	Polypropylene	2	4	13	20	0.002 (0.04)
MCAP400	40	Polypropylene	3	7	22	40	0.001 (0.02)
MCAP700	70	Polypropylene	15	22	52	70	0.0008 (0.015)
MCAC100	10	Cellulose	1	2	8	10	0.003 (0.05)
MCAC150	15	Cellulose	2	3	10	15	0.002 (0.03)
MCAC250	25	Cellulose	3	5	20	25	0.0002 (0.003)
MCAC1000	100	Cellulose	5	10	85	100	0.0001 (0.002)
MCAC1500	150	Cellulose	15	30	100	150	0.00005 (0.0009)

*In water at 1cks

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Viscosity} \times \text{Flow Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}$$

Note:

1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1cks for 10 in (or single).

Ordering Information

MCA		Media		Micron Rating		Length		O-Ring Material	
Cartridge Code		CODE	DESCRIPTION	CODE	μm	CODE	IN.	CODE	DESCRIPTION
MegaFlow Plus Absolute Series		P	Polypropylene	010	1 (P)	40	40"	E	EPR
		C	Cellulose	020	2 (P)			N	Buna-N
				050	5 (P)			S	Silicone
				100	10 (P, C)			V	Viton®
				150	15 (C)				
				200	20 (P)				
				250	25 (C)				
				400	40 (P)				
				700	70 (P)				
				1000	100 (C)				
				1500	150 (C)				

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DS_IP_MegaFlow Plus Rev. A

Fulflo® ParMax™ Filter Cartridges

Large-diameter, high-flow cartridges



The best of pleated and large diameter technologies are combined in Parker's ParMax™ high-flow filter cartridges. ParMax cartridges are available with polypropylene and microfiberglass media in absolute (99.98%) ratings from 0.8 to 90 micron. The unique layered construction provides excellent retention across a wide range of flux rates. One-six inch diameter cartridge can handle up to 500gpm flow (60" length). The inside-to-outside flow allows for a high contaminant holding capacity. High flow and a long filter life make the ParMax an ideal choice for a wide variety of critical process applications.



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Benefits

- Large diameter yields much higher flow rates compared to traditional 2.5" filters
- High flow capacity permits use of fewer elements and cuts capital expenditure
- Inside-out flow pattern ensures positive capture of contaminants
- Absolute retention ratings for critical filtration
- All materials listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO9001 registered company

Applications

- Process water
- Water
- Spirits
- Food and beverage

Fulflo® ParMax™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Media:

RCP - Polypropylene
 RMG - Microfiberglass

Support/Drainage:

Polypropylene

Hardware:

Polypropylene

O-rings:

EPDM, Buna-N, Viton®, silicone

Retention Ratings (99.98%):

0.8, 1, 3, 4.5, 10, 20, 30, 40 and 90 µm

Maximum Operating Conditions:

Maximum Temperature
 176°F (80°C) @ 30psid (2.1bar)

Maximum Differential Pressure:

70psi (4.8bar) @ 77°F (25°C)
 30psi (2.1bar) @ 176°F (80°C)

Recommended Operating Conditions:

Flow Rate

Up to 175gpm (662 lpm)/20" element
 Up to 350gpm (1325 lpm)/40" element
 Up to 500gpm (1892 lpm)/60" element

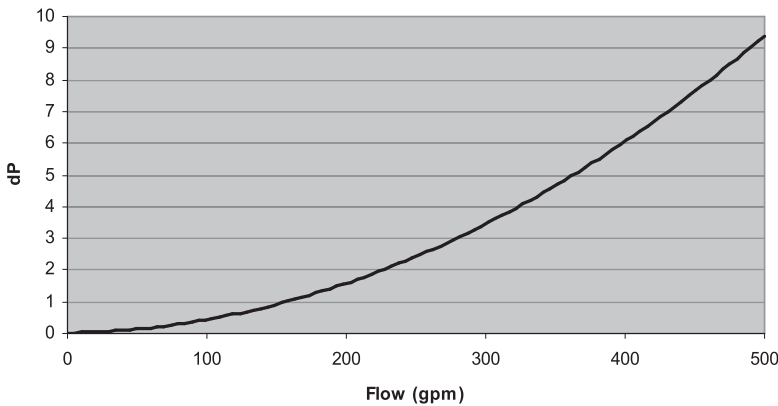
Change-out Pressure

35psid (2.41bar)

Dimensions (nominal):

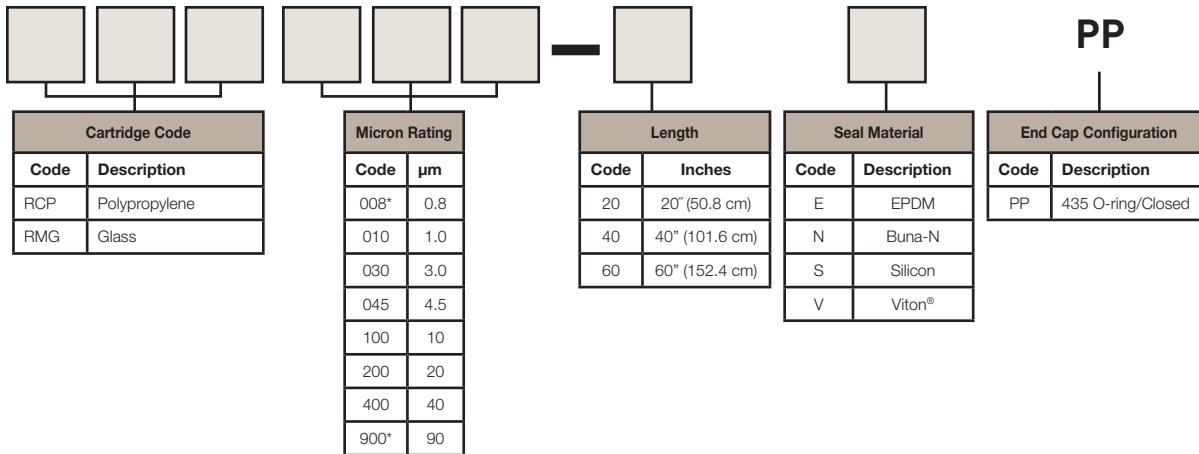
Outside Diameter: 6" (152mm)
 Inside Diameter: 2.9" (74mm)

**Flow vs dP
 (2.9" Cartridge Inlet Orifice)**



Note: The 2.9" inlet orifice of the ParMax Cartridge is the flow-limiting factor

Ordering Information



* 008 & 900 available in polypropylene media (RCP) only

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Fulflo® ParMax™ SELECT Filter Cartridges

High-flow design

The best of pleated and large diameter technologies are combined in Parker's ParMax Select high flow filter cartridges. The unique layered construction and staged pleating provide improved dirt holding capacity and retention across a wide range of flux rates. One six-inch diameter cartridge can handle up to 500gpm flow (60" length). The inside to outside flow allows for a high contaminant holding capacity and a long filter life which makes the ParMax Select an ideal choice for a wide variety of critical process applications.

ParMax Select cartridges are available with polypropylene pleated depth media and microfiberglass media in absolute (99.98%) ratings from 1 to 90 microns.



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Benefits

- Large diameter yields much higher flow rates compared to traditional 2.5" filters
- High flow capacity allows for fewer elements and less capital expense.
- Cartridge is 100% thermally welded
- Inside-out flow pattern ensures positive capture of contaminants
- Absolute retention ratings for critical filtration
- All materials listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO9001 registered company

Applications

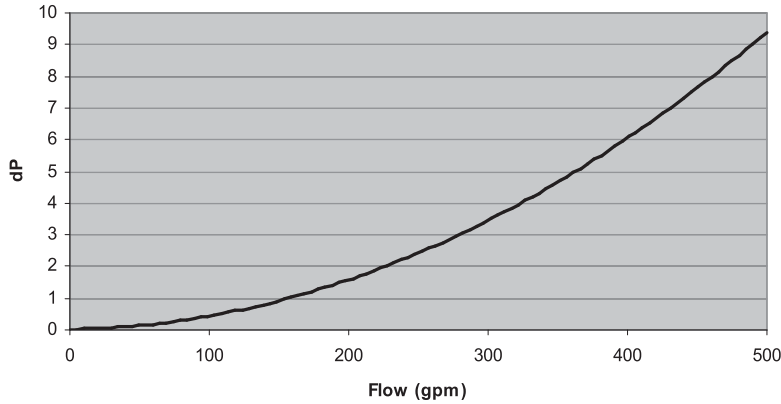
- Process Water
- Power Generation
- Specialty chemicals
- Food and Beverage

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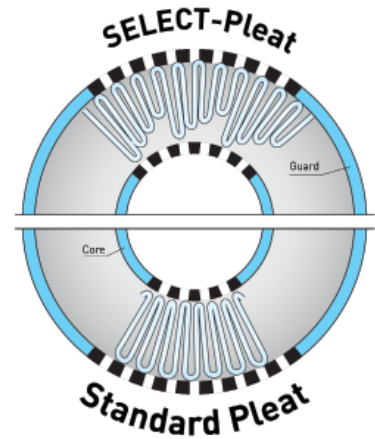
Fulflo ParMax™ SELECT Cartridge

ParMax™ Select High Flow Cartridge

Flow vs. dP
(2.9" Cartridge Inlet Orifice)



Note: The 2.9" inlet orifice of the ParMax Select Cartridge is the flow-limiting factor



With Select Pleating, there is more open area on the inside of the cartridge for additional contaminant-holding capacity.

Materials of Construction:

- Media:
 - RSCP - Polypropylene
 - RSMG - Microfiberglass
- Support/Drainage: Polypropylene
- Hardware: Polypropylene
- O-Rings (SOE): EPDM, Buna-N, Viton®, Silicone

Retention Ratings (99.98%):

- 1, 3, 4, 5, 10, 20, 30, 40, 90* μm

Dimensions (nominal):

Outside Diameter: 6.0" (15.24 cm)
Inside Diameter: 2.9" (7.36 cm)

Maximum Operating Conditions:

- Maximum Temperature: 176°F (80°C) @ 30psid (2.1bar)
- Maximum Differential Pressure: 70psi (4.8bar) @ 77°F (25°C)
30psi (2.1bar) @ 176°F (80°C)

Recommended Operating Conditions:

- Flow Rate:
 - Up to 175gpm (662 LPM)/ 20" element
 - Up to 350gpm (1325 LPM)/ 40" element
 - Up to 500gpm(1892 LPM)/ 60" element
- Change-out Pressure: 35psid (2.41bar)

Ordering Information

Cartridge Code		Micron Rating		Length		Seal Material		End Cap Configuration	
Code	Description	Code	μm	Code	Inches	Code	Description	Code	Description
RSCP	Polypropylene	010	1.0	20	20" (50.8 cm)	E	EPDM	PP	435 O-ring/Closed
RSMG	Glass	030	3.0	40	40" (101.6 cm)	N	Buna-N		
		045	4.5	60	60" (152.4 cm)	S	Silicon		
		100	10			V	Viton®		
		200	20						
		400	40						
		900*	90						

* Available only in polypropylene media (RCP)

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Depth Media Filter Cartridges

Melt Blown | Resin Bonded | Wound Depth



Avasan™ Filter Cartridge
High-purity melt blown depth cartridges

Fulflo® DuraBond™ Filter Cartridge
Economical filtration with high strength, thermally-bonded depth cartridges

Fulflo® Honeycomb™ Filter Cartridge
Multi-purpose filtration solutions with wound depth cartridges

Fulflo® MegaBond Nominal™ Filter Cartridge
High-purity filtration with low-cost melt blown depth filter cartridges

Fulflo® MegaBond Plus™ Filter Cartridge
Depth cartridge for high dirt-holding capacity and absolute-rated filtration efficiency

Fulflo® ProBond™ Filter Cartridge
Patented break-through in resin-bonded cartridge design

Fulflo® SWC Filter Cartridge
Economical filtration solutions with string-wound depth cartridges

Fulflo® XTL™ Filter Cartridge
Technologically advanced wound cartridge design for doubled cartridge life and improved performance



Toll free sales & technical support:
877.784.2234
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Avasan™ Filter Cartridges

High-purity melt blown depth cartridges

Avasan™ (AVS) cartridges are manufactured with a proprietary melt blown manufacturing process using a specially formulated polypropylene polymer. This formulation provides a uniquely graded density filter cartridge designed for high purity applications. The fiber matrix of the cartridge has been engineered to provide structural integrity throughout the long service life of the cartridge and the finish-free construction provides optimum fluid purity and eliminates foaming. Avasan's inherent fluid compatibility properties plus graded density make it the economical filter choice for high clarity requirements.



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Benefits

- Continuous bonding of fibers throughout the filter matrix ensures non-fiber releasing construction
- Superior inter-layer bonding provides true three dimensional filtration & a construction that does not compress with increasing pressure
- Pure polypropylene construction
- Finish-free construction provides optimum fluid purity and eliminates foaming
- Graded density construction provides built-in pre-filtration and longer life
- All materials bio-safe in accordance with USP Class VI-121°C Plastic Test
- All materials listed as acceptable for potable and edible contact according to CFR Title 21
- ISO9001 registered company

Applications

- DI Water
- R.O. Pre-filtration
- Potable Water
- Plating Solutions
- Chemical Processing Fluids



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Avasan™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Filter Medium

100% melt blown polypropylene

End Caps/Adapters (optional)

Various; refer to Ordering Information

Seal Options

Various; refer to Ordering Information

- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

- Pending Certifications:
NSF - Materials only

Maximum Recommended Operating Conditions

Temperature

@ 50psid (3.45bar): 80°F (27°C)

@ 25psid (1.72bar): 140°F (60°C)

Flow Rate

5gpm (18.9 lpm) per 10" length

Recommended Maximum

Change Out ΔP: 35psi (2.4bar)

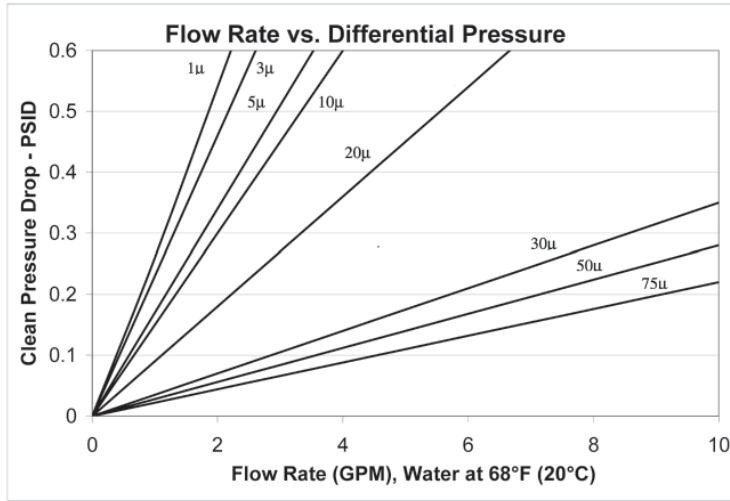
Dimensions (Nominal)

1-1/16 in. (27mm) ID x 2-7/16 in. (62mm) OD (max.)

4, 10, 20, 30, and 40 in. continuous nominal lengths

Nominal Filtration Ratings (90%)

1μm, 3μm, 5μm, 10μm, 20μm, 30μm, 50μm and 75μm



Flow rate is per 10" cartridge. For liquids other than water, multiply the pressure drop by the fluid viscosity in centipoise.

Ordering Information

Cartridge Code		Micron Rating	Nominal Length		End Cap Configuration		Seal Material	
AVS	AVS Cartridge	(μm)	CODE	IN. (mm)	CODE	DESCRIPTION	CODE	MATERIAL
		1	4	4" (102)	None	Double Open End (DOE) w/o gaskets	None	Omit
		3	9.75	9.75" (248)	DO	DOE	A	Poly foam gaskets w/ collars (DO only)
		5	10	10" (254)	LL	120 O-ring both ends**	E	EPR
		10	19.5	19.5" (495)	LR	120 O-ring/Recessed**	N	Buna-N
		20	20	20" (508)	OB	Std. open end/Polypropylene spring closed end	S	Silicone (o-ring only)
		30	29.25	29.25" (743)	PR	213 O-ring/Recessed**	T	PFA Encapsulated Viton® (222, 226 O-ring only)
		50	30	30" (762)	SC	226 O-ring/Flat	V	Viton®
		75	39	39" (991)	SF	226 O-ring/Fin	W	Poly foam gaskets w/o collars (DO only)
			40	40" (1016)	TC	222 O-ring/Flat		
					TF	222 O-ring/Fin		
					TX	222 O-ring/Flex fin		
					XA	DOE w/extended core		
					XB	Ext. core open end polypropylene spring closed end		

**Available only in 9-3/4" and 19-1/2" lengths.

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DS_IP_Avasan Rev. A

Fulflo® DuraBond™ Cartridges

Economical filtration with high strength, thermally-bonded depth cartridges

Parker's Fulflo® DuraBond™ cartridges are the most economical high strength filter cartridges available. Featuring an integral rigid thermally bonded construction, the DuraBond provides consistent filtration for a wide variety of fluids. Its fixed pore structure acts as a sieve-like particle "classification" filter for pigmented coatings allowing pigments to pass while stopping large agglomerates.

DuraBond cartridges are available in nominal ratings of 1µm, 3µm, 5µm, 10µm, 25µm, 50µm, 75µm and 100µm.



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Benefits

- Fixed pore structure provides efficiency, integrity and optimum particle retention
- Thermally bonded bi-component fiber matrix provides rigid dimensionally stable construction without fiber migration
- Rigid construction eliminates contaminant unloading and channeling
- Corrugated porous surface maximizes dirt holding capacity
- Silicone free construction will not change coating properties
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components
- Polyolefin construction provides broad chemical compatibility for a variety of applications
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Easily disposed by shredding, incinerating or crushing
- Construction provides particle "classification" effect with pigmented coatings
- Double-open-end style is self-sealing without separate gasket material

Applications

- Photographic Chemicals
- DI Water
- Plating Solutions
- Bleach
- RO Pre-filtration
- Organic Solvents
- Oil Field Fluids
- Membrane Pre-filtration
- Industrial Coatings
- Magnetic Coatings
- Potable Water
- Process Fluids



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Fulflo® DuraBond™ Cartridges

SPECIFICATIONS

Materials of Construction

- Filter Medium:
Thermal Bonded bi-component matrix of polypropylene/ polyethylene
- End Caps/Adapters (optional):
Polyolefin copolymer
- Seal Options:
Various; refer to Ordering Information

Dimensions

1-1/16 in (27mm) ID x 2-7/16 (62mm) in OD
10, 20, 30, 40, and 50 in. continuous nominal lengths

Maximum Recommended Operating Conditions

- Temperature: 175°F (80°C)
- Pressure:
- 100psid (6.8bar)@72°F (27°C)
- 50psid (3.4bar)@175°F (80°C)
- Flow rate:
5gpm (18.9 lpm) per 10 in. length
- Change-out ΔP: 30psi (2.1bar)

Nominal Filtration Ratings (90% efficiency)

1, 3, 5, 10, 25, 50, 75, 100 μm

DBC Flow Factors		DBC Length Factors		Flow Rate and Pressure Drop Formulas
Rating (μm)	Aqueous Service psi/gpm per 10 in cartridge	Length (in)	Length Factor	
DBC1	0.109	9.75	1.0	Flow Rate (gpm): $\frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$ Clean ΔP: $\frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$ 1. Clean ΔP ispsi differential at start. 2. Viscosity is centistokes. Use Conversion Tables for other units. 3. Flow Factor is ΔP/GPM at 1cks for 10 in. (or single). 4. Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.
DBC3	0.087	10.00	1.0	
DBC5	0.073	19.50	2.0	
DBC10	0.058	20.00	2.0	
DBC25	0.031	29.25	3.0	
DBC50	0.022	30.00	3.0	
DBC75	0.015	39.00	4.0	
DBC100	0.012	40.00	4.0	
		50.00	5.0	

Liquid Particle Retention Ratings (μm) @ Removal Efficiency of:

Cartridge	β=1000 99.9%	β=100 99%	β=20 95%	β=10 90%
DBC1	5	4	2	1
DBC3	10	8	4	3
DBC5	20	16	10	5
DBC10	30	25	15	10
DBC25	55	50	30	25
DBC50	90	80	70	50
DBC75	>100	>100	100	75
DBC100	>100	>100	>100	100

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$
 Percent Removal Efficiency = $\left(\frac{\beta-1}{\beta}\right) \times 100$

Performance determined per ASTM F-795-88, Single-Pass Test using AC test dust in water at a flow rate of 2.5gpm per 10 in (9.5 lpm per 254 mm).

Ordering Information

DBC	□	M	□	—	□	—	□	
Cartridge Code	Micron Rating	Nominal Length			End Cap Configuration		Seal Material	
DBC DuraBond	(μm)	CODE	IN.	mm	CODE	DESCRIPTION	CODE	MATERIAL
	1	9-4	9-3/4	248	None	Double Open End (DOE) w/o gaskets	None	No Seal Mat. (Std. DOE)
	3	10	10	254	AR	020 Flat (Gelman)	A	Poly foam gaskets w/collars (DO only)
	5	19-4	19-1/2	495	DO	DOE	E	EPR
	10	20	20	508	LL	120 O-ring both ends**	N	Buna-N
	25	29-4	29-1/4	743	LR	120 O-ring/Recessed**	S	Silicone (O-ring only)
	50	30	30	762	OB	Std. open end/Polypropylene spring closed end	T	PFA Encapsulated Viton® (222, 226 O-ring only)
	75	39-4	39	991	PR	213 O-ring/Recessed**	V	Viton®
	100	40	40	1016	SC	226 O-ring/Flat	W	Poly foam gaskets w/o collars (DO only)
		50	50	1270	SF	226 O-ring/Fin		
					TC	222 O-ring/Flat		
					TF	222 O-ring/Fin		
					TX	222 O-ring/Flex fin		
					XA	DOE w/extended core		
					XB	Ext. core open end polypropylene spring closed end		

**Available only in 9-3/4" (9-4) and 19-1/2" (19-4) lengths.

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Fulflo® Honeycomb™ Filter Cartridges

Multi-purpose filtration solutions with wound depth cartridges

Parker has been a leader in filter media innovation and performance since we first invented the Honeycomb™ Filter Tube over 65 years ago. Parker has the world's largest manufacturing capacity for wound cartridges, offering superior quality along with technical, engineering and marketing support.

Effective removal ratings at nominal 90% efficiency from 0.5µm to 150µm.



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Benefits

- A broad range of media provide excellent compatibility with a variety of organic solvents, animal, petroleum and vegetable oils
- Optional core covers and end treatments assure fiber migration control
- Multiple length cartridges minimize change-out time, eliminate spacers and are available to fit competitive filter vessels
- FDA grade polypropylene (DOE only) cartridges certified to ANSI/NSF61 standard for contact with drinking water components
- Continuous strand winding geometry provides performance consistency
- One-piece metal extended center core option eliminates the need for cartridge guides in all competitive and Fulflo® multi-cartridge vessels
- A special snap-in extender is available for polypropylene cores
- Cotton, polypropylene, nylon and polyester materials are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- O-ring/end cap options available
- ISO9001:2008 registered company

Applications

- Oxidizing Agents
- Concentrated Alkalies
- Potable Liquids
- Dilute Acids & Alkalies
- Mineral Acids
- Organic Acids & Solvents
- Petroleum Oils
- Photo Solutions
- Amines
- Water
- Prefilter for Membranes



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Fulflo® Honeycomb™ Cartridges

Wound Depth Cartridge Design and Function

Wound cartridges provide true depth filtration utilizing hundreds of tapered filtering passages of controlled size and shape. Each layer of roving

contributes to true depth filtration by trapping its share of particles. Wound cartridges offer a gradual pressure increase during cartridge life versus surface-type media that have

an abrupt flow cutoff when loaded. In addition, the irregular outer layer reduces surface blinding, assuring both longer cartridge life and full cartridge utilization.

Ultrafine Wound Depth Cartridges for Critical Filtration Applications

Ultrafine cartridges are a unique member of the Honeycomb™ wound depth cartridge family. They are specifically designed for critical filtration applications in the 0.5µm range. When absolute 0.5µm filtration is required, the nominal Ultrafine

cartridge can be used as a prefilter, thereby significantly extending membrane life. Ultrafine cartridges remove 90% of particles larger than 0.5µm in size. This type of filtration provides excellent protection for equipment or processes that must be protected from fine particles.

Applications include:

- Prefilter for membranes
- Rinse water in semiconductor manufacturing
- Fine filtration for ultrasonic parts, washer solvents and other high-purity solvents
- Prefilter for industrial reverse osmosis equipment

Ultrafine Ordering Information

Filter Medium		Nominal Length		Core Material		Core Cover Material		End Cap Configuration		Seal Material	
Code	Description	Code	Size (Inches)	Code	Description	Code	Description	Code	Description	Code	Material
C	FDA Grade Cotton	9-4	9-7/8	None	Tinned Steel	None	No Cover	None	DOE (w/o gaskets)	None	Std. DOE
E	FDA Grade Rayon	10	10	A	Polypropylene	<i>Note: Core cover material is glass paper with polyester overlay.</i>					
M	FDA Grade Polypropylene	19-4	19-1/2	A3	Glass-filled Polypropylene						
T	Industrial Grade Polypropylene	20	20	G	304 Stainless Steel						
WC	Industrial Grade White Cotton	29-4	29-1/4	S	316 Stainless Steel						
		30	30-3/16								
		39-4	39			DOE (w/ gaskets)	DOE (w/ gaskets)	Std. Open End/ Polypro Spring Closed End	A	Polyfoam	
		40	40-3/16			OB	Std. Open End/ Polypro Spring Closed End	222/Open end/ Polypro Spring Closed End	E	EPDM	
						TB	222/Open end/ Polypro Spring Closed End	TC	222/Closed	N	Buna-N
						TC	222/Closed	TF	222/Fin	S	Silicone
						TF	222/Fin	TX	222/Flex fin	V	Viton®
						TX	222/Flex fin	SC	226/Closed		
						SC	226/Closed	SF	226/Fin		
						SF	226/Fin	SX	226/Flex fin		
						SX	226/Flex fin	XA	Polypro Extender		
						XA	Polypro Extender	XB	Extended Core Open End/Polypro Spring Closed End		
						XB	Extended Core Open End/Polypro Spring Closed End	XC	Extended Metal		
						XC	Extended Metal				

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Fulflo® Honeycomb™ Cartridges

Wound Cartridge Flow Factors for Aqueous (Water-based) Fluids (psid/gpm @ 1cks)

Rating (µm)	Polypropylene Polyester Nylon	Cotton Rayon	Glass
0.5	0.9924	2.6590	0.5000
1	0.7463	2.0000	0.4211
3	0.3330	0.6250	0.3478
5	0.2381	0.3636	0.1951
10	0.1429	0.1931	0.1430
20	0.0898	0.1075	0.1096
30	0.0704	0.0855	0.0816
50	0.0595	0.0709	0.0678
75	0.0538	0.0645	0.0611
100	0.0500	0.0624	0.0590

Wound Cartridge Flow Factors for Non-Aqueous (Solvent or Oil based) Fluids (psid/gpm @ 1cks)

Rating (µm)	Polypropylene Polyester Nylon	Cotton Rayon	Glass
0.5	1.8350	1.3800	0.5000
1	1.0000	0.7519	0.4211
3	0.5800	0.3003	0.3478
5	0.3003	0.1949	0.1951
10	0.1299	0.1000	0.1430
20	0.0560	0.0350	0.1096
30	0.0200	0.0175	0.0816
50	0.0141	0.0130	0.0678
75	0.0120	0.0100	0.0611
100	0.0080	0.0065	0.0590

Wound Cartridge Nominal Micrometer Ratings

Cartridge Designation									Micron Rating	Compressed Air & Gas Micron Rating
8R	E8R	N8R	U8R	S8R	M8R	R8R	T8R	WC8R	100	15
10R	E10R	N10R	U10R	S10R	M10R	R10R	T10R	WC10R	75	13
11R	E11R	N11R	U11R	S11R	M11R	R11R	T11R	WC11R	50	12
12R	E12R	N12R	U12R	S12R	M12R	R12R	T12R	WC12R	40	-
13R	E13R	N13R	U13R	S13R	M13R	R13R	T13R	WC13R	30	10
15R	E15R	N15R	U15R	S15R	M15R	R15R	T15R	WC15R	20	7
17R	E17R	N17R	U17R	S17R	M17R	R17R	T17R	WC17R	15	5
19R	E19R	N19R	U19R	S19R	M19R	R19R	T19R	WC19R	10	3
21R	E21R	N21R	U21R	S21R	M21R	R21R	T21R	WC21R	7	-
23R	E23R	N23R	U23R	S23R	M23R	R23R	T23R	WC23R	5	2
27R	E27R	N27R	U27R	S27R	M27R	R27R	T27R	WC27R	3	1
39R	E39R	N39R	U39R	S39R	M39R	R39R	T39R	WC39R	1	Less than 1
Ultrafine (C, E, M, T, WC)									0.5	Less than 0.5

Wound Cartridge Length Factors

Length (in)	Length Factor
10	1.0
20	2.0
30	3.0
40	4.0
50	5.0

Flow Rate and Pressure Drop Formulae:

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is $\Delta P/GPM$ at 1cks for 10 in (or single).
- Length Factors convert flow or ΔP from 10 in (single length) to required cartridge length.

Nominal Removal Ratings:

- @ 90% efficiency from 0.5µm to 150µm

Maximum Recommended Operating Conditions:

- Change Out ΔP : 30psi (2.1bar)
- ΔP @ Ambient Temperature: 60psi (4.1bar)
- Flow Rate: 10gpm (38 lpm) per 10 in. length
- Temperature (See Max. Operating Temp.table)

Dimensions:

- 1 in. ID x 2-7/16 OD
- 3 in. to 50 in. lengths

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Fulflo® Honeycomb™ Cartridges

Wound Cartridge Baked Glass Fiber Nominal Micrometer Ratings

Cartridge Designation	Liquids	Compressed Air & Gases
K5B	100 - 150	100+
K5R	75 - 100	10
K6R	40	7
K8R	30	5
K10R	20	3
K12R	15	1
K15R	10	<1
K19R	5	<1
K23R	3	<1
K27R	1	<1
K39R	0.5	<1

Note: All glass cartridges have standard glass core cover.

Maximum Operating Temp. @ 35psid

Cartridge Material	304/316 SS Metal Core	Polypropylene Core	Glass-Filled Polypropylene
Cotton	250°F (121°C)	120°F (49°C)	—
Glass	750°F (402°C)	—	—
Nylon	275°F (135°C)	120°F (49°C)	—
Polypropylene	200°F (93°C)	120°F (49°C)†	200°F (93°C)
Polyester	275°F (135°C)	120°F (49°C)	—
Rayon	250°F (121°C)	120°F (49°C)	—

Note: Refer to Materials Selection Guide for additional compatibility information.

Ordering Information

Filter Medium		Density		Nominal Length		Core Material		Core Cover Material		End Cap Configuration		Seal Material	
Code	Description	Code	Micron	Code	Size (Inches)	Code	Description	Code	Description	Code	Description	Code	Material
None	Cotton (FDA)	6R	150	3	3	None	Tinned Steel	None	No Cover	None	DOE- Double open end (w/o gaskets)	None	Std. DOE
E	FDA Grade Rayon	8R	100	4	4	A	Polypropylene	B	Nylon	DO	DOE (w/ gaskets)	A	Polyfoam
K*	Baked Glass Fiber	10R	75	5	5	A3	Glass-filled Polypropylene	V	Non-woven Polyester	OB	Std. Open End/ Polypro Spring Closed End	E	EPDM
M	FDA Grade Polypropylene	11R	50	6	6	G	304 Stainless Steel	W	Cellulosic Paper	TB	222/Open End/ Polypro Spring Closed End	N	Buna-N
N	Nylon (FDA)	12R	40	7	7	S	316 Stainless Steel	Y	Polypropylene	TC	222/Closed	S	Silicone
S	Polyester (FDA)	13R	30	8	8	SR	Passivated 316 Stainless Steel (Special Order)			TF	222/Fin	V	Viton®
T	Industrial Grade Polypropylene	14R	25	9-4	9-7/8					TX	222/Flex fin		
U	Natural Cotton	15R	20	10	10					SC	226/Closed		
UK	Unbaked Glass Fiber	17R	15	19-4	19-1/2					SF	226/Fin		
WC	White Cotton	19R	10	20	20					XA	Polypro Extender		
		21R	7	29-4	29-1/4					XB	Extended Core Open End/Polypro Spring Closed End		
		23R	5	30	30-3/16					XC	Extended Metal		
		27R	3	39-4	39								
		39R	1	40	40-3/16								
				50	50								

End Treatment	
Code	Description
None	No Treatment
D	Sodium Silicate
L	Laquer
M	Singed

Packaging Options	
Code	Description
Z	Individual Poly Bag
TIS	Tissue Wrap

Nominal Cartridge Diameter	
Code	Description
None	1" ID x 2-7/16" OD
-2	1" ID x 2-1/16" OD
-45	1" ID x 4-1/2" OD (9-7/8" and 20" length only) for Fulflo LTG and Ametek Big Blue Vessels

*Poly wrap packaging is standard. Additional pricing applies for other packaging options.

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Fulflo® MegaBond™ Nominal Filter Cartridges

High-purity filtration with low-cost melt blown depth filter cartridges

Fulflo® MegaBond™ Nominal (MBN) cartridges are the most economical high purity filter cartridges available. Featuring a graded density matrix of uniform polypropylene fibers, the MBN provides consistent filtration for a wide variety of fluids. No fiber finish or surfactants are present to generate extractables leading to foaming or other undesirable effects on the filtrate.

Available in nominal ratings of .5, 1, 5, 10, 25, 50 and 75 micron.



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Benefits

- Thermally bonded melt blown fiber matrix provides dimensionally stable construction
- Continuous fiber matrix prevents media migration and ensures consistent quality filtration performance
- Finish-free construction provides optimum fluid purity and eliminates foaming condition
- Superior inter-layer bonding eliminates contaminant unloading and channeling
- FDA grade polypropylene (DOE only) designed to conform to ANSI/NSF42 & NSF61 standards
- Narrow range fiber size optimizes consistency of filtration performance
- Polypropylene construction provides broad chemical compatibility for a variety of applications
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Single component construction simplifies compatibility options and provides easy disposal

Applications

- Photographic Chemicals
- DI Water
- Plating Solutions
- R.O. Pre-filtration
- Membrane Pre-filtration
- Organic Solvents
- Oil field Fluids
- Bleach
- Potable Water
- Chemical Processing Fluids



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Fulflo® MegaBond™ Nominal Filter Cartridges

SPECIFICATIONS

Materials of Construction

Filter Medium

100% melt blown polypropylene

End Caps/Adapters (optional)

Polyolefin copolymer

Seal Options

Various; refer to Ordering Information

Maximum Recommended

Operating Conditions

Temperature

@ 40psid (2.7bar): 80°F (27°C)

@ 20psid (1.4bar): 140°F (60°C)

Flow Rate

5gpm (18.9 lpm) per 10 in length

Recommended Maximum

Change Out ΔP: 30psi (2.1bar)

Operating Differential Pressure @ Ambient

Temperature: 40psi (2.7bar)

Dimensions

1 1/16 in. ID x 2 7/16 in OD (max)

10, 20, 30, 40 and 50 in. continuous

nominal lengths

Nominal Filtration Ratings (90%)

.5µm, 1µm, 5µm, 10µm, 25µm, and 50µm

MBN Flow Factors

Rating (µm)	Aqueous Service psi/gpm per 10 in cartridge
MBN05	0.15
MBN1	0.13
MBN5	0.11
MBN10	0.10
MBN25	0.09
MBN50	0.05
MBN75	0.03

MBN Length Factors

Length (in)	Length Factor
9.75	1.0
10.00	1.0
19.50	2.0
20.00	2.0
29.25	3.0
30.00	3.0
39.00	4.0
40.00	4.0
50.00	5.0

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1 cks for 10 in. (or single).
- Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Ordering Information

Cartridge Code		Micrometer Rating (µm)	Nominal Length			End Cap Configuration		Seal Material	
MBN	MegaBond Nominal		Code	Inches	mm	Code	Description	Code	Material
		.5							
		1	9-4	9¾	248	None	DOE (w/o gaskets)	None	No Seal Material (Std. DOE)
		5	10	10	254	AR	020/Flat (Gelman)	A	Poly Foam Gaskets w/ Collars (DO only)
		10	19-4	19½	495	DO	DOE	E	EPR
		25	20	20	508	LL	120 O-ring both ends**	N	Buna-N
		50	29-4	29¼	743	LR	120 O-ring/Recessed**	S	Silicone (O-ring only)
			30	30	762	OB	Std. open end/Polypropylene spring closed end	T	PFA Encapsulated Viton® (222, 226 O-ring only)
			39-4	39	991	PR	213 O-ring/Recessed**	V	Viton®
			40	40	1016	SC	226 O-ring/Flat	W	Poly Foam Gaskets w/o Collars (DO only)
			50	50	1270	SF	226 O-ring/Fin		
			75	75	1905	TB	222 open end/Polypropylene spring closed end		
						TC	222 O-ring/Flat		
						TF	222 O-ring/Fin		
						TX	222 O-ring/Flex Fin		
						XA	DOE w/Extended Core		
						XB	Ext. core open end/Polypropylene spring closed end		

**Available only in 9-¾" (9-4) and 19-½" (19-4) lengths.

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DS_IP_MegaBond N Rev. A



Fulflo® MegaBond Plus™ Cartridges

Depth cartridge for high dirt-holding capacity and absolute-rated filtration efficiency

Parker's Fulflo® MegaBond Plus™ (MBP) are absolute rated depth cartridges. Using a new innovative manufacturing process, the MBP has higher dirt-holding capacities offering long service life without contaminant migration. The MBP has a fixed core inner structure of thermally bonded continuous microfine polypropylene fibers. The modified outer layer fixed pore structure maximizes the graded density surface area to enhance dirt-holding capacity.

Available in absolute ($\beta = 5000$) ratings of 1, 3, 5, 10, 15, 20, 30, 40, 70, 90 and 120 micron.

Benefits

- Microfine, thermally bonded fiber construction provides superior filtration & often eliminates the need for circulation to achieve product clarity
- Non-fiber-releasing, continuous fiber matrix prevents media migration and ensures consistent production yields and overall quality filtration performance
- No surfactants or binders are present to interrupt product quality or cause foaming
- Double open-end cartridges have polyolefin gaskets thermally bonded to both ends eliminating fluid bypass between the cartridge and the vessel seal
- Superior inter-layer bonding eliminates contaminant unloading and channeling
- Unique outer graded density structure increases dirt holding capacity
- Polypropylene fiber provides broad chemical compatibility for a variety of applications
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Pore size differentiation is achieved using fibers of differing diameters and maintaining uniform density throughout the cartridge
- Pore sizes do not change as DP increases during service, providing consistent particle retention

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Applications

- Photographics
- High Technology Coatings
- DI Water
- Plating Solutions
- Chemical Processing
- Membrane Prefiltration
- Food & Beverage

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Fulflo® MegaBond Plus™ Cartridges

SPECIFICATIONS

Materials of Construction

Polypropylene:

Microfiber 100% melt blown construction

Center Support Core/End Caps:

Natural polypropylene

Thermally Bonded Gaskets:

Polyolefin closed cell foam (DOE only)

Maximum Recommended Operating Conditions

Temperature:

@ 60psid (4.1bar): 80°F (27°C)

@ 35psid (2.4bar): 160°F (71°C)

@ 15psid (1.0bar): 200°F (93°C)

Flow Rate:

5gpm (18.9 lpm) per 10 in length

Recommended Maximum

Change Out ΔP: 35psi (2.4bar)

Operating Pressure @ Ambient

Temperature: 60psid (4.1bar)

Dimensions

1 in ID x 2-9/16 in OD 10, 20, 30 and 40 in continuous nominal lengths

Absolute Filtration Ratings

1µm, 3µm, 5µm, 10µm, 15µm, 20µm, 30µm, 40µm, 70µm, 90µm and 120µm

Beta Ratio (β) =

Upstream Particle Count @ Specified Particle Size and Larger

Downstream Particle Count @ Specified Particle Size and Larger

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) 100$$

Performance determined per ASTM F-795-88. Single-Pass Test using AC test dust in water at a flow rate of 3.5gpm per 10 in (13.2 lpm per 254 mm) cartridge.

MBP Flow Factors (psid/gpm @ 1 cks)

Rating (µm)	Flow Factor
MBP1	2.17
MBP3	1.60
MBP5	0.90
MBP10	0.32
MBP15	0.16
MBP20	0.12
MBP30	0.10
MBP40	0.05
MBP70	<0.05
MBP90	<0.04
MBP120	<0.03

MBP Length Factors

Length (in)	Length Factor
9.75	1.0
10.00	1.0
19.50	2.0
20.00	2.0
29.25	3.0
30.00	3.0
39.00	4.0
40.00	4.0

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1 cks for 10 in. (or single).
4. Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Liquid Particle Retention Ratings (µm) @ Removal Efficiency of:

Cartridge	β=5000 Absolute	β=1000 99.0%	β=100 99%	β=50 98%	β=10 90%
MBP1	1	0.9	0.5	0.4	0.2
MBP3	3	2.8	1.9	1.7	0.8
MBP5	5	3.7	2.3	1.6	1.2
MBP10	10	9.1	8.0	7.8	6.7
MBP15	15	12.0	9.6	8.9	7.2
MBP20	20	18.3	13.0	12.5	8.7
MBP30	30	25.0	20.0	18.0	13.0
MBP40	40	35.0	28.0	25.0	18.0
MBP70	70	60.0	48.0	42.0	30.0
MBP90	90	80.0	72.0	63.0	48.0
MBP120	120	105.0	95.0	85.0	70.0

Ordering Information

Cartridge Code		Micron Rating	Nominal Length		Support Construction		End Cap Configuration				Seal Material	
MBP	MegaBond Plus	(Absolute) (µm)	CODE	INCHES	CODE	MATERIAL	CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	MATERIAL
		1	9-4	9¾"	N	Polypropylene	None	Std. Double Open End (DOE) / Polyfoam	SSC	SS inserted 226 O-ring/Closed	None	Polyfoam (DOE only)
		3	10	10"	G	304 SS (Core Only)	AR	020/Flat (Gelman)	SSF	SS inserted 226 O-ring/Fin	E	EPR
		5	19-4	19½"			DO	DOE	STC	SS inserted 222 O-ring/Closed	N	Buna-N
		10	20	20"			DX	DOE with Polypro extender	STF	SS inserted 222 O-ring/Fin	S	Silicone (O-ring only)
		15	29-4	29¾"			LL	120 O-ring both ends**	TC	222 O-ring/Flat	T	PFA Encapsulated Viton® (222, 226 O-ring only)
		20	30	30"			LR	120 O-ring/Recessed**	TF	222 O-ring/Fin	V	Viton®
		30	39-4	39"			OB	Std. open end/Polypropylene spring closed end	TX	222 O-ring/Flex Fin		
		40	40	40"			PR	213 O-ring/Recessed**	XA	DOE w/Extended Core		
		70					SC	226 O-ring/Flat	XB	Ext. core open end/Polypropylene spring closed end		
		90					SF	226 O-ring/Fin				
		120										

**Available only in 9¾" (9-4) and 19½" (19-4) lengths.

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DS_IP_MegaBond Plus Rev. A

Fulflo® ProBond™ Filter Cartridges

Patented break-through in resin-bonded cartridge design

Parker ProBond™ cartridges have a unique, proprietary two-stage filtration design to maximize particle retention and service life in viscous fluid filtration applications. An outer, spiral, prefilter wrap, made from a fiber blend of polyester and acrylic, increases cartridge strength and eliminates residual debris associated with conventional or machined and grooved, resin bonded cartridges.

ProBond filter cartridges are available in eight differentiated removal ratings of 2µm, 5µm, 10µm, 25µm, 50µm, 75µm, 125µm and 150µm pore sizes to meet a wide range of performance requirements.



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Benefits

- Outer, spiral wrap collects large particles and agglomerates, while inner layers control particle removal at rated size
- Outer wrap increases surface area, & eliminates loose debris and contamination caused by machined products
- Extra-long acrylic fibers provide added strength, resist breakage and migration common with competitive “short fiber” cartridges
- Available with optimal single-open-end seals (222 o-ring with flat cap) in ABS or nylon
- Phenolic resin impregnation strengthens cartridge for use with high viscosity fluid
- Withstands pressure surges up to 150psid across cartridge (depending on fluid temperature)
- One-piece construction eliminates bypass concerns with multi-length cartridges and eases change out
- Silicone-free construction ensures no contamination to adversely affect adhesion properties of coatings

Applications

- Paints
- Printing Inks
- Adhesives
- Resins
- Emulsions
- Chemical Coatings
- Organic Solvents
- Plasticizers
- Waxes
- Oil & Gas Fluids
- Petroleum Products



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Fulflo® ProBond™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

1st stage Pre-filter wrap:

- Polyester/Acrylic long staple fiber blend

2nd stage Final Filter wrap:

- Acrylic long staple fiber
- Fibers impregnated with Phenolic Resin

Type of Construction

Coreless, one-piece, rigid resin bonded fibrous matrix

Maximum Recommended

Operating Conditions

- Flow Rate: 5gpm per 10 in length (18.9 lpm per 254 mm length)
- Temperature: 250°F (121°C)
- Maximum Recommended Change Out ΔP: 50psid (3.5bar)
- Recommended Maximum Differential Pressure:
 - Cartridge Pressure Resistance
 - 150psid (10bar) @ 70°F (21°C)
 - 125psid (8.6bar) @ 100°F (38°C)
 - 90psid (6.2bar) @ 150°F (65°C)
 - 65psid (4.5bar) @ 180°F (82°C)
 - 25psid (1.7bar) @ 250°F (121°C)

Particle Removal Ratings

2µm, 5µm, 10µm, 25µm, 50µm, 75µm, 125µm and 150µm

Dimensions, in. (mm)

Outside Diameter: 2-⁹/₁₆ in (65)

Inside Diameter: 1-¹/₈ in (28.6)

Lengths: Nominal, 10, 20, 30 and 40 in.

Environmental/Chemical Compatibility

Classified as a nonhazardous material

- Incinerable (8000 BTU/lb)
- Crushable and shreddable
- Certified silicone-free
- Suitable for weak acids and bases (pH 5-9)
- Unsuitable for oxidizing agents
- Not recommended for FDA applications

End Adapters

- None on double open end style
- ABS (Acrylonitrile Butadiene Styrene) for most applications
- Nylon (NTC) for aromatic solvents

ProBond Flow Factors

Rating (µm)	Flow Factors
2	0.08
5	0.04
10	0.02
25	0.012
50	0.01
75	0.006
125	0.0013
150	0.0010
200	0.0005
250	0.0001

ProBond Length Factors

Length (in)	Length Factors
9	1.0
10	1.0
19	2.0
20	2.0
29	3.0
30	3.0
39	4.0
40	4.0

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

1. Clean ΔP ispsi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
4. Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Ordering Information

Cartridge Code		Micron Rating	Nominal Length			End Cap Configuration		Seal Material	
PRO	ProBond Series	(µm)	CODE	IN.	mm	CODE	DESCRIPTION	CODE	MATERIAL
		2	9	9- ³ / ₄	248	Omit	Std. double open end (DOE) coreless	Omit	DOE and XA
		5	10	10	254	CXC	Extended tinned steel core	E	EPR
		10	19	19- ¹ / ₂	495	C	Tinned steel core	N	Buna-N
		25	20	20	508	NTC	Single open end 222 o-ring/Flat cap (Nylon)	S	Silicone (O-ring only)
		50	29	29- ¹ / ₄	743	OB	Std. open end/Polypropylene spring closed end	T	PFA Encapsulated Viton® (222, 226 O-ring only)
		75	30	30	762	TC	Single open end 222 O-ring/Flat cap (ABS Plastic)	V	Viton®
		125	39	39	991	XA	Poly extender		
		150	40	40	1016	XB	Extended core open end/ Polypropylene spring closed end		
		200							
		250							

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DS_IP_ProBond Rev A.

Fulflo® SWC Filter Cartridges

Economical filtration solutions with string-wound depth cartridges

The SWC filter cartridge offers a wide range of fibers and core materials. Roving is wound onto a center core for strength. The diagonal pattern of the media forms a tight, interlocking weave. Parker domick hunter Process Filtration has one of the world's largest manufacturing plants for wound cartridges, offering superior quality along with technical, engineering and marketing support.

Nominal removal ratings from 1µm to 100µm are available.



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Benefits

- SWC's provide excellent compatibility with a variety of organic solvents and petroleum products
- Optional core covers available to assure fiber migration control
- Multiple length cartridges minimize change out time, eliminate spacers and are available to fit competitive filter vessels
- Cotton and polypropylene materials are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Continuous strand roving geometry provides performance consistency
- Extended center core option eliminates the need for cartridge guides in competitive and Fulflo multi-cartridge vessels
- One piece extended length center cores are available in tinned steel, 316 stainless steel and 304 stainless steel
- A special snap-in extender is available for polypropylene cores
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components

Applications

- Prefilter for RO Membranes
- Water
- Alkalies
- Dilute Acids & Alkalies
- Organic Acids & Solvents
- Potable Liquids
- Petroleum Oils
- Mineral Acids

Fulflo® SWC Filter Cartridges

SPECIFICATIONS

Materials of Construction

- Polypropylene
- Cotton

Maximum Recommended Operating Conditions

- Temperature:
 - Polypropylene: 200°F (93°C) with tinned steel or stainless steel cores; 120°F (49°C) with polypropylene cores
 - Cotton: 250°F (121°C) with tinned steel or stainless steel cores; 120°F (49°C) with polypropylene cores
- Change Out ΔP: 30psi (2.1bar)
- ΔP @ Ambient Temperature: 60psi (4.1bar)
- Flow Rate: 5gpm (18.9 lpm) per 10 in. length

Nominal Removal Ratings

- 90% efficiency from 1μm to 100μm

Dimensions

- 1 in. ID x 2-3/8 in. OD
- 10, 20, 30 and 40 in. lengths

SWC Length Factors

Length (in)	Length Factor
10	1.0
20	2.0
30	3.0
40	4.0

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

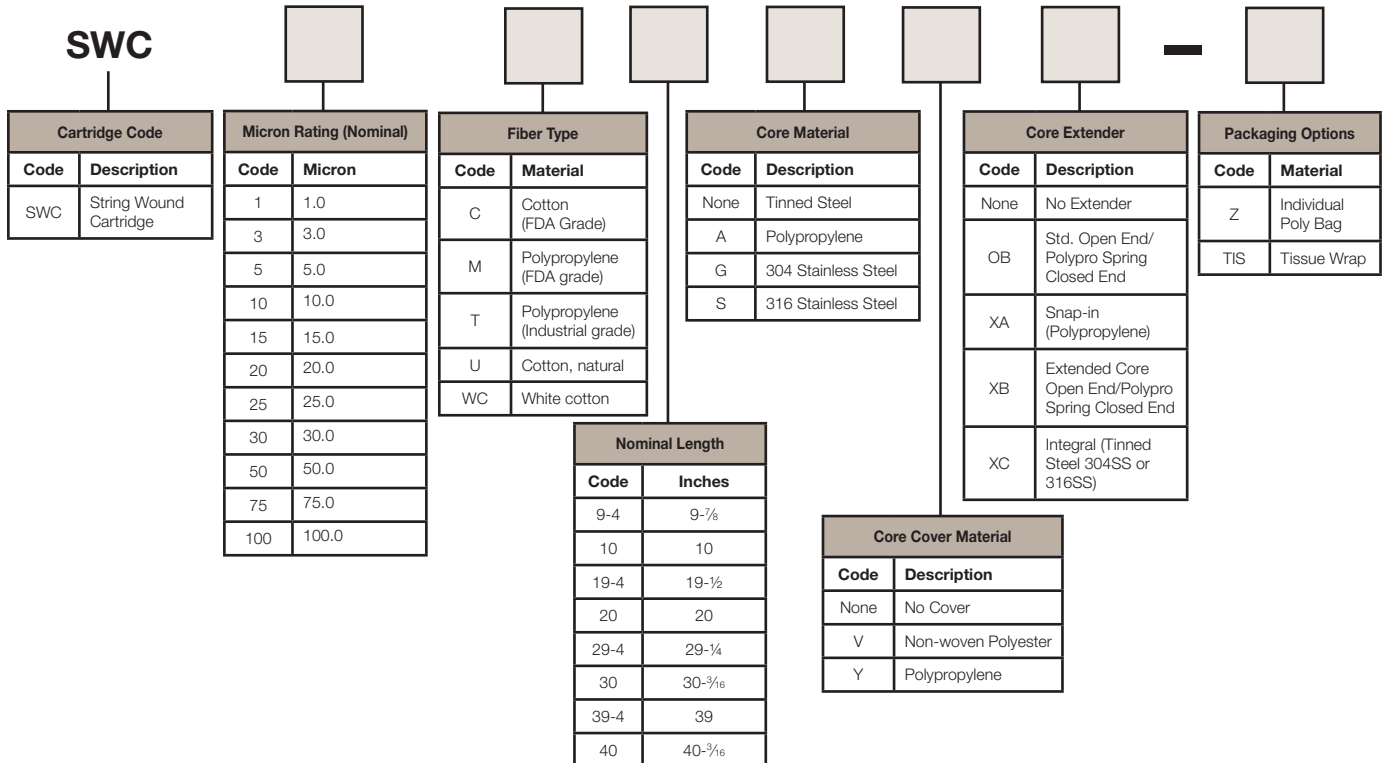
Notes:

1. Clean ΔP ispsi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is ΔP/GPM at 1cks for 10 in. (or single).
4. Length Factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

SWC Flow Factors (psid/gpm @ cks)

Rating (μm)	Cotton	All Synthetics
1	2.00	0.75
3	0.63	0.33
5	0.36	0.24
10	0.19	0.14
15	0.16	0.12
20	0.11	0.09
25	0.10	0.08
30	0.09	0.07
50	0.07	0.06
75	0.06	0.05
100	0.06	0.05

Ordering Information



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Fulflo® XTL™ Filter Cartridges

Technologically advanced wound cartridge design for doubled cartridge life and improved performance

The unique construction of Parker's patented* Fulflo® XTL™ (extended life) cartridges provides twice the average life of conventionally wound cartridges for process fluid filtration. Computer modeling has optimized the wound cartridge geometry maximizing the use of the internal cartridge surface area. The enhanced design provides improved dirt-holding capacity (twice the average) over standard wound cartridges, while providing true controlled-depth filtration.

Fulflo® XTL cartridges are available in nominal (90%) ratings of 1µm, 3µm, 5µm, 10µm, 20µm and 30µm.



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Benefits

- Result in significant cost savings based on fewer system interruptions, decreased labor expenses for change outs, & reduced inventory and cartridge disposal costs
- Unique computer programming capability permits the design and manufacture of special cartridge constructions to suit requirements of nearly any filtration application
- "M" polypropylene and "C" cotton materials are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Continuous strand roving geometry provides performance consistency
- XTL wound cartridges fit all Fulflo vessels and most competitive vessels without compromising final product clarity or flow characteristics of the cartridge. The most

noticeable difference is the extended life savings offered by XTL cartridges

- Extended center cores are available in tinned steel, 316 stainless steel and 304 stainless steel
- A special snap-in extender is available for polypropylene cores
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components

Applications

- Potable Liquids
- Organic Solvents
- Process Water
- Photoprocessing
- Lubricants
- R.O. Pre-filtration
- Amines
- Chemical Process



ENGINEERING YOUR SUCCESS.

Filter Bags and Strainers



Fulflo® Basket Strainers

For effective large particle removal

Fulflo® Filter Bags

High-quality, consistent filtration performance

Fulflo® HS Pleated Bag (HSPB)

High surface area for large volume industrial applications

Fulflo® Pleated Bag (PB)

High quality, consistent filtration performance

Fulflo® XLH Filter Bags

High-efficiency for quality filtration performance



Toll free sales & technical support:
877.784.2234
dhpsales.na@parker.com

Fulflo® Basket Strainers

For effective large particle removal

Fulflo® basket strainers effectively remove large-sized particles ranging from US Mesh 20 to 100 (840µm to 149µm) from liquids with viscosities of up to 15,000 SSU. Parker basket strainers are useful as pre-filters for the collection of gross contaminants.



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Benefits

- Available in two standard sizes to fit Fulflo FB & SB bag filter vessels
- Each strainer constructed of 316 stainless steel and features a permanent handle for easy installation, removal and cleaning
- Fulflo strainer vessels designed for maximum operating pressures of up to 150psi (9.0bar) and high flow rates
- Cleanable permanent media
- Optional ratings available down to 550 mesh (25 micron)
- Five standard ratings available from 20 to 100 mesh

Applications

- Discharge Water
- Process Water
- Coolants
- Cutting Oils
- Inks
- Lubricants
- Paints
- Resins
- Solvents
- Bulk Chemicals
- Parts Washing Systems
- Adhesives

Fulflo® Basket Strainers

SPECIFICATIONS

Maximum Operating Pressure Differential
150psid (10.3bar)

Length: (Basket Only)
Single = 14-¾ in. (37 cm)
Double = 27-¾ in. (70 cm)

Length: (Including Handle)
Single = 18-¾ in. (47 cm)
Double = 31-¾ in. (80 cm)

Outer Diameter:
Single = 7-7/16 in. (19 cm)
Double = 7-7/16 in. (19 cm)

Basket Capacity:
Single = 2.2gal (8.3 liters)
Double = 4.3gal (16.3 liters)

Weight:
Single = 5.4 lbs. (2 kg)
Double = 9.4 lbs. (4.3 kg)

Mesh Surface Area:
Single = 2.3 ft2 (2139 cm2)
Double = 4.2 ft2 (3906 cm2)

Pressure Drop Determination for Fulflo® Basket Strainers

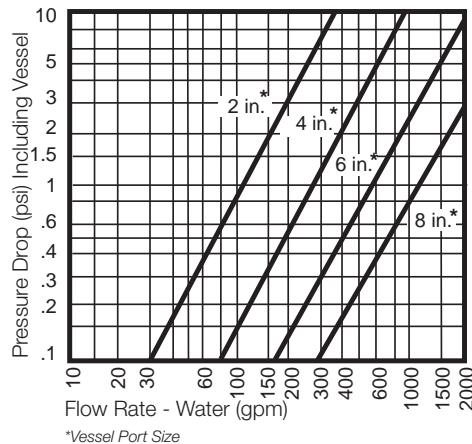
- From the pressure drop chart below, determine the pressure drop through the vessel using the known flow rate and inlet/outlet size. The chart is for water flowing through a vessel containing a clean 20 mesh basket.
- To determine the pressure drop for a vessel with other strainers, multiply the above value by the appropriate correction factor in the following table (water only):
- Correction factor for liquids other than water:
 - Multiply pressure drop for water, determined by completing steps 1 and 2, by the specific gravity of the liquid.
 - Multiply results of "a" by the viscosity and mesh correction factor in the table below.

Mesh Correction Factors

Viscosity SSU	20 Mesh	40 Mesh	60 Mesh	80 Mesh	100 Mesh
500	1.6	1.9	2.1	2.4	2.6
1,000	1.7	2.2	2.4	2.6	2.8
2,000	1.9	2.4	2.7	2.9	3.2
3,000	2.0	2.6	2.9	3.2	3.5
5,000	2.2	3.0	3.5	4.0	4.5
10,000	2.5	3.5	4.2	5.0	6.0

Water Correction Factor

20 Mesh	1.0
40 Mesh	1.2
60 Mesh	1.4
80 Mesh	1.6
100 Mesh	1.7



Ordering Information

Strainer Baskets With Handles

Single Length Stainless Steel	
Type	Part #
½ in. perforations	0370-5177
20 Mesh (840µm)	0370-5059
40 Mesh (420µm)	0370-5060
60 Mesh (250µm)	0370-5061
80 Mesh (177µm)	0370-5062
100 Mesh (149µm)	0370-5063

Double Length Stainless Steel	
Type	Part #
½ in. perforations	0370-5156
20 Mesh (840µm)	0370-5064
40 Mesh (420µm)	0370-5065
60 Mesh (250µm)	0370-5066
80 Mesh (177µm)	0370-5067
100 Mesh (149µm)	0370-5068

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DS_IP_Basket Strainer Rev. A

Fulflo® Filter Bags

High-quality, consistent filtration performance

Fulflo® Filter Bags are ideal for virtually any process filtration application requiring the removal of solids. Parker's Fulflo® filter bags are manufactured and tested under the strictest quality control standards to assure consistent performance. Parker's Fulflo® filter bags perform at high flow rates and viscosities to 10,000 cps or higher.

Standard Fulflo® Filter Bags are available in 1µm to 800µm particle retention ratings.



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Features

- Standard filter bags fit Fulflo® vessels and most major competitive models
- The “C” Style Fulflo® bag features a polypropylene Quik-Seal ring which effectively seals the bag into standard Parker bag vessels
- The “G” Style Fulflo® bag features a carbon steel snap ring for positive sealing in competitive vessels
- Fulflo® Quik-Seal™ option is available for all “G” style Fulflo® filter bag media
- Felt bags come standard with glazed surface treatment to effectively control migration of fibers into the filtered product
- Polypropylene felt (P) bags are suitable for incidental food contact per CFR Title 21

Applications

- Solvents
- Bulk Chemicals
- Coatings
- Coolants
- Petroleum Oils
- Inks
- Paints
- Adhesives
- Resins
- Prefilters for Finer Cartridges
- Parts Washing Systems
- Water

Fulflo® Filter Bags

SPECIFICATIONS

Maximum Recommended Operating Conditions

Temperature:

Polyester: 275°F (136°C)

Polypropylene: 200°F (94°C)

Monofilament Nylon Mesh: 275°F (136°C)

Nomex®: 425°F (220°C)

Multifilament Polyester Mesh: 275°F (136°C)

Flow Rate: (Per single length)

Standard Bag: 80gpm (303 lpm)

Change-out ΔP: 35psi (2.4bar)

Pressure: 70psid (4.8bar)

Size

C1: 7.5" X 17.5"

C2: 7.5" X 31.5"

G1: 7" X 17.5"

G2: 7" X 31.5"

Effective Removal Ratings

0.5µm to 800µm

Bag Media Selection

Mono-filament Mesh:

Single strand nylon with retention ratings from 100µm to 600µm

Glazed Felt:

In polypropylene or polyester felts, the surface fibers are melt bonded to one another, reducing the possibility of fiber migration

Multi-filament Mesh:

Strong fabric woven from twisted strands. Particle retention ratings from 150µm to 800µm

High Temperature Nomex®

Standard Seal (no seal option specified)

C = Plastic Quik-Seal™ Ring (polypropylene for P felt and polyester for PE felt)

G = Galvanized Steel Ring

Standard Bag Flow Factors

Rating (µm)	Flow Factors
1	0.00083
3	0.00059
5	0.00044
10	0.00029
25	0.00017
50	0.00013
75	0.00008
100	0.00007

Flow Rate and Pressure Drop Formulas

Flow Rate (gpm) = $\frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$

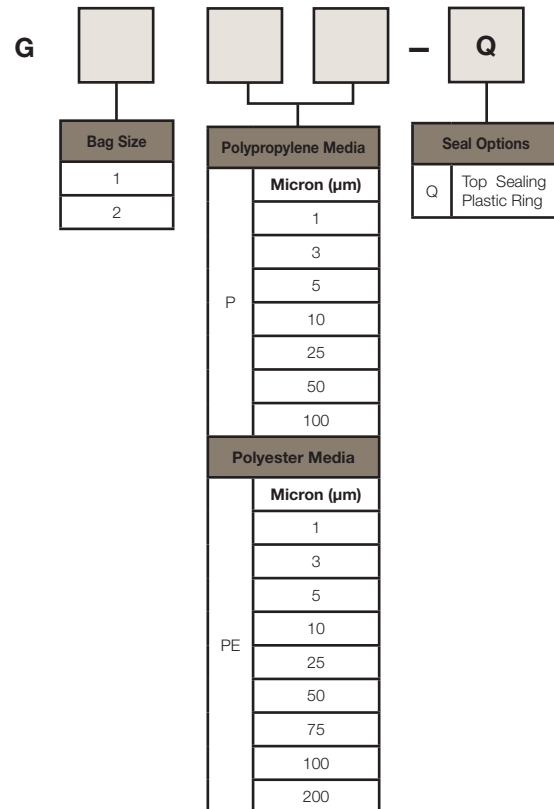
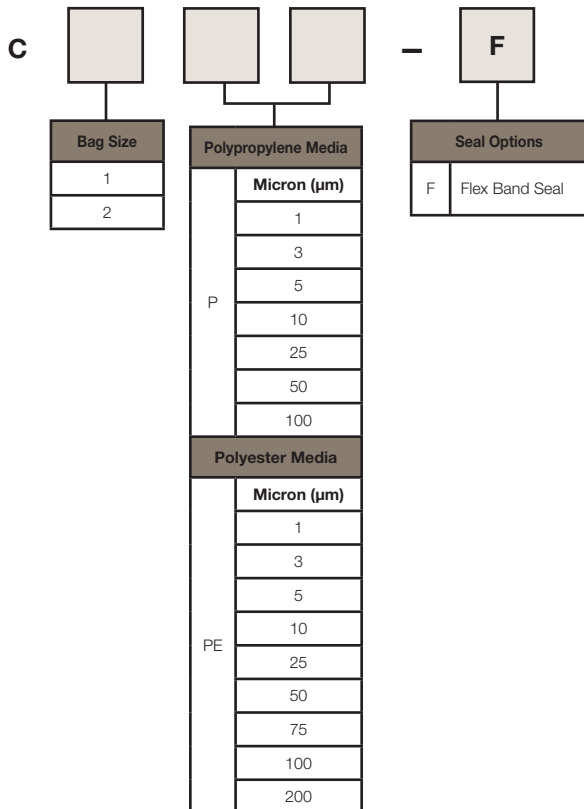
Clean ΔP = $\frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$

Notes:

- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1cks for single length bag.
- Length Factors convert flow or ΔP from single length bags. Use length factor or 1 for single length and a factor of 2 for double length.

Ordering Information

Polypropylene, Polyester Felt Bags

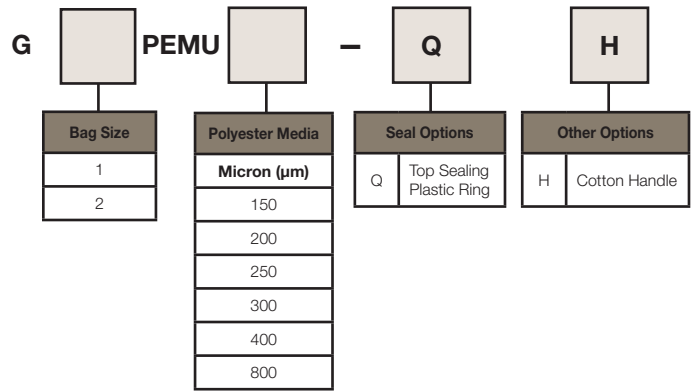
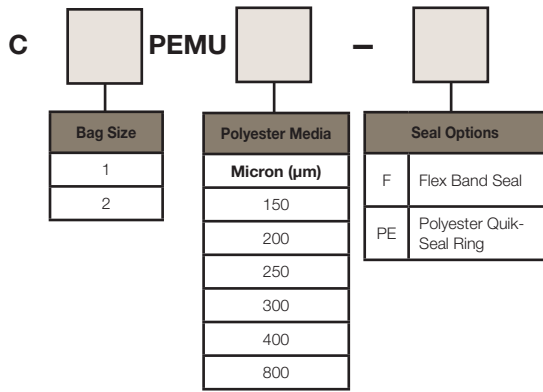


Note:

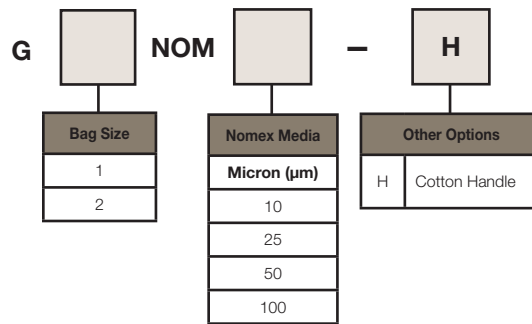
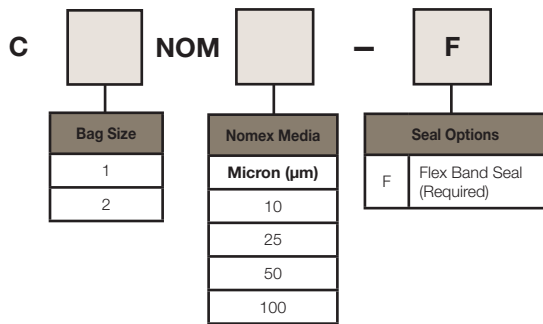
The following apply to all bag media selections

- Use C-Style bags for Parker CB, FB, & SB housings
- Use G-Style bags for Parker E-Series Bag & competitor housings

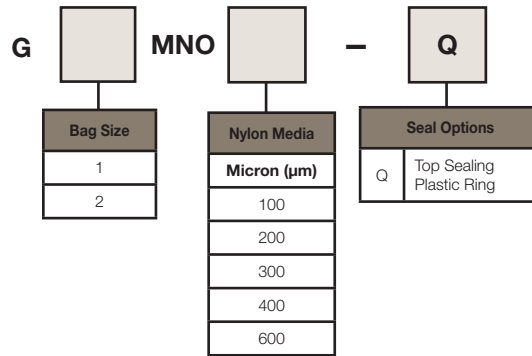
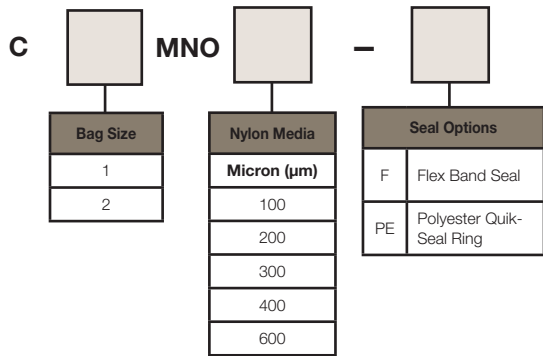
Polyester Multi-Filament Bags



Nomex Felt Bags



Nylon Mono-Filament Bags



Note:

The following apply to all bag media selections

- Use C-Style bags for Parker CB, FB, & SB housings
- Use G-Style bags for Parker E-Series Bag & competitor housings

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DS_IP_Filter Bag Rev. A

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www.parker.com/processfiltration

Fulflo® HS Pleated Bag Filter

Economical high surface area pleated bag for large volume industrial applications

The Fulflo® HS Pleated Bag filter is a nominally rated high surface area media configuration designed for high flow and high dirt loading industrial process conditions. The increased surface area reduces filtration costs by minimizing labor and downtime over use of standard bags. The Fulflo® HS Pleated Bag utilizes an o-ring seal to prevent fluid bypass and is fully thermally welded.



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Features

- Fits Parker domnick hunter EB bag housings and competitive standard size bag housings
- Enhanced capacity exceeds filter life when compared to standard filter bags
- Up to 12 times the surface area over standard filter bags
- Heavy duty construction

Benefits

- Fewer change-outs
- Longer filter life
- Lower filtration costs
- Fits competitor housings

Applications

- Oil & gas
 - Injection wells
 - Produced water
- Inks, paints, coatings & resins
- Automotive electrocoat applications
- Cooling towers
- Water remediation

Fulflo® HS Pleated Filter Bags

SPECIFICATIONS

Materials of Construction

Filter Media Options

XF:	Polyester
F, M:	Polypropylene
MC, C, XC:	Polyamides

Outer Cage/Inner core

ETP (Electro-tin-plated) steel

End cap

P:	Polypropylene
E:	Polyester

Seal Materials

Buna-N, EPR, Viton®

Dimensions

Cartridge Outside Diameter

6 inches

Cartridge Inside Diameter

3-1/4 inches

Cartridge Length

Bag 1 = 12 inches

Bag 2 = 26 inches

Maximum Flow Rate

Bag 1 = 100gpm

Bag 2 = 200gpm

Maximum Recommended Operating Conditions

Temperature

Polyester: 275 °F (136 °C)

Polypropylene: 200 °F (94 °C)

Polyamides: 275 °F (136 °C)

Change out ΔP

35psid

Note: A filter basket must be used with the HS Pleated Bag in housings

Performance Attributes

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

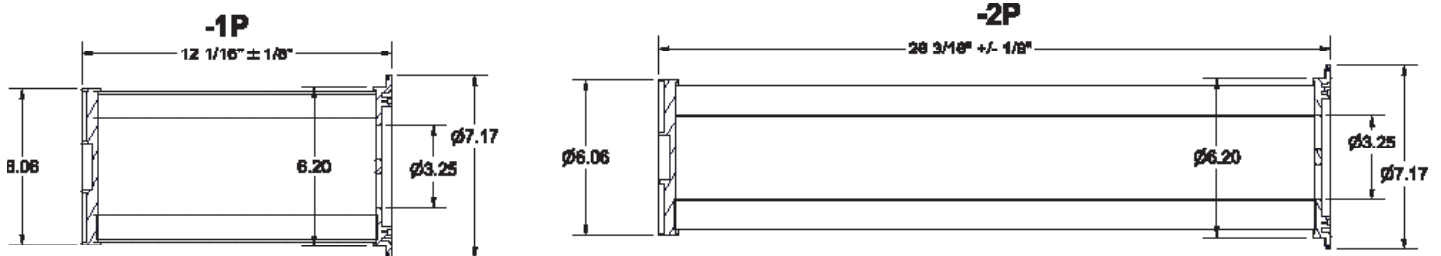
- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow factor is psid/gpm at 1cks for 10 in. (or single).
- Length factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

Potential Application By Media	Potential Application Use
HSPBXC Series	Disposal Wells
HSPBC Series	Fracking, Resins, Adhesives
HSPBMC Series	Produced Water, Ink, Coolants
HSPBM* Series	Parts Washing/Phosphate
HSPBF* Series	Electrocoat, Paint

** The F and M series is not recommended for fluids containing hydrocarbons*

HS Pleated Bag Flow Factors (psid/gpm@1cks)

Rating (series)	Flow factor
XF	0.00049
F	0.00023
M	0.00015
MC	0.0008
C	0.0005
XC	0.0002



Ordering Information

Cartridge Series	Media Options		Bag Size		End Cap		Seal Material	
High Surface Pleated Bag	Code	Micron	Code	End cap Material	Code	Description	E	EPR
	XF	1-10	1	P (Polypropylene)	US	Under seal	N	Buna-N
	F	10-25	2	E (Polyester)			V	Viton®
	M	25-50						
	MC	50-100						
	C	100-200						
	XC	200-300						

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DS_IP_HSPB_Rev. A

Fulflo® Pleated Bag (PB)

High quality, consistent filtration performance

Parker's new Fulflo® Pleated Bag (PB) series is a high-capacity product line that provides a cost-effective alternative with higher removal efficiencies over standard bag media configurations. Utilizing Parker's unique "Select" pleat design along with our proprietary media configurations, we are able to optimize the pleat pack surface area to maximize the service life within each configuration. The Fulflo PBs are available in several polypropylene formats: Poly-Mate Plus, Poly-Mate and Claripor. In addition, it is available with our Glass-Mate media.

This product is designed to fit within existing bag filter vessels, including our SB, FB, CB series without any hardware changes and incorporates an easy-to-grasp integrated handle for quick removal.



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Features

- High capacity reduces the number of filters required resulting in fewer changouts & lower filtration costs
- High capacity allows for smaller housings & less capital expenditure
- Inside/outside flow captures and retains contaminants to eliminate potential fouling downstream
- Range of sealing configurations meets the majority of housing requirements
- Several media types are available for a wide variety of applications
- Manufactured with strict quality control
- Polypropylene cartridges listed as acceptable for potable and edible contact according to CFR Title 21
- Process Advanced Filtration is ISO9001 compliant

Applications

- Intermediates & fine chemicals
- Amines
- Commercial water
- Deep well injection
- Catalyst recovery
- Vegetable oils
- Paints & inks



ENGINEERING YOUR SUCCESS.

Fulflo® Pleated Bag (PB) Series

Materials of Construction:

Structural components:

Polypropylene

Support/Drainage:

Polypropylene

Media:

Polypropylene

Poly-Mate Plus

Claripor

Poly-Mate

Borosilicate Microfiber

Glass-Mate

Seal Material:

EPDM

Buna – N

Viton®

FDA-listed as acceptable for potable/edible liquid contact according to CFR Title 21

- Poly-Mate PMPB
- Poly-Mate Plus PPPB
- Claripor CPPB

FDA-listed components biosafe per USP Class VI-121 C Plastics test allows filtration of edible/potable liquids

- Glass-Mate GMPB

Recommended Operating

Conditions:

Poly-Mate Plus, Poly-Mate, Claripor:

70 psid (4.8 bard) @ 77 F (25 C)

35 psid (2.4 bard) @ 130 F (54 C)

Flow Rate	P1	P2
Recommended Flow Rate*	25gpm (95 L/min)	50gpm (189L/min)
Maximum Flow Rate	50gpm (189L/min)	100gpm (379L/min)
* For optimum performance		
Recommended change-out differential pressure 35psid (2.41 bard)		

Glass-Mate:

40 psid (2.8 bard) @ 77 F (25 C)

15 psid (1.0 bard) @ 175 F (79 C)

Dimensions (Nominal):

Outside Flange Diameter: 7.25"

Outside Filter Diameter: 6"

Length (Nominal):

Size 1 Bag - 11.5"

Size 2 Bag - 24.5"

Size (Nominal):

C: 7.50"

G: 7.12"

PLEATED BAG CONFIGURATION OPTIONS

Claripor CPPB

The PB Claripor offers the best of pleated and depth style technologies.

The unique depth layer construction provides higher retention, longer service life, and excellent gel removal.

These features, in addition to the PB Claripor's high contaminant holding capacity and exceptional clarifying ability make it an ideal choice for a wide array of critical process applications.

Poly-Mate PMPB

The PB Poly-Mate incorporates a unique combination of polypropylene meltblown and spun-bonded media to provide a high surface area, finish-free and non-fiber releasing filtration.

Poly-Mate Plus PPPB

The PB Poly-Mate Plus filters are made with pleated a polypropylene microfiber which provides high efficiency and high purity filtration. The PB Poly-Mate Plus media configuration makes it an ideal membrane pre-filter or cost effective alternative to membrane filters in a variety of applications.

Glass-Mate GMPB

The PB Glass-Mate offers an economical choice for applications requiring high quality filtration, and long service life. The laminated media/support layer maximizes flow capacity and eliminates media migration.

PB Flow Factors (based on 25 gpm for Size 1 Bags) & Efficiencies															
Poly-Mate (PMPB)				Poly-Mate Plus (PPPB)				Claripor (CPPB)				Glass-Mate (GMPB)			
PN/ Micron	Effic. @95%	Effic. @99%	Flow Factor PSI/GPM	PN/ Micron	Effic. @90%	Effic.@ ≥99.9%	Flow Factor PSI/GPM	PN/ Micron	Effic. @90%	Effic.@ ≥99.9%	Flow Factor PSI/GPM	PN/ Micron	Effic. @90%	Effic.@ ≥99.9%	Flow Factor PSI/GPM
1	0.2	1	0.0186	1	0.45	1.4	0.0290	1.5	0.7	1.5	0.0616	1.5	1	1.5	0.0261
2.5	1	2.5	0.0102	3	1	2.5	0.0068	3	1	3	0.0359	3	1.6	3	0.0248
5	3	5	0.0024	5	2	5	0.0060	4.5	3.5	4.5	0.0257	10	5	10	0.0165
15	8	15	0.0017	10	4	10	0.0048	10	4	10	0.0205	20	12	20	0.0116
48	32	48	0.0011	20	12	20	0.0010	20	12	20	0.0128	40	20	40	0.0050
				40	20	40	0.0007	30	16	30	0.0077				
				70	35	70	0.0005	40	18	40	0.0067				
				90	60	90	0.0004	70	25	70	0.0062				
								90	40	90	0.0039				

Specifications are subject to change without notification.
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Fulflo® Pleated Bag (PB) Series

Ordering Information

PMPB		Poly-Mate		Micron Rating		Bag Length		Hardware		Ring Style		Seal Type (A, B, C, D only)	
Code	µm	Code	µm	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
010	1	1		P	Polypropylene	CQ	Plastic: "Q" Parker Top Sealing	N	Buna-N	CA	Elastomeric: Parker	E	EPR
025	2.5	2				GQ	Plastic: "Q" Competitive Top Sealing	V	Viton®	GB	Elastomeric: GAF/FSI Side Entry Seal		
050	5					GC	Elastomeric: Pall/FTC			GD	Elastomeric: FSI/Hayward Over the Top Seal		
150	15												
480	48												

PPPB		Poly-Mate Plus		Micron Rating		Bag Length		Hardware		Ring Style		Seal Type (A, B, C, D only)	
Code	µm	Code	µm	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
010	1	1		P	Polypropylene	CQ	Plastic: "Q" Parker Top Sealing	N	Buna-N	CA	Elastomeric: Parker	E	EPR
030	3	2				GQ	Plastic: "Q" Competitive Top Sealing	V	Viton®	GB	Elastomeric: GAF/FSI Side Entry Seal		
050	5					GC	Elastomeric: Pall/FTC			GD	Elastomeric: FSI/Hayward Over the Top Seal		
100	10												
200	20												
400	40												
700	70												
900	90												

CPPB		Claripor		Micron Rating		Bag Length		Hardware		Ring Style		Seal Type (A, B, C, D only)	
Code	µm	Code	µm	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
015	1.5	1		P	Polypropylene	CQ	Plastic: "Q" Parker Top Sealing	N	Buna-N	CA	Elastomeric: Parker	E	EPR
030	3	2				GQ	Plastic: "Q" Competitive Top Sealing	V	Viton®	GB	Elastomeric: GAF/FSI Side Entry Seal		
045	4.5					GC	Elastomeric: Pall/FTC			GD	Elastomeric: FSI/Hayward Over the Top Seal		
100	10												
200	20												
300	30												
400	40												
700	70												
900	90												

GMPB		Glass-Mate		Micron Rating		Bag Length		Hardware		Ring Style		Seal Type (A, B, C, D only)	
Code	µm	Code	µm	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
015	1.5	1		P	Polypropylene	CQ	Plastic: "Q" Parker Top Sealing	N	Buna-N	CA	Elastomeric: Parker	E	EPR
030	3	2				GQ	Plastic: "Q" Competitive Top Sealing	V	Viton®	GB	Elastomeric: GAF/FSI Side Entry Seal		
100	10					GC	Elastomeric: Pall/FTC			GD	Elastomeric: FSI/Hayward Over the Top Seal		
200	20												
400	40												

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Toll free sales & technical support:

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www.parker.com/processfiltration

Fulflo® XLH Filter Bags

High-efficiency for quality filtration performance

Fulflo® XLH filter bags are ideal for virtually any process filtration application requiring the removal of solids. Parker's filter bags are manufactured and tested under the strictest quality control standards to assure consistent performance.

XLH filter bags perform at efficiencies similar to depth cartridges with high flow rates and viscosities to 10,000 cps or higher. XLH bags are available in 0.5µm, 1µm, 2.5µm, 10µm and 25µm particle retention ratings.



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Benefits

- Parker's XLH all-polypropylene high efficiency filter bags provide twice the dirt-holding capacity at a lower cost than many competitive bags and cartridges of the same micrometer rating
- XLH bags require less frequent change out, less storage and disposal space, and are easy to install and remove
- Each bag is incinerable (with Quik-Seal™ option), reducing filter disposal costs
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21

Applications

- Solvents
- Bulk Chemicals
- Coatings
- Coolants
- Petroleum Oils
- Inks
- Paints
- Adhesives
- Resins
- Prefilters for Finer Cartridges
- Parts Washing Systems
- Water

Fulflo® XLH Filter Bags

SPECIFICATIONS

Materials of Construction

Microfiber: FDA grade polypropylene microfiber used in the XLH bag series assures high-efficiency performance and is oil absorbent.

Particle retention ratings:
0.5µm to 25µm

Maximum Recommended Operating Conditions

Temperature:
Polypropylene—200°F (94°C)
Flow Rate (Per single length)
XLH 25gpm (95 lpm)
Change-out ΔP: 35psi (2.4bar)

Maximum Allowable Pressure:
70psid (4.8bar)

Standard Seal:
(No seal option specified)
C = Plastic Quik-Seal Ring
G = Galvanized Steel Ring

Size

C1: 7.5" X 17.5"
C2: 7.5" X 31.5"
G1: 7" X 17.5"
G2: 7" X 31.5"

XLH Flow Factors

Rating (µm)	Flow Factors
0.5	0.0185
1	0.0143
2.5	0.0130
10	0.0043
25	0.0031

XLH Filter Bag Retention Ratings

Rating (µm)	Particle Size (µm) at which efficiency is:		
	90%	95%	99%
0.5	0.5	1	5
1	1	2	10
2.5	2.5	4	16
10	2.5	4	16
25	25	30	40

Flow Rate and Pressure Drop Formulas

Flow Rate (gpm) = $\frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$

Clean ΔP = $\frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$

Notes:

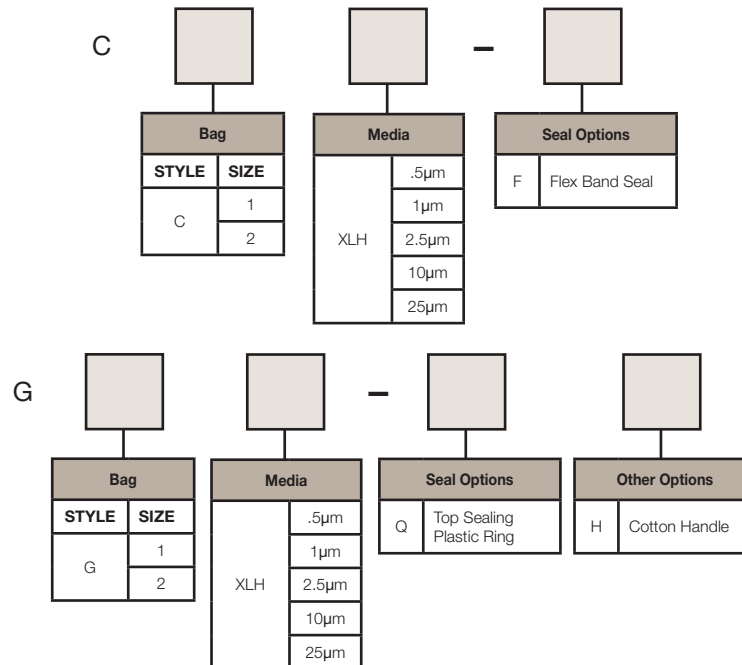
- Clean ΔP is psi differential at start.
- Viscosity is centistokes. Use Conversion Tables for other units.
- Flow Factor is ΔP/GPM at 1 cks for single length bag.
- Length Factors convert flow or ΔP from single length bags. Use length factor of 1 for single length and a factor of 2 for double length.

Beta Ratio (β):

$\frac{\text{Upstream Particle Count @ Specified Particle Size \& Larger}}{\text{Downstream Particle Count @ Specified Particle Size \& Larger}}$

$$\text{Percent Removal Efficiency} = \left(\frac{\beta - 1}{\beta} \right) \times 100$$

Ordering Information



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DS_IP_XLH Filter Bag Rev. A

Sorbent Media Series



Fulflo® TruBind™ 300 Filter Cartridge

Effective & economical hydrocarbon removal with enhanced polymeric absorbent cartridges

Fulflo® TruBind™ 400 Filter Cartridge

Effective & economical hydrocarbon removal with enhanced polymeric absorbent cartridges



Toll free sales & technical support:
877.784.2234
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Fulflo® TruBind™ 300 Filter Cartridge

Effective & economical hydrocarbon removal with enhanced polymeric absorbent cartridges

Parker Fulflo® TruBind™ absorbent cartridges utilize a modified polymeric absorbent that economically and effectively reduces trace hydrocarbon contamination in aqueous fluids. The enhanced polymer, configured in a radial-flow-design cartridge, provides maximum utilization of available surface area. This product can be used alone or as an enhancement to other systems. Whether process fluid reclamation or meeting disposal requirements is the goal, TruBind can solve many demanding hydrocarbon-contaminated aqueous fluid problems.

Benefits

- Increases machine tool life when installed at point-of-use
- Increases working life of valuable process fluids
- Reduces hydrocarbon levels to meet EPA discharge regulations

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- Absorbed hydrocarbon is chemically bound by polymer and is not leachable
- Absorbent polymer is enhanced to maximize utilization of surface area
- Radial flow design of cartridge allows maximum flow with minimal pressure drop
- High integrity construction withstands harsh process environment
- Variety of cartridge sizes & end cap options increase housing selection
- TruBind cartridges are completely incinerable
- Parker's Total Quality Management (TQM) system assures consistent and reliable performance

Applications

- Water Soluble Machine
- Alkaline Parts Washing
- Industrial Discharge Water
- Produced Water Disposal
- E-Coat Paint
- Post Oil/Water Separator
- Compressor Condensate
- Car & Truck Wash Water
- Plating Bath
- Gas & Oil Facility Wastewater
- Surface Water Runoff (Truck stops, airports, auto service stations)
- Bilge Water
- Pre Carbon Bed
- Aerosol Mists Cooling Water
- Tanker Ballast Water
- Pre R.O. Membrane Polishing

ENGINEERING YOUR SUCCESS.

Fulflo® TruBind™ 300 Filter Cartridge

SPECIFICATIONS

Materials of Construction

Absorbent: Proprietary modified polymer
 Support Construction: 100% polyolefin
 Seal Material: Gasket (Polyethylene Foam);
 222 O-Ring (Buna-N)

Maximum Recommended Operating Conditions

Temperature:
 150°F (65°C) @ 20psid (1.4bar); 180°F (82°C) @10psid (0.7bar)
 Pressure:
 40psid (2.8bar) @ 75°F (24°C)
 Flow Rate:
 1.0gpm per 10-inch cartridge
 Change-out Pressure Drop (net):
 10psi (0.7bar)
 Flow Factor:
 0.03psid per 1gpm at 1cks viscosity per 10 in cartridge
 pH Range: 2 - 12
 Lengths: 10-40 in (249mm-1016mm)

Dimensions:

Outside Diameter: 2½" in (63.5 mm)
 Inside Diameter: 1¼" in (27 mm)

Bio-safety:

The TruBind cartridge is classified as non-hazardous and incinerable. Disposal must be dictated by local regulations pertaining to the absorbed contaminant.

Recommended Vessels:

All standard Fulflo vessels designed for 2-1/2 in OD cartridges.

Technology

Unlike competitive technologies in which hydrocarbons are removed through surface adsorption onto the medium, TruBind cartridges utilize a proprietary modified polymer that both absorbs and chemically binds the hydrocarbon molecules into its interior matrices. The affinity of the polymeric absorbent for hydrocarbon contaminant is so great that accelerated testing by the Toxic Characteristics Leachate Procedure (TCLP) indicated the effluent hydrocarbon level in water to be below current and proposed EPA limits. The modified polymer was formulated to control the speed of hydrocarbon absorption by eliminating the potential for skin formation at the polymer/hydrocarbon interface. Consequently this polymer, when incorporated into a radial-flow-design cartridge, insures maximum utilization of surface area. The nature of the polymer makes it an effective absorbent for free, emulsified and dissolved oils, synthetic lubricants, grease and a multitude of organic solvents.

Performance

TruBind absorbent cartridge efficiency depends upon the residence time of the fluid within the cartridge, which is a function of the volumetric flow rate.

- Hydrocarbon Removal Efficiency:** At an equivalent flow rate of 1.0gpm per 10-inch cartridge the TruBind cartridge typically reduces trace hydrocarbon contaminant in excess of 95% in single pass mode. This efficiency level can be maintained only to a net differential pressure of 10psi. Series or multipass filtration can virtually eliminate hydrocarbon contamination.
- Hydrocarbon Absorbent Capacity:** The TruBind cartridge medium has the potential to remove up to 250 grams (approximately one-half pint) of low density hydrocarbon contaminant. On this basis, the table below provides expected life data in hours or gallons at several trace contaminant levels based on a 1.0gpm flow rate per 10-inch cartridge. Absorbent capacity will decrease as density of hydrocarbon increases.
- Flow Rate Capability:** A maximum flow rate of 1.0gpm per 10-inch length cartridge is recommended for the most effective removal of trace hydrocarbon contaminant.

Hydrocarbon (ppm)	Concentration % by weight	Hydrocarbon removal per minute (grams)	Estimated life in hours	Gallons fluid treated	Estimated cost per gallon of treated fluid
10	.001	0.04	106.0	6,330	\$.003
100	.01	.40	10.6	633	\$.03
1,000	.1	4.00	1.1	63	\$.30

Use the following equations to calculate performance:
 Life (Hrs.) = 1100.8/PPM
 Removal Rate (Grams/Min) = PPM/264.2

Note: Cost per gallon decreases significantly with longer cartridges.

Ordering Information

TBC

Cartridge Series	Length		
	(code)	(in)	(mm)
TruBind Absorbent Cartridge	9	9¾"	244
	10	9⅓"	249
	19	19¾"	498
	20	19½"	506
	29	29¼"	743
	30	30¼"	764
	39	39	991
	40	40	1016

Support Core

A = Standard Wall
 Polypropylene Core

End Cap Configuration

DO = Double-Open-End (gasket seal)
 DX = DOE w/core extender
 TC = Single-Open-End (222 O-ring seal)
 TX = 222 O-ring/Flex Fin

Seal Material

A = Polyolefin Foam Gasket (standard for "DO" seal design)
 N = Buna-N O-Ring (standard for "TC" seal design)

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DS_IP_TruBind 300 Rev. A

Fulflo® TruBind™ 400 Filter Cartridge

Effective & economical hydrocarbon removal with enhanced polymeric absorbent cartridges

Parker Fulflo® TruBind™ absorbent cartridges utilize a modified polymeric absorbent that economically and effectively reduces trace hydrocarbon contamination in aqueous fluids. The enhanced polymer, configured in a radial-flow-design cartridge, provides maximum utilization of available surface area. This product can be used alone or as an enhancement to other systems. Whether process fluid reclamation or meeting disposal requirements is the goal, TruBind™ can solve many demanding hydrocarbon-contaminated aqueous fluid problems.



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Benefits

- Increases machine tool life when installed at point-of-use
- Increases working life of valuable process fluids
- Reduces hydrocarbon levels to meet EPA discharge regulations
- Absorbed hydrocarbon is chemically bound by polymer and is not leachable
- Absorbent polymer is enhanced to maximize utilization of surface area
- Radial flow design of cartridge allows maximum flow with minimal pressure drop
- High integrity construction withstands harsh process environment
- TruBind cartridges are completely incinerable

Applications

- Water Soluble Machine Tool Coolants
- Alkaline Parts Washing
- Industrial Discharge
- Car & Truck Wash Water
- Gas & Oil Facility Wastewater
- Tanker Ballast Water
- Bilge Water
- Surface Water Runoff
- Produced Water Disposal (Truck stops, airports, auto service stations)
- Pre Carbon Bed
- Post Oil/Water Separator
- E-Coat Paint
- Compressor Condensate
- Pre R.O. Membrane Water
- Plating Bath
- Aerosol Mists

Fulflo® TruBind™ 400 Filter Cartridge

SPECIFICATIONS

Materials of Construction:

Absorbent: Proprietary polymer
 Support Construction: 100% polyolefin
 Seal Material: Polyethylene Foam

Cartridge Dimensions (nominal)

Lengths:
 9 13/16 in (249mm)
 19 15/16 in (506mm)
 Outside Diameter:
 4 1/2 in (114 mm)
 Inside Diameter:
 1 1/16 in (27 mm)

Maximum Recommended Operating Conditions:

Temperature:
 150°F (65°C) @20psid (1.4bar);
 180°F (82°C) @10psid (0.7bar)
 Pressure:
 40psid (2.8bar) @ 75°F (24°C)
 Flow Rate:
 3.0gpm per 10-inch cartridge
 Change-out Pressure Drop (net):
 10psi (0.7bar)
 Flow Factor:
 0.1psid per 1gpm at 1cks viscosity
 per 10 in cartridge
 pH Range: 2 - 12

Bio-safety:

The TruBind cartridge is classified as non-hazardous and incinerable. Disposal must be dictated by local regulations pertaining to the absorbed contaminant.

Recommended Vessels:

Parker LTG10 and LTG20 polymeric vessels and equivalent competitive vessels.

Technology

Unlike competitive technologies in which hydrocarbons are removed through surface adsorption onto the medium, TruBind cartridges utilize a proprietary modified polymer that both absorbs and chemically binds the hydrocarbon molecules into its interior matrices. The affinity of the polymeric absorbent for hydrocarbon contaminant is so great that accelerated testing by the Toxic Characteristics Leachate Procedure (TCLP) indicated the effluent hydrocarbon level in water to be below current and proposed EPA limits. The modified polymer was formulated to control the speed of hydrocarbon absorption by eliminating the potential for skin formation at the polymer/hydrocarbon interface. Consequently this polymer, when incorporated into a radial-flow-design cartridge, insures maximum utilization of surface area. The nature of the polymer makes it an effective absorbent for free, emulsified and dissolved oils, synthetic lubricants, grease and a multitude of organic solvents.

Performance

TruBind absorbent cartridge efficiency depends upon the residence time of the fluid within the cartridge, which is a function of the volumetric flow rate.

- Hydrocarbon Removal Efficiency:** At an equivalent flow rate of 3.0gpm per 10-inch cartridge the TruBind cartridge typically reduces trace hydrocarbon contaminant in excess of 95% in single pass mode. This efficiency level can be maintained only to a net differential pressure of 10psi. Series or multipass filtration can virtually eliminate hydrocarbon contamination.
- Hydrocarbon Absorbent Capacity:** The TruBind cartridge medium has the potential to remove up to 500 grams (approximately one pint) of low density hydrocarbon contaminant. On this basis, the table below provides expected life data in hours or gallons at several trace contaminant levels based on a 3.0gpm flow rate per 10-inch cartridge. Absorbent capacity will decrease as density of hydrocarbon increases.
- Flow Rate Capability:** A maximum flow rate of 3.0gpm per 10-inch length cartridge is recommended for the most effective removal of trace hydrocarbon contaminant.

Use the following equations to calculate performance:

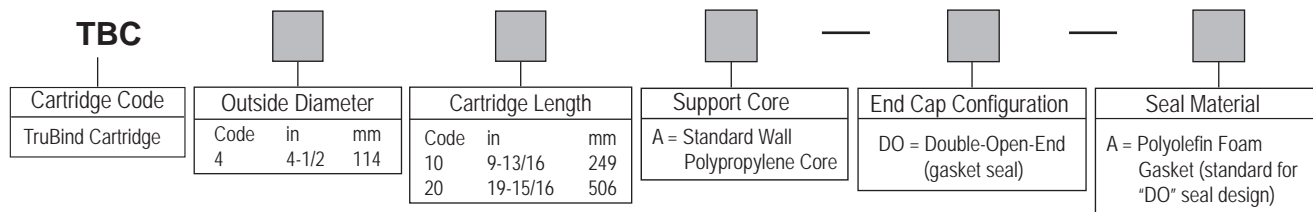
$$\text{Life (Hrs.)} = 800/\text{PPM}$$

$$\text{Removal Rate (Grams/Min)} = \text{PPM}/90$$

Hydrocarbon (ppm)	Concentration % by weight	Hydrocarbon removal per minute (grams)	Estimated life in hours	Gallons fluid treated	Estimated cost per gallon of treated fluid
10	.001	0.11	80.0	14,400	\$.002
100	.01	1.10	8.0	1,400	\$.025
1,000	.1	11.00	0.8	144	\$.24

Note: Cost per gallon decreases significantly with longer cartridges.

Ordering Information



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DS_IP_TrueBind 400 Rev. A

Metallic Media Series



**Fulflo® Metallic
Filter Cartridges**
High-integrity cartridges for
optimized filtration

Steelflow™ Filter Cartridges
All-316L stainless steel filter
cartridge for microfiltration
applications



Toll free sales & technical support:
877.784.2234
dhpsales.na@parker.com

Fulflo® Metallic Filter Cartridges

High-integrity cartridges for optimized filtration

Fulflo® metallic stainless steel filter cartridges provide optimum filtration for fluids and gases in high temperature and high flow rate applications.

Available in a cylindrical or pleated design, cleanable stainless steel cartridges are the logical choice when natural and synthetic media cartridges cannot meet aggressive process conditions.

Fulflo® reusable 304 and 316 grade stainless steel cartridges offer versatility of choice with fourteen nominal particle removal ratings, six standard lengths and a variety of end configurations and seal materials.

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Benefits

- Temperature capability up to 500° F with synthetic seals; up to 1500° F with NPT connections
- Available in 304 and 316 stainless steel for compatibility choice with aggressive chemicals
- Available in fourteen nominal ratings from 2 to 840 microns for a wide range of particle size removal
- Dimensional integrity of stainless steel media accommodates high flow rate and high temperature systems
- Cartridges may be cleaned and reused
- Available with a wide range of grommet and O-ring materials to optimize fluid and temperature compatibility
- Variety of seal configurations allow retrofit in many filter vessel designs

- Welded and crimped construction eliminates the need for adhesives which can be a contaminant source and limit temperature range
- Pleated surface maximizes filtration area for longer service life
- Plain (cylindrical) surface provides ease of cleaning
- Optional perforated stainless steel pleat protectors minimize handling damage
- Meets FDA guidelines for use with potable and edible liquids

Applications

- Heat Transfer
- Hot Melt Processes
- Viscous Fluids
- Hot Wax
- Aggressive Gases
- Polymer Filtration
- High Temperature Processes
- Process Fluids Steam
- Corrosive Fluids
- Catalyst Recovery
- Caustic Cleaning Solutions



ENGINEERING YOUR SUCCESS.

Fulflo® Metallic Filter Cartridges

SPECIFICATIONS

Materials of Construction:

- Filter Medium: Stainless steel wire cloth
- Structural Components: 100% stainless steel
- Seal Materials:
 - Grommets: Buna-N, Viton®, PTFE, EPDM
 - O-Rings - Buna-N, EPDM, Viton®, PFA encapsulated Viton®
- Construction Method: Welded and crimped (no adhesives)
- Meets FDA guidelines with optional seal materials ("F" Code)

Maximum Recommended Operating Conditions:

- Temperature:
 - 1500°F (816°C) - NPTF and NPTM styles only
 - 500°F (260°C) - Any cartridge style with PTFE grommet
 - 400°F (204°C) - Any cartridge style with Viton® or PFA encapsulated Viton® seal material
 - 300°F (149°C) - Any cartridge style with EPDM seal material
 - 250°F (121°C) - Any cartridge style with Buna-N seal material
- Differential Pressure:
 - Standard core: 60psi (4.1bar)
 - High pressure core: 300psi (20.7bar)
- Flow Rate: 10gpm (38 lpm) per 10 in cartridge
- Change-out ΔP: 35psi (2.4bar)

Particle Removal Ratings (Nominal):

14 ratings from 2 to 840 micrometers

Effective Filtration Area:

Cylindrical
0.5 ft²/10 in length (465 cm²/254mm)

Pleated
1.7 ft²/10 in length (1580 cm²/254 mm)

Dimensions

- Outside Diameter:
 - Cylindrical: 2-½ in (64 mm)
 - Pleated: 2-5/8 in (67 mm)
- Inside Diameter: 1-1/16 in (27 mm)
- Lengths (nominal): 10, 20 and 30 in
- Grommet: 1-1/16 in (27 mm) ID X 1-7/8 in (48 mm) OD

Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{Clean DP} \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

$$\text{Clean DP} = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

1. Clean DP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is DP/GPM at 1cks for 10 in (or single).
4. Length Factors convert flow or DP from 10 in (single length) to required cartridge length.

Removal Rating/Mesh Count/Open Area

Micrometer Rating Nominal (Absolute)	Mesh Count (per inch)	Percent Open Area
2	9	325 x 2300
5	14	200 x 1400
10	18	165 x 1400
20	32	200 x 600
40	55	120 x 400
75	-	190 x 200
100	-	30 x 150
150	-	90 x 100
190	-	70 x 80
230	-	50 x 60
280	-	40 x 50
370	-	40 x 40
540	-	30 x 30
840	-	20 x 20

Ratings from 2 - 40 micrometers are twill dutch weave pattern
Ratings from 75 - 840 micrometers are open square weave pattern

Length Factor Table

Length	Length Factor
9-3/4", 10	1
19-1/2", 20	2
29-1/4", 30	3
39, 40	4

Flow Factor Table

Rating	CSS Flow Factor	PSS Flow Factor	Rating	CSS Flow Factor	PSS Flow Factor
2	0.011111	0.003268	150	0.001462	0.000430
5	0.008681	0.002553	190	0.001389	0.000408
10	0.005787	0.001702	230	0.001323	0.000389
20	0.003966	0.001167	280	0.001157	0.000340
40	0.002222	0.000654	370	0.000992	0.000292
75	0.001736	0.000511	540	0.000896	0.000264
100	0.001634	0.000481	840	0.000694	0.000204

Ordering Information

Cartridge Code		Nominal Micrometer Rating (µm)	Nominal Length			Media Support Construction		Seal Material		End Cap Configuration		Special Options	
CODE	DESCRIPTION		CODE	INCH	mm	CODE	DESCRIPTION	CODE	MATERIAL	CODE	MATERIAL	CODE	DESCRIPTION
CSS	Cylindrical Stainless Steel	2	4	4	102			E	EPDM	DO	Double open end (DOE)	H	High pressure core (316 SS)
PSS	Pleated Stainless Steel	5	9	9.75	248	G	304 Stainless Steel	F	PTFE (Grommet only)	DX	Double open end w/extended core	P	Pleat protector sleeve (316 SS)
		10	10	10	254	S	316 Stainless Steel	N	Buna-N	FC	Single open end w/1" NPTF female connection		
		20	19	19.5	495			T	PFA Viton® (O-ring only)	MC	Single open end w/ 1" NPTM male		
		40	20	20	508			V	Viton®	SC	226 O-ring Flat		
		75	29,25	29,25	743			X	No seal material (FC, MC style)	TC	222 O-ring Flat		
		100	30	30	762								
		150	40	40	1016								
		190											
		230											
		280											
		370											
		540											
		840											

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DS_IP_Metallic Filter Rev. B

Steelflow™ Filter Cartridges

All-316L stainless steel filter cartridge for microfiltration applications

The Steelflow™ filter cartridge was developed for microfiltration applications with extreme thermal ranges and differential pressures and provides extended service life with excellent dirt-holding capacity.

Steelflow's superior performance is due to its proprietary 421® filter medium, composed of 100%, 316L random fiber stainless steel. A unique calendaring process forms specialized filter media which provides consistently high porosities and large filtration areas. The sintered matrix is reinforced with woven wire screen to provide the mechanical strength necessary to withstand high differential pressures and exceptional flow characteristics. All other Steelflow components are 316L stainless steel which provides exceptional chemical and thermal resistance. Steelflow can be cleaned mechanically, chemically or thermally to allow cartridge reuse and are bubble point integrity tested for quality. Available in 0.5µm, 1.0µm, 5.0µm, 10µm, 20µm and 40µm. Liquid particle retention is typically 99.0% efficient at the stipulated pore size.



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Benefits

- 100% bubble point integrity tested
- 316L stainless steel construction
- Superior chemical compatibility
- Excellent mechanical strength
- Extended on-stream life
- High thermal tolerance
- Regenerable

Applications

- Spargers
- Cryogenics
- Beverage Filtration
- Highly Viscous Fluids
- Corrosive Liquids and Gases
- Super-Heated Process Steam
- High Temperature Processing
- Recovery of Valuable Particulate

ENGINEERING YOUR SUCCESS.

Steelflow™ Filter Cartridges

SPECIFICATIONS

Materials of Construction

Media: 316L Stainless Steel
 Support Layers: 316L Stainless Steel
 Structure: 316L Stainless Steel

Maximum Differential Pressure

Forward:
 250psid (17bar) @ 700°F (371°C)
 Reverse:
 50psid (3.4bar) @ 700°F (371°C)

Chemical Compatibility

Steelflow is compatible with all chemicals that may be processed using stainless steel.

Operating Temperature Range

Maximum: +700°F (371°C)
 Minimum: -450°F (-268°C)

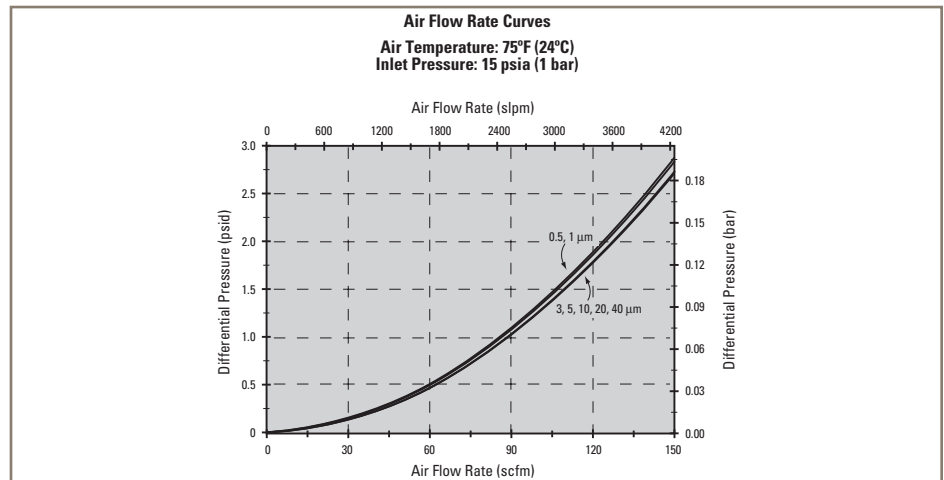
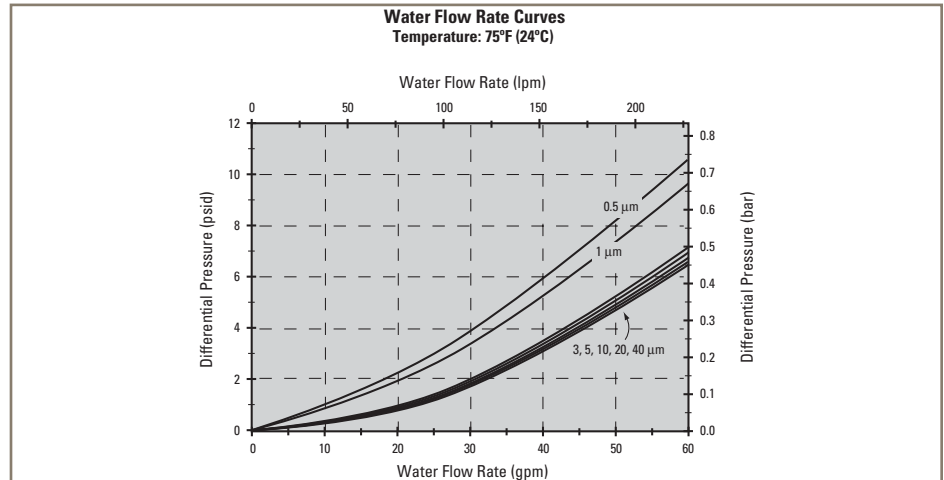
Effective Filtration Area

1.8ft² (0.17m²) per nominal 10 inch (250mm) cartridge.

Regenerable

May be cleaned chemically, mechanically or thermally.

Performance Attributes



Ordering Information

21 - 10

End Fitting	
CODE	DESCRIPTION
1	DOE
2	226/Flat
3	222/Flat
7	226/Fin
8	222/Fin
A	SOE w/1" NPT
B	SOE w/1.5" NPT

Nominal Length	
CODE	LENGTH
10	10" (250mm)
20	20" (500mm)
30	30" (750mm)
40	40" (1000mm)

Filter Rating	
CODE	MICRON
005	0.5μm
010	1.0μm
030	3.0μm
050	5.0μm
100	10.0μm
200	20.0μm
400	40.0μm

O-Ring	
CODE	MATERIAL
0	Buna-N
1	EPDM
2	Silicone
4	Viton®
5*	FEP-Encapsulated Viton®
6*	FEP-Encapsulated Silicone
N	None

*O-Rings Only

Gaskets	
CODE	THICKNESS
1	0.200" (5mm)
2	0.125" (3mm)
4	(1) 0.200" (5mm) (1) 0.125" (3mm)
N	No Gasket

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Coalescers



**Fulflo® LC Hydrocarbon
Liquid-Liquid Coalescer**
Optimized for removing water
from hydrocarbons or
hydrocarbons from water

Naphtha Coalescer
Optimized to remove water
from light naphtha natural gas
and hydrocarbon applications

**Solvent and
Caustic Coalescer**
Removes carried-over water
and caustics from hydrocarbons



Toll free sales & technical support:
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dhpsales.na@parker.com

Fulflo[®] LC Hydrocarbon Liquid-Liquid Coalescer

Optimized for removing water from hydrocarbons or hydrocarbons from water



The all synthetic Fulflo[®] LC Hydrocarbon liquid-liquid coalescers utilize a proprietary, high performance coalescing media in a pleated configuration to improve performance. The liquid-liquid coalescers are designed to remove water from hydrocarbons or hydrocarbons from water.

Please contact your representative to tailor a coalescer for your specific application.

SPECIFICATIONS	
Length	20", 40", 56", 60"
Outside diameter	6" (152.4 mm)
Maximum differential pressure	2.4 bar (35 psi) at 20°C (68°F)
Recommended change-out	1 bar (15 psi)
End caps	DOE, SOE, threaded base (TB), & high flow style
Media	Proprietary, all synthetic pleated coalescing media
Micron rating	10.0, 2.0, 1.0, 0.3
Absolute removal efficiencies	99.9% with maximum 15 ppm at outlet

Performance and specifications have been calculated in a laboratory environment which may not represent actual field results.

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Performance

- Absolute micron rating: down to 0.3 water droplets
- Water removal efficiency: 99% to 99.9%
- 100% removal of solids and liquids larger than 3µm
- Removes water down to 10 ppm, depending on application

Applications

- Jet fuel/kerosine, gasoline, diesel and other fuels
- Wide variety of hydrocarbons and intermediates
- Removal of carried-over water
- Final products polishing haze removal
- Protection of catalysts, exchangers and equipment

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DS_OG_LC HYDRO 5/14 Rev. 1B

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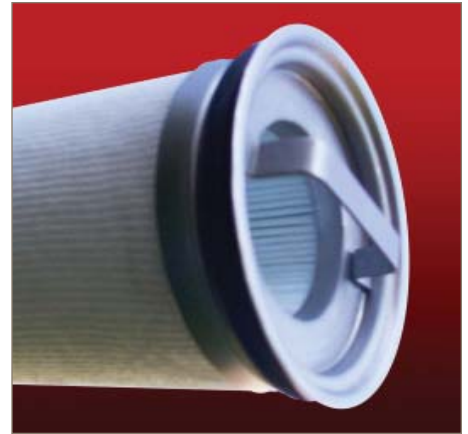
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Naphtha Coalescer

Optimized to remove water from light naphtha natural gas and hydrocarbon applications



Parker domnick hunter's high performance Naphtha Coalescer is designed to remove water from light naphtha or heavy naphtha. The proprietary Nylon 66 coalescing media is designed specifically for naphthas, aromatics and hydrocarbon solvents. Because naphthas contain higher ratios of aromatics and may be treated with caustics, common materials of construction used in coalescing elements often are not compatible with naphtha.

Please contact your representative to tailor a coalescer for your specific application.

SPECIFICATIONS	
Length	20-1/2" & 40-1/2", nominal (520.7 & 1028.7 mm)
Outside diameter	3-3/4" (95.25 mm) (4-1/4" (108 mm) Flange)
Recommended change-out	0.9 bar (12.5 psi)
End caps	Stainless steel "LC Style" Single Open End, external O-Ring
Maximum temperature	300 °F (148 °C)
Initial pressure drop	Less than 2 psid
Inlet water concentration	Up to 3% water (30.000 ppm)
Pleated coalescing media	Nylon 66 or epoxy-binder microfiber glass combined with nylon 66 media
Core	Stainless steel

Performance and specifications have been calculated in a laboratory environment which may not represent actual field results.

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Performance

- Removes aerosol sized droplets and particulate down to 0.3 µm
- Water removal efficiency: 99% to 99.9%
- 100% Removal of solids and liquids larger than 4 µm of 18 µm

Applications

- Diesel
- Light straight-run naphtha
- Heavy straight-run naphtha
- Condensate, reformat
- Light catalytic cracked naphtha (LCN)
- Production of gasoline, jet fuel, ethylene, propylene

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DS_OG_NAPHTHA 5/14 Rev. 1B

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Solvent and Caustic Coalescer

Removes carried-over water and caustics from hydrocarbons



Parker domnick hunter's solvent & caustic coalescer with high performance nylon 66 media is designed to remove carried-over water and caustics from hydrocarbons. Common materials of construction used in coalescing elements are often not compatible with aromatics. The proprietary nylon 66 coalescing media is designed specifically for aromatics and caustics.

Please contact your representative to tailor a coalescer for your specific application.

SPECIFICATIONS	
Length	20", 40", 56", and 60"
Outside diameter	6" (152.4 mm)
Recommended change-out	1 bar (15 psi)
End caps	DOE, SOE, threaded base (TB), & high flow style
Maximum temperature	300 °F (93 °C)
Initial pressure drop	Lower than 0.1 bar (2 psi)
Inlet water concentration	Up to 3% water (30.0000 ppm)
Pleated coalescing media	High performance pleated nylon 66 media
Core	Tin coated carbon steel or stainless steel

Performance and specifications have been calculated in a laboratory environment which may not represent actual field results.

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Performance

- Absolute micron rating: 3 µm
- Nominal micron rating: 0.8 µm
- Water removal efficiency: 99% to 99.9%
- 100% Removal of solids and liquids larger than 3 µm

Applications

- Removal of water from aromatic hydrocarbons
- Final products
- Protection of catalysts and packing
- Removal of carried-over caustic from caustic treating



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Single Cartridge Filter Vessels



Fulflo® B Filter Vessel

Designed for a wide range of industrial application

Fulflo® BSSB Filter Vessel

Stainless steel vessels for water & corrosive fluid applications

Fulflo® EH Single Cartridge Filter Vessel

304 stainless steel, commercial (non-ASME code) design

Fulflo® High-Pressure Filter Vessel (4.5C)

Ideal for high-pressure liquid & gas applications

Fulflo® "M" Series Filter Vessel

High-pressure single cartridge

Fulflo® TC Stainless Steel Filter Vessel

Stainless steel vessels for use with SOE-222 style filter cartridges

Trufluor™ Filter Vessel

High purity and rugged design for aggressive chemical filtration

Trufluor +™ Filter Vessel

High purity PFA filter housing



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Fulflo® B Filter Vessel

Designed for a wide range of industrial applications (non ASME code)

Carbon Steel "B" Vessels feature a single center bolt for quick cartridge changing and in-line connections for easy installation.

Duplex vessels permit independent or parallel shell operation. In addition, they offer the advantage of continuous service because one can be serviced while the other is operating. Manifold vessels work simultaneously in parallel shells to provide higher flow rates with less pressure drop than single-shell models.

Air and gas single-shell vessels feature in-line pipe connections for easy installation and aluminum baffle sleeve deflectors for two-stage moisture removal.



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Benefits

- Single center bolt for quick cartridge change
- In-line pipe connection for easy installation
- Optional integrally cast brackets for easy mounting
- Drains and vents standard on all models
- Standard Buna-N closure gasket material with optional Viton®,* Neoprene and fluoropolymer gaskets available
- Spring-loaded bottom seats for positive cartridge sealing
- Duplex vessels for continuous service

- Manifold unit for increased flow
- B-Series filter vessels take standard DOE cartridges

Applications

- Petrochemicals
- Coolants
- Hydraulic Oils
- Process Water
- Solvents
- Potable Liquids
- Compressed Air

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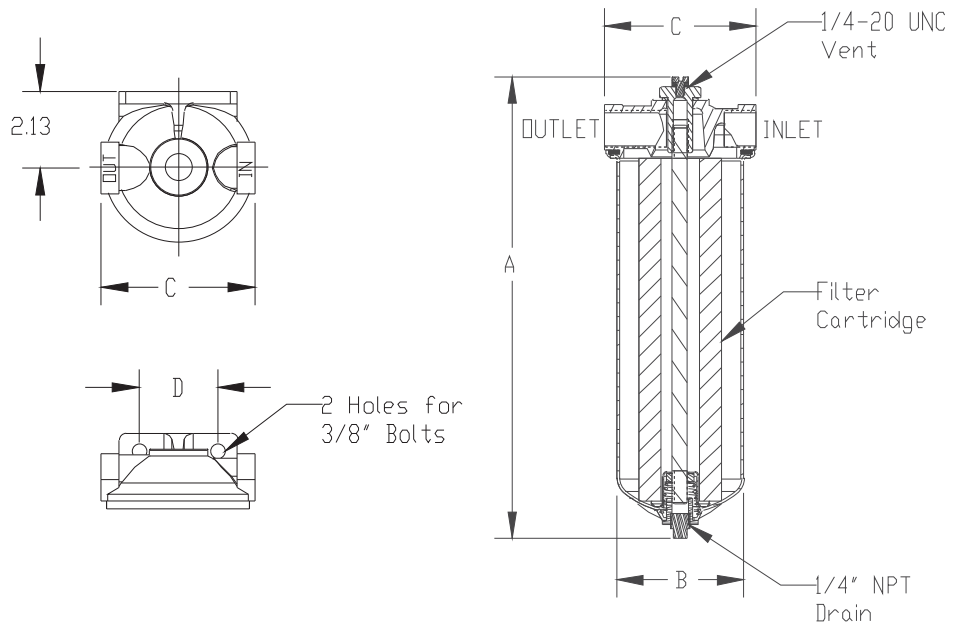
Fulflo® B Filter Vessel

Bracketed Head Dimensions (in)

Code	NPT ¼	NPT ¾
D	1.50	2.19
C	4.19	4.31

Note: Flow factors are the same for all ratings.
Center core ID & length are primary flow restrictions.

Optional Shell O-Ring/Gasket	
Material	Part #
Nitrile/Buna-N (Std.)	2620-5045
FKM (Viton®)	2620-5058
Glass-filled Fluoropolymer	2620-5056
Neoprene	2620-5042
Rubber	2620-5344
Non-asbestos substitute	2620-5054



Duplex (BDX1) Design Specifications

Model	Aqueous Flow† (gpm)	Cartridge Length (in)	Pipe Size NPT (in)	Max. Op. Pressure (psi @ 200°F)	Max. Op. Pressure (psi @ 250°F)	Overall Height (in)	Shipping Wt. (lbs)
BDX1-10-½ SD	5/10	(2) 10	½	150psi (10.3bar)	100psi (6.9bar)	13.75	16
BDX1-10-¾ SD	5/10	(2) 10	¾	150psi (10.3bar)	100psi (6.9bar)	13.75	16
BDX1-20-½ SD	10/20	(2) 20	½	150psi (10.3bar)	100psi (6.9bar)	23.75	23
BDX1-20-¾ SD	10/20	(2) 20	¾	150psi (10.3bar)	100psi (6.9bar)	23.75	23

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type.

Design Specifications

Model	Rated Capacity*	Cartridge Qty. & Length (in)	Max. Op. Pressure (psi @ 200°F)	Max. Op. Pressure (psi @ 250°F)	(A) Overall Height (in)	(B) Outside Diam.	(C) Face-to-Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Wt. (lbs)
AIR & OTHER GASES									
B3A-(¼ or ⅜) SD	65scfm	(1) 3	125psi (8.6bar)	N/A	7.0	3.63	4.19	¼ - ⅜	3.0
B5A-(½ or ¾) SD	110scfm	(1) 5	125psi (8.6bar)	N/A	9.25	3.63	4.31	½ - ¾	3.75
B7A-(¾ or 1) SD	150scfm	(1) 7	125psi (8.6bar)	N/A	11.38	3.63	4.5	¾ - 1	5.25
LIQUIDS									
B10-¾ SD	5gpm	(1) 10	150psi (10.3bar)	100psi (6.9bar)	12.88	3.63	4.31	¾	6.0
B20-¾ SD	10gpm	(1) 20	150psi (10.3bar)	100psi (6.9bar)	23.0	3.63	4.31	¾	9.25
B10-1 SD	5gpm	(1) 10	150psi (10.3bar)	100psi (6.9bar)	13.25	3.63	4.5	1	6.0
B20-1 SD	10gpm	(1) 20	150psi (10.3bar)	100psi (6.9bar)	23.25	3.63	4.5	1	9.25

Note: B3A, B5A and B7A vessels supplied with 10µm Fulflo wound cotton cartridge

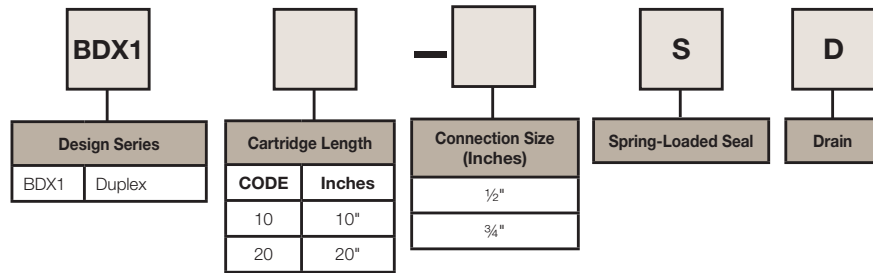
* Maximum flow rate for gases based on air at 70°F (21°C) and maximum operating pressure with initial pressure loss of 3psig (.2bar) with a 5µm viscose wound depth filter cartridge.

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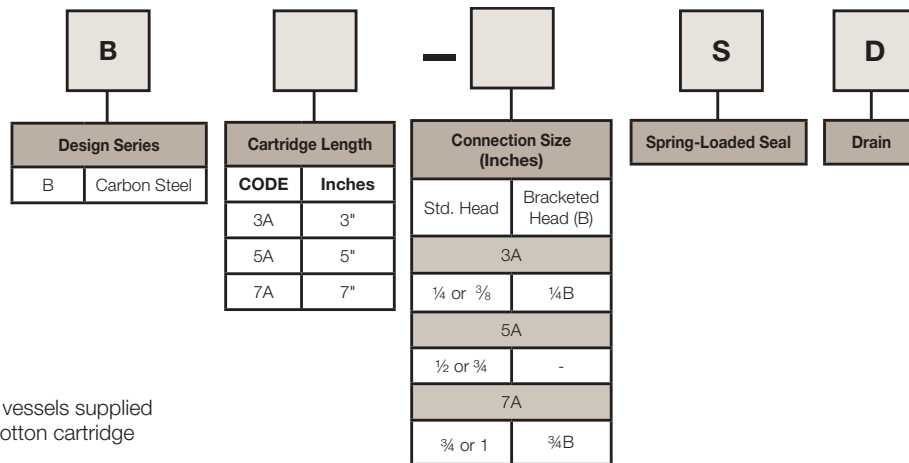
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Ordering Information

DUPLEX

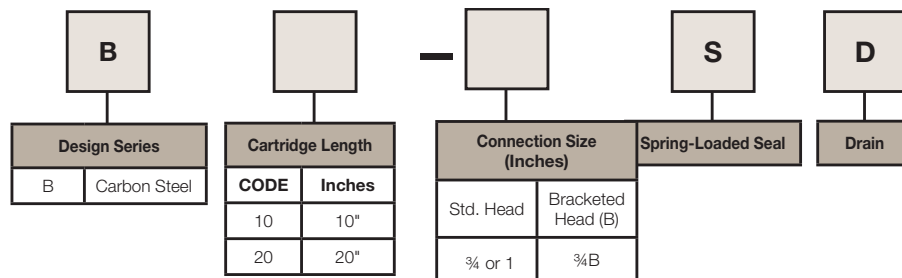


AIR & OTHER GASES



Note: B3A, B5A and B7A vessels supplied with 10µm Fulflo wound cotton cartridge

LIQUIDS



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DS_IP_B Vessel Rev. A

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Fulflo® BSSB Filter Vessel

Stainless steel vessels for water & corrosive fluid applications (non ASME code)

The BSSB models have a 316 stainless steel shell and a four-boss 316 stainless steel head for applications where an all-stainless steel construction is required. The single center bolt allows for quick cartridge change-out while the in-line connections provide for easy installation.



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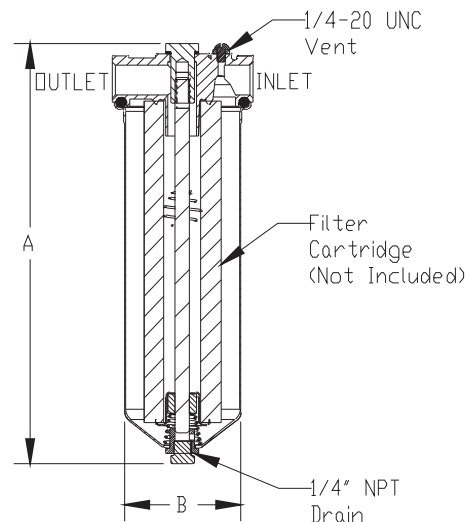
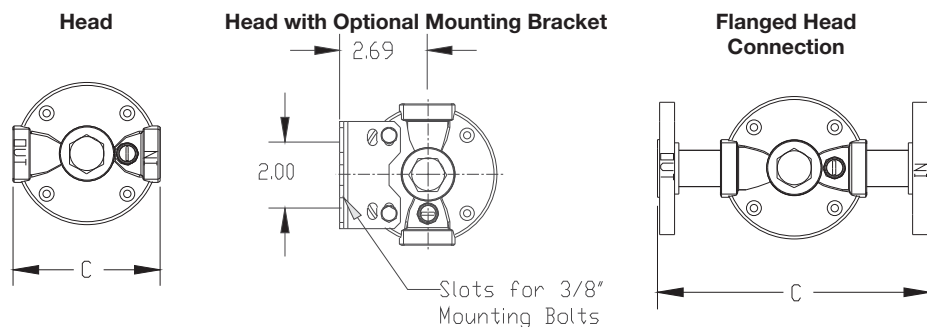
Benefits

- Single center bolt for quick cartridge change
- In-line pipe connections for easy installation
- Bracket kit for installation on drilled head bosses for easy mounting
- Spring-loaded bottom seat for positive cartridge sealing
- O-ring closure seal provides positive sealing
- BSSB Series filter vessels take standard DOE cartridges

Applications

- Petrochemicals
- Coolants
- Hydraulic Oils
- Process Water
- Solvents
- Potable Liquids
- Compressed Air

Fulflo® BSSB Filter Vessel



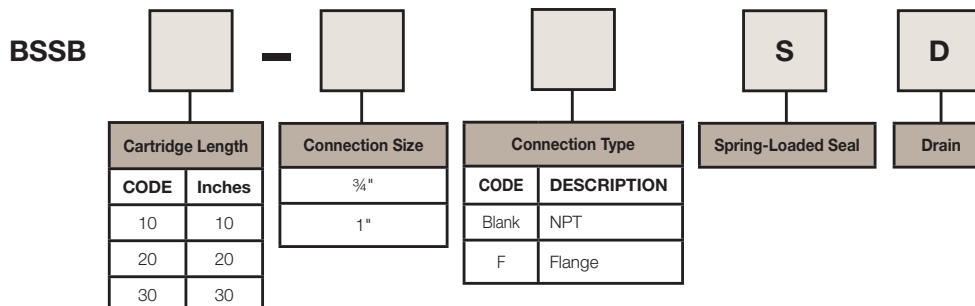
Optional Shell O-Ring/Gasket	
Material	Part #
Nitrile/Buna-N (Std.)	4150-5178
EPDM	4150-5177
FKM (Viton®)	4150-5179
Fluoropolymer	4150-5226
Fluoropolymer encapsulated Viton®	4150-5361
Fluoropolymer encapsulated Silicone	4150-5382

BSSB Design Specifications

Model	Typical Aqueous Flow† (gpm)	Cartridge Length (in)	Max. Op. Pressure (psi @ 250°F)	Max. Op. Pressure (psi @ 200°F)	(A) Overall Height (in)	(B) Outside Diam. (in)	(C) Face-to-Face Dim. (in)	Port Size (in)	Shipping Wt. (lbs)
BSSB10-3/4 SD	5	(1) 10	150psi (10.3bar)	175psi (12.1bar)	12.75	3.63	4.31	3/4 FNPT	6.0
BSSB20-3/4 SD	10	(1) 20	150psi (10.3bar)	175psi (12.1bar)	22.88	3.63	4.31	3/4 FNPT	10.50
BSSB30-3/4 SD	15	(1) 30	150psi (10.3bar)	175psi (12.1bar)	33.25	3.63	4.31	3/4 FNPT	15.00
BSSB10-1 SD	5	(1) 10	150psi (10.3bar)	175psi (12.1bar)	13.0	3.63	4.5	1 FNPT	6.0
BSSB20-1 SD	10	(1) 20	150psi (10.3bar)	175psi (12.1bar)	23.13	3.63	4.5	1 FNPT	10.50
BSSB30-1 SD	15	(1) 30	150psi (10.3bar)	175psi (12.1bar)	33.25	3.63	4.5	1 FNPT	15.00
BSSB10-3/4 FSD	5	(1) 10	150psi (10.3bar)	175psi (12.1bar)	12.75	3.63	8.0	3/4 Flange	9.0
BSSB20-3/4 FSD	10	(1) 20	150psi (10.3bar)	175psi (12.1bar)	22.88	3.63	8.0	3/4 Flange	13.5
BSSB30-3/4 FSD	15	(1) 30	150psi (10.3bar)	175psi (12.1bar)	33.25	3.63	8.0	3/4 Flange	18.0
BSSB10-1 FSD	5	(1) 10	150psi (10.3bar)	175psi (12.1bar)	12.75	3.63	8.0	1 Flange	9.0
BSSB20-1 FSD	10	(1) 20	150psi (10.3bar)	175psi (12.1bar)	22.88	3.63	8.0	1 Flange	13.5
BSSB30-1 FSD	15	(1) 30	150psi (10.3bar)	175psi (12.1bar)	33.25	3.63	8.0	1 Flange	18.0

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type.

Ordering Information



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DS_IP_BSSB Vessel Rev. A



Fulflo® EH Single Cartridge Filter Vessel

304 & 316 stainless steel, commercial (non ASME code) design

The Fulflo EH non-code single cartridge filter vessels provide economical filtration of a wide variety of liquids in a lightweight, small profile, clamp closure design.

The EH vessels accept a single 10" or 20" long, double open end (DOE) or 222 single open end (SOE) filter cartridge. A 226 option is also available.

These vessels are manufactured from polished stainless steel and rated for 100 psi (6.9 bar).



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Benefits

- Convertible design allows for the use of both DOE and 222 SOE cartridges. A 226 option is also available
- Clamped o-ring closure seal provides quick and positive seal
- In-line 1" FNPT threaded pipe connections for easy installation
- Head mounting kit included
- EPDM seals are standard with other material options available

Applications

- Potable Water
- Lubricants
- Process Water
- Coolants
- Edible Oils
- Cutting Oils
- Coatings
- Solvents

Fulflo® EH Single Cartridge Filter Vessel

Number of Cartridges

(1) x 10" or 20" lg x 2.75" Max OD

Connection sizes

1" NPT inlet & outlet

1/4" NPT vent & drain

Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
304/316 SST	100 psi (6.9 bar)	300°F (149°C)

Typical aqueous flow	
Length Code	Capacity (gpm)
S	5
D	10

O-ring Temperature Guide	
Material	Max. Temp.
Nitrile (Buna-N)	250°F (121°C)
EPDM (EPR)*	300°F (149°C)
FKM (Viton®)	400°F (204°C)**

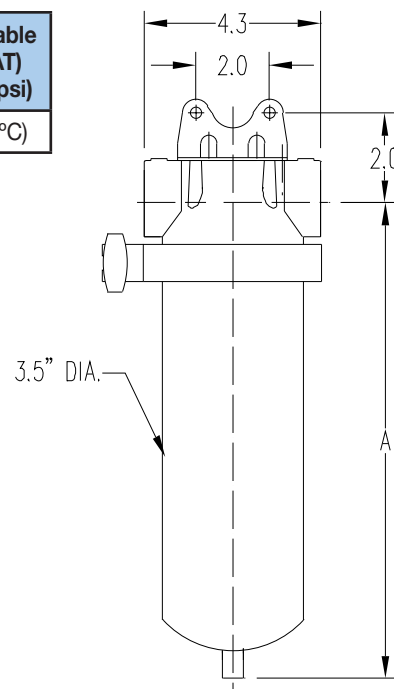
* EPDM o-ring is standard
**Vessel temperature limited to 300°F (149°C)

Cartridge Configurations	
222 O-ring SOE	PP spring closed end**
226 O-ring SOE	Flat*
DOE	Standard

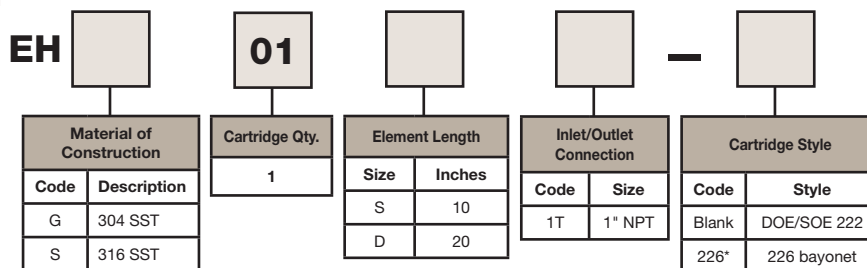
*Not recommended for 222 style
**Not required for 226 style

Length Code	A*	Weight (lbs)
S	14	9
D	24	11

*Add 1" for 226



Ordering Information



*Only available in 304SS

Replacement Parts	
Part Number	Description
4150-5836-E	O-ring, Cover EPDM
4150-5836-N	O-ring, Cover Buna-N
4150-5836-V	O-ring, Cover FKM (Viton®)
1390-5046	Clamp 304SS
0720-5301	Center Rod 10" - 304SS
0720-5307	Center Rod 10" - 316SS
0720-5302	Center Rod 20" - 304SS
0720-5308	Center Rod 20" - 316SS
0821-5526	Mounting Bracket - 304SS
5830-5194	Spring Seal Assembly - 304SS
5830-5195	Spring Seal Assembly - 316SS
5320-5401	Seal Nut 304SS
5320-5407	Seal Nut 316SS

Specifications are subject to change without notification.
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DS_IP_EH Single Filter Vessel 2/14 Rev. D

Fulflo® High-Pressure Single Cartridge Filter Vessel (4.5C)

Design ideal for high-pressure liquid & gas applications (non ASME code)

Ideal for a wide range of industrial machinery and process industry applications, these vessels combine extremely high-pressure rating capability with ease of installation and rugged durability.



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Benefits

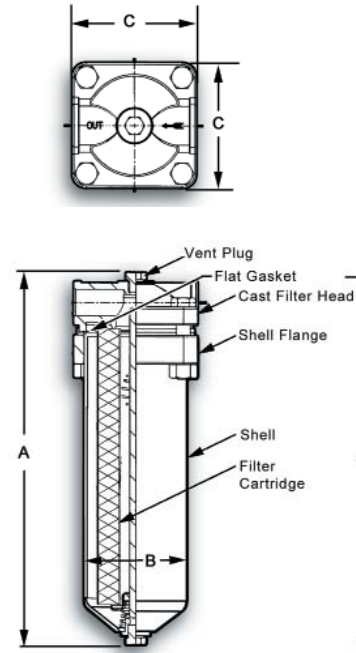
- 4.5C features multiple bolt closure to meet high-pressure requirements
- In-line pipe connections for easy installation
- Available in carbon steel and 316 stainless steel materials
- Spring-loaded bottom seats for positive cartridge sealing
- Drain and vent standard on all models
- Vessels accept a single 10" or 20" DOE (double-open-end) seal elements

Applications

- Petrochemicals
- Coolants
- Hydraulic Oils
- Process Water
- Solvents
- Other High-Pressure Liquids

Fulflo® High-Pressure Single Cartridge Filter Vessel

Optional Shell O-Ring/Gasket	
Material	Part #
FKM (Viton®)	2620-5058
Klingsil C-4401 (Std.)	2620-5054
Glass-filled Fluoropolymer	2620-5056
Neoprene	2620-5042
Rubber	2620-5344

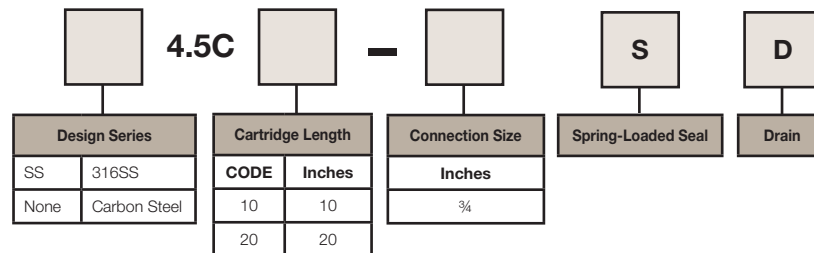


Design Specifications

Model	Rated Capacity† (gpm)	Wound Depth Cartridge Length (in)	Max. Op. Pressure	Max. Op. Temperature	A Overall Height (in)	B Outside Diam. (in)	C Face-to-Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Weight (lbs)
4.5C10-¾ SD	5	(1) 10	450psi (31bar)	400°F (204°C)	13.31	3.63	4.38	¾	9
SS4.5C10-¾ SD	5	(1) 10	450psi (31bar)	400°F (204°C)	13.31	3.63	4.38	¾	10
4.5C20-¾ SD	10	(1) 20	450psi (31bar)	400°F (204°C)	29.19	3.63	4.38	¾	12.25
SS4.5C20-¾ SD	10	(1) 20	450psi (31bar)	400°F (204°C)	29.19	3.63	4.38	¾	13.25

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type.

Ordering Information



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DS_IP_HP 4.5C Rev. A

Fulflo® “M” Series Single Cartridge Vessels

ASME code high-pressure single cartridge

Parker’s “M” Series Single Cartridge Filter Vessels are designed for a broad range of high pressure industrial and chemical process applications. All details of design, materials, construction and workmanship comply with the ASME code for pressure vessels. The “M” series is available with and without the ASME stamp.

Benefits

- ASME design to insure integrity, available with and without the ASME stamp
- T-Style head and shell for ease of installation and servicing
- Standard O-Ring closure seal is Buna-N, with optional materials available for improved chemical compatibility and higher temperature rating
- Flanged or threaded connections to suit installation requirements and preference

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- Optional 150, 300 or 600 lb. RFSO flange connections for installation flexibility
- 1-inch connections for maximum flow capability of filter cartridges
- Utilizes one 10-, 20- or 30-inch cartridge
- Multiple bolt closure with bright zinc plated studs
- Optional single-open-end (SOE 2-222 TC Style) cartridge adapter for positive sealing of high efficiency filter cartridges
- Wide range of cartridge media available for process clarity control and chemical compatibility
- Rigid cartridge support post with threaded end seal for positive double open end (DOE) cartridge seating

Applications

- Chemicals
- Catalyst Recovery
- Solvents
- Cutting Oils
- Other High Pressure Liquids
- Process Water
- Lubricants
- Coolants
- Hydraulic Oils
- Compressed Air and Gases

ENGINEERING YOUR SUCCESS.

Fulflo® “M” Series Single Cartridge Vessels

SPECIFICATIONS

Carbon steel or 316 stainless steel material
 Drain: ¼ in. NPT
 Vent: ¼ in. NPT
 Bolting: (4) 5/8-11 UNC bright zinc plated carbon steel
 O-ring head to shell seal

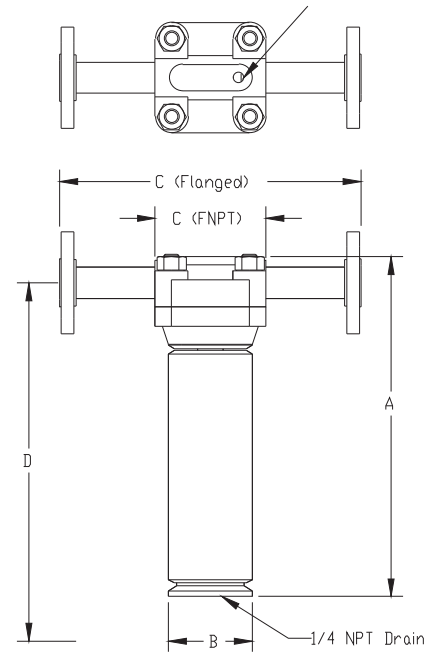
Optional Shell O-Ring/Gasket	
Material	Part #
Nitrile/Buna-N (Std.)	4151-1339
EPDM	4154-5339
FKM (Viton®)	4152-8339
Fluoropolymer encapsulated Viton®	4150-5589
Fluoropolymer encapsulated Silicone	4150-5588

Maximum Allowable Working Pressure

Connections	Designation	Carbon Steel @ 250°F (121°C)	316 Stainless Steel @ 250°F (121°C)
FNPT	T	1610psig	1610psig
150 lb. Flange	F	245psig	225psig
300 lb. Flange	H	665psig	590psig
600 lb. Flange	J	1332psig	1180psig

Note:

FNPT maximum pressure is 1610psig at 300°F with EPR O-ring, 400°F with Viton* and FEP encapsulated Viton* O-ring, and 500°F with FEP Encapsulated Silicone. Flanged units (F, H, and J designations) are based on ANSI B16.5 pressure at 250°F (121°C). The flanged versions can also be rated for the higher design temperature in which case the pressure rating will be reduced according to ANSI B16.5. Indicate the desired temperature in degrees F at the end of the model number. The gasket material and flange rating must be changed accordingly.



M Series Flow Rates & Dimensions

Model	Typical Aqueous Flow Rate† (gpm)	Cartridge Length (in)	(A) Height (in)	(B) Outside Diam. (in)	(C) Face-to-Face (in)		Weight (lbs)		(D) Cartridge Removal Clearance (in) ‡
					FNPT	Flanged	FNPT	Flanged	
MC (N or U) 1S	6	10	14.5	3.5	4.62	12.62	37	45	22
MC (N or U) 1D	12	20	24.5	3.5	4.62	12.62	46	54	42
MC (N or U) 1T	18	30	34.5	3.5	4.62	12.62	55	63	62

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type.

‡ Add 3” when using TC internal option for use with TC style 2-222 O-ring cartridges.

Ordering Information

Material		Design		Columns		Length		Inlet Outlet		Inlet Outlet Type		Gasket Material		Internal Option		Special Temperature for Flanged Units	
CODE	Description	CODE	Description	CODE	Inches	CODE	Inches	CODE	Description	CODE	Description	CODE	Description	CODE	Description	CODE	Description
C	Carbon Steel	N	Non-Code	1	1 Element	S	10	1	1	T	FNPT	N	Buna-N	Blank	Center Post for DOE	Blank	250° (121°C)
S	316SS	U	ASME U-Stamp			D	20			F	Flanged 150#	E	EPR	TC	222 O-ring Adapter		
						T	30			H	Flanged 300#	V	Viton®				
										J	Flanged 600#	T	FEP Encap. Viton®				
										K	Flanged 900#	L	FEP Encap. Silicone				
										L	Flanged 1500#						
										M	Flanged 2500#						

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DS_IP_M Vessel Rev. A

Fulflo® TC Single Cartridge Filter Vessel

Stainless steel vessels for use with SOE-222 style filter cartridges (non ASME code)

The SSTC models have a 316 stainless steel shell and a four-boss 316 stainless steel head for applications where an all-stainless steel construction is required. The vessels feature a head which accepts SOE TC style filter cartridges which eliminates the possibility of fluid bypass.



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Benefits

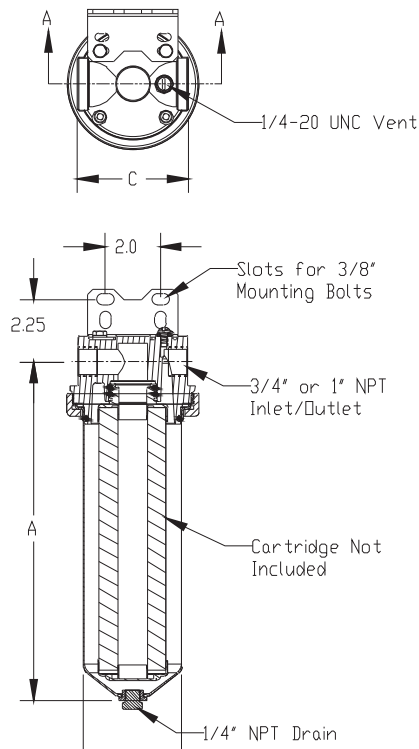
- The vessels are sealed using a ring type threaded closure which requires no special tools to change the cartridges
- Threaded ring closure for quick cartridge change
- 222 seal cup for TC and competitive cartridge sealing (M3, Code 3, Code 0)
- Integrally cast brackets for easy mounting
- Standard Buna-N closure o-ring material with optional Viton, EPR and Silicone available
- Available for use with 10", 20" and 30" cartridge lengths
- Vessel has no internal parts
- Cartridge seating is positive and can be checked prior to closing
- All components have electropolished finish

Applications

- Solvents
- Chemicals
- Potable Water
- Parts Washer

Fulflo® TC Single Cartridge Filter Vessel

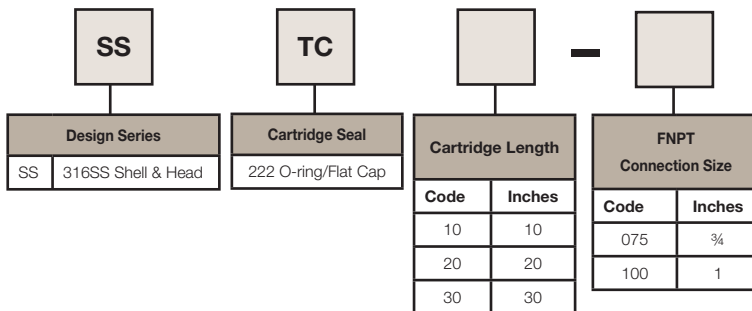
Optional Shell O-Ring/Gasket	
Material	Part #
Nitrile/Buna-N (Std.)	4151-1236
EPDM	4154-5236
FKM (Viton®)	4152-8236
Silicone	4151-4236
Fluoropolymer encapsulated Viton®	4154-4236
Fluoropolymer encapsulated Silicone	4150-5617



Design Specifications

Model	Typical Aqueous Flow (gpm)	Cartridge Length (in)	Max. Op. Pressure (psi @ 250°F)	(A) Overall Height (in)	(B) Outside Diam. (in)	(C) Face-to-Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Wt. (lbs)
SSTC10-075	5	10	200psi (13.8bar)	12.25	3.50	3.94	.75	7.80
SSTC20-075	10	20	200psi (13.8bar)	22.38	3.50	3.94	.75	9.00
SSTC30-075	15	30	200psi (13.8bar)	32.50	3.50	3.94	.75	10.20
SSTC10-100	5	10	200psi (13.8bar)	12.25	3.50	3.94	1.00	7.80
SSTC20-100	10	20	200psi (13.8bar)	22.38	3.50	3.94	1.00	9.00
SSTC30-100	15	30	200psi (13.8bar)	32.50	3.50	3.94	1.00	10.20

Ordering Information



Note: Buna-N is standard seal.

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DS_IP_TC Vessel Rev. A

Trufluor™

High purity, rugged design for aggressive chemical filtration (non ASME code)

The simple, yet rugged design of the Trufluor filtration housing is an excellent solution to any aggressive chemical filtration problem. The two-piece design allows for ease of installation and a positive seal.

Series TFH (Trufluor PFA) uses high purity PFA materials of construction to provide the broadest available chemical compatibility and strong mechanical properties with the lowest possible extractables. Use this choice with a fluoropolymer cartridge for an all fluoropolymer filtration system.

Series TVH (Trufluor PVDF) uses polyvinylidene fluoride (PVDF) materials of construction to provide excellent chemical compatibility and superior mechanical properties with the lowest possible extractables.

Both series accept a 10 in. (25.4 cm) 222 o-ring / flat SOE style cartridge. Choice of 3/4" NPT or 3/4" butt weld inlet and outlet connections available.



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Benefits

- High purity PFA construction
- Also available in PVDF
- Broad chemical compatibility
- Extremely low extractables
- Standard 1/4" gauge connections upstream and downstream

Applications

- High purity acids and bases
- Fine Chemical
- Aggressive solvents
- Acid etch and BOE
- Photomask and Photoresist
 - Chemicals
 - Solvents
 - Developers

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SPECIFICATIONS

Materials of Construction

Head and Bowl: High purity PFA
 O-Ring: FEP Encapsulated Viton®
 NPT Plugs: High purity PFA
 Threaded Head
 Inserts: PTFE coated 316
 Stainless steel

Connections

Inlet | Outlet: ¼" NPT or Butt Weld
 Vent and Drain: ¼" NPT

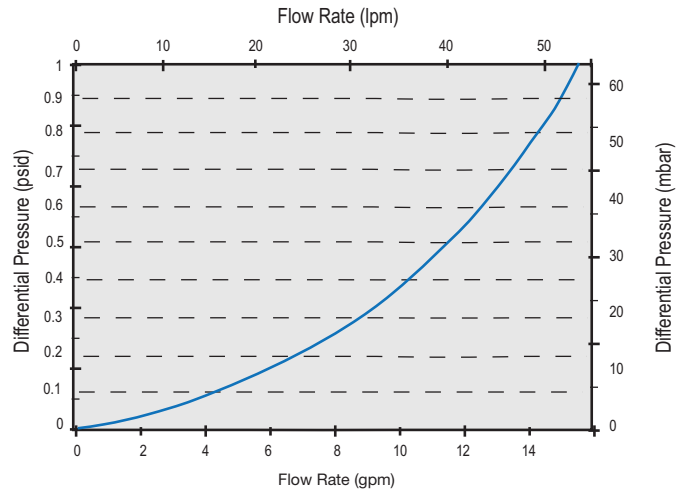
Maximum Operating Specifications

TFH (PFA):
 65psid (4.5bar) @ 203°F (95°C)
 75psid (5.2bar) @ 68°F (20°C)

TVH (PVDF):

110psig @ 203°F (95°C)
 150psig @ 68°F (20°C)

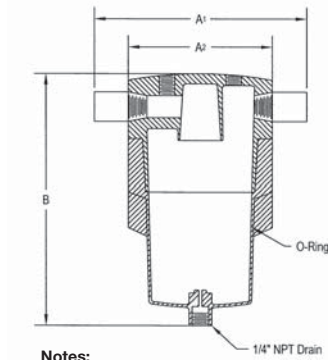
Housing Differential Pressure vs. Liquid Flow Rate



Cartridge Configurations Supported

Size	Description
10"	222 Flat End Cap SS Reinforced 222 Flat End Cap

Housing Part#	Overall Width (A)		Overall Length (B)		Minimum Clearance for Cartridge Removal	
	Inches	cm	Inches	cm	Inches	cm
TFH10N08N02T	4-7/8	12.4	16	40.6	13	33.0
TFH10W08N02T	7-21/32	19.4	16	40.6	13	33.0
TVH10N08N02T	4-7/8	12.4	16	40.6	13	33.0
TVH10W08N02T	7-21/32	19.4	16	40.6	13	33.0



Notes:
 1. Dim. A1 = ¼" Butt-weld
 Dim. A2 = ¼" NPT

This housing is not recommended for compressed air or gas service. It is suitable for use with fully compatible liquids (which do not soften, swell or adversely affect the product or its materials of construction) only. This housing is not recommended for acid service at the pressure shown.

Please contact Parker for detailed compatibility information.

NOTE:

Use of this product in a manner other than in accordance with Parker's current recommendations may lead to injury or loss. Parker cannot accept liability for such injury or loss.

Ordering Information

Model		Bowl Length		Connection Type		Connection Size		Drain/Vent Type		Drain/Vent Size		Seal Material	
CODE	DESCRIPTION	CODE	INCHES (mm)	CODE	DESCRIPTION	CODE	INCHES (mm)	CODE	DESCRIPTION	CODE	INCHES (mm)	CODE	DESCRIPTION
TFH	Trufluor PFA	10	10"	N	NPT	08	¼"	N	NPT	02	¼" (6.35mm)	T	FEP Encapsulated Viton®
TVH	Trufluor PVDF			W	Butt-weld			W	Butt-weld				

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Trufluor™ +

High purity PFA filter housing
(non ASME code)

The Trufluor™+ filter housing is designed for maximum chemical resistance and high purity. Constructed of PFA (wetted parts) and PVDF (non-wetted parts), this housing is compatible with the most aggressive chemistries. The high-purity materials of construction and cleanroom packaging insure a high level of cleanliness. The housing consists of a stationary bowl and locking ring that provides a positive seal and easy filter replacement. It is compatible with our Fluoroflow® line of all-fluoropolymer cartridges including the large-diameter Fluoroflow®-XL in lengths of 10, 20 and 30 inches.



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Benefits

- Excellent chemical resistance
- High-purity construction
- Packaged in cleanroom
- High flow rates
- Compatible with 2.75" and 3.25" diameter cartridges

Applications

- Wet etch and clean (90°C or less)
- Photochemicals
- DI water
- Fine chemical
- Aggressive solvents
- High purity acids & bases



ENGINEERING YOUR SUCCESS.

Trufluor™+

SPECIFICATIONS

Materials of Construction

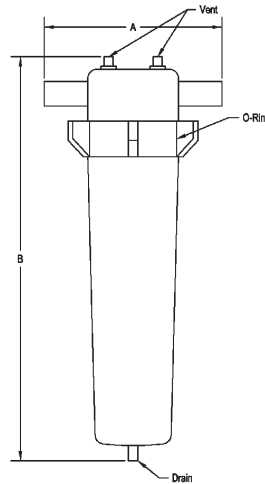
Head and Bowl: High Purity PFA
 O-Ring: FEP Encapsulated Viton®
 Locking Ring: PVDF (non-wetted part)

Connections

Inlet/Outlet 3/4" or 1" Flare
 3/4" or 1" Butt Weld
 Vent/Drain 1/4" Flare
 1/4" Butt Weld
 1/4" NPTF
 3/8" Closed
 3/8" Flare

Maximum Operating Specifications

50psig (3.4bar) at 194°F (90°C)
 100psig (6.9bar) at 77°F (25°C)

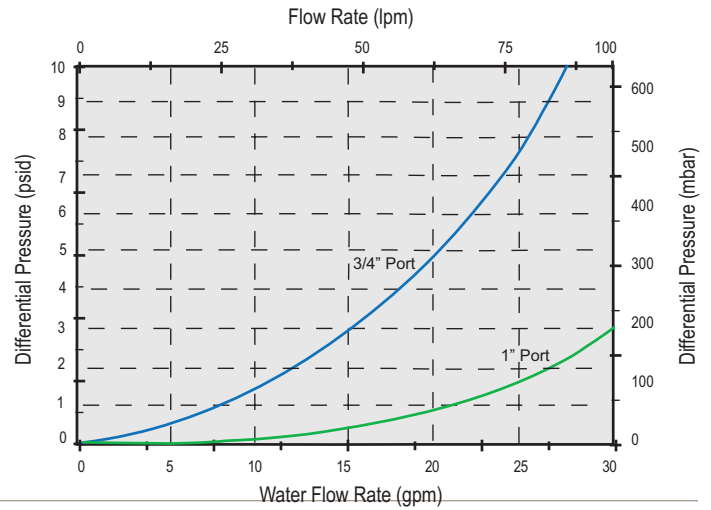


Dimensional Data

10" Filter		
Housing Style	Overall Width (A)	Overall Length (B)
3/4" Butt Weld Pipe	9.0" 22.9 cm	16.0" 40.6 cm
3/4" Flare	10.5" 26.7 cm	19.5" 49.5 cm
1" Butt Weld Pipe	9.0" 22.9 cm	16.0" 40.6 cm
1" Flare	11.0" 27.9 cm	19.5" 49.5 cm
20" Filter		
Housing Style	Overall Width (A)	Overall Length (B)
3/4" Butt Weld Pipe	12.0" 30.5 cm	25.7" 65.3 cm
3/4" Flare	10.5" 26.7 cm	29.3" 74.4 cm
1" Butt Weld Pipe	9.0" 22.9 cm	25.7" 65.3 cm
1" Flare	11.0" 27.9 cm	29.3" 74.4 cm
30" Filter		
Housing Style	Overall Width (A)	Overall Length (B)
3/4" Butt Weld Pipe	12.0" 30.5 cm	35.5" 90.2 cm
3/4" Flare	10.5" 26.7 cm	39.1" 99.3 cm
1" Butt Weld Pipe	9.0" 22.9 cm	35.5" 90.2 cm
1" Flare	11.0" 27.9 cm	39.1" 99.3 cm

Cartridge Configurations Supported

Length (in)	Cartridge Style
10	222/Flat End Cap
20	SS Reinforced 222/Flat End Cap
30	Cap



Ordering Information

TFP [] [] [] [] [] [0] [2] [T]

Bowl Length		Connection Type		Connection Size		Drain Vent Type		Drain Vent Size		Seal Material	
CODE	Inches (mm)	CODE	Description	CODE	Inches (mm)	CODE	Description	CODE	Inches (mm)	CODE	Description
10	10" (254mm)	F	Flare	08	3/4" (19.05mm)	C	Closed*	02	1/4" (6.35mm)	T	FEP Encapsulated Viton®
20	20" (508mm)	W	Butt Weld	10	1" (25.40mm)	F	Flare*				
30	30" (762mm)					W	Butt Weld				
						N	NPTF				

*Additional charges apply

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Multi-Cartridge Filter Vessel Series

ASME code and non-code vessels in a range of configurations for many liquid, compressed air & gas applications



Fulflo® CH Filter Vessel

Carbon steel, 304 & 316 stainless steel non-ASME code

Fulflo® CP Filter Vessel

Carbon steel single element oil filter vessel

Fulflo® EH Multi-Cartridge Filter Vessel

304 stainless steel, commercial (non-ASME code) design

Fulflo® FE Filter Vessel

Designed for economical filtration of liquids and gases

Fulflo® FP Filter Vessel

Economical liquid filtration design

Fulflo® HT Filter Vessel

ASME code filter vessel for high temperature fluids

Fulflo® Mega Flow Filter Vessel

High flow capacity design

Fulflo® MP Filter Vessel

R.O. pre-filter membrane protector

Fulflo® P Filter Vessel

High efficiency/high flow rate design

Fulflo® ParMax™ Vessel

High flow capacity design

Fulflo® S Filter Vessel

ASME code for liquid and gas

Fulflo® SF Filter Vessel

High flow rate ASME code design

Fulflo® WH Filter Vessel

304 & 316 stainless steel non-ASME



Toll free sales & technical support:
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Fulflo® CH Multi-Cartridge Filter Vessel

Carbon steel, 304 and 316 stainless steel filter vessel (non ASME code)

The Fulflo® CH non-code filter vessels are lightweight and provide economical filtration of liquids. The vessel features the integrity of a swing bolt for fast, easy opening and closing. It comes with standard zinc plated bolts and legs for corrosion resistance but is also offered with stainless steel options. Wall mounting brackets are available as well.

The Fulflo CH vessel series accommodates either double-open-end (DOE) or single-open-end (SOE) 222/flat or 222 flex fin filter cartridges in 10 inch, 20 inch or 30 inch lengths.

The CH filter vessel series replaces the FH filter vessel series.



Contact Information

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Benefits

- Single O-ring design closure assures quick, positive cover sealing
- Swing bolts for fast and easy opening and closing of cover
- Pivot pin cover allows cover to remain attached when opened
- Commercial engineering design - Non-code
- Zinc plated closure bolts and legs for corrosion resistance
- Adjustable leg height
- Standard features include vent, clean drain & dirty drain connections
- Optional mounting wall bracket (P/N 0820-6005)

Applications

- Potable Water
- Lubricants
- Process Water
- Coolants
- Edible Oils
- Cutting oils
- Coatings
- Solvents

ENGINEERING YOUR SUCCESS.

Fulflo® CH Multi-Cartridge Filter Vessels

Available Finishes

- Enamel exterior paint on carbon steel models
- Glass bead blast finish on stainless models

Number of Cartridges

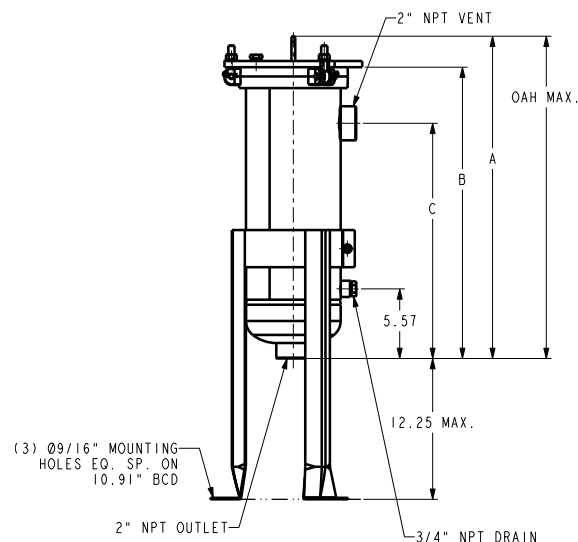
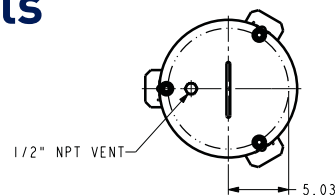
Five 10 inch, 20 inch or 30 inch x 2.70" OD (Max) end caps

Product Configurations

Pipe size or connection:
2" NPT inlet & outlet
1/2" NPT vent
3/4" NPT drain

Fulflo® CH Vessel Series

Rated Capacity
25gpm, 50gpm, 75gpm



Cartridge Configurations	
222 O-ring SOE	Flat
	PP spring closed end
Gasket SOE	Flex fin
	PP spring closed end
DOE	Standard
	Extended Core

Optional Shell O-Ring/Gasket*	
Material	Part #
Nitrile/Buna-N (Std.)	4150-5706
EPDM	4150-5708
FKM (Viton®)	4150-5707
Fluoropolymer	4150-5790

*Optional O-ring shipped separately

Model	Dimensions			Shipping Wt. (lbs)
	A	B	C	
CHC5S2T	26	23.5	19.00	57
CHC5D2T	36	33.5	29.00	67
CHC5T2T	46	43.5	39.00	77
CHG5S2T	26	23.5	19.00	57
CHG5D2T	36	33.5	29.00	67
CHG5T2T	46	43.5	39.00	77
CHS5S2T	26	23.5	19.00	57
CHS5D2T	36	33.5	29.00	67
CHS5T2T	46	43.5	39.00	77

Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
Carbon Steel	175psi (12.1bar)	400°F (204°C)* **
304 Stainless	175psi (12.1bar)	400°F (204°C)**
316 Stainless	175psi (12.1bar)	400°F (204°C)**

*Limited to 250°F by the paint

**Limited to 250°F by the standard Buna-N O-ring

Ordering Information

CH	<input type="text"/>	5	<input type="text"/>	<input type="text"/>	<input type="text"/>
Material		Element Length		Inlet/Outlet Size	
Code	Description	Code	Inches	Code	Inches
C	Carbon Steel	S	10	2T	2" NPT
G	304 Stainless Steel	D	20		
S	316 Stainless Steel	T	30		
Support Options					
Code	Description				
Blank	Zinc plated carbon steel legs				
W	Wall Mounted/No legs				
SL	Stainless steel legs				
SB	Stainless steel cover bolts				
SS	Stainless steel bolts & legs				

Example Part# Configuration for Orders (no dashes):
CHC5S2T
CHG5D2TSL

Specifications are subject to change without notification.
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DS_IP_CH Vessel Rev. A

Fulflo® CP Multi-Cartridge Filter Vessel

Carbon steel, non-ASME code oil filter vessel

The Fulflo® CP multi-cartridge filter vessels are designed for high efficiency and economical operation in oil reclamation and maintenance applications. The vessel features the integrity of a swing bolt for fast, easy opening and closing. It comes with standard zinc plated bolts and legs for corrosion resistance.

The light, compact design makes the Fulflo CP easy to mount on equipment or on the floor to conserve space. The adjustable legs offer installation flexibility by allowing various inlet elevations and nozzle orientations. Wall mounting brackets are available as well.

The CP filter vessel series replaces the FPM filter vessel series.



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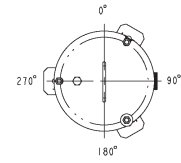
Benefits

- Single O-ring design closure assures quick, positive cover sealing
- Swing bolts for fast, and easy opening and closing of cover
- Commercial engineering design - Non-code
- Pivot pin cover allows cover to remain attached when opened
- Adjustable leg height
- Optional mounting wall bracket (P/N 0820-6005)

Applications

- Hydraulic oils
- Quench Oils
- Engine & Compressor Lube Oils
- Cutting Oils
- Coolants
- EDM Liquids

Fulflo® CP Oil Filter Vessel



Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
Carbon Steel	175psi (12.1bar)	250°F (121°C)

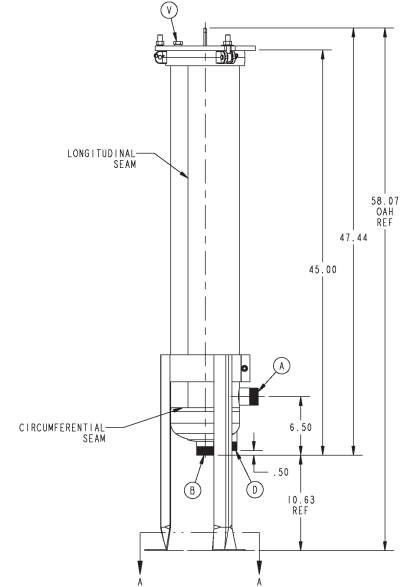
†Operating temperature limited to 250°F by standard Buna-N O-ring material and exterior paint.

Cartridge Configurations

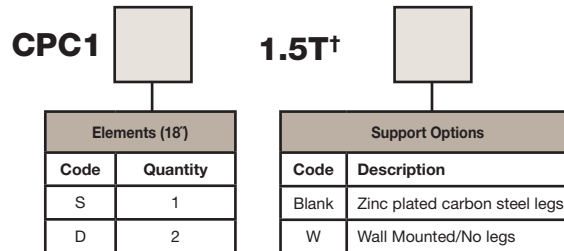
Filter Element	Series Number	Operating Temp.
Fulflo® Flo-Pac®	718, 736	250°F (121°C)
Fulflo® Flo-Pac® +		

Model	Number of 18" Elements Per Column	Typical Aqueous Flow† (gpm)	OAH	Shipping Weight (lbs)
CPC1S1.5T	1	30	40.66	58
CPC1D1.5T	2	60	58.06	75

†Actual flow rate is dependent of fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.



Ordering Information



†Male NPT

Example Part# Configuration for Orders (no dashes):
 CPC1S1.5T
 CPC1D1.5TW

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DS_IP_CP Vessel Rev. A

Fulflo® EH Multi-Cartridge Filter Vessel

304 & 316 stainless steel, commercial design (non ASME code)

The Fulflo EH non-code multi-cartridge filter vessels provide economical filtration of a wide variety of liquids in a lightweight, externally polished stainless steel design, with features including a swing bolt secured, quick opening cover and an internal positive pressure cartridge alignment and sealing plate.

The EH vessels accommodate either 10", 20", 30" or 40" long, double open end (DOE) or 222 single open end (SOE) filter cartridges.

These vessels are manufactured from polished and passivated stainless steel and rated for 150 psi (10.3 bar).

For added corrosion resistance, all cover bolt and leg mounting hardware is made from stainless steel as well.



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Benefits

- Convertible design allows for use of both DOE and SOE cartridges
- Swing bolted o-ring closure seal provides quick and positive seal and easy access to the vessel interior and filter cartridges
- Both FNPT threaded and flanged connections are available in specific models
- EPDM seals are standard with other material options available
- Standard threaded FNPT vent & drains
- Standard stainless steel cartridge support and sealing hardware
- Polished exterior and pickle passivate interior / exterior for enhanced corrosion resistance

Applications

- Potable Water
- Lubricants
- Process Water
- Coolants
- Edible Oils
- Cutting oils
- Coatings
- Solvents

ENGINEERING YOUR SUCCESS.

Fulflo® EH Multi-Cartridge Filter Vessel

Available Finishes

- Polished exterior

Typical aqueous flow (Based on 5gpm per 10" length)		
Model	Filter Quantity	Capacity (gpm)
EHG05S	5 x 10"	25
EHG05D	5 x 20"	50
EH*05T	5 x 30"	75
EH*05Q	5 x 40"	100
EHG07T	7 x 30"	105
EHG07Q	7 x 40"	140
EHG11T	11 x 30"	165
EHG11Q	11 x 40"	220
EHG19T	19 x 30"	285
EHG19Q	19 x 40"	380

* G or S

Vessel dimensions									
Model	A	B	C	D	E	F	G	H	Weight (lbs)
EHG05S2T	9.85	15.75	8.00	29.33	26.00	6.00	12.00	12.40	41
EHG05D2T	9.85	19.69	8.00	39.17	35.84	6.00	12.00	12.40	48
EH*05T2T	9.85	23.63	8.00	49.00	45.67	6.00	12.00	12.40	55
EH*05Q2T	9.85	27.56	8.00	59.25	55.91	6.00	12.00	12.40	62
EHG07T2T	11.81	27.56	10.00	51.77	47.64	7.00	14.00	14.57	75
EHG07Q2T	11.81	31.50	10.00	62.00	57.87	7.00	14.00	14.57	84
EHG11T3F	14.17	27.56	12.00	55.71	50.79	9.14	18.27	16.54	115
EHG11Q3F	14.17	35.43	12.00	65.16	60.24	9.14	18.27	16.54	123
EHG19T4F	15.75	31.50	15.91	58.47	52.56	11.90	23.79	20.87	161
EHG19Q4F	15.75	35.43	15.91	67.52	61.61	11.90	23.79	20.87	175

* G or S

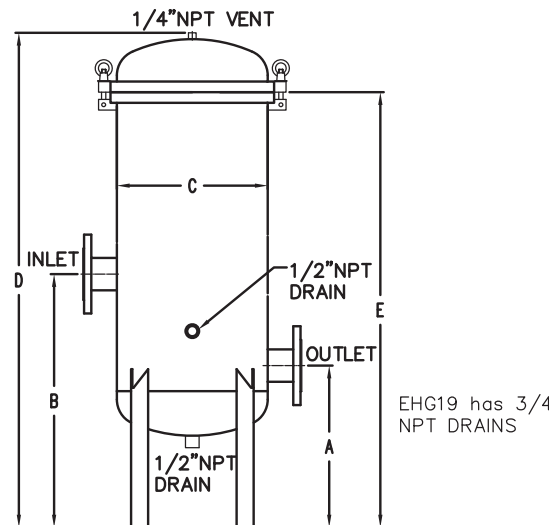
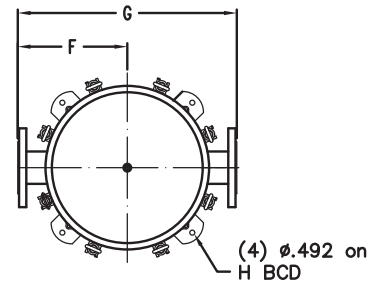
Cartridge Configurations*	
222 O-ring SOE	Flat
	PP spring closed end
	Flex fin
	Fin
Gasket SOE	PP spring closed end
DOE	Standard

*2.75" maximum diameter

Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
304/316 SST	150 psi (10.3 bar)	300°F (149°C)

O-ring Temperature Guide	
Material	Max. Temp.
Nitrile (Buna-N)	250°F (121°C)
EPDM (EPR)*	300°F (149°C)
FKM (Viton®)	400°F (204°C)**

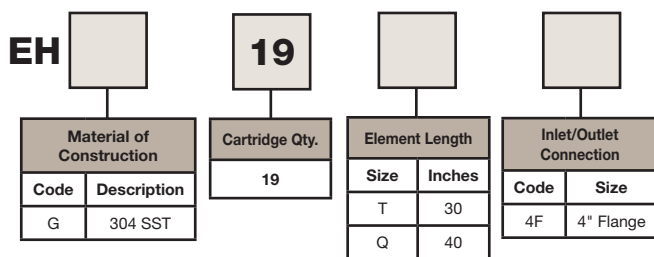
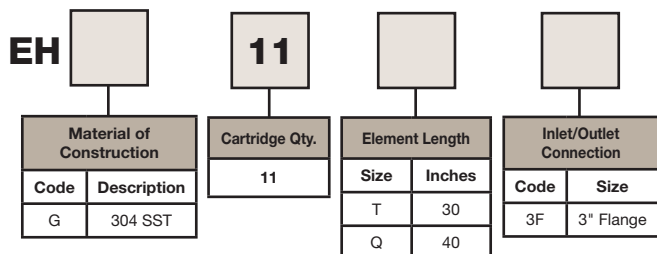
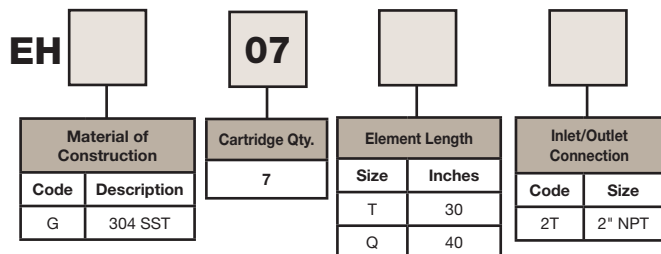
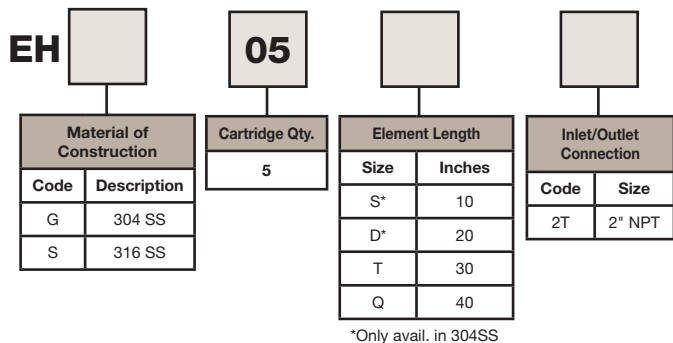
*EPDM o-ring is standard.
**Vessel temp. limited to 300°F (149°C)



EHG19 has 3/4 NPT DRAINS

Fulflo® EH Multi-Cartridge Filter Vessel

Ordering Information



Replacement Parts		
Model(s)	Part Number	Description
All	2390-5003	Cover Bolt Assembly†
All	2800-5405	Cartridge Guide (10") - 304SS
All	2800-5406	Cartridge Guide (20") - 304SS
All	2800-5403	Cartridge Guide (30") - 304SS
All	2800-5404	Cartridge Guide (40") - 304SS
All	5320-5402	Spring Seal Assembly
All	0720-5305	Center Rod 10" 304SS
All	0720-5306	Center Rod 20" 304SS
All	0720-5303	Center Rod 30" 304SS
All	0720-5304	Center Rod 40" 304SS
All	4090-5365	Wing Nut (Pressure Plate) - 304SS
All	6780-5190	Washer (Pressure Plate) - 304SS
EH*05	4150-5837-E	O-ring, Cover EPDM
EH*05	4150-5837-N	O-ring, Cover Buna-N
EH*05	4150-5837-V	O-ring, Cover FKM (Viton®)
EHG05	1567-0160	Pressure Plate - 304SS
EHS05	6780-5192	Washer (Pressure Plate) - 316SS
EHS05	5320-5408	Spring Seal Assembly - 316SS
EHS05	2800-5408	Cartridge Guide (30") - 316SS
EHS05	2800-5409	Cartridge Guide (40") - 316SS
EHS05	0720-5309	Center Rod 30" 316SS
EHS05	0720-5310	Center Rod 40" 316SS
EHS05	4090-5373	Wing Nut (Pressure Plate) - 316SS
EHS05	1567-0165	Pressure Plate - 316SS
EHG07	4150-5838-E	O-ring, Cover EPDM
EHG07	4150-5838-N	O-ring, Cover Buna-N
EHG07	4150-5838-V	O-ring, Cover FKM (Viton®)
EHG07	1567-0161	Pressure Plate - 304SS
EHG11	4150-5840-E	O-ring, Cover EPDM
EHG11	4150-5840-N	O-ring, Cover Buna-N
EHG11	4150-5840-V	O-ring, Cover FKM (Viton®)
EHG11	1567-0162	Pressure Plate - 304SS
EHG19	4150-5842-E	O-ring, Cover EPDM
EHG19	4150-5842-N	O-ring, Cover Buna-N
EHG19	4150-5842-V	O-ring, Cover FKM (Viton®)
EHG19	1567-0163	Pressure Plate - 304SS

†Bolt assembly includes 1 each bolt, nut, washer, pin and retainer.

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DS_IP_E Multi Filter Vessel 2/14 Rev. D

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Fulflo® FE Filter Vessel

ASME code designed for economical filtration of liquids and gases

Fulflo FE multi-cartridge filter vessels meet a broad range of liquid and gas applications. It comes with standard zinc plated bolts and legs for corrosion resistance but is also offered with stainless steel options. Wall mounting brackets are available as well.

The FE filter vessels accommodate double-open-end (DOE) and single-open-end (SOE) filter cartridges in 10 inch, 20 inch, and 30 inch lengths.



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www.parker.com/processfiltration

Benefits

- Single O-ring design closure assures quick, positive cover sealing
- Swing bolts with eyenuts for fast, easy opening and closing of cover
- Dual purpose cartridge seats for use with DOE and 2-222 O-ring SOE cartridges
- ASME Code UM stamp is standard (U stamp is optional)
- Threaded vent & drain connections
- Adjustable leg height
- Threaded or flanged inlet and outlet
- Side inlet; cover opens without disconnecting piping
- Side inlet, bottom outlet and crevice-free welded design provide a smooth interior for easy wash-out and cleaning

Applications

- Potable Water
- Process Water
- Coatings
- Lubricants
- Coolants
- Cutting Oils
- Solvents

Fulflo® FE Filter Vessel

Design Specifications

Model	Cartridge No. & Length (in)	Aqueous Flow† (gpm)	Typical Dimensions (in)					Shipping Wt. (lbs)	Volume (gal)
			A	B	C	D	E**		
FE6-1-2	6 (10)	30	33.00	5.75	25.56	13.19	2 NPT	82	3.6
FE6-1-2F	6 (10)	30	33.00	8.00	25.56	12.00	2 NPS	90	3.6
FE6-2-2	6 (20)	60	43.06	5.75	35.63	13.19	2 NPT	87	5.4
FE6-2-2F	6 (20)	60	43.06	8.00	35.63	12.00	2 NPS	95	5.4
FE6-3-2	6 (30)	90	53.13	5.75	45.69	13.19	2 NPT	92	7.8
FE6-3-2F	6 (30)	90	53.13	8.00	45.69	12.00	2 NPS	100	7.8
FE6-3-3F	6 (30)	90	53.13	8.00	45.69	11.75	3 NPS	110	7.8

† Actual rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

** NPT - ANSI Class 3000# Thread Couplings / NPS - ANSI Class 150# Slip-on Flanges

Maximum Operating Conditions

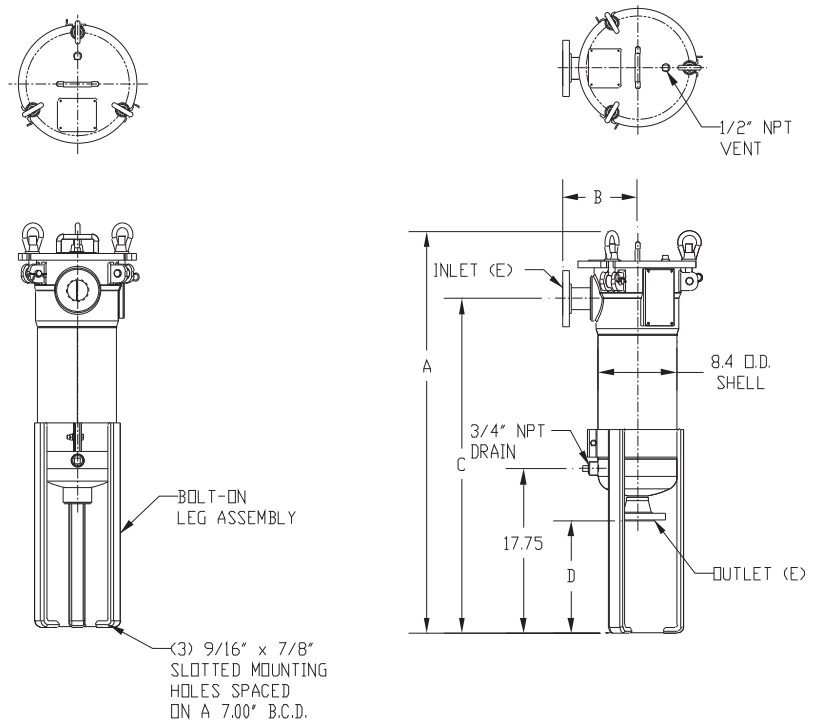
Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
Carbon Steel	150psi (10.3bar)	450°F (232°C)* **
304L Stainless	150psi (10.3bar)	450°F (232°C)**
316L Stainless	150psi (10.3bar)	450°F (232°C)**

* Limited to 250°F by the paint

** Limited to 250°F by the standard Buna-N O-ring

Optional Shell O-Ring/Gasket*	
Material	Part #
Nitrile/Buna-N (Std.)	4151-1371
EPDM	4154-5371
Silicone	4150-5537
FKM (Viton®)	4152-8371
Fluoropolymer	4151-5371

* Optional O-ring shipped separately



Ordering Information

Material of Construction		Cartridge Qty.		Cartridge Length		Connection Size		Connection Type		Support Options	
Code	Description	Code	Amount	Code	Inches	Code	Inches	Code	Description	Code	Description
None	Carbon Steel	6	6	1	10	2	2	Blank	NPT	Blank	Zinc plated carbon steel legs
4L	304L Stainless Steel			2	20	3	3	F	ANSI 150 lb. flange	SL	304 Stainless steel legs
6L	316L Stainless Steel			3	30					SB	316 Stainless steel cover bolts
										SS	Stainless steel bolts & legs

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DS_IP_FE Vessel Rev. B



Fulflo® FP Filter Vessel

ASME code design for economical liquid filtration

Fulflo® FP single or double round filter vessels meet a broad range of liquid applications. It is designed for use with the Fulflo® Flo-Pac 718 and 736 pleated filter cartridge series.



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Benefits

- Single O-ring design closure assures quick, positive cover sealing
- Swing bolts with eyenuts for fast, easy opening and closing of cover
- ASME Code UM stamp is standard (U stamp is optional)
- Threaded vent & drain connections
- Adjustable leg height
- Threaded or flanged inlet and outlet options
- Side inlet, bottom outlet and crevice-free welded design provide a smooth interior for easy wash-out and cleaning

Applications

- Process Water
- Coatings
- Lubricants
- Coolants
- Cutting Oils
- Solvents
- EDM

Fulflo® FP Filter Vessel

Design Specifications

Model	Cartridge No. & Length (in.)	Typical Aqueous Flow† (gpm)	Dimensions (in.)					Shipping Weight (lbs)	Volume (gal)
			A	B	C	D	E††		
FP1-1-2	(1) 18	50	42.56	5.75	35.13	13.19	2 NPT	112	5.5
FP1-1-2F	(1) 18	50	42.56	8.00	35.13	12.00	2 NPS	120	5.5
FP1-2-2	(2) 18	100	60.56	5.75	53.13	13.19	2 NPT	132	9.6
FP1-2-2F	(2) 18	100	60.56	8.00	53.13	12.00	2 NPS	140	9.6
FP1-2-3F	(2) 18	100	60.56	8.00	53.13	11.75	2 NPS	150	9.6

†Actual rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

†† NPT - ANSI Class 3000# Thread Couplings / NPS - ANSI Class 150# Slip-on Flanges

Maximum Operating Conditions

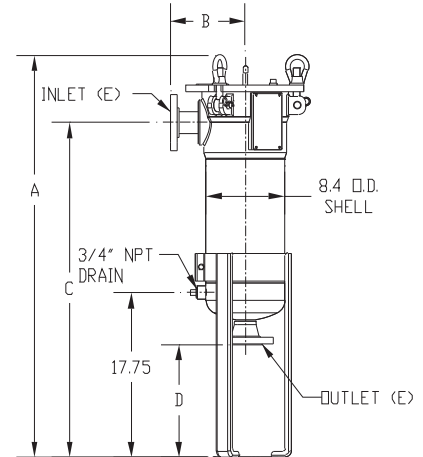
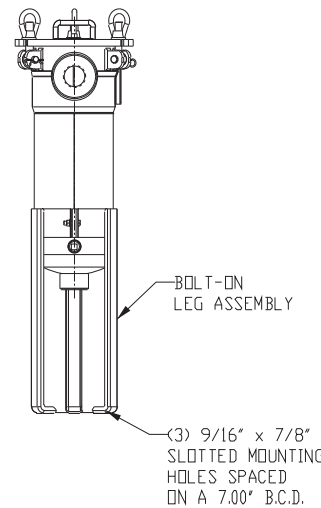
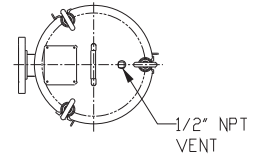
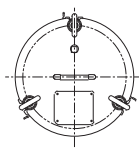
Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
Carbon Steel	150psi (10.3bar)	450°F (232°C) **
304L Stainless	150psi (10.3bar)	450°F (232°C)**

*Limited to 250°F by the paint

**Limited to 250°F by the standard Buna-N O-ring

Optional Shell O-Ring/Gasket*	
Material	Part #
Nitrile/Buna-N (Std.)	4151-1371
EPDM	4154-5371
FKM (Viton®)	4152-8371
Fluoropolymer	4151-5371

*Optional O-ring shipped separately



Ordering Information

Material of Construction		Cartridge Qty.		Cartridge Length		Connection Size		Connection Type	
Code	Description	Code	Columns	Code	Inches	Code	Inches	Code	Description
None	Carbon Steel	1	1	1	18	2	2	Blank	NPT
4L	304L Stainless Steel			2	36	3	3	F	ANSI 150 lb. flange

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DS_IP_FP Vessel Rev. B



Fulflo® HT Multi-Cartridge Filter Vessel

ASME code filter vessel for heat transfer oils and other high temperature fluids

Fulflo® HT multi-cartridge filter vessels are specifically designed for filtration of high temperature heat transfer oils and other hot fluids. All details of design, materials and construction of the HT vessel series conform to ASME code.

The HT series vessels are designed for use with double open end (DOE) and single open end (SOE) cartridges in 10, 20 and 30 inch lengths.

Benefits

- ANSI blind flange closure for positive seal and common replacement gasket size
- High temperature 304 SS spiral wound closure gasket with non-asbestos filler for use at elevated temperature and when fire safe non O-ring design is required
- Modified silicone paint, suitable for high temperature, applied over sandblasted surface for exterior protection

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Benefits (cont'd)

- Nickel plated bolting for corrosion resistance at high temperature
- Cartridge top seats, guides and bottom seats made of 316 SS for corrosion resistance
- Inlet and outlet nozzles extended 6 inches to allow for installation of protective insulation
- Extruded nameplate so design information is visible after protective insulation is installed
- Minimum pressure drop design
- Designed & fabricated in accordance with ASME Boiler & Pressure Vessel code, U or UM stamp
- Dual purpose cartridge seat for use with double open end and 2-222 O-ring single open end cartridges

Applications

- Heat Transfer Oils
- High Temperature Oils
- Hot Fluids & Gases

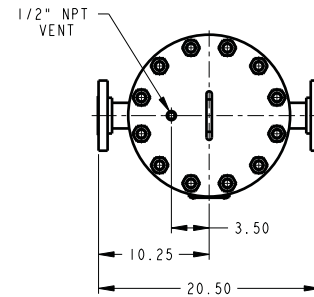
ENGINEERING YOUR SUCCESS.

Fulflo® HT Filter Vessels

Design Specifications

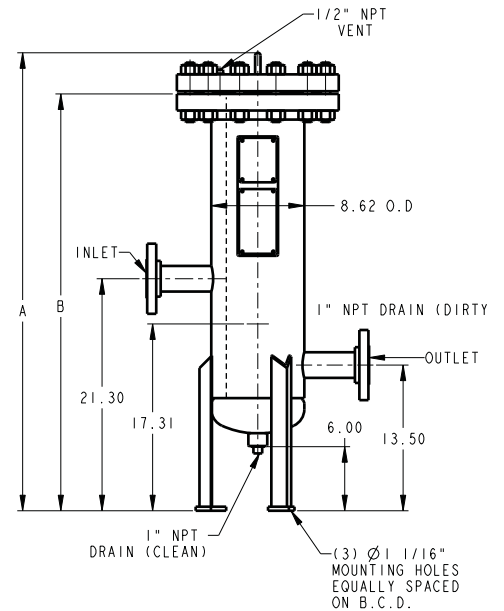
Model	Cart. Qty. & Length (in.)	Flow†	A	B	Shipping Weight (lbs)	
					150 U UM	300 U UM
HT6-1-2F	6 (10)	30	32.38	28.63	175	260
HT6-2-2F	6 (20)	60	42.44	38.69	190	275
HT6-3-2F	6 (30)	90	52.50	48.75	205	290

†Based on 5 gpm per 10" cartridge

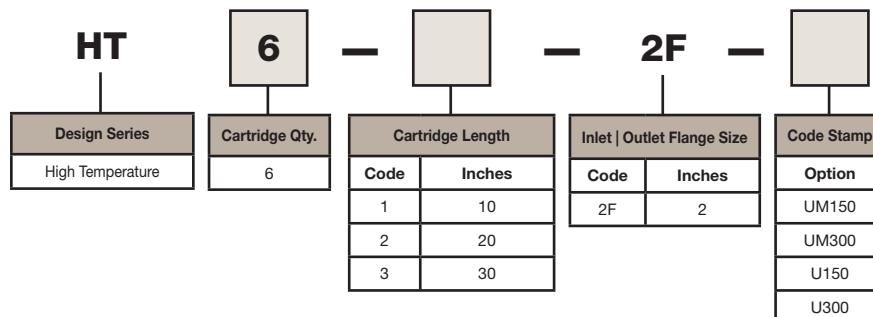


Maximum Operating Conditions

Code	Material of Construction	Max. Operating Pressure	Max. Operating Temperature
150 U, UM	Carbon Steel	122psi (8.41bar)	650°F (343°C)
300 U, UM	Carbon Steel	417psi (28.7bar)	650°F (343°C)



Ordering Information



Specifications are subject to change without notification.
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DS_IP_HT Vessel Rev. B

Fulflo® MegaFlow™ Multi-Cartridge Filter Vessel

ASME code. high flow capacity design for
MegaFlow filter cartridges

Fulflo® MegaFlow™ vessels are designed to accept MegaFlow filter cartridges that handle up to 175gpm (662 lpm) each. They provide significant size and capital cost reduction compared with vessels containing conventional size filter cartridges. The horizontal design and coreless cartridge configuration make change-out fast and easy.

Models are available for flow rates up to 3325gpm (12,586 lpm).



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Benefits

- Horizontal design makes cartridge change practically effortless
- Vessels have slight pitch to prevent liquid from spilling when opening cover
- Permanent internal perforated post supports cartridges and eliminates loose internal parts
- Cartridges have internal O-ring for positive seal
- Cartridge top is located flush with cover to facilitate cartridge change
- Inlet connection is below cartridges to prevent impingement on media
- Built to ASME Boiler And Pressure Code to insure integrity
- Available in carbon steel, 304L stainless steel and 316L stainless steel for a wide variety of applications
- O-ring cover seal for quick and positive vessel cover sealing
- Cover locating pin for quick and accurate alignment
- Available in 150psi and 300psi pressure ratings

Applications

- Reverse Osmosis Filtration
- Potable Water
- Process Water
- Edible Oils
- Lubricants
- Coolants
- Cutting Oils
- Solvents
- Chemicals



ENGINEERING YOUR SUCCESS.

Fulflo® MegaFlow™ Filter Vessel

Maximum Operating Conditions

Material of Construction	Max. Operating Pressure (psi @ 250 °F) [†]	Max. Design Temp. ^{††}	Connection type
Carbon Steel	150psi (10.3bar)	250°F (121°C)	F
Carbon Steel	300psi (20.7bar)	250°F (121°C)	H
304 Stainless Steel	150psi (10.3bar)	250°F (121°C)	F
304 Stainless Steel	300psi (20.7bar)	250°F (121°C)	H
316 Stainless Steel	150psi (10.3bar)	250°F (121°C)	F
316 Stainless Steel	300psi (20.7bar)	250°F (121°C)	H

[†] Operating temperature limited by standard O-ring material and exterior paint.

Optional Shell O-Ring/Gasket*

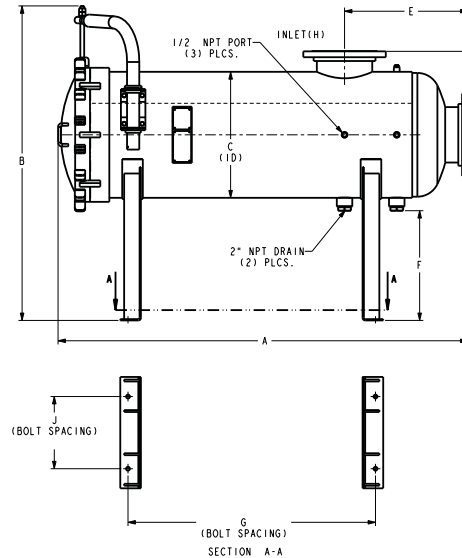
Model	Part #			
	Buna-N	EPDM	FKM Viton®	Fluoropolymer encapsulated Viton®
2 round	4150-5155	-	-	-
3 round	4151-5365	-	4150-5319	-
4 round	4151-1467	4154-5467	4152-8467	-
5 round	4151-1470	4154-5470	4152-8470	-
7 round	4151-1472	4154-5472	4152-8472	-
8 round	4154-1474	4154-5474	4152-8474	-
12 round	4150-5441	4150-5444	4150-5422	-
15 round	4150-5399	4150-5225	-	-
19 round	4150-5367	-	-	4150-5577

*Optional O-ring shipped separately

Reference Dimensions

No. & Model	Cartridges Qty.	Horizontal Model Dimensions (in.)									Shipping Weight (lbs.)
		A	B	C	D	E	F	G	H	J	
MF02	2	69.31	57.44	14.063	11.25	20.00	27.09	46.00	6 NPS	8.00	615
MF03	3	69.81	58.44	16.063	12.25	21.00	26.09	46.00	6 NPS	8.00	715
MF04	4	75.20	58.00	18.063	13.25	22.00	25.09	48.00	8 NPS	10.00	790
MF05	5	75.47	59.00	20.063	14.25	22.00	24.09	48.00	8 NPS	12.00	920
MF07	7	78.73	60.00	22.063	15.25	24.00	23.09	48.00	10 NPS	12.00	1120
MF08	8	79.00	61.00	24.063	16.25	24.00	22.09	48.00	10 NPS	14.00	1245
MF12	12	85.93	64.06	30.063	20.25	28.00	19.03	52.00	12 NPS	20.00	1915
MF15	15	92.95	65.06	32.063	21.50	30.00	18.03	54.00	14 NPS	22.00	2175
MF19	19	95.32	73.31	36.063	23.75	34.00	22.03	56.00	16 NPS	26.00	2870

Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, media type and inlet viscosity. Consult media flow charts for each application. Shipping weights and dimensions are for 150 psig nominal design only.



Ordering Information

MF													
Material of Construction		Design Series		Cartridge Qty.		Vessel Orientation		Inlet Outlet Size		Inlet Outlet Connection Type		Finish	
Code	Description	Code	Description	Code	Amount	Code	Description	Code	Inches	Code	Description	Code	Description
C	Carbon Steel	N	Non-code	01	1	V	Vertical	06	6	F	ANSI 150 lb. flange	C	Painted
G	304L Stainless Steel	U	ASME Code	02	2	H	Horizontal	08	8	H	ANSI 300 lb. flange	B	Glass bead blast
S	316L Stainless Steel			03	3			10	10			P	Passivated
				04	4			12	12			E	Electropolished
				05	5			14	14				
				07	7			16	16				
				08	8								
				12	12								
				15	15								
				19	19								

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DS_IP_Mega Flow Vessel Rev. A

Fulflo® MP Filter Vessel

ASME code R.O. pre-filter membrane protector (MP) filter vessel

MP filter vessels are ideal for a wide range of filtration applications including pre-filtration of brackish, process and sea water. All MP Series vessels are built in accordance with ASME boiler and Pressure Vessel Code, U stamp. All MP vessels have dual purpose bottom seats for use with either double-open-end or 222 O-ring design.



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Benefits

- Flow rates from 108gpm to 3520gpm
- Maximum design pressure is 150psi (10.3bar) at 250°F (121°C)
- 304L or 316L stainless steel
- Stainless steel welded attachments
- Swing bolt closure for quick opening, with hex nuts for use with pneumatic tools
- Optional stainless steel bolting and davit assembly
- Horizontal vessels provide for easy cartridge installation
- Dual purpose cartridge seats for use with double open end and 2-222 O-ring single-open-end cartridges
- Glassbead blasted exteriors
- Passivated interior and exterior surfaces to remove free carbon and protect against corrosion
- Buna-N O-ring closure seal provides positive cover sealing
- Horizontal vessel utilizes removable internal cartridge support plate
- Large size clean and dirty drain for uniform piping and valve size

Applications

- Brackish and Sea Water
- Semiconductor Process Water
- Boiler Feed Water
- Reverse Osmosis Pre-filtering
- Potable Water
- Electronic Rinse Water
- Deionized Water



ENGINEERING YOUR SUCCESS.

Fulflo® MP Filter Vessel

Fulflo® MP Filter Series throughput based on flow of water (in gpm) per 10-inch cartridge

10 inch Cartridges	Filter Model	At 3gpm† per 10 inch		At 3.5gpm per 10 inch		At 4.5gpm per 10 inch		At 5gpm per 10 inch	
		gpm‡	mgd	gpm	mgd	gpm	mgd	gpm	mgd
VERTICAL VESSELS									
36	MP12-3-3FK1	108	0.2	126	0.2	162	0.2	180	0.3
48	MP12-4-4FK1	144	0.2	168	0.3	216	0.3	240	0.3
63	MP21-3-4FK1	189	0.3	221	0.4	284	0.4	315	0.5
84	MP21-4-4FK1	252	0.4	294	0.5	378	0.5	420	0.6
87	MP29-3-4FK1	261	0.4	305	0.5	392	0.6	435	0.6
105	MP35-3-6FK1	315	0.5	368	0.6	473	0.7	525	0.8
116	MP29-4-6FK1	348	0.5	406	0.7	522	0.8	580	0.8
120	MP40-3-6FK1	360	0.5	420	0.7	540	0.8	600	0.9
140	MP35-4-6FK1	420	0.6	490	0.8	630	0.9	700	1.0
156	MP52-3-6FK1	468	0.7	546	0.9	702	1.0	780	1.1
160	MP40-4-6FK1	480	0.7	560	0.9	720	1.0	800	1.2
208	MP52-4-8FK1	624	0.9	728	1.2	936	1.3	1040	1.5
258	MP86-3-8FK1	774	1.1	903	1.5	1161	1.7	1290	1.9
309	MP103-3-8FK1	927	1.3	1082	1.8	1391	2.0	1545	2.2
344	MP86-4-10FK1	1032	1.5	1204	2.0	1548	2.2	1720	2.5
412	MP103-4-10FK1	1236	1.8	1442	2.4	1854	2.7	2060	3.0
472	MP118-4-12FK1	1416	2.0	1652	2.7	2124	3.1	2360	3.4
704	MP177-4-14FK1	2115	3.0	2464	4.1	3168	4.6	3520	5.1
HORIZONTAL VESSELS									
120	MP40H-3-6FK1	360	0.5	420	0.7	540	0.8	600	0.9
156	MP52H-3-6FK1	468	0.7	546	0.9	702	1.0	780	1.1
160	MP40H-4-6FK1	480	0.7	560	0.9	720	1.0	800	1.2
208	MP52H-4-8FK1	624	0.9	728	1.2	936	1.3	1040	1.5
258	MP86H-3-8FK1	774	1.1	903	1.5	1161	1.7	1290	1.9
309	MP103H-3-8FK1	927	1.3	1082	1.8	1391	2.0	1545	2.2
344	MP86H-4-10FK1	1032	1.5	1204	2.0	1548	2.2	1720	2.5
412	MP103H-4-10FK1	1236	1.8	1442	2.4	1854	2.7	2060	3.0
472	MP118H-4-12FK1	1416	2.0	1652	2.7	2124	3.1	2360	3.4
704	MP177H-4-14FK1	2112	3.0	2464	4.1	3168	4.6	3520	5.1

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

‡ gpm = gallons per minute; mgd = millions of gallons per day

Optional Shell O-Ring/Gasket* refer to price book for details.

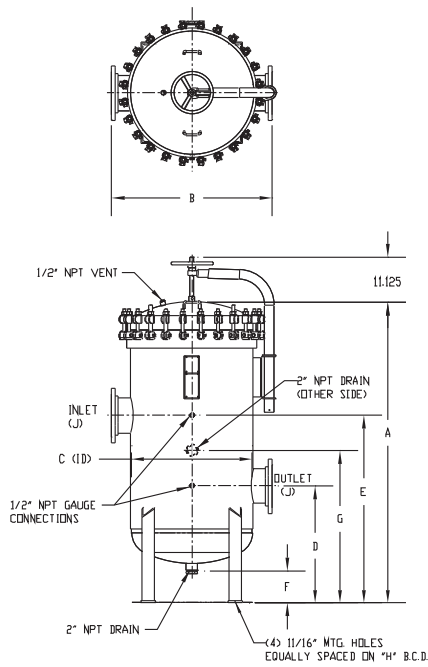
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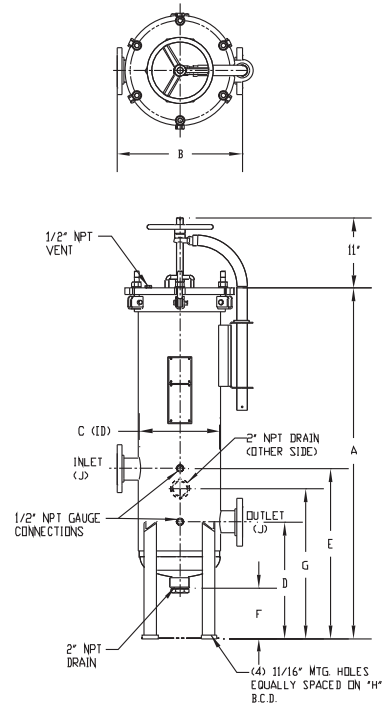


Fulflo® MP Filter Vessel

ALL OTHER MODELS



MP12, MP21



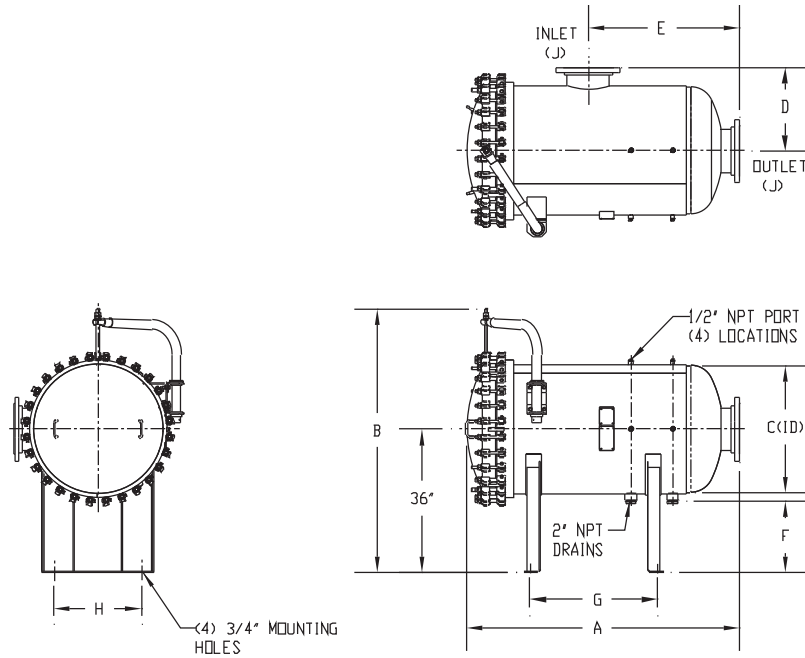
Design Specifications

No. & Model	Cartridges		Dimensions (in.)									Shipping Weight (lbs.)
	Qty.	Length (in.)	A	B	C	D	E	F	G	H	J	
MP12-3-3FK1	12	30	67.75	20.00	12.813	18.50	27.00	8.00	23.75	12.50	3 NPS	390
MP12-4-4FK1	12	40	77.75	20.00	12.813	18.50	27.00	8.00	23.75	12.50	4 NPS	420
MP21-3-4FK1	21	30	68.75	24.00	16.063	19.25	27.75	8.00	24.50	15.75	4 NPS	500
MP21-4-4FK1	21	40	78.75	24.00	16.063	19.25	27.75	8.00	24.50	15.75	4 NPS	530
MP29-3-4FK1	29	30	75.25	26.00	18.063	22.00	33.25	8.00	28.25	17.88	4 NPS	570
MP29-4-6FK1	29	40	85.25	26.00	18.063	22.00	33.25	8.00	28.25	17.88	6 NPS	620
MP35-3-6FK1	35	30	76.00	28.00	20.063	22.50	34.00	8.00	28.75	19.88	6 NPS	650
MP35-4-6FK1	35	40	86.00	28.00	20.063	22.50	34.00	8.00	28.75	19.88	6 NPS	680
MP40-3-6FK1	40	30	77.00	30.00	22.063	23.00	34.25	8.00	29.25	21.88	6 NPS	710
MP40-4-6FK1	40	40	87.00	30.00	22.063	23.00	34.25	8.00	29.25	21.88	6 NPS	750
MP52-3-6FK1	52	30	80.75	32.00	24.063	25.50	40.00	8.00	32.75	23.75	6 NPS	790
MP52-4-8FK1	52	40	90.75	32.00	24.063	25.50	40.00	8.00	32.75	23.75	8 NPS	860
MP86-3-8FK2	86	30	86.75	40.00	30.063	29.00	46.50	8.00	37.75	30.00	8 NPS	1280
MP86-4-10FK2	86	40	96.75	40.00	30.063	29.00	46.50	8.00	37.75	30.00	10 NPS	1380
MP103-3-8FK2	103	30	87.75	42.00	32.063	29.50	47.00	8.00	38.25	32.00	8 NPS	1410
MP103-4-10FK2	103	40	97.75	42.00	32.063	29.50	47.00	8.00	38.25	32.00	10 NPS	1510
MP118-4-12FK2	118	40	102.00	46.00	36.063	32.50	52.25	8.00	42.00	35.88	12 NPS	1830
MP177-4-14FK2	176	40	107.00	54.00	42.063	35.00	57.00	8.00	45.50	42.00	14 NPS	2650

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Fulflo[®] MP Filter Vessel



Design Specifications

No. & Model	Cartridges		Dimensions (in.)									Shipping Weight (lbs.)
	Qty.	Length (in.)	A	B	C	D	E	F	G	H	J	
MP40H-3-6FK1	40	30	55.50	60.0	22.063	15.00	32.00	23.00	23.00	12.00	6 NPS	850
MP40H-4-6FK1	40	40	65.50	60.0	22.063	15.00	36.00	23.00	32.00	12.00	6 NPS	880
MP52H-3-6FK1	52	30	55.25	61.0	24.063	16.00	32.00	22.00	23.00	14.00	6 NPS	920
MP52H-4-8FK1	52	40	65.25	61.0	24.063	16.00	36.00	22.00	32.00	14.00	8 NPS	990
MP86H-3-8FK1	86	30	60.25	64.0	30.063	20.00	34.00	19.00	24.00	20.00	8 NPS	1490
MP86H-4-10FK1	86	40	68.25	64.0	30.063	20.00	38.00	19.00	32.00	20.00	10 NPS	1560
MP103H-3-8FK1	103	30	60.75	66.0	32.063	21.00	34.00	18.00	24.00	22.00	8 NPS	1620
MP103H-4-10FK1	103	40	68.75	66.0	32.063	21.00	38.00	18.00	32.00	22.00	10 NPS	1700
MP118H-4-12FK1	118	40	72.00	67.0	36.063	23.00	40.00	16.00	32.00	26.00	12 NPS	2040
MP177H-4-14FK1	176	40	74.75	77.6	42.063	27.00	41.00	13.00	32.00	32.00	14 NPS	2820

Ordering Information

Material of Construction		Cartridge Qty.		Design Series		Cartridge Length		Inlet Outlet Flange Options		Coverlift Option	
Code	Description	Orientation	Range	Code	Description	Code	Inches	Code	Code	Description	
4L	304 LSS	Vertical	12-176	Blank	Vertical	3	30	3F	No symbol	None	
6L	316L SS	Horizontal	40-176	H	Horizontal	4	40	4F	K1	Mechanical	
								6F	K2	Hydraulic	
								8F			
								10F			
								12F			
								14F			

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DS_IP_MP Vessel Rev. B

Fulflo® P Filter Vessel

ASME code high efficiency and high flow rate vessel

Fulflo® P series multi-cartridge filter vessels are designed for high flow rate where the contaminants can be effectively removed by pleated paper (surface type) media.

The P vessel series is designed for use with the Fulflo® Flo-Pac® 718 and 736 pleated filter cartridge series.



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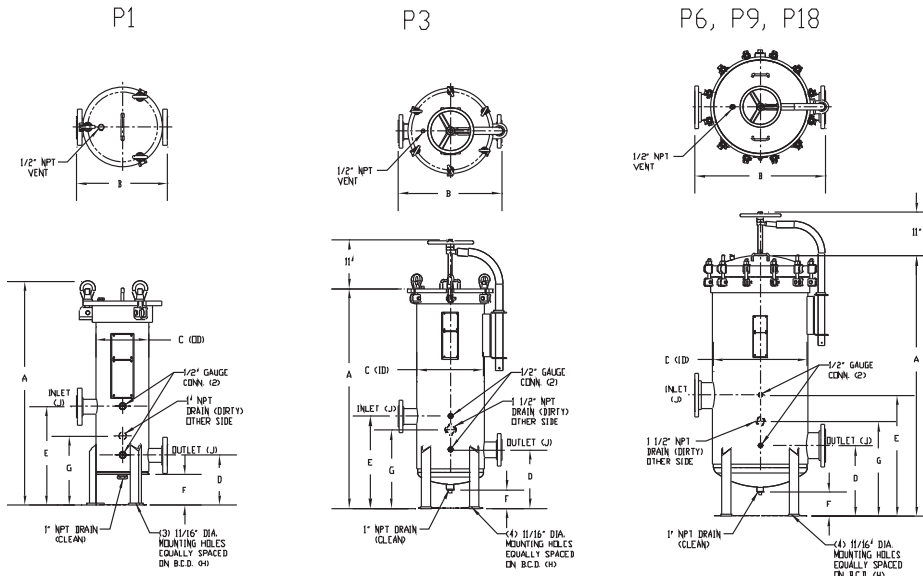
Benefits

- Designed and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, U or UM stamp with 150psi (10.3bar) rating at 250°F (121°C)
- Mechanical coverlifts
- Designed for minimum pressure drop
- Cartridge capacity from 1 to 18 cartridges
- All P models feature swing bolts for easier cleaning and servicing
- O-ring seals provide positive closure sealing
- Optional hydraulic coverlifts

Applications

- Fuels
- Lubricating Oils
- Solvents
- Coolants
- Refineries
- Hydraulic Oils
- Rolling Mill Oils
- Processing Liquids

Fulflo® P Filter Vessel



Reference Dimensions

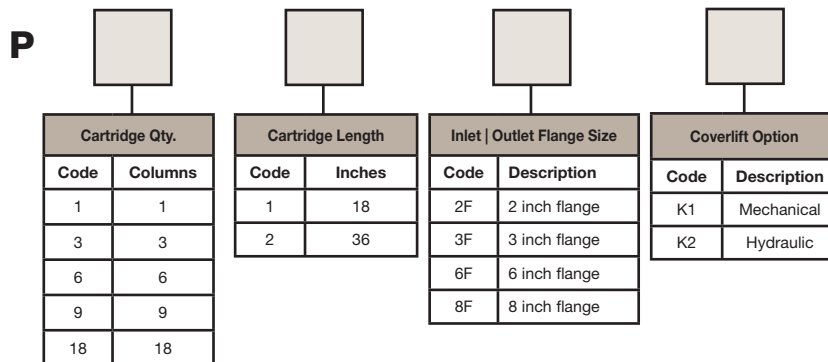
Model	Cartridge No. & Length (in.)	Maximum Flow† (gpm)	Dimensions (in.)									Shipping Weight†† (lbs.)
			A	B	C	D	E	F	G	H	J	
P1-1-2F	1 (18)	50	36.13	14.88	8.63	8.19	16.19	5.06	11.31	7.81	2	180
P1-2-2F	1 (36)	100	54.13	14.88	8.63	8.19	16.19	5.06	11.31	7.81	2	200
P3-1-3F	3 (18)	150	38.74	22.50	15.06	13.38	21.00	5.00	17.88	14.75	3	405
P3-2-3F	3 (36)	300	57.31	22.50	15.06	13.38	21.00	5.00	17.88	14.75	3	465
P6-2-6F	6 (36)	600	65.00	29.25	20.06	16.50	31.00	5.00	22.56	19.75	6	790
P9-2-6F	6 (36)	900	67.19	33.38	24.06	18.00	31.00	6.00	24.19	23.75	6	985
P18-2-8F	18 (36)	1800	76.06	42.25	32.06	23.63	41.25	6.00	31.69	31.81	8	1570

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.
 †† Shipping weights and dimensions are for 150psig nominal design only.

Material of Construction	Max. Allowable Pressure (psi @ 250°F)*	Max. Allowable Temperature
Carbon Steel	150psi (10.3bar)	250° F (121° C)

*Operating temperature limited to 250°F by standard Buna-N O-ring material and exterior paint.

Ordering Information



Specifications are subject to change without notification.
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ParMax™ Multi-Cartridge Filter Vessel

ASME code, high-flow capacity vessel

ParMax™ multi-cartridge filter vessels are designed to accept ParMax filter cartridges for flows of up to 500 gpm (1892 lpm) each 60" length. They provide significant size and capital cost reduction compared with vessels containing conventional size filter cartridges. The horizontal design and coreless cartridge configuration make cartridge change fast and easy. ParMax filter elements are inside/out flow direction and are available in either 20", 40" or 60" length. Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, media type and inlet velocity. Consult ParMax cartridge flow charts for each application.



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Benefits

- Horizontal design makes cartridge change easier and quicker without need for elevated platform. Vertical orientation is also available.
- Large diameter cartridge yields high flow rate per cartridge resulting in fewer cartridges and smaller, lower cost vessels.
- Inside-out flow direction captures contaminants on the inside of the filter which makes changing cartridges less messy and quicker.
- Built to ASME Boiler And Pressure Code to insure integrity.
- Cartridges have external O-ring for positive seal
- Available in carbon steel, 304L stainless steel and 316L stainless steel for a wide variety of applications. Other alloys also available.
- O-ring cover seal for quick and positive vessel cover sealing.
- Cover locating pin for quick and accurate alignment.
- Available in 150 PSI and 300 PSI pressure ratings: custom pressure ratings available.

Applications

- Reverse Osmosis Filtration
- Potable Water
- Process Water
- Edible Oils
- Lubricants
- Coolants
- Cutting Oils
- Solvents
- Chemicals

ParMax™ Filter Vessel

ParMax Filter Cartridges

- One six-inch diameter cartridge can handle up to 500gpm flow (60" length)
- The inside-to-outside flow allows for a high contaminant holding capacity
- High-flow and long filter life
- Ideal choice for a wide variety of critical process applications

Standard Design

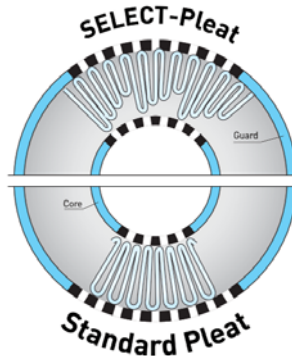
The best of pleated and large diameter technologies are combined in Parker's ParMax™ high-flow filter cartridges. The unique layered construction provides excellent retention across a wide range of flux rates. ParMax cartridges are available with polypropylene and microfiberglass media in absolute (99.98%) ratings from 1 to 90 microns.

SELECT Design

The unique layered construction and staged pleating of the ParMax™ Select cartridges provide improved dirt-holding capacity and retention across a wide range of flux rates. ParMax Select cartridges are available with polypropylene pleated depth media and microfiberglass media in absolute (99.98%) ratings from 1 to 90 microns.

Typical Aqueous Flow Rates

Optimal Flow Rate	Surface Area (ft²)	Flux Rate (gpm/ft²)
20" Cartridge		
120 GPM		
Standard	25	4.80
Select	32	3.75
40" Cartridge		
240 GPM		
Standard	50	4.80
Select	62	3.87
60" Cartridge		
360 GPM		
Standard	75	4.80
Select	94	3.83
Recommended Max. Flow Rate	Surface Area (ft²)	Flux Rate (gpm/ft²)
20" Cartridge		
175 GPM		
Standard	25	7.00
Select	32	5.47
40" Cartridge		
350 GPM		
Standard	50	7.00
Select	62	5.65
60" Cartridge		
500 GPM		
Standard	75	6.67
Select	94	5.32



With Select Pleating, there is more open area on the inside of the cartridge for additional contaminant-holding capacity.

Using higher flow rates than optimal can result in reduced cartridge efficiency and life as well as system filtrate velocities exceeding 10 feet per second.

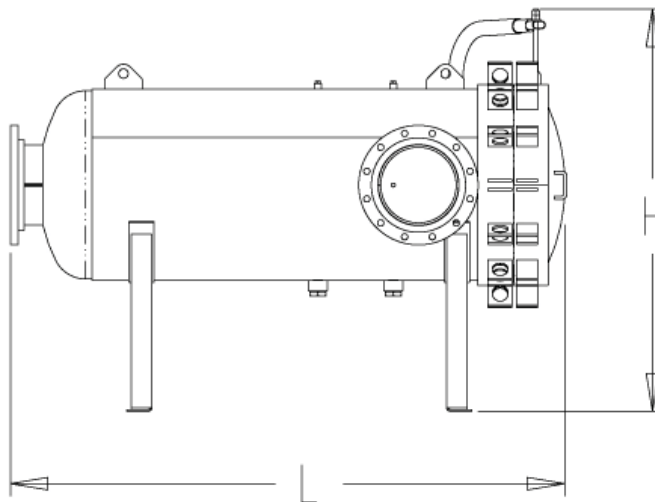
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ParMax™ Filter Vessel

Design Specifications (All dimensions are inches)

Model *Material of Construction (C, G or S)	Cartridge Qty. in Vessel	H Overall Height (Horizontal)	L Overall Length (Horizontal)	Vessel Nominal Diameter	Optimal Inlet/Outlet Size	Max. Flow (gpm/ft²)†	Empty Vessel Weight‡ (lbs.)
40 INCH CARTRIDGE(S) - HORIZONTAL DESIGN							
PX * U0140H03F	1	43.0	60.2	8.0	3	350	250
PX * U0340H06F	3	58.4	69.8	16.0	6	1,050	694
PX * U0540H08F	5	59.0	77.0	20.0	8	1,750	935
PX * U0740H10F	7	60.0	79.7	22.0	10	2,450	1106
PX * U0840H10F	8	61.0	79.9	24.0	10	2,800	1248
PX * U1240H12F	12	64.0	88.4	30.0	12	4,200	1672
PX * U1540H14F	15	65.0	90.8	32.0	14	5,250	1938
PX * U1940H16F	19	67.3	94.5	36.0	16	6,650	2593
60 INCH CARTRIDGE(S) - HORIZONTAL DESIGN							
PX * U0160H04F	1	43.0	81.3	8.0	4	500	325
PX * U0360H08F	3	58.4	91.8	16.0	8	1,500	756
PX * U0560H10F	5	59.0	99.0	20.0	10	2,500	1070
PX * U0760H10F	7	60.0	99.7	22.0	10	3,500	1181
PX * U0860H12F	8	61.0	101.9	24.0	12	4,000	1389
PX * U1260H14F	12	64.0	109.7	30.0	14	6,000	1834
PX * U1560H16F	15	65.0	112.9	32.0	16	7,500	2113
PX * U1960H18F	19	67.3	116.5	36.0	18	9,500	2828

†Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, media type and inlet velocity. Consult media flow charts for each application.
‡Shipping weights and dimensions are for 150 PSIG nominal design only. 40" & 60" refer to nominal cartridge length.



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ParMax™ Filter Vessel

Design Specifications (All dimensions are inches)

Model *Material of Construction (C, G or S)	Cartridge Qty. in Vessel	H Overall Height (Vertical)	V Access Height (Vertical)	Vessel Nominal Diameter	Optimal Inlet/Outlet Size	Max. Flow† (gpm/ft²)	Empty Vessel Weight‡ (lbs.)
40 INCH CARTRIDGE(S) - VERTICAL DESIGN							
PX * U0140V03F	1	69.4	65.5	8.0	3"	350	250
PX * U0340V06F	3	94.3	81.9	16.0	6"	1,050	694
PX * U0540V08F	5	106.3	90.0	20.0	8"	1,750	935
PX * U0740V10F	7	115.2	98.8	22.0	10"	2,450	1106
PX * U0840V10F	8	115.5	98.8	24.0	10"	2,800	1248
PX * U1240V12F	12	129.0	110.3	30.0	12"	4,200	1672
PX * U1540V14F	15	135.0	115.8	32.0	14"	5,250	1938
PX * U1940V16F	19	143.6	123.4	36.0	16"	6,650	2593

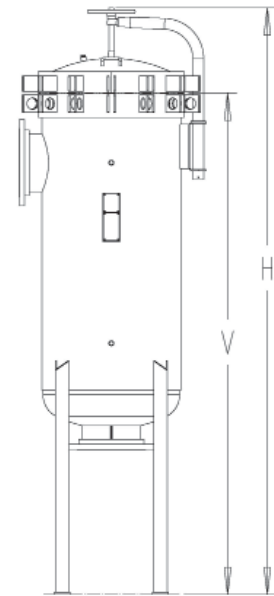
†Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, media type and inlet velocity. Consult media flow charts for each application.

‡Shipping weights and dimensions are for 150 PSIG nominal design only. 40" & 60" refer to nominal cartridge length.

Maximum Operating Conditions

Material of Construction	Max. Operating Pressure (psi @ 250 °F)†	Max. Design Temp.††	Connection type
Carbon Steel	150psi (10.3bar)	250°F (121°C)	F
Carbon Steel	300psi (20.7bar)	250°F (121°C)	H
304 Stainless Steel	150psi (10.3bar)	250°F (121°C)	F
304 Stainless Steel	300psi (20.7bar)	250°F (121°C)	H
316 Stainless Steel	150psi (10.3bar)	250°F (121°C)	F
316 Stainless Steel	300psi (20.7bar)	250°F (121°C)	H

† Operating temperature limited by standard O-ring material and exterior paint.



Ordering Information

Material		Design		Cartridge Qty.		Cartridge Length		Vessel Orientation		Optimal Inlet/Outlet Size		Inlet/Outlet Connection Type		Finish	
Code	Description	Code	Description	Code	Amount	Code	Inches	Code	Description	Code	Inches	Code	Description	Code	Description
C	Carbon Steel	U	ASME Code	01	1	40	40	H	Horizontal	03	3	F	ANSI 150 lb. flange	C	Painted
G	304L Stainless Steel			03	3	60	60	V	Vertical*	04	4	H	ANSI 300 lb. flange	B	Glass Bead Blast
S	316L Stainless Steel			05	5					06	6			P	Passivated
				07	7					08	8				
				08	8					10	10				
				12	12					12	12				
				15	15					14	14				
				19	19					16	16				
										18	18				

*60" vertical not recommended.

F=150 PSI vessel design
H=300 PSI vessel design

C is valid for carbon steel design only.
B & P are valid for stainless steel design only.

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DS_GN_ParMax Vessel 11/11 Rev. A



Fulflo® S Multi-Cartridge Filter Vessel

ASME code filter vessel for liquid and gas applications

Fulflo® S series multi-cartridge filter vessels meet a broad range of liquid and gas applications for flow rates up to 2,040gpm (7,720 lpm). All details of design, materials, construction and workmanship of the S vessel series conform to ASME code.

The S vessel series accommodates double-open-end (DOE) or single-open-end (SOE) filter cartridges in 10 in., 20 in., 30 in. & 40 in. equivalents.



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Benefits

- Built in accordance with ASME boiler and pressure vessel code
- Available in 150psi (10.3bar) and 300psi (20.7bar) designs
- Mechanical coverlifts standard on most models
- S85 and S102 feature hydraulic coverlifts (available on all models as an option)
- Dual purpose cartridge seats for use with DOE and 2-222 O-ring SOE cartridges
- O-ring closure seal provides positive cover sealing
- All S models feature swing bolts with closures for quick cleaning and servicing
- Accepts DOE or SOE cartridges

Applications

- Liquid
- Gas
- Food & Beverage
- Chemical Processes
- Petrochemical
- Paints & Coatings

Fulflo® S Filter Vessels

150 psi (10.3bar) Design Specifications

No. & Model	Cartridges		Max. Flow (gpm)	Dimensions (in.)									Shipping Weight (lbs.)
	Qty.	Length (in.)		A†	B	C	D	E	F	G	H	J††	
S25-3-4F	25	30	375	55.88	26.00	18.06	15.50	28	5	20.44	17.76	4	515
S25-4-6F	25	40	500	69.75	26.00	18.06	16.50	31	5	22.25	17.76	6	540
S35-3-4F	35	30	525	58.19	29.25	20.06	16.50	31	5	22.56	19.77	4	640
S35-3-6F	35	30	525	58.19	29.25	20.06	16.50	31	5	22.56	19.77	6	645
S35-4-6F	35	40	700	68.25	29.25	20.06	16.50	31	5	22.56	19.77	6	695
S40-3-6F	40	30	600	60.25	30.75	22.06	18.00	32	5	23.31	21.70	6	810
S52-3-4F	52	30	780	63.69	33.38	24.06	20.50	34	5	27.56	23.72	4	855
S52-3-6F	52	30	780	63.69	33.38	24.06	20.50	34	5	27.56	23.72	6	865
S52-4-8F	52	40	1040	73.69	33.38	24.06	20.50	34	5	27.56	23.72	6	900
S85-3-8F	85	30	1275	67.25	39.75	30.06	24.00	40	6	31.50	29.81	8	1170
S85-4-8F	85	40	1700	73.63	39.75	30.06	24.00	40	6	31.50	29.81	8	1200
S102-3-8F	102	30	1530	68.63	42.25	32.06	23.63	41.25	6	31.69	31.81	8	1450
S102-4-8F	102	40	2040	79.94	42.25	32.06	23.63	41.25	6	31.69	31.81	8	1600

† Add 5 in to this dimension for hydraulic coverlift.
 †† Inlet and outlet size standard ASA flanges.

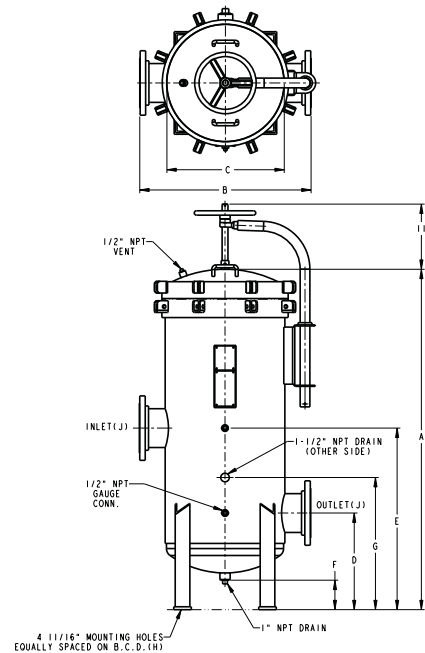
Maximum Operating Conditions

Material of Construction	Max. Operating Pressure (psi @ 250 °F)†	Max. Design Temp.††	Configs.
Carbon Steel	150psi (10.3bar)	500°F (260°C)	S
Carbon Steel	300psi (20.7bar)	500°F (260°C)	HS
304 Stainless Steel	150psi (10.3bar)	300°F (150°C)	S
304 Stainless Steel	300psi (20.7bar)	300°F (150°C)	HS
316 Stainless Steel	150psi (10.3bar)	400°F (204°C)	S
316 Stainless Steel	300psi (20.7bar)	400°F (204°C)	HS

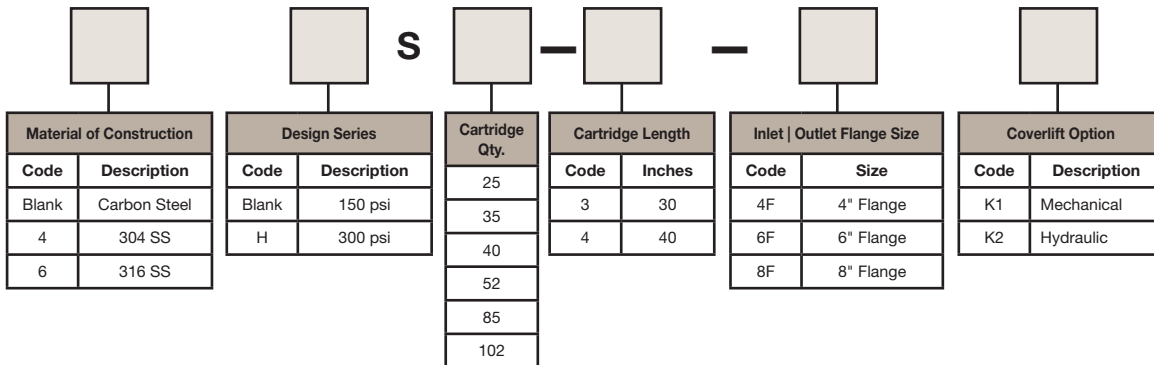
† Operating temperature limited by standard O-ring material and exterior paint.

Optional Shell O-Ring/Gasket*					
Model	Part #				
	Buna-N	EPDM	FKM Viton®	Fluoropolymer	Neoprene
25 round	4151-1467	4154-5467	4152-8467	4150-5259	-
35 round	4150-5003	4150-5006	4150-5004	4150-5037	-
40 round	4151-1472	4154-5472	4152-8472	4151-5472	4154-1472
52 round	4150-5007	4150-5010	4150-5008	4150-5044	-
85 round	4150-5034	-	4150-5040	-	4150-5444
102 round	4150-5011	-	4150-5012	4150-5046	-

*Optional O-ring shipped separately



Ordering Information



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DS_IP_S Vessel Rev. A

Fulflo® SF Multi-Cartridge Filter Vessel

ASME code, high flow rate filter vessel

Fulflo® SF multi-cartridge filter vessels meet a broad range of liquid and gas applications. All details of design, materials, construction and workmanship of the SF vessel series conform to ASME code.

The SF Vessel Series accommodates double-open-end (DOE) and single-open-end (SOE) cartridges in 10 in., 20 in., 30 in. and 40 in. equivalents.



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Benefits

- Designed and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, U or UM stamp
- Mechanical coverlifts of carbon steel construction standard on models SF12 and SF19
- Designed for minimum pressure drop
- External welded attachments on stainless steel models are also stainless steel
- Dual purpose cartridge seats for use with double open end & 2-222 O-ring single open end cartridges

- All SF models feature swing bolts with eyenuts for easier cleaning & servicing
- O-ring seals provide positive closure
- Hydraulic coverlifts optional on SF12 and SF19 models

Applications

- Water
- Concentrated Alkalies
- Dilute Acids & Alkalies
- Mineral Acids
- Organic Acids
- Oxidizing Agents
- Solvents
- Petroleum Oils
- Potable Liquids
- Photo Solutions



ENGINEERING YOUR SUCCESS.

Fulflo® SF Filter Vessels

Design Specifications

No. & Model	Cartridges		Flow (gpm)	Dimensions (in.)									Shipping Weight (lbs.)
	Qty.	Length (in.)		A†	B	C	D	E	F	G	H	J††	
SF3-1-2F	3	10	15	26.69	12.69	6.63 OD	8.19	16.19	5.00	11.31	5.81	2	125
SF6-1-2F	6	10	30	26.94	14.88	8.63 OD	8.19	16.19	5.06	11.31	7.81	2	180
SF6-2-2F	6	20	60	37.00	14.88	8.63 OD	8.19	16.19	5.06	11.31	7.81	2	185
SF6-3-2F	6	30	90	47.06	14.88	8.63 OD	8.19	16.19	5.06	11.31	7.81	2	200
SF6-4-3F	6	40	120	58.50	14.88	8.63 OD	8.19	16.19	5.06	12.00	7.81	3	220
SF12-3-3F	12	30	180	53.75	20.50	12.06 ID	13.38	21.00	5.00	17.88	11.68	3	310
SF12-3-4F	12	30	180	53.75	20.50	12.06 ID	13.38	21.00	5.00	17.88	11.68	4	315
SF12-4-4F	12	40	240	60.31	20.50	12.06 ID	13.38	21.00	5.00	17.88	11.68	4	330
SF19-3-4F	19	30	285	50.19	23.50	15.06 ID	13.38	21.00	5.00	17.88	14.75	4	420
SF19-4-4F	19	40	380	60.31	23.50	15.06 ID	13.38	21.00	5.00	17.88	14.75	4	440

† Add 5 inches to this dimension for hydraulic coverlift. †† Inlet and outlet size standard ASA flanges.

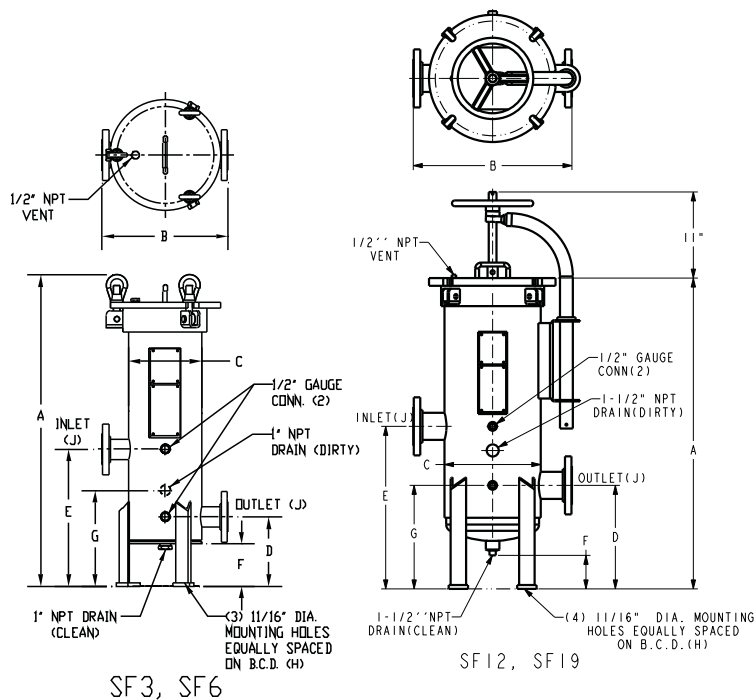
Maximum Operating Conditions

Material of Construction	Max. Operating Pressure (psi @ 250 °F)†	Max. Design Temp.††	Configs.
Carbon Steel	150psi (10.3bar)	500°F (260°C)	SF
Carbon Steel	300psi (20.7bar)	500°F (260°C)	HSF
304 Stainless Steel	150psi (10.3bar)	300°F (150°C)	SF
304 Stainless Steel	300psi (20.7bar)	300°F (150°C)	HSF
316 Stainless Steel	150psi (10.3bar)	400°F (204°C)	SF
316 Stainless Steel	300psi (20.7bar)	400°F (204°C)	HSF

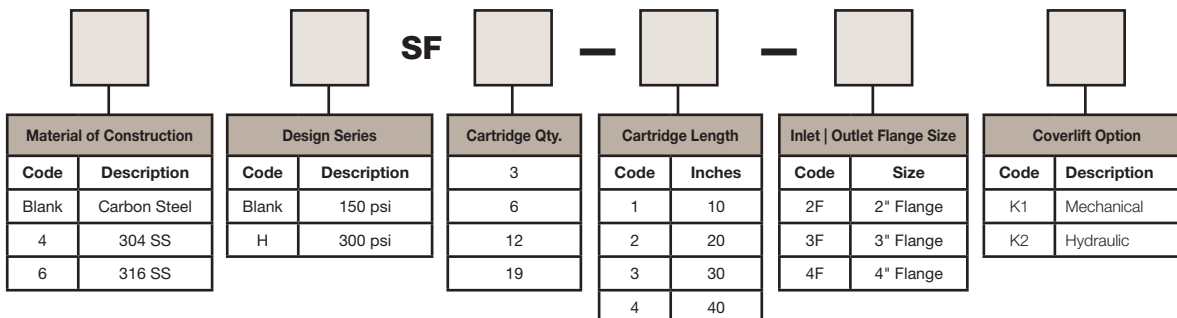
† Operating temperature limited by standard O-ring material and exterior paint.

Optional Shell O-Ring/Gasket*					
Model	Part #				
	Buna-N	EPDM	Viton®	Fluoropolymer	Fluoropolymer encapsulated Viton®
3 round	4151-1366	-	4152-8366	4151-5366	-
6 round	4151-1374	4154-5374	4152-8374	4151-5374	-
12 round	4151-1454	4154-5454	4152-8454	4151-5454	4150-5379
19 round	4151-1460	4154-5460	4152-8460	4151-5460	-

*Optional O-ring shipped separately



Ordering Information



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DS_IP_SF Vessel Rev. A

Fulflo® WH Multi-Cartridge Filter Vessel

304 and 316 stainless steel filter vessel
(non ASME code)

The WH cartridge filter vessels are a lightweight, economical, Non-ASME industrial / commercial design suitable for a wide variety of filtration applications. The 100% stainless steel and passivated finish provides superior corrosion resistance and an excellent appearance. The swing type closure bolts and hinged cover design (up to 35 round) make cartridge change-out quick and easy.



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Benefits

- Hinged cover (up to 35 round) and swing bolt closure for fast, easy cartridge change-out
- Maximum design pressure is 150psi (10.3bar) at 250°F (121°C) for use in a wide range of operating conditions
- 100% stainless steel for corrosion resistance. Bolting is zinc plated carbon steel
- Dual purpose cartridge seats for use with double open end & 2-222 O-ring single open end cartridges
- Standard finish is passivated
- 316 stainless steel cartridge seats, top seat plate assemblies, & tri-fold element guides for long term use
- Standard Buna-N O-ring with optional fluoroelastomer and EPR for wide range of applications
- Standard features include vent, clean drain & dirty drain connections

Applications

- Potable Water
- Process Water
- Edible Oils
- Beverages
- Chemicals
- Solvents
- Pre-Reverse Osmosis

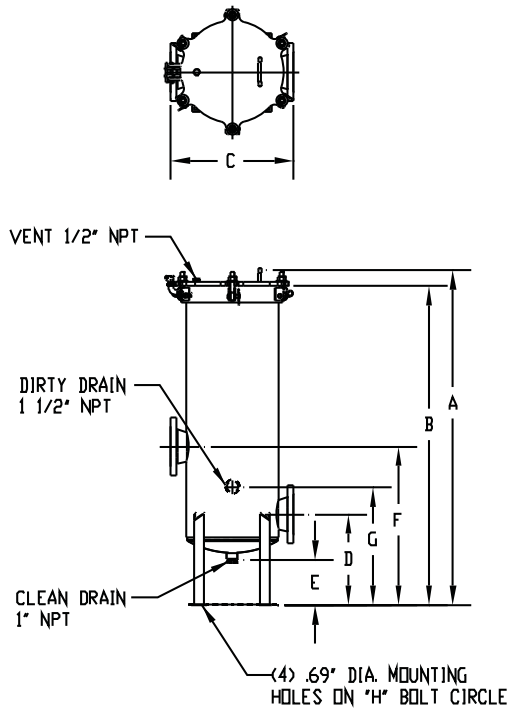
Fulflo® WH Filter Vessels

Design Specifications

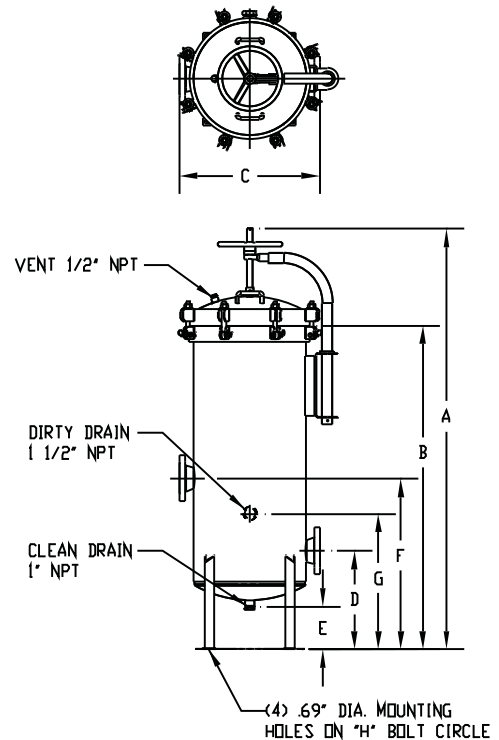
Model *Material of Construction (G or S)	Cartridges		Typical Flow† (gpm)	Dimensions (in.)								Shipping Weight (lbs)
	Qty.	Length (in.)		A	B	C	D	E	F	G	H	
WH*4S1.5T	4	10	28	22.56	19.56	10.06	5.25	3.00	10.75	8.25	9.63	55
WH*4D2T	4	20	56	32.63	29.63	10.38	5.25	3.00	10.75	8.25	9.63	60
WH*4T2T	4	30	84	46.69	39.69	10.38	5.25	3.00	10.75	8.25	9.63	65
WH*4Q2T	4	40	112	56.75	49.75	10.38	5.25	3.00	10.75	8.25	9.63	70
WH*9T3F	9	30	189	51.94	49.38	15.49	14.00	5.75	21.50	18.25	10.46	165
WH*9Q3F	9	40	252	62.00	59.44	15.49	14.00	5.75	21.50	18.25	10.46	180
WH*12T3F	12	30	252	51.94	49.38	16.80	14.00	7.29	21.50	18.25	11.72	175
WH*12Q3F	12	40	336	62.00	59.44	16.80	14.00	7.29	21.50	18.25	11.72	195
WH*16T4F	16	30	336	52.06	49.38	19.05	14.00	7.02	24.50	18.25	13.74	235
WH*16Q4F	16	40	448	62.13	59.44	19.05	14.00	7.02	24.50	18.25	13.74	150
WH*21T4F	21	30	441	52.06	49.38	21.30	14.00	6.29	24.50	18.25	15.76	165
WH*21Q4F	21	40	588	62.13	59.44	21.30	14.00	6.29	24.50	18.25	15.76	185
WH*29T6F	29	30	609	68.35	52.56	23.52	16.00	6.93	27.75	22.00	17.80	395
WH*29Q6F	29	40	812	78.41	62.63	23.52	16.00	6.93	27.75	22.00	17.80	420
WH*35T6F	35	30	735	68.62	52.56	25.52	16.00	6.26	27.75	22.00	19.81	445
WH*35Q6F	35	40	980	78.68	62.63	25.52	16.00	6.26	27.75	22.00	19.81	470

†Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application. Flow rates shown do not consider inlet velocity limitations.

WH4 | WH9 | WH12 | WH16 | WH21



WH29 | WH35



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Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
304 Stainless	150psi (10.3bar)	250°F (121°C)*
316 Stainless		

*Limited to 250°F by the standard Buna-N O-ring

Optional Shell O-Ring/Gasket*			
Model	Part #		
	Buna-N	Viton®	EPDM
4 round	4150-5706	4150-5707	4150-5708
9 round	4150-5702	4150-5703	4150-5704
12 round	4150-5680	4150-5700	4150-5689
16 round	4150-5681	4150-5701	4150-5690
21 round	4150-5612	4150-5686	4150-5691
29 round	4150-5682	4150-5687	4150-5692
35 round	4150-5683	4150-5688	4150-5693

*Optional O-ring shipped separately

Ordering Information

WH										
Design Series	Material of Construction	Cartridge Qty.	Cartridge Length		Inlet Outlet		Inlet Outlet Type		Finish	
	Code Description		Code	Inches	Code	Inches	Code	Description	CODE	DESCRIPTION
	G 304 SS	4	S	10	1.5	1.5	F	ANSI 150lb RF50 Flange	P	Passivated
	S 316L SS	9	D	20	2	2	T	FNPT		
		12	T	30	3	3				
		16	Q	40	4	4				
		21			6	6				
		29								
		35								

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DS_IP_WH Vessel Rev. A

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Bag Filter Vessel Series



Fulflo® CB Filter Vessel

Carbon steel, 304 & 316 stainless steel bag filter vessel

Fulflo® EB Multi-Bag Filter Vessel

304 stainless steel, commercial (non ASME code) design

Fulflo® EB Single Bag Filter Vessel

304 stainless steel, commercial (non ASME code) design

Fulflo® FB Filter Vessel

Designed for economical filtration of liquids and gases

Fulflo® SB Filter Vessel

ASME code single and multiple bag vessels for high flow rates and high solids retention



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Fulflo® CB Bag Filter Vessels

Carbon steel, 304/316 stainless steel,
non-ASME code bag filter vessel

The Fulflo® CB filter vessel series is an economical design that features the integrity of a swing bolt for fast, easy opening and closing. The CB series is available in either carbon steel, 304 or 316 stainless steel. It comes with standard zinc plated bolts and legs for corrosion resistance but are also offered with stainless steel options. The integral basket support provides a smooth interior for easy cleaning and bag installation.

The Fulflo CB filter vessel is for use with either single or double length bags with flex type bands or flared plastic rings and can also be used with solid ring and plastic ring bags by using the optional bag sealing insert and adding an O-ring under the basket rim. The adjustable legs offer installation flexibility by allowing various inlet elevations and nozzle orientations. Wall mounting brackets are available as well.

The CB filter vessel series replaces the FCB filter vessel series.

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Benefits

- Single O-ring design closure assures quick, positive cover sealing
- Swing bolts for fast, and easy opening and closing of cover
- Maximum design pressure is 175psi (12bar) at 250°F (121°C)
- Commercial engineering non-code design
- Threaded vent & drain connections
- Carbon steel with zinc plated support basket or 304/316 SS with 316 SS support basket
- Optional mounting wall bracket (P/N 0820-6005)
- Adjustable leg height
- Side inlet allows cover to open without disconnecting piping
- Integral basket support design provides a smooth interior for easy wash-out and cleaning
- Pivot pin cover allows cover to remain attached when opened
- Positive seal of “C” style flex band bags prior to closing the vessel cover
- Optional retainer assembly for conversion to solid ring (“G” style) and plastic ring (“Q” style) bags (P/N 5020-5244)
- Zinc plated closure bolts and legs for corrosion resistance

Applications

- Potable Water
- Cutting Oils
- Solvents
- Coolants
- Process Water
- Coatings
- Lubricant

ENGINEERING YOUR SUCCESS.

Fulflo® CB Filter Vessels

Available Finishes

- Enamel exterior paint on carbon steel models
- Glass bead blast finish on stainless models

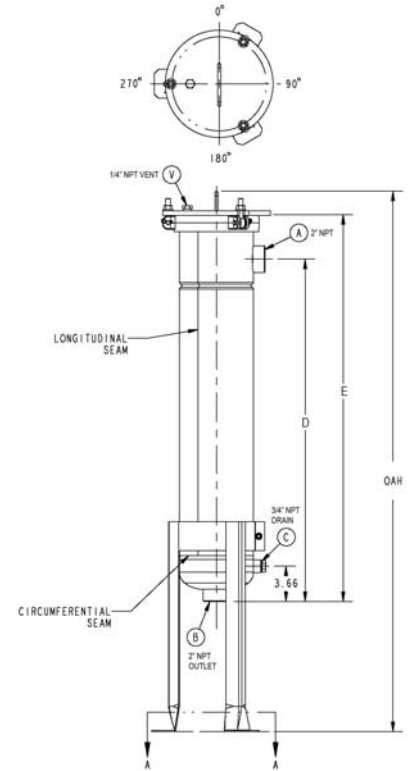
Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAPpsi)
Carbon Steel	175psi (12.1bar)	400°F (204°C)* **
304 Stainless	175psi (12.1bar)	400°F (204°C)**
316 Stainless	175psi (12.1bar)	400°F (204°C)**

* Limited to 250°F by the paint

** Limited to 250°F by the std. Buna-N O-ring

Model *Material of Construction (C, G or S)	Bag Style	Typical Aqueous Flow† (gpm)	Dimensions			Shipping Weight (lbs)	Volume (gal.)
			D	E	OAH		
CB*1S2T	Single	80	20.41	25.00	40.94	65	4.3
CB*1D2T	Double	160	35.41	40.00	55.94	90	7.2

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.



Ordering Information

CB **1**

Material	
Code	Description
C	Carbon Steel
G	304 Stainless Steel
S	316 Stainless Steel

Bag Length	
Code	Inches
S	17.5
D	31.5

Inlet/Outlet Flange Size	
Code	Inches
2T	2" NPT

Support Options	
Code	Description
Blank	Zinc plated carbon steel legs
W	Wall Mounted/No legs
SL	Stainless steel legs
SB	Stainless steel cover bolts
SS	Stainless steel bolts & legs

Example Part# Configuration for Orders (no dashes):
 CBC1S2T
 CBG1D2TW

*Specifications are subject to change without notification.
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Fulflo® EB Multi-Bag Filter Vessel

304 stainless steel, commercial
(non ASME code) design

The Fulflo EB non ASME code multi-bag filter vessels provide economical filtration of a wide variety of liquids in a bottom-in bottom-out, externally polished stainless steel design.

Features include a swing bolt secured, quick opening cover and individual internal bag sealing devices.

EB multi-bag vessels accommodate #2 (double length) Parker "G" style bags with a 7" diameter rim.

These vessels are manufactured from polished and passivated 304 stainless steel and rated for 150 psi (10.3 bar). For added corrosion resistance, all cover bolt, cover davit and mounting legs are also stainless steel.



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Benefits

- Swing bolted o-ring closure seal provides quick and positive seal and easy access to the vessel interior and filter bags.
- ANSI B16.5 flanged inlet & outlet connections
- EPDM seals are standard with other material options available
- Standard threaded FNPT vent and drains
- Standard stainless steel closure bolt hardware
- Polished exterior and pickle passivate interior/exterior for enhanced corrosion resistance
- Bottom in-line connection design

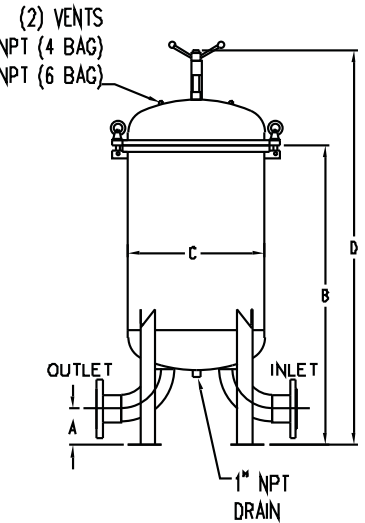
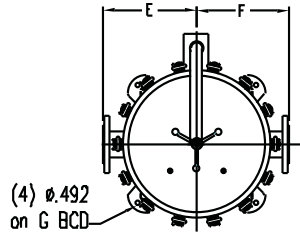
Applications

- Potable Water
- Cutting Oils
- Solvents
- Coolants
- Process Water
- Coatings
- Lubricant

Fulflo® EB Multi-Bag Filter Vessel

Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAPpsi)
304 Stainless	150 psi (10.3 bar)	300°F (149°C)

Optional O-Ring/Gasket*				
Material	4 round		6 round	
	Cover seal part #	Basket seal part #	Cover seal part #	Basket seal part #
Nitrile (Buna-N)	4150-5839-N	4150-5834-N	4150-5841-N	4150-5834-N
EPDM (EPR)**	4150-5839-E	4150-5834-E	4150-5841-E	4150-5834-E
FKM (Viton®)	4150-5839-V	4150-5834-V	4150-5841-V	4150-5834-V



*Optional O-ring shipped separately
**EPDM o-ring is standard.

Typical aqueous flow*		
Model	Bag Qty.	Capacity (gpm)
EBG_4	4 x #2	640
EBG_6	6 x #2	960

*Based on 160 gpm water per #2 double bag

Vessel dimensions								
Model	A	B	C	D	E	F	G	Weight (lbs)
EBG4D4F	5.94	46.06	21.88	62.00	16.00	16.00	27.75	419
EBG6D6F	7.09	53.13	27.81	70.69	17.44	17.44	33.94	660

Ordering Information

4 Bag Vessel

Material of Construction		Bag		Bag Length		Inlet/Outlet Connection	
Code	Description	Code	Qty.	Size	Inches	Code	Size
G	304 SST	4	4	D	31.5	4F	4" Flange

6 Bag Vessel

Material of Construction		Bag		Bag Length		Inlet/Outlet Connection	
Code	Description	Code	Qty.	Size	Inches	Code	Size
G	304 SST	6	6	D	31.5	6F	6" Flange

Replacement Parts

Model(s)	Part Number	Description
All	2390-5004	Cover Bolt Assembly†
All	4150-5834-E	O-ring, Basket EPDM
All	4150-5834-N	O-ring, Basket Buna-N
All	4150-5834-V	O-ring, Basket FKM (Viton®)
All	0370-5325	Basket, Double Length - 304SS
All	5260-5241	Davit Screw
All	2880-5024	Davit Wing Handle
All	5020-5249	Retainer Bag - 304SS
All	5020-5255	Retainer Bag - 316SS
EBG4	4150-5839-E	O-ring, Cover EPDM
EBG4	4150-5839-N	O-ring, Cover Buna-N
EBG4	4150-5839-V	O-ring, Cover FKM (Viton®)
EBG4	4452-5170	Davit Arm
EBG6	4150-5841-E	O-ring, Cover EPDM
EBG6	4150-5841-N	O-ring, Cover Buna-N
EBG6	4150-5841-V	O-ring, Cover FKM (Viton®)
EBG6	4452-5171	Davit Arm

† Bolt assembly includes 1 each bolt, nut, washer, pin and retainer.

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DS_IP_EB Multi Bag Vessel 2/14 Rev. C

Fulflo® EB Single Bag Filter Vessel

304 & 316 stainless steel, commercial
(non ASME code) design

The Fulflo EB non ASME code single bag filter vessels provide economical filtration of a wide variety of liquids in a lightweight, externally polished stainless steel design. Features include a secured swing bolt quick open cover and an internal positive pressure bag hold down device.

EB single bag vessels are available to accommodate common industrial filter bag sizes 1, 2, 3 and 4.

These vessels are manufactured from polished and passivated stainless steel and rated for 150 psi (10.3 bar). For added corrosion resistance, all cover bolt and leg mounting hardware is made from stainless steel as well.



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Benefits

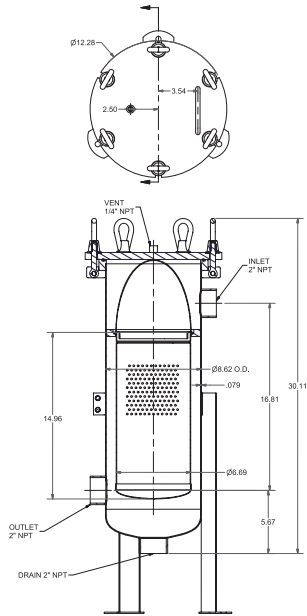
- Swing bolted o-ring closure seal provides quick & positive seal with easy access to the vessel interior and filter bag
- Both FNPT threaded and flanged connections are available in specific models
- NPT models offers dual 2" outlet ports on bottom and side locations
- EPDM seals are standard with other material options available
- Standard threaded FNPT vent & drains
- Standard stainless steel closure bolt hardware
- Polished exterior & pickle passivate interior/exterior for enhanced corrosion resistance
- Mounting legs are adjustable, providing flexibility for installation height & orientation
- Hinged cover for ease of use

Applications

- Potable Water
- Cutting Oils
- Solvents
- Coolants
- Process Water
- Coatings
- Lubricant

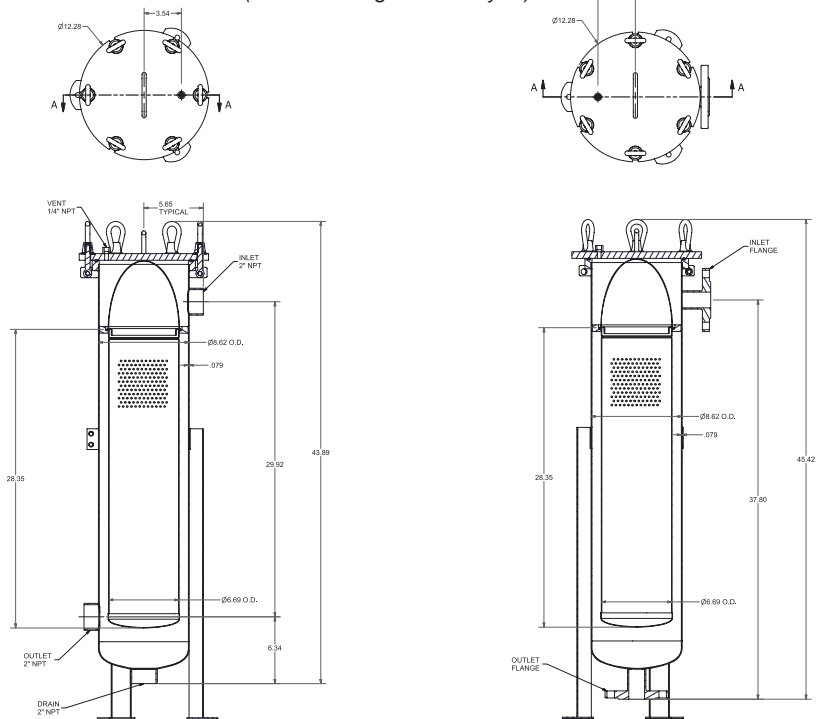
Fulflo® EB Single Bag Filter Vessel

SIZE S



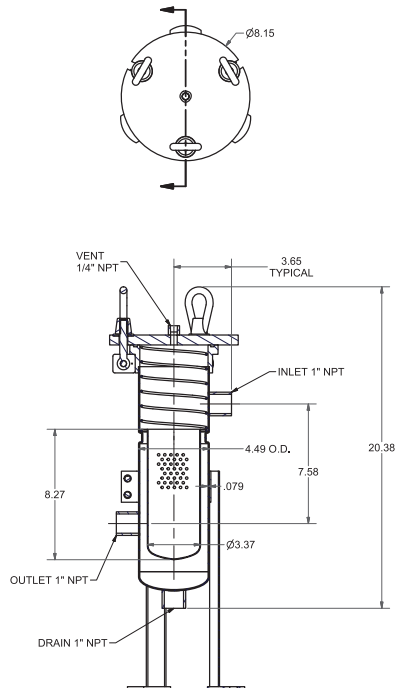
Vessel designed to use (1) #1
Parker 'G' style bag with 7-1/4" diameter rim
Inlet elevation adjustable from approx. 21" to 33"

SIZE D (shown in flange & NPT styles)



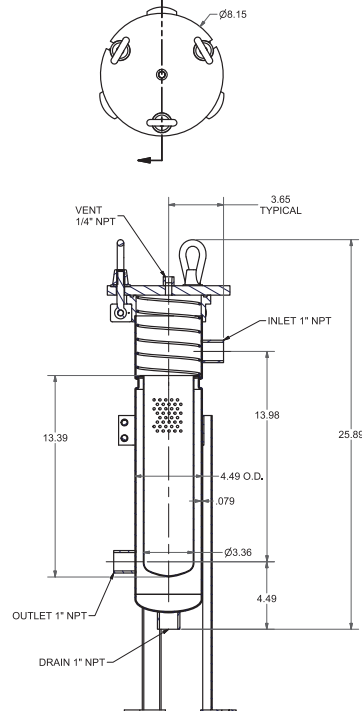
Vessel designed to use (1) #2
Parker 'G' style bag with 7-1/4" diameter rim
Inlet elevation adjustable from approx. 37" to 53"

SIZE 3



Vessel designed to use (1) #3
Parker 'G' style bag with 4-1/4" diameter rim
Inlet elevation adjustable from approx. 15" to 19"

SIZE 4



Vessel designed to use (1) #4
Parker 'G' style bag with 4-1/4" diameter rim
Inlet elevation adjustable from approx. 19" to 30"

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Fulflo® EB Single Bag Filter Vessel

Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
304 & 316 SST	150 psi (10.3 bar)	300°F (149°C)

Optional O-Ring/Gasket		
Material	Cover seal part #	Basket seal part #
Nitrile (Buna-N)	4150-5835-N	4150-5834-N
EPDM (EPR)*	4150-5835-E	4150-5834-E
FKM (Viton®)	4150-5835-V	4150-5834-V**

*EPDM o-ring is standard. O-ring installed under cover and basket rim
 **Vessel temperature limited to 300°F (149°C)

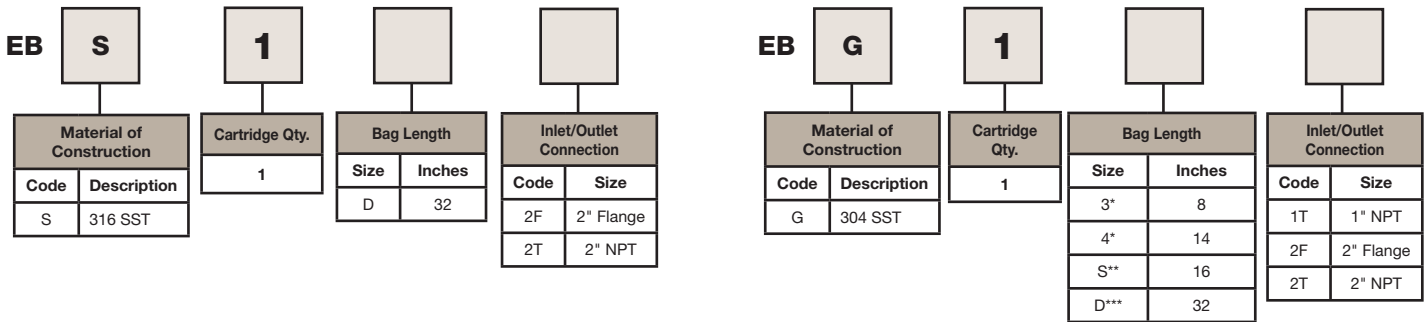
Typical Aqueous Flow

Based on 160 gpm water per #2 double bag & 80 gpm per #1 single bag

Ordering Configurations (Size 1 & 2)							
Part #	Material	Industry Size	Bag Length	Bag Diameter (in.)	Connection	Features	Weights (lbs.)
EBG1S2T	304SS	1	16	7	2" NPT	Side in/bottom out or side out design with adjustable legs	64
EBG1D2T	304SS	2	32	7	2" NPT	Side in/bottom out or side out design with adjustable legs	82
EBG1D2F	304SS	2	32	7	2" Flange	Side in/bottom out with adjustable legs	82
EBS1D2T	316SS	2	32	7	2" NPT	Side in/bottom out or side out design with adjustable legs	82
EBS1D2F	316SS	2	32	7	2" Flange	Side in/bottom out with adjustable legs	82

Ordering Configurations (Size 3 & 4)							
Part #	Material	Industry Size	Bag Length	Bag Diameter (in.)	Connection	Features	Weights (lbs.)
EBG131T	304SS	3	8	4	1" NPT	Side in/bottom out or side out design with adjustable legs	24
EBG141T	304SS	4	14	4	1" NPT	Side in/bottom out or side out design with adjustable legs	29

Ordering Information



* Only avail. in 1" NPT
 ** Only avail. in 2" NPT
 *** Only avail. in 2" NPT & 2" Flange

Size S (1) & D (2) Replacement Parts	
Part Number	Description
2390-5003	Cover Bolt Assembly [†]
4150-5835-E	O-ring, Cover EPDM
4150-5835-N	O-ring, Cover Buna-N
4150-5835-V	O-ring, Cover FKM (Viton®)
4150-5834-E	O-ring, Basket EPDM
4150-5834-N	O-ring, Basket Buna-N
4150-5834-V	O-ring, Basket FKM (Viton®)
0370-5325	Basket, Double Length - 304SS
0370-5343	Basket, Double Length - 316SS
5020-5248	Retainer Bag - 304SS
5020-5254	Retainer Bag - 316SS
3420-5492	Leg Assembly Size 2 - 304SS
3420-5495	Leg Assembly Size 1 - 304SS

[†]Bolt assembly includes 1 each bolt, nut, washer, pin & retainer.

Size 3 & 4 Replacement Parts	
Part Number	Description
2390-5003	Cover Bolt Assembly [†]
4154-5350	O-ring, Cover EPDM
4151-1350	O-ring, Cover Buna-N
4152-8350	O-ring, Cover FKM (Viton®)
4154-5155	O-ring, Basket EPDM
4151-1155	O-ring, Basket Buna-N
4152-8155	O-ring, Basket FKM (Viton®)
0370-5366	Basket, #3
0370-5367	Basket, #4
5830-6004	Spring Retainer
3420-5493	Leg Assembly #3 - 304SS
3420-5494	Leg Assembly #4 - 304SS

[†]Bolt assembly includes 1 each bolt, nut, washer, pin & retainer.

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DS_IP_ EB Single Bag Vessel 2/14 Rev. D

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Fulflo® FB Filter Vessels

ASME code design for economical filtration of liquids and gases

The Fulflo® FB series of bag and strainer filter vessels provides excellent filtration in a wide range of industrial and chemical applications. All details of design, materials, construction and workmanship of the FB Vessel Series conform to ASME code and are available in non-code design and construction.



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Benefits

- Single O-ring design closure assures quick, positive cover sealing (O-rings are not required to seal filter bags.)
- Swing bolts with eye nuts for fast, easy opening and closing of cover
- Buna-N O-ring standard with EPDM, Viton® and fluoropolymer available
- Maximum design pressure is 150psi (10.3bar) at 450°F** (232°C)
- ASME Code UM stamp is standard (U stamp is optional)
- Threaded vent and drain connections
- Adjustable leg height. Threaded or flanged inlet and outlet
- Side inlet; cover opens without disconnecting piping
- Side inlet, bottom outlet and crevice-free welded design provide a smooth interior for easy wash-out and cleaning
- Hinged cover for easy opening
- Positive seal of "C" style flex band bags prior to closing the vessel cover
- Optional hold-down assembly for conversion to "G" style bag media seal available.

Applications

- Potable Water
- Process Water
- Coatings
- Lubricants
- Coolants
- Cutting Oils
- Solvents

Fulflo® FB Filter Vessels

Design Specifications

Model	Cartridge No. & Length (in.)	Typical Aqueous Flow† (gpm)	Typical Dimensions (in)					Shipping Wt. (lbs)	Volume (gal)
			A	B	C	D	E		
FB11-2	Single	80	43.06	5.75	35.63	13.19	2 NPT	90	5.4
FB11-2F	Single	80	43.06	8.00	35.63	12.00	2 NPS	100	5.4
FB12-2	Double	160	53.94	5.75	46.50	13.19	2 NPT	95	7.8
FB12-2F	Double	160	53.94	8.00	46.50	12.00	2 NPS	105	7.8
FB12-3F	Double	160	53.94	8.00	46.50	11.75	3 NPS	115	7.8

† Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

Maximum Operating Conditions

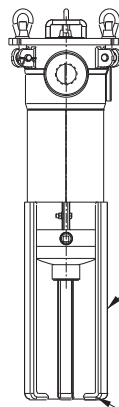
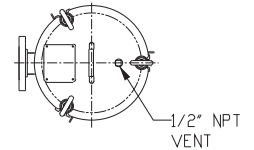
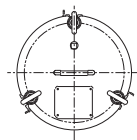
Material of Construction	Max. Allowable Pressure (MAP) (psi @ MAT °F)	Max. Allowable Temp. (MAT) (°F @ MAP psi)
Carbon Steel	150psi (10.3bar)	450°F (232°C)**
304L Stainless	150psi (10.3bar)	450°F (232°C)**
316L Stainless	150psi (10.3bar)	450°F (232°C)**

*Limited to 250°F by the paint

**Limited to 250°F by the standard Buna-N O-ring

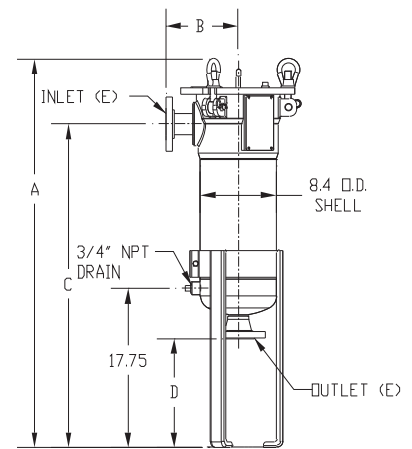
Optional O-Ring/Gasket*		
Material	Cover seal part #	Basket seal part #
Nitrile (Buna-N)	4151-1371	4151-1440
EPDM (EPR)	4154-5371	4154-5440
FKM (Viton®)	4152-8371	4152-8440
Fluoropolymer	4151-5371	4151-5440

*Optional O-ring shipped separately.



BOLT-ON LEG ASSEMBLY

(3) 9/16" x 7/8" SLOTTED MOUNTING HOLES SPACED ON A 7.00" B.C.D.



Ordering Information

Material		Media Requirement		Connection Size		Connection Type		Support Options	
Code	Description	Code	Description	Code	Inches	Code	Description		
None	Carbon Steel	11	One single bag	2	2	Blank	NPT	Blank	Zinc plated carbon steel legs
4L	304L Stainless Steel	12	One double bag	3	3	F	NPS	SL	Stainless steel legs
6L	316L Stainless Steel							SB	Stainless steel cover bolts
								SS	Stainless steel bolts & legs

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DS_IP_FB Vessel Rev. B

Fulflo® SB Filter Vessels

ASME code single and multiple bag vessels for high flow rates and high solids retention

Constructed to handle flow rates of up to 1120gpm (4240 lpm), the Fulflo® SB series of bag and strainer filter vessels provides excellent filtration in a wide range of industrial and chemical applications. All details of design, materials, construction and workmanship of the SB vessel series conform to ASME code and are available in non-code design and construction.



Contact Information

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www.parker.com/processfiltration

Benefits

- Accepts “C” style flex band bags for optimized independent seal
- Built in accordance with ASME (U or UM stamp) Boiler and Pressure vessel code
- Maximum design pressure is 150psi (10.3bar) or 300psi (20.7bar)
- Available in carbon steel, 304 stainless steel, or 316 stainless steel
- Single O-ring seal closure design assures quick, positive cover seal
- Swing bolts with hexnuts for fast, easy opening and closing of cover
- Buna-N standard O-ring with Viton® elastomer, and fluoropolymer elastomer O-rings also available
- Positive bag media seal prior to sealing housing

Applications

- Potable Water
- Process Water
- Coatings
- Lubricants
- Coolants
- Cutting Oils
- Solvents

Fulflo® SB Filter Vessels

Design Specifications

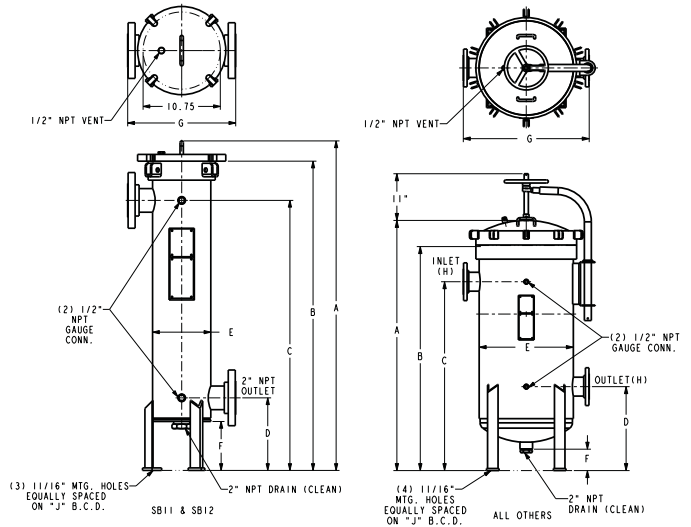
Model	Maximum Flow† (gpm)	Dimensions (in.)									Shipping Wt. (lbs)
		A	B	C	D	E	F	G	H	J	
SB11-2	80	34.88	30.69	26.75	10.75	8.63	7.31	10.75	2.00	7.81	180
SB11-2F	80	34.88	30.69	26.75	10.75	8.63	7.31	14.88	2.00	7.81	180
SB12-2	160	47.88	43.69	39.75	10.75	8.63	7.31	10.75	2.00	7.81	200
SB12-2F	160	47.88	43.69	39.75	10.75	8.63	7.31	14.88	2.00	7.81	200
SB12-3F	160	48.81	44.63	40.00	10.75	8.63	7.31	16.00	2.00	7.81	200
SB31-3FK1	240	43.00	38.25	32.00	17.00	18.44	6.00	26.00	3.00	17.75	600
SB32-4FK1	480	56.00	51.25	45.00	17.00	18.44	6.00	26.00	4.00	17.75	650
SB41-4FK1	320	43.50	38.63	32.00	17.00	20.44	6.00	28.00	4.00	19.79	670
SB42-4FK1	640	56.50	51.63	45.00	17.00	20.44	6.00	28.00	4.00	19.79	720
SB42-6FK1	640	60.19	55.13	47.00	18.00	20.44	6.00	30.00	6.00	19.79	740
SB52-6FK1	800	60.50	54.50	45.00	20.00	22.44	6.00	30.00	6.00	21.71	700
SB62-8FK1	960	64.00	58.00	48.00	22.00	26.00	5.00	36.00	8.00	25.30	1105
SB72-6FK1	1120	59.75	53.75	45.00	20.00	26.00	5.00	34.00	6.00	25.30	1070
SB72-8FK1	1120	64.00	58.00	48.00	22.00	26.00	5.00	36.00	8.00	25.30	1105
SB82-8FK1	1440	64.56	58.00	48.00	23.25	28.44	5.00	38.00	8.00	27.88	1180
SB92-8FK1	1440	66.75	60.00	50.00	24.00	30.56	6.00	40.00	8.00	29.80	1180

†Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

Maximum Operating Conditions

Material of Construction	Max. Operating Pressure (psi @ 250 °F)†	Max. Design Temp.††	Configs.
Carbon Steel	150psi (10.3bar)	500°F (260°C)	SB
Carbon Steel	300psi (20.7bar)	500°F (260°C)	HSB
304 Stainless Steel	150psi (10.3bar)	300°F (150°C)	SB
304 Stainless Steel	300psi (20.7bar)	300°F (150°C)	HSB
316 Stainless Steel	150psi (10.3bar)	400°F (204°C)	SB
316 Stainless Steel	300psi (20.7bar)	400°F (204°C)	HSB

† Operating temperature limited by standard O-ring material and exterior paint.



Optional Shell O-Ring/Gasket* refer to price book for details.

Ordering Information

Material		Design Series		Number of Bags		Bag Length		Inlet Outlet Flange Size		Coverlift Option	
Code	Description	Code	Description	Code	Description	Code	Description	Code	Description	Code	Description
None	Carbon Steel	Blank	150psi	1	1 bag	1	Single	None	NPT	Blank	None
4	304 Stainless Steel	H	300psi	3	3 bags	2	Double	2F	2 inch flange	K1	Mechanical
6	316 Stainless Steel			4	4 bags			3F	3 inch flange	K2	Hydraulic
				5	5 bags			4F	4 inch flange		
				6	6 bags			6F	6 inch flange		
				7	7 bags			8F	8 inch flange		
				8	8 bags						
				9	9 bags						

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Appendix





End Cap Configurations

Glossary of Filtration
Technology

Standard Screen Micrometer
Conversion Chart

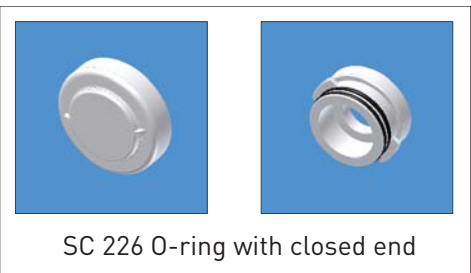
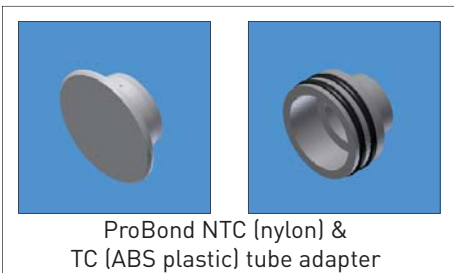
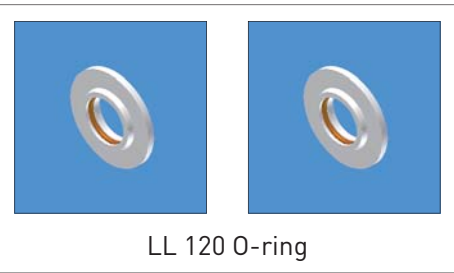
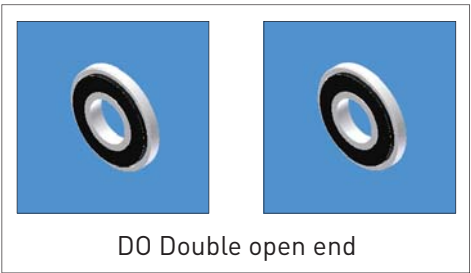
Offer of Sale

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End Cap Configurations

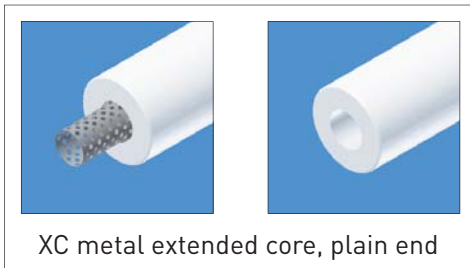
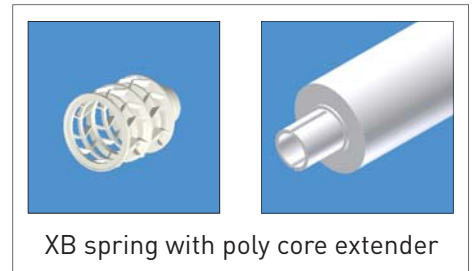
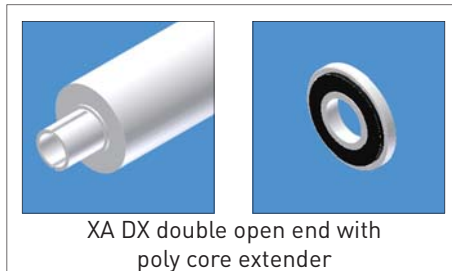
Please use the following as a guideline in determining end cap styles.

APPENDIX

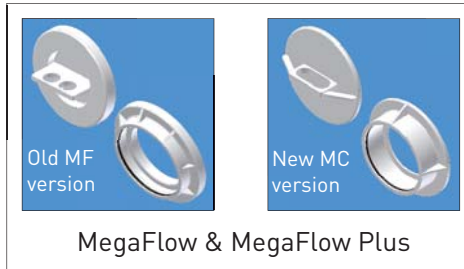


End Cap Configurations *(continued)*

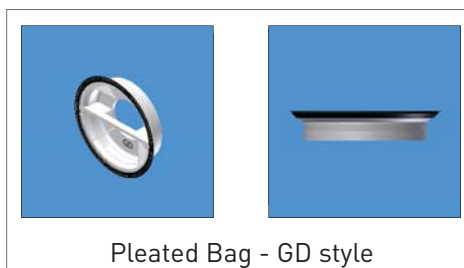
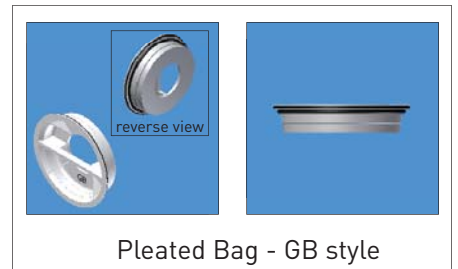
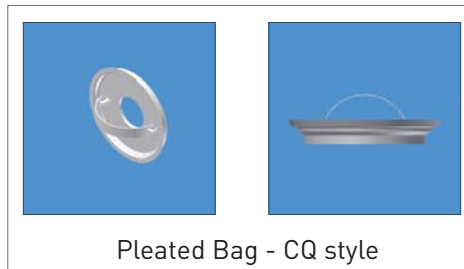
APPENDIX



LARGE DIAMETER FORMATS



PLEATED BAG FORMATS



Glossary of Filtration Terminology APPENDIX

DEFINITIONS

This section presents definitions for some key words and phrases that are generally associated with filtration processes.

Absolute Rating:

Particle size in micrometers removed at a given efficiency under a manufacturer's defined test condition. Also an arbitrary term assigned by a manufacturer. Implied is 100%, but more often defined as 98.67%, 99%, 99.9% and 99.99%, according to the manufacturer. Parker Process Filtration Division defines absolute as 99.98% removal (Beta = 5000) as determined by particle counting methods.

Absorb/Absorption:

The process of a fluid being taken into the pores of a solid.

Adsorb/Adsorption:

To collect and hold a fluid on the surface of a solid.

ASTM Test Procedure (F795-88):

Procedure upon which Parker tests and rates its filter media; generally a single pass test in water at 2.5gpm per 10-in length.

Beta Ratio & Efficiency Relationship	
Beta Ratio	% Efficiency
1	0
2	50
4	75
5	80
10	90
20	95
50	98
75	98.67
100	99
1,000	99.9
5,000	99.98
10,000	99.99
∞	100

Beta Ratio:

The ratio of the number of particles of a given size and larger upstream of a filter to the number of particles of the same size and larger downstream.

Bridging:

Condition of filter loading where contaminants span the open space between adjacent sections of a filter medium, thus blocking a portion of the useful filtration area.

Bubble Point:

Pressure drop in inches of water required to expel the first steady (continuous) stream of bubbles (fizz point) from a horizontal disc of wetted filter medium or a filter cartridge immersed in a liquid (usually alcohol). Parker Process Filtration Division uses alcohol in its test.

Bubble Point Test:

A common, nondestructive method used to test the integrity of cartridge construction to compare relative porosities of filter media or to monitor product consistency as a quality control method.

Bypass:

Fluid flowing through a passage other than the filter medium and /or leakage around filter media seals.

"C" Style Bag:

Parker Process Filtration Division style bag which incorporates a spring band bag seal configuration. Designed to fit Parker Process Filtration Division style housings only.

Cartridge/Bag Design Flow Rate:

Flow rate at which cartridge/bag published performance was generated in laboratory tests. Flow rates above those listed below will adversely affect the efficiency and dirt-holding capacity of cartridge or bag.

Cartridge/Bag Design Flow	
Product	Design Flow
Wound	3.5gpm/10" long
Pleated	2.5gpm/10" long
ProBond™	3.5gpm/10" long
MegaBond Plus	2.5gpm/10" long
Standard Bag	50gpm/single length
XLH Bag	15gpm/single length

Glossary of Filtration Terminology **APPENDIX**

(continued)

Channeling:

Tendency for contaminant to pass through a low-density area of an inconsistent filter medium or around cartridge seal points.

Clarification:

Filtration of liquids containing small quantities of solids.

Classification:

Arrangement or separation of particles by size.

Collapse Pressure:

Pressure across a filter cartridge or bag great enough to cause it to collapse.

Colloids:

Suspension of submicron particles in a continuous fluid medium that will not settle out of the medium.

Contaminant:

Undesirable insoluble solid or gelatinous particles present in a fluid.

Cycle Length/Filter Life:

The duration, measured in time or volume, that a filter can operate effectively between replacement and/or cleaning.

Density:

Mass per unit volume of a substance under specified conditions of temperature and pressure.

Depth Media:

Generally filter media that are thick and provide graded density construction. Wound, resin-bonded and melt blown cartridges fall into this category. Typically, these cartridges result in lower flow rates, higher initial pressure drops and lower dirt holding capacities than surface media (pleated).

Differential Pressure/Pressure Drop:

Difference in pressure between two points in a system. In filters, this is usually measured between the inlet and outlet of the filter housing (is a determining factor of filter service life).

Dirt Holding Capacity:

The weight of a contaminant fed to the filter during a test to reach a predefined terminal pressure drop.

Double Open End (DOE):

A filter cartridge configuration such that both ends are open and require housings with knife edge sealing devices.

Efficiency:

The ability of the filter medium to remove particles from the fluid stream.

Effluent/Filtrate:

The fluid that has passed through the filter.

Emulsion:

A suspension of small liquid droplets within a second liquid that will not mix.

Extractables:

Inorganic or organic elements or compounds in the filter medium that have leached into the filtrate. Usually reported by weight or percent.

FDA:

To be used for filtration of foods, beverages, drugs or cosmetics. All filter construction materials must comply with regulations established by the Food and Drug Administration (FDA) as listed in CFR Title 21.

Filter Media:

Plural of filter medium.

Filter Medium:

The permeable material used for a filter that separates particles from a fluid passing through it.

Filtration:

Separation of particulate matter from a fluid by passing the fluid through a permeable medium that will trap a percentage of the particulates.

Filtration Efficiency:

That fraction of suspended particles retained by the filter.

Glossary of Filtration Terminology **APPENDIX**

(Glossary continued)

Flux:

A relationship of flow to surface area; expressed as gallons per minute per square foot.

“G” Style Bag:

Filter bag provided by Parker Process Filtration Division to fit many competitive vessels (FSI, AF&F, GAF, ISP, etc.), which is referred to as a snap ring seal configuration.

Gauge Pressure:

Pressure greater than atmospheric pressure.

Gels:

Compressible or semisolid materials that can pass through filter media at an undefined and inconsistent degree. Best removed by depth medium.

Graded Density:

Variation in a cartridge that results in the filter medium being more dense toward the core and less dense toward the outside surface. This is useful where a wide range of particle sizes exists because it allows larger particles to be trapped toward the surface and smaller particles toward the core.

Gravimetric Efficiency:

Amount of contaminant removed by weight as determined by suspended solids analysis (ppm, mg/l).

Hydrophilic:

The tendency of a surface to wet with water (water loving).

Hydrophobic:

The tendency of a surface not to wet with water (water hating).

Immiscible:

Incapable of blending or mixing into a single homogeneous phase.

Impingement:

Direct impact of particle or liquid upon the filter media.

Influent:

Fluid entering the inlet of a filter.

Laminar Flow:

Flow rate at which liquid is in a nonturbulent state (10 ft/sec) and should not be exceeded to maintain filtration integrity and consistency.

Mean Filtration Rating:

Average size of the pores of the filter medium.

Media (Medium):

Material in a filter element that separates solids from fluid.

Media Migration:

Contamination of the effluent by fibers or other material of which the filter is constructed.

Micron:

A unit of length. Correct term is micrometer (μm), which is .000039 inch. Human eye can see a 40-micrometer diameter particle.

Multipass Process:

A process or system in which fluid is circulated indefinitely through a filter medium, e.g., engines, compressors, hydraulic equipment.

Nominal Rating:

Micron size removed at a given efficiency under a manufacturer's defined test condition. An arbitrary term assigned by a manufacturer. Varies from 50%-98% depending on manufacturer and product.

Particle Removal Efficiency:

Removal of particles as a function of size as determined by counting individual particles.

Permeability:

The property of a filter medium that permits a fluid to pass through under a pressure differential (such as gpm/psi).

Porosity:

A measure of the open area of a filter medium. Sometimes expressed as a void volume.

Glossary of Filtration Terminology

APPENDIX

(Glossary continued)

Single Open End (SOE):

A filter cartridge configuration such that one end is sealed off by a closed end cap and the opposite end has a 222 O-ring, 226 O-ring or other seal device. Used in housings that are designed to accept 222 O-ring, 226 O-ring or other SOE cartridges.

Single Pass Process:

A process in which a fluid passes through the filter medium only once before further processing. Parker Process Filtration products are tested and rated for these types of processes.

Specific Gravity:

Ratio of mass of a solid or liquid to the mass of an equal volume of distilled water, or of a gas to an equal volume of air under prescribed temperature and pressure.

Surface Media:

Filter media that are thin, cellulosic, microfiber or membrane material and, due to their construction, generally provide high flow rate, low pressure drop, high efficiency, high surface area and high dirt-holding capacity.

Suspended Solids:

Mixture of solids suspended in a fluid. Expressed in weight or volume.

Thixotropic Flow:

A fluid system where a range of viscosities can be measured at any given shear rate. The longer the material is sheared, the lower the viscosity until a lower limiting value is reached.

Throughput:

Total volume of a fluid that passes through a filter before it must be replaced.

Turbidity:

Measure of the amount of haze or cloudiness caused by fine particles in a fluid.

Turbidimetric Efficiency:

Percentage reduction of haze or cloudiness in a fluid.

Turbulent Flow:

Flow rate at which laminar flow (10 ft/sec) is exceeded and filtration performance is adversely affected.

Uniform Density:

Having the same weight per unit volume of filter media from the upstream (influent) to the downstream (effluent) side of the filter.

Unloading:

Tendency for previously collected contaminant to be forced through the filter medium as pressure is increased.

Vessel:

Container for filter cartridges or bags.

Viscosity:

A measure of the resistance to flow of a liquid. Viscosity of a liquid varies appreciably with changes in temperature. Typically expressed in centipoise, centistoke or SSU values.

Water Hammer:

Pressure surge produced when the linear flow of a noncompressible fluid is rapidly interrupted by devices such as fast-acting valves.

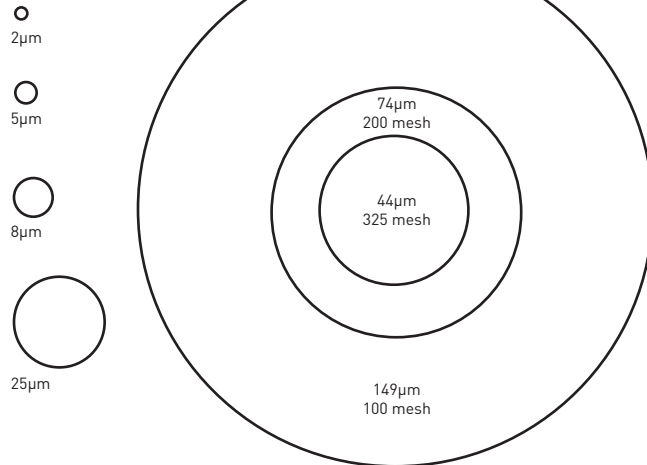
Standard Screen Micrometer Conversion Chart

APPENDIX

US & ASTM Std. Sieve #	Actual Opening (Inches)	Micron (µm)
10	0.0787	2000
12	0.0661	1680
14	0.0555	1410
16	0.0469	1190
18	0.0394	1000
20	0.0331	840
25	0.0280	710
30	0.0232	590
35	0.0197	500
40	0.0165	420
45	0.0138	350
50	0.0117	297
60	0.0098	250
70	0.0083	210
80	0.0070	177
100	0.0059	149
120	0.0049	125
140	0.0041	105
170	0.0035	88
200	0.0029	74
230	0.0024	62
270	0.0021	53
325	0.0017	44
400	0.00142	36
550	0.00099	25
625	0.00079	20
1,250	0.000394	10
1,750	0.000315	8
2,500	0.000197	5
5,000	0.000099	2.5
12,000	0.0000394	1

Relative Size of Particles

Magnification 500 times



MICROMETER COMPARISONS	
Substance	Micron (µm)
Table Salt	100
Human Hair (Avg.)	50-70
White Blood Cell	25
Talcum Powder	10
Cocoa	8-10
Red Blood Cell	8
Bacteria (cocci)	2

CONVERSION RATES	
1 cu ft	7.48 gal
1 gal	231 cubic in
1 cu ft water	62.42 lb
1 gal water	8.34 lb
1 US gal	0.833 lmp gal
1 lb/in ²	2.31 ft of water = 2.036 in Hg
°F	$\frac{5}{9} (°C+32)$
Cks	cps ÷ spg

Note: Lower limit of visibility (naked eye) - 40µm

Linear Equivalents

1 in = 25.4mm = 25,400µm
 1mm = 0.0394 in = 1,000µm
 1µm = 3.94 x 10⁻⁵ in = 0.0000394 in

Formulae:

Velocity (ft. per sec) = $\frac{0.4085 \times \text{gpm}}{d^2 \text{ (ID in)}}$

Brake hp = $\frac{\text{gpm} \times (\text{total head in ft.}) \times (\text{specific gravity})}{(3960) \times (\text{pump efficiency})}$

METRIC CONVERSION FORMULAE	
mm	inches x 25.4
m	feet x 0.03048
cm ³	cu in x 16.39
m ³	cu ft x 0.028
kg	pounds x 0.454
kPa	psi x 6.895
lpm	gpm x 3.785
°C	$\frac{5}{9} (°F-32)$

Offer of Sale

APPENDIX

The goods, services or work (referred to as the "Products") offered by Parker-Hannifin Corporation, its subsidiaries, groups, divisions, and authorized distributors ("Seller") are offered for sale at prices indicated in the offer, or as may be established by Seller. The offer to sell the Products and acceptance of Seller's offer by any customer ("Buyer") is contingent upon, and will be governed by all of the terms and conditions contained in this Offer of Sale. Buyer's order for any Products specified in Buyer's purchase document or Seller's offer, proposal or quote ("Quote") attached to the purchase order, when communicated to Seller verbally, or in writing, shall constitute acceptance of this offer.

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4. **Warranty.** Seller warrants that the Products sold hereunder shall be free from defects in material or workmanship for a period of twelve (12) months from the date of delivery or 2,000 hours of normal use, whichever occurs first. All prices are based upon the exclusive limited warranty stated above, and upon the following disclaimer: **DISCLAIMER OF WARRANTY: THIS WARRANTY IS THE SOLE AND ENTIRE WARRANTY PERTAINING TO PRODUCTS PROVIDED. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING DESIGN, MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.**

5. **Claims; Commencement of Actions.** Buyer shall promptly inspect all Products upon receipt. No claims for shortages will be allowed unless reported to the Seller within ten (10) days of delivery. No other claims against Seller will be allowed unless asserted in writing within thirty (30) days after delivery. Buyer shall notify Seller of any alleged breach of warranty within thirty (30) days after the date the defect is or should have been discovered by Buyer. Any claim or action against Seller based upon breach of contract or any other theory, including tort, negligence, or otherwise must be commenced within twelve (12) months from the date of the alleged breach or other alleged event, without regard to the date of discovery.

6. **LIMITATION OF LIABILITY.** IN THE EVENT OF A BREACH OF WARRANTY, SELLER WILL, AT ITS OPTION, REPAIR OR REPLACE A DEFECTIVE PRODUCT, OR REFUND THE PURCHASE PRICE WITHIN A REASONABLE PERIOD OF TIME. IN NO EVENT IS SELLER LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF, OR AS THE RESULT OF, THE SALE, DELIVERY, NON-DELIVERY, SERVICING, USE OR LOSS OF USE OF THE PRODUCTS OR ANY PART THEREOF, OR FOR ANY CHARGES OR EXPENSES OF ANY NATURE INCURRED WITHOUT SELLER'S WRITTEN CONSENT, WHETHER BASED IN CONTRACT, TORT OR OTHER LEGAL THEORY. IN NO EVENT SHALL SELLER'S LIABILITY UNDER ANY CLAIM

MADE BY BUYER EXCEED THE PURCHASE PRICE OF THE PRODUCTS.

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9. **Special Tooling.** A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture Products. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the Products, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller has the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

10. **Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller retains a security interest in all Products delivered to Buyer and this agreement is deemed to be a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. **Improper Use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any losses, claims, liabilities, damages, lawsuits, judgments and costs (including attorney fees and defense costs), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, application, design, specification or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Products; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

12. **Cancellations and Changes.** Buyer may not cancel or modify or cancel any order for any reason, except with Seller's written consent and upon terms that will indemnify, defend and hold Seller harmless against all direct, incidental and consequential loss or damage. Seller may change Product features, specifications, designs and availability.

13. **Limitation on Assignment.** Buyer may not assign its rights or obligations under this agreement without the prior written consent of Seller.

14. **Force Majeure.** Seller does not assume the risk and is not liable for delay or failure to perform any of Seller's obligations by reason of events or circumstances beyond its reasonable control (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation: accidents, strikes or labor disputes, acts of any government or government agency, acts of nature, delays or failures in delivery from carriers or suppliers, shortages of materials, or any other cause beyond Seller's reasonable control.

15. **Waiver and Severability.** Failure to enforce any provision of this agreement will not invalidate that provision; nor will any such failure prejudice Seller's right to enforce that provision in the future. Invalidation of any provision of this agreement by legislation or other rule of law shall not invalidate any other provision herein. The remaining provisions of this agreement will remain in full force and effect.

16. **Termination.** Seller may terminate this agreement for any reason and at any time by giving Buyer thirty (30) days

prior written notice. Seller may immediately terminate this agreement, in writing, if Buyer: (a) breaches any provision of this agreement (b) appoints a trustee, receiver or custodian for all or any part of Buyer's property (c) files a petition for relief in bankruptcy on its own behalf, or one if filed by a third party (d) makes an assignment for the benefit of creditors; or (e) dissolves its business or liquidates all or a majority of its assets.

17. **Governing Law.** This agreement and the sale and delivery of all Products are deemed to have taken place in, and shall be governed and construed in accordance with, the laws of the State of Ohio, as applicable to contracts executed and wholly performed therein and without regard to conflicts of laws principles. Buyer irrevocably agrees and consents to the exclusive jurisdiction and venue of the courts of Cuyahoga County, Ohio with respect to any dispute, controversy or claim arising out of or relating to this agreement.

18. **Indemnity for Infringement of Intellectual Property Rights.** Seller is not liable for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Section. Seller will defend and indemnify Buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets ("Intellectual Property Rights"). Seller will defend at its expense and will pay the cost of any settlement or damages awarded in an action brought against Buyer based on an allegation that a Product sold pursuant to this agreement infringes the Intellectual Property Rights of a third party. Seller's obligation to defend and indemnify Buyer is contingent on Buyer notifying Seller within ten (10) days after Buyer becomes aware of such allegations of infringement, and Seller having sole control over the defense of any allegations or actions including all negotiations for settlement or compromise. If a Product is subject to a claim that it infringes the Intellectual Property Rights of a third party, Seller may, at its sole expense and option, procure for Buyer the right to continue using the Product, replace or modify the Product so as to make it noninfringing, or offer to accept return of the Product and refund the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller is not liable for claims of infringement based on information provided by Buyer, or directed to Products delivered hereunder for which the designs are specified in whole or part by Buyer, or infringements resulting from the modification, combination or use in a system of any Product sold hereunder. The foregoing provisions of this Section constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

19. **Entire Agreement.** This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged. The terms contained herein may not be modified unless in writing and signed by an authorized representative of Seller.

20. **Compliance with Laws.** Buyer agrees to comply with all applicable laws, regulations, and industry and professional standards of care, including those of the United Kingdom, the United States of America, and the country or countries in which Buyer may operate, including without limitation the U. K. Bribery Act, the U.S. Foreign Corrupt Practices Act ("FCPA"), the U.S. Anti-Kickback Act ("Anti-Kickback Act") and the U.S. Food Drug and Cosmetic Act ("FDCA"), each as currently amended, and the rules and regulations promulgated by the U.S. Food and Drug Administration ("FDA"), and agrees to indemnify and hold harmless Seller from the consequences of any violation of such provisions by Buyer, its employees or agents. Buyer acknowledges that it is familiar with the provisions of the U. K. Bribery Act, the FCPA, the FDA, and the Anti-Kickback Act, and certifies that Buyer will adhere to the requirements thereof. In particular, Buyer represents and agrees that Buyer will not make any payment or give anything of value, directly or indirectly to any governmental official, any foreign political party or official thereof, any candidate for foreign political office, or any commercial entity or person, for the purpose of influencing such person to purchase Products or otherwise benefit the business of Seller.



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