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# Industrial Process Filtration

## Filtration products for Industrial Applications

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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.

# Contents


**INTRODUCTION ..... 1**

**Membrane Filter Cartridges ..... 3**
- Clariflow®-G Filter Cartridge ..... 5
- Evadur Filter Cartridge ..... 7
- Fluoroflow® Filter Cartridge ..... 9
- Proflow™ II-G (General Grade) Filter Cartridge ..... 11

**Pleated Filter Cartridges ..... 13**
- Abso-Mate™ Filter Cartridge ..... 15
- Claripor™ Filter Cartridge ..... 17
- Flo-Pac® Filter Cartridge ..... 19
- Flo-Pac® + Filter Cartridge ..... 21
- Glass-Mate™ Filter Cartridge ..... 23
- Fulflo® 1401 Pleated Filter Cartridge ..... 25
- Fulflo® PCC Filter Cartridge ..... 27
- Fulflo® Poly-Mate™ Filter Cartridge ..... 29
- Fulflo® Poly-Mate™ Plus Filter Cartridge ..... 31

**Large Diameter Pleated Filter Cartridges ..... 33**
- Fulflo® HF Depthflo™ Filter Cartridge ..... 35
- Fulflo® MaxGuard Filter Cartridge ..... 37
- Fulflo® MaxGuard SELECT Filter Cartridge ..... 39
- Fulflo® MegaFlow™ Filter Cartridge ..... 41
- Fulflo® MegaFlow™ Plus Filter Cartridge ..... 43
- Fulflo® ParMax Filter Cartridge ..... 45
- Fulflo® ParMax SELECT Filter Cartridge ..... 47

**Depth Media Filter Cartridges ..... 49**
- Avasan™ Filter Cartridge ..... 51
- Fulflo® DuraBond™ Filter Cartridge ..... 53
- Fulflo® Honeycomb™ Filter Cartridge ..... 55
- Fulflo® MegaBond™ Nominal Filter Cartridge ..... 59
- Fulflo® MegaBond Plus™ Filter Cartridge ..... 61
- Fulflo® ProBond™ Filter Cartridge ..... 63
- Fulflo® SWC Filter Cartridge ..... 65
- Fulflo® XTL™ Filter Cartridge ..... 67

**Filter Bags & Strainers ..... 69**
- Fulflo® Basket Strainers ..... 71
- Fulflo® Filter Bags ..... 73
- Fulflo® HS Pleated Bags (HSPB) ..... 77
- Fulflo® Pleated Bags (PB) ..... 79
- Fulflo® XLH Filter Bags ..... 83

**Sorbent Media Filter Series ..... 85**
- Fulflo® TruBind™ 300 Filter Cartridge ..... 87
- Fulflo® TruBind™ 400 Filter Cartridge ..... 89

**Metallic Media Filter Series ..... 91**
- Fulflo® Metallic Filter Cartridges ..... 93
- Steelflow™ Filter Cartridges ..... 95

**Coalescers ..... 97**
- Fulflo® LC Coalescer ..... 99
- Naptha Coalescer ..... 101
- Solvent and Caustic Coalescer ..... 103

**Single Cartridge Filter Vessels ..... 105**
- Fulflo® B Single Cartridge Filter Vessel ..... 107
- Fulflo® BSSB Single Cartridge Filter Vessel ..... 111
- Fulflo® EH Single Cartridge Filter Vessel ..... 113
- Fulflo® High-Pressure Filter Vessel (4.5C) ..... 115
- Fulflo® "M" Series Single Cartridge Filter Vessel ..... 117
- Fulflo® TC Single Cartridge Filter Vessel ..... 119
- Trufluor™ Single Cartridge Filter Vessel ..... 121
- Trufluor +™ Single Cartridge Filter Vessel ..... 123

**Multi-Cartridge Filter Vessels ..... 125**
- Fulflo® CH Multi-Cartridge Filter Vessel ..... 127
- Fulflo® CP Multi-Cartridge Filter Vessel ..... 129
- Fulflo® EH Multi-Cartridge Filter Vessel ..... 131
- Fulflo® FE Multi-Cartridge Filter Vessel ..... 135
- Fulflo® FP Multi-Cartridge Filter Vessel ..... 137
- Fulflo® HT Multi-Cartridge Filter Vessel ..... 139
- Fulflo® MegaFlow Multi-Cartridge Filter Vessel ..... 141
- Fulflo® MP Multi-Cartridge Filter Vessel ..... 143
- Fulflo® P Multi-Cartridge Filter Vessel ..... 147
- Fulflo® ParMax Multi-Cartridge Filter Vessel ..... 149
- Fulflo® S Multi-Cartridge Filter Vessel ..... 153
- Fulflo® SF Multi-Cartridge Filter Vessel ..... 155
- Fulflo® WH Multi-Cartridge Filter Vessel ..... 157

**Bag Filter Vessels ..... 161**
- Fulflo® CB Bag Filter Vessel ..... 163
- Fulflo® EB Multi-Bag Filter Vessel ..... 165
- Fulflo® EB Single Bag Filter Vessel ..... 167
- Fulflo® FB Bag Filter Vessel ..... 171
- Fulflo® SB Bag Filter Vessel ..... 173

**Appendix ..... 175**
- End Cap Configurations ..... 177
- Glossary of Filtration Technology ..... 179
- Standard Screen Micrometer Conversion Chart ..... 183
- Offer of Sale ..... 184

# Innovation

## Leader in process filtration, separation and purification

Parker Industrial 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. Many of our products are manufactured under controlled environmental conditions and are subjected to demanding programs of quality assurance.

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



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# Industrial Filtration

## A Core Expertise

Parker Industrial 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.

Winovation

### 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:

**940.325.2575**

**industrialprocess.na@parker.com**

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# Pleated Membrane Filter Cartridges

Clariflow®-G (General Grade) Pleated Membrane Filter Cartridge
Hydrophilic polyethersulfone (PES) membrane for aqueous liquid filtration applications

Evadur Pleated 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

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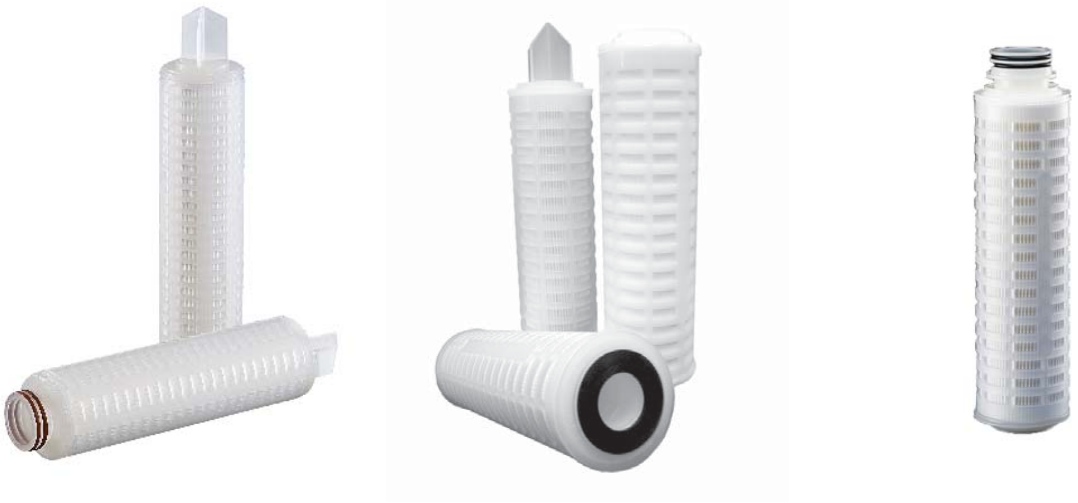

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**940.325.2575**

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# Clariflow®-G (General Grade) Filter Cartridges

## Hydrophilic polyethersulfone (PES) membrane for aqueous liquid filtration applications

Clariflow®-G 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
- ISO 9001 registered company

## Applications

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

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# 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)

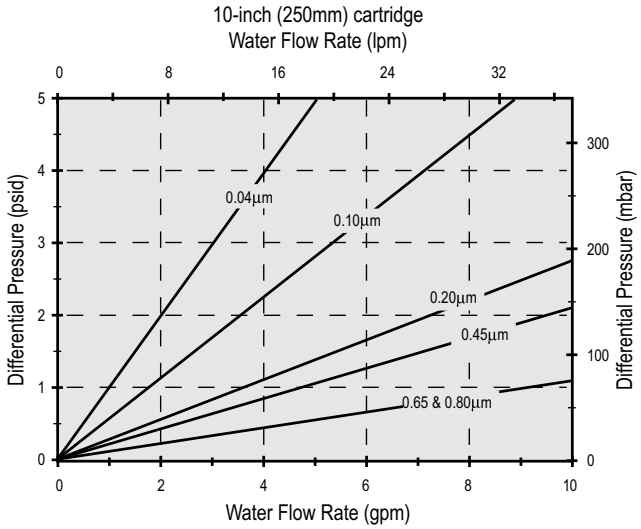
### Maximum Operating Temperature

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 | |
|---|---|
| **Code** | **Description** |
| 0 | DOE (Cuno®) |
| 1 | DOE |
| 2 | 226/Flat |
| 3 | 222/Flat |
| 6 | 020/Internal/Flat |
| 7 | 226/Fin |
| 8 | 222/Fin |

| Nominal Length | | |
|---|---|---|
| **Code** | **Inches** | **mm** |
| 10 | 10 | 250 |
| 20 | 20 | 500 |
| 30 | 30 | 750 |
| 40 | 40 | 1000 |

| Filter Rating | |
|---|---|
| **Code** | **Micron** |
| 924 | 0.04 |
| 001 | 0.10 |
| 002 | 0.20 |
| 004 | 0.45 |
| 006 | 0.65 |
| 008 | 0.85 |

| Gasket/O-Rings | |
|---|---|
| **Code** | **Material** |
| 0 | Buna-N |
| 1 | EPDM |
| 2 | Silicone |
| 4 | Viton® |
| 5* | FEP-Encapsulated Viton® |
| 6* | FEP-Encapsulated Silicone |
| N | None |

*O-Ring only

| Gasket | | |
|---|---|---|
| **Code** | **Thickness** | |
| | **Inches** | **mm** |
| 1 | 0.200 | 5 |
| 2 | 0.125 | 3 |
| 4 | (1) 0.200 | 5 |
| | (1) 0.125 | 3 |
| N | No Gasket | |

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DS_IP_Clariflow-G Rev. C



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# 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.

## Contact Information

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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 of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Manufactured in a clean room environment
- Manufactured with quality control that measures integrity testing
- ISO 9001 registered company

## Applications

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

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# 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)

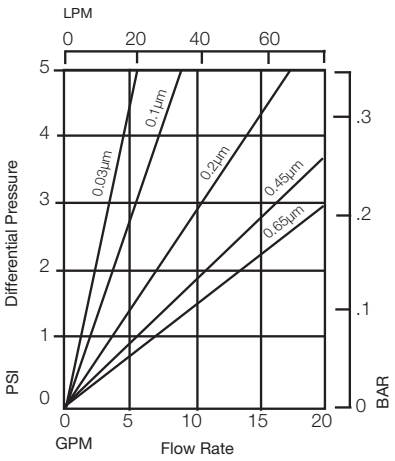
**Sterilization/Sanitization Methods**

- 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

**EV** | [ ] | **B** | [ ] | [ ] | [ ] | [ ]

| Cartridge Code | |
|---|---|
| Code | Description |
| EV | Evadur |

| Pore Size | |
|---|---|
| Code | Micron |
| T | 0.03 |
| S | 0.1 |
| F | 0.2 |
| R | 0.45 |
| H | 0.65 |

| Diameter | |
|---|---|
| Code | Inches |
| B | 2.7 |

| Length | |
|---|---|
| Code | Inches |
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |
| 40 | 40 |

| Seal Material | |
|---|---|
| Code | Material |
| E | EPR |
| B | Buna-N |
| S | Silicone |
| T | PFA Encapsulated Viton® (O-ring only) |
| V | Viton® (O-ring only) |
| X | No seal material |

| End Cap Configuration | |
|---|---|
| Code | Description |
| HH | Double Open End |
| DX | DOE w/extender |
| SC | 226 O-ring/Flat Cap |
| SF | 226 O-ring/Fin |
| TC | 222 O-ring/Flat Cap |
| 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
- ISO 9001 registered company

## Applications

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

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# 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% $HNO_3$ extraction

**Maximum Differential Pressure/Temperature**
Forward:
80psid (5.5bar) @ 75ºF (24ºC)
55psid (3.8bar) @ 167ºF (75ºC)
30psid (2.0bar) @ 257ºF (125ºC)
15psid (1.0bar) @ 300ºF (150ºC)

Reverse:
50psid (3.4bar) @ 75ºF (24ºC)
15psid (1.0bar) @ 250ºF (121ºC)

**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**

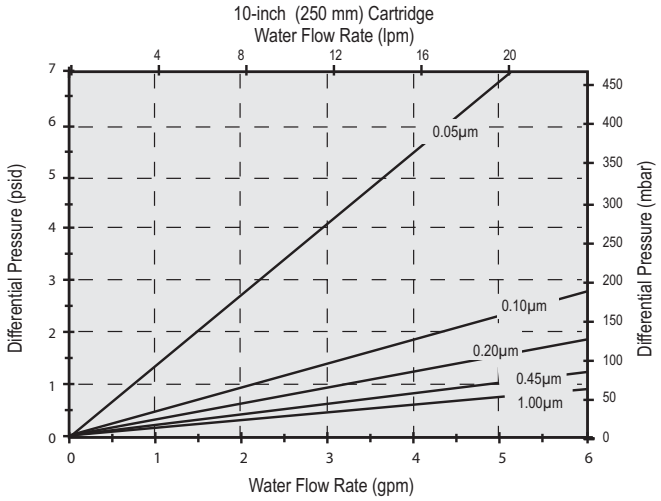
| Water flow rates, Typical* | | |
|---|---|---|
| **Micron** | **gpm/psid** | **lpm/100mbar** |
| 0.05 | 0.9 | 4.9 |
| 0.1 | 2.3 | 13 |
| 0.2 | 3.2 | 18 |
| 0.45 | 4.7 | 26 |
| 1.0 | 6.7 | 37 |

*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 | |
|---|---|
| **CODE** | **DESCRIPTION** |
| 2 | 226 \| Flat |
| 3 | 222 \| Flat |
| 7 | 226 \| Fin |
| 8 | 222 \| Fin |

| Nominal Length | | |
|---|---|---|
| **CODE** | **INCHES** | **mm** |
| 04 | 4 | 102 |
| 10 | 10 | 250 |
| 20 | 20 | 500 |
| 30 | 30 | 750 |
| 40 | 40 | 1000 |

| Filter Rating | |
|---|---|
| **CODE** | **MICRON** |
| 925 | 0.05 |
| 001 | 0.1 |
| 002 | 0.2 |
| 004 | 0.45 |
| 010 | 1.0 |
| 503 | 100 (Nominal) |

| O-Rings | |
|---|---|
| **CODE** | **MATERIAL** |
| 2 | Silicone |
| 4 | Viton® |
| 5* | FEP-Encapsulated Viton® |
| 6* | FEP-Encapsulated Silicone |
| 7 | Chemraz® |
| N | None |

*O-Ring only

| Treatment | |
|---|---|
| **CODE** | **OPTIONS** |
| Blank | UPW Flush & Dry |
| F | Ozone UPW Flush & Dry |
| W | Wet Packed |

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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 hydrophobicbarrier, 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.

## Contact Information

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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
- ISO 9001 registered company

## Applications

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

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# Proflow™ II -G 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) @ 75ºF (24ºC)
40psid (2.8bar) @ 180ºF (82ºC)

Reverse:
50psid (3.4bar) @ 75ºF (24ºC)

**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

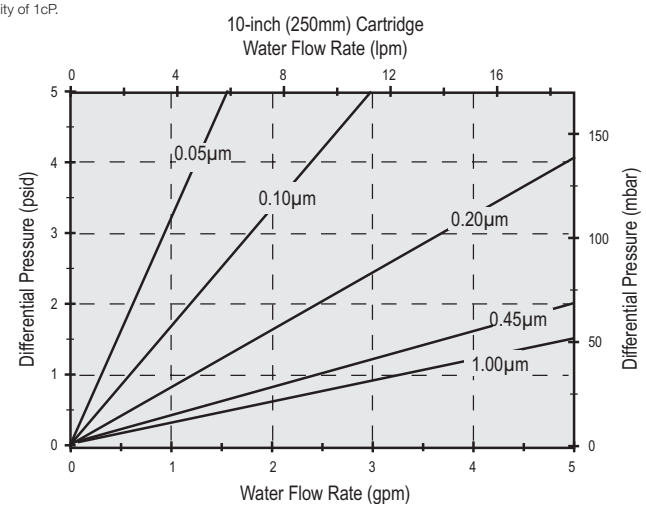
| Water flow rates, Typical* | | |
|---|---|---|
| **Micron** | **gpm/psid** | **lpm/100mbar** |
| 0.05 | 0.6 | 3.29 |
| 0.1 | 1.2 | 6.59 |
| 0.2 | 2.5 | 14 |
| 0.45 | 5.1 | 28 |
| 1.0 | 6.2 | 34 |

* 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 | |
|---|---|
| **Code** | **Options** |
| 4 | Standard |
| 6 | Flushed with 18 Megohm DI Water |

| Styles | |
|---|---|
| **Code** | **Description** |
| 1 | No Insert (Std.) |
| 5 | Encapsulated Stainless Steel |
| 6 | Encapsulated Polysulfone |
| A | ½" Shortened on 222 Fitting |

| End Fitting | |
|---|---|
| **Code** | **Description** |
| 0 | DOE (Cuno®) |
| 1 | DOE |
| 2 | 226 \| Flat |
| 3 | 222 \| Flat |
| 6 | 020 \| Internal \| Flat |
| 7 | 226 \| Fin |
| 8 | 222 \| Fin |
| G | 120 \| Internal \| Recessed End cap |
| H | 213 \| Recessed End cap (Ametek) |
| R | 222/Recessed End cap |

| Nominal Length | | |
|---|---|---|
| **Code** | **Inches** | **mm** |
| 10 | 10 | 250 |
| 20 | 20 | 500 |
| 30 | 30 | 750 |
| 40 | 40 | 1000 |

| Filter Rating | |
|---|---|
| **Code** | **Micron** |
| 925 | 0.05 |
| 001 | 0.1 |
| 002 | 0.2 |
| 004 | 0.45 |
| 010 | 1.0 |

| Gasket/O-Rings | |
|---|---|
| **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 Only | | |
|---|---|---|
| **Code** | **Thickness** | |
| | **Inches** | **mm** |
| 1 | 0.200 | 5 |
| 2 | 0.125 | 3 |
| 4 | (1) 0.200 | 5 |
| | (1) 0.125 | 3 |
| N | No Gasket | |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DS_IP_Proflow II Rev. A





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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® 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



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Toll free sales & technical support:
**940.325.2575**
**industrialprocess.na@parker.com**

# 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.

## Contact Information

Parker Hannifin Corporation
**Bioscience Division - N.A.**
2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## Benefits

- Absolute ratings for consistent and reliable performance (99.98%; ß = 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
- ISO 9001 registered company

## Applications

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

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# 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 $^{11}/_{16}$ in.

Cartridge Inside Diameter
- DOE: 1 $^{1}/_{16}$ in.
- SOE: 1 $^{5}/_{32}$ 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 (ß) =

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

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

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:**
1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is psid/gpm at 1cks 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:

| Cart. | ß=5000 Absolute | ß=1000 99.9% | ß=100 99% | ß=50 98% | ß=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

**PAB** □ — □ □ □ □ □ □

**Filter Rating**

| Code | Micron |
|---|---|
| 002 | 0.2 |
| 004 | 0.45 |
| 010 | 1 |
| 020 | 2 |
| 050 | 5 |
| 100 | 10 |
| 200 | 20 |
| 400 | 40 |
| 700 | 70 |

**Nominal Length**

| Code | Inches | mm |
|---|---|---|
| 9 | 9 $^{5}/_{8}$ | 244 |
| 10 | 9 $^{15}/_{16}$ | 249 |
| 19 | 19 $^{5}/_{8}$ | 498 |
| 20 | 19 $^{15}/_{16}$ | 506 |
| 29 | 29 ¼ | 743 |
| 30 | 30 $^{1}/_{16}$ | 764 |
| 39 | 39 | 991 |
| 40 | 40 | 1016 |

**Support Construction**

| Code | Material |
|---|---|
| F | Glass-filled Polypropylene (core only) |
| G | 304 Stainless Steel (core only) |
| A | Natural Polypropylene (All support components) |

**Seal Material**

| Code | Material |
|---|---|
| P | Polyethylene Foam (DOE gasket only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T[1] | PFA-Encapsulated Viton® (222, 226 & O-ring only)* |
| V | Viton® |
| X | No seal material |

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

**End Cap Configuration**

| Code | Description | Code | Description |
|---|---|---|---|
| AR | 020 O-ring/Recessed cap | SSC | SS inserted 226 O-ring/ Closed |
| DO | Double open end (DOE) | SSF | SS inserted 226 O-ring/Fin |
| DX | Double open end/extended core | TC | 222 O-ring/Flat |
| LL[2] | 120/120 (Filterlite LMO & Nuclepore Polymeric Vessels) | TF | 222 O-ring/Fin |
| LR[2] | 120 O-ring/Recessed (Nuclepore) | STC | SS inserted 222 O-ring/ Closed |
| OB | Std. open end/Polypropylene spring closed end | STF | SS inserted 222 O-ring/Fin |
| PR[2] | 213 O-ring/Recessed cap (Ametek® & Parker LT Polymeric Vessels) | TX | 222 O-ring/Flex Fin |
| SC | 226 O-ring/Flat | XB | Ext. core open end/ Polypropylene spring closed end |
| SF | 226 O-ring/Fin | | |

[2]Available only in 9 $^{5}/_{8}$" (-9) and 19 $^{5}/_{8}$" (-10) lengths

**Special Options**

| Code | Description |
|---|---|
| B | Bubble-point test |
| R | DI water rinse (5 min.) |
| Z6 | Individual Poly bag only |

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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.

## Contact Information

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**www.parker.com/bioscience**

## 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 of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Manufactured with strict quality control
- ISO 9001 registered company

## Applications

- Critical coatings
- Inkjet inks
- Specialty chemicals

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# 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)

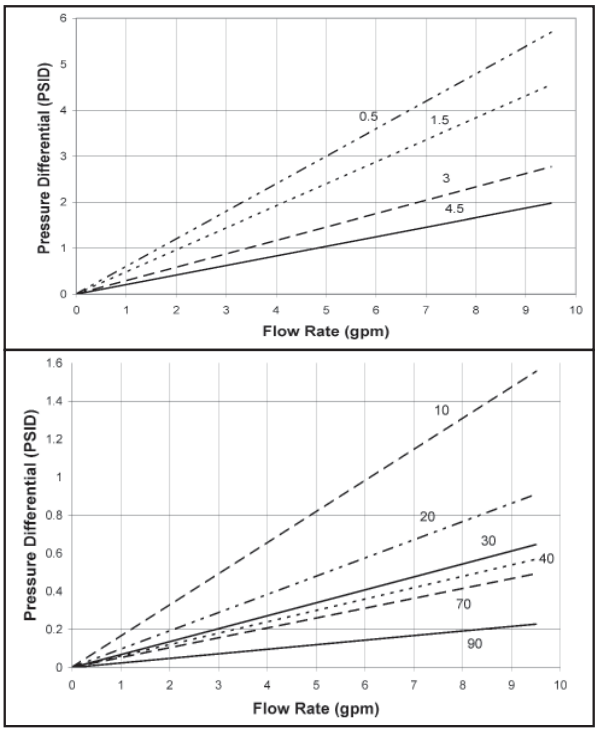
Maximum Differential Pressure:
70psi (4.8bar) @ 77°F (25°C)
30psi (2.1bar) @ 176°F (80°C)

**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

CP – ☐ ☐ ☐ ☐ – ☐

| Cartridge Code | |
|---|---|
| CP | Claripor |

| Pore Size | |
|---|---|
| CODE | MICRON |
| 005 | 0.5 |
| 015 | 1.5 |
| 030 | 3.0 |
| 045 | 4.5 |
| 100 | 10 |
| 200 | 20 |
| 300 | 30 |
| 400 | 40 |
| 700 | 70 |
| 900 | 90 |

| Nominal Length | |
|---|---|
| CODE | INCHES (CM) |
| 4 | 4" (10.16) |
| 5 | 5" (12.7) |
| 10 | 10" (25.4) |
| 20 | 20" (50.8) |
| 30 | 30" (76.2) |
| 40 | 40" (101.6) |

| Core Material | |
|---|---|
| CODE | MATERIAL |
| A | Natural Polypropylene |
| F | Glass-filled polypropylene |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T | PFA Encapsulated Viton® (O-rings only, not gaskets) |
| V | Viton® |

| End Cap Configuration | |
|---|---|
| CODE | DESCRIPTION |
| DO | Double open end (DOE) |
| DX | Double open end/extended core |
| TC | 222 O-ring/Flat |
| TF | 222 O-ring/Fin |
| TX | 222 O-ring/Flex Fin |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| STC | 222 O-ring/Flat cap w/SS insert |
| STF | 222 O-ring/Fin cap w/SS insert |
| 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; ß = 20).

## Contact Information

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**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## Applications

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

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# 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 ½ in. ID) | 50gpm |
| 600 Series (1 9/16 in. ID) | 35gpm |
| 700 Series | 50gpm |

### Dimensions
300 Series
2 ½ in. OD x 1 in. ID x 9 5/8 in., 19 ¾ in., 29 ¼ in., 29 5/8 in, 40 in.
500 Series
4 ½ in. OD x 1 ¾ in. ID x 18 in.
600 Series
6 ¼ in. OD x 3 1/12 , or 1 9/16 in. x 14 3/8, 29 or 43 3/8 in. long
700 Series
6 ¼ in. OD x 2 5/8 in. or 2 1/8 in. ID x 18, 36, or 54 in. long

### Flow Rate and Pressure Drop Formulas

$$\text{Flow Rate (gpm)} = \frac{\text{CleanΔP x Length Factor}}{\text{Viscosity x Flow Factor}}$$

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

**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 |

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

| Cartridge | ß=5000 Absolute | ß=1000 99.9% | ß=100 99% | ß=20 95% | ß=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 |

**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.

## Ordering Information

FP – [ ] – [ ] – [ ] – [ ] – [ ]

**Cartridge Code**

| | |
|---|---|
| FP | Flo-Pac |

**Outside Diameter**

| CODE | INCHES | SERIES |
|---|---|---|
| 3 | 2 ½ | 300 |
| 5 | 4 ½ | 500 |
| 6 | 6 ¼ | 600 |
| 7 | 6 ¼ | 700 |

**Length**

| CODE | INCHES | SERIES |
|---|---|---|
| 10 | 9 5/8 | 300 |
| 14 | 14 3/8 | 600 |
| 18 | 18 | 500, 700 |
| 20 | 19 3/4 | 300 |
| 29 | 29 | 600 |
| 29 | 29 ¼ | 300 |
| 30 | 29 5/8 | 300 |
| 36 | 36 | 700 |
| 40 | 40 | 300 |
| 44 | 43 3/8 | 600 |
| 54 | 54 | 700 |

**Micron Rating (µm)**

| |
|---|
| 0.5 |
| 1 |
| 5 |
| 10 |
| 20 |
| 30 |
| 60 |

**Inside Diameter**

| CODE | INCHES | SERIES |
|---|---|---|
| None | 1" (300) | 300 |
| None | 1 3/4" (500) | 500 |
| None | 3 1/2" (600) | 600 |
| None | 2 5/8" (700) | 700 |
| 1 | 1 5/16" (600) | 600 |
| 8 | 2 1/4" (700) | 700 |

**Seal Material**

| CODE | DESCRIPTION |
|---|---|
| None | Buna-N Gaskets |
| A | Vellumoid (300, 600, 700 Series) |
| B | Fiber (500 Series Only) |
| C | Cork (700 Series Only) |
| G | Buna-N Grommets (600 Series 1 5/16" ID) |
| V | Viton® |

**Body**

| CODE | DESCRIPTION |
|---|---|
| None | Metal (500, 600, 700 Series) |
| | Polypro (300 Series) |
| M | Metal (300 Series) |
| N | No Body |

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# 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; ß = 20).

## Contact Information

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**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## 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)

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# 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 ½ in ID) | 50gpm |
| 600 Series (1 $^{9}/_{16}$ in ID) | 35gpm |
| 700 Series | 50gpm |

Differential Pressure: 70psi (4.8bar)

### Dimensions

300 Series
2½ in OD x 1 in ID x 9 $^{5}/_{8}$ in, 19 ¾ in, 29 ¼ in, 29 $^{5}/_{8}$ in and 40 in long

600 Series
6 ¼ in. OD x 3 ½ in. ID or 1 $^{9}/_{16}$ in. ID x 14 $^{3}/_{8}$ in. long or 29 in. long

700 Series
6 ¼ 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)**

| 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 |
| FP614 | 3.6 |
| FP629 | 7.2 |
| FP718 | 6.5 |
| FP736 | 13.0 |

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

| Cartridge | ß=5000 Absolute | ß=1000 99.9% | ß=100 99% | ß=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:**
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.

## Ordering Information

FPE – [ ] – [ ] – [ ] – [ ] – [ ] – [ ]

**Cartridge Code**

| Flo-Pac + |
|---|

**Outside Diameter**

| CODE | INCHES | SERIES |
|---|---|---|
| 3 | 2 ½ | 300 |
| 6 | 6 ¼ | 600 |
| 7 | 6 ¼ | 700 |

**Length**

| CODE | INCHES | SERIES |
|---|---|---|
| 10 | 9 $^{5}/_{8}$ | 300 |
| 14 | 14 $^{3}/_{8}$ | 600 |
| 18 | 18 | 700 |
| 20 | 19 ¾ | 300 |
| 29 | 29 | 600 |
| 29 | 29 ¼ | 300 |
| 30 | 29 $^{5}/_{8}$ | 300 |
| 36 | 36 | 700 |
| 40 | 40 | 300 |
| 44 | 43 ½ | 600 |
| 54 | 54 | 700 |

**Micron Rating (µm)**

| 0.5 |
|---|
| 1 |
| 5 |
| 10 |
| 20 |
| 30 |
| 60 |

**Inside Diameter**

| CODE | INCHES | SERIES |
|---|---|---|
| None | 1 | 300 |
| None | 3 ½ | 600 |
| None | 2 $^{5}/_{8}$ | 700 |
| 1 | 1 $^{9}/_{16}$ | 600 |
| 8 | 2 $^{1}/_{8}$ | 700 |

**Seal Material**

| CODE | DESCRIPTION |
|---|---|
| A | Vellumoid (300, 600, 700 Series) |
| C | Cork (700 Series Only) |
| N | Buna-N |
| V | Viton® |

**Body**

| CODE | DESCRIPTION |
|---|---|
| None | Louvered Metal Body (300, 600, 700) |
| EX | Expanded Metal (600, 700) |

Specifications are subject to change without notification.
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DS_IP_Flo-Pac Plus Rev. B

# 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.

## Contact Information

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Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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 materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
  *(except 200 & 400 micron)*
- High surface area yields high flow rate, low differential pressure
- Non-fiber-releasing media with minimal extractables provides high- purity filtrate
- ISO 9001 registered company

## Applications

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

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# 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 *(except 20 & 40 micron)*
- 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:**
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.

**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. | ß=5000 Abso-lute | ß=1000 99.8% | ß=100 99% | ß=20 95% | ß=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**

| CODE | MICRON |
|---|---|
| 002 | 0.2 |
| 004 | 0.45 |
| 010 | 1.0 |
| 020 | 2.0 |
| 030 | 3.0 |
| 050 | 5.0 |
| 100 | 10 |
| 200* | 20 |
| 400* | 40 |

*Non-FDA (add '-N' to end of part#)

**Nominal Length**

| CODE | INCHES | mm |
|---|---|---|
| 9 | 9 5/8" | 244 |
| 10 | 9 13/16" | 249 |
| 19 | 19 5/8" | 498 |
| 20 | 19 13/16" | 506 |
| 29 | 29 1/4" | 743 |
| 30 | 30 1/16" | 764 |
| 39 | 39" | 991 |
| 40 | 40" | 1016 |

**Support Construction**

| CODE | MATERIAL |
|---|---|
| F | Glass-filled polypropylene core & pure polypropylene extruded outer cage |
| G[1] | 304 Stainless Steel core with polyester outer netting |
| P | Polyester core, end caps & outer netting |
| S | 316 Stainless Steel |

[1]Stainless steel end caps incl. only on DO option

**Seal Material**

| CODE | MATERIAL |
|---|---|
| P | Polyethylene Foam (DOE gasket only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T[2] | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |
| X | No seal material |

[2]PFA/Viton is O-ring only; for DOE

**End Cap Configuration**

| CODE | DESCRIPTION | CODE | DESCRIPTION |
|---|---|---|---|
| AR | 020 O-ring/ Recessed cap | TB | |
| DO | Double open end (DOE) | TC | 222 O-ring/Flat Cap |
| DX | Double open end/ extended core | TF | 222 O-ring/Fin |
| LL[3] | 120 O-ring/ Recessed Cap | TX | 222 O-ring/Flex Fin |
| LR | 120 O-ring/Recessed[3] | XB | Ext. core open end/ Polypropylene spring closed end |
| OB | Std. open end/ Polypropylene spring closed end | SSC | SS inserted 226 O-ring/Closed |
| PR | 213 O-ring/ Recessed cap[3] | SSF | SS inserted 226 O-ring/Fin |
| SC | 226 O-ring/Flat Cap | STC | SS inserted 222 O-ring/Closed |
| SF | 226 O-ring/Fin | STF | SS inserted 222 O-ring/Fin |

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

**Special Options**

| CODE | DESCRIPTION |
|---|---|
| Blank | None |
| Z6 | Individual Poly bag only |
| Z15 | Individual poly bag 15/ctn. (20", 30", 40") |
| Z30 | Individual poly bag 30/ctn. (10") |

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DS_IP_Glass-Mate Rev. B

# 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 (ß = 5000, 99.98%).

## Contact Information

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**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## Applications

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

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# 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 2⅛″ 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 | ß = 5000 99.98% | ß = 1000 99.9% | ß = 100 99% | ß = 20 95% | ß = 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 (ß) =**

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

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

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

## Ordering Information

| Cartridge Code | |
|---|---|
| PPC | Pleated Polypropylene |

| Nominal Particle (µm) Removal Rating | |
|---|---|
| CODE | MICRON |
| 005 | 0.5 |
| 010 | 1.0 |
| 020 | 2.0 |

| Size Code | |
|---|---|
| CODE | LENGTH (IN) |
| 1401 | 38.75 |

| Cartridge Code | |
|---|---|
| PCC* | Pleated Cellulosic |
| PCG** | Pleated Celluosic (14% Glass fiber) |

*Only avail. in code 3, 10 & 30
**Only avail. in code 020

| Nominal Particle (µm) Removal Rating | |
|---|---|
| CODE | MICRON |
| 020 | 2.0 |
| 3 | 3.0 |
| 10 | 10.0 |
| 30 | 30.0 |

| Size Code | |
|---|---|
| CODE | LENGTH (IN) |
| 1401 | 38.75 |

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# 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: ß = 100).

## Contact Information

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**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## Applications

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

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# 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/cm$^2$)
Optimum Change Out DP: 35psi (2.5 km/cm$^2$)

**Polypropylene Support**
Maximum Temperature @ 10psid (0.7 km/cm$^2$): 200°F (93°C)

Maximum Temperature @ 35psid (2.5 km/cm$^2$): 125°F (52°C)

Maximum ΔP @ 75°F (24°C): 60psi (4.2 kg/cm$^2$)

Change Out DP: 35psi (2.5 km/cm$^2$)

**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 (ß) =**

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

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

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:**
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.

**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. | ß=5000 Absolute | ß=1000 99.7% | ß=100 99% | ß=50 98% | ß@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 | |
|---|---|
| PCG020 | 2 |
| PCC3 | 3 |
| PCC10 | 10 |
| PCC30 | 30 |
| PCC60 | 60 |

| Nominal Length | |
|---|---|
| CODE | INCHES (MM) |
| 9 | 9 5/8" (244) |
| 10 | 9 13/16" (249) |
| 19 | 19 5/8" (498) |
| 20 | 19 15/16" (506) |
| 29 | 29 1/4" (743) |
| 30 | 30 1/16" (764) |
| 40 | 40 (1016) |

| Support Construction | |
|---|---|
| CODE | MATERIAL |
| A | Polypropylene (DOE/SOE) |
| G | 304 Stainless Steel (DOE) |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| P | Poly Foam (DOE Gasket Only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| V | Viton® |

| End Cap Configuration | |
|---|---|
| CODE | DESCRIPTION |
| AR | 020 O-ring/Recessed (Gelman) |
| DO | Double open end (DOE) |
| DX | DOE w/Core Extender |
| LL | 120/120 (Filterite LMO and Nuclepore Polymeric Vessels)* |
| LR | 120 O-ring/Recessed (Nuclepore)* |
| OB | Std. Open End/Polypro Spring Closed End |
| PR | 213 O-ring/Recessed (Ametek Polymeric Vessels)* |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| TB | 222 Open End/Polypro Spring Closed End |
| 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

Specifications are subject to change without notification.
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DS_IP_PCC Rev. B

# 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; ß = 100).

## Contact Information

Parker Hannifin Corporation
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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
- ISO 9001 registered company

## Applications

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

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# 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 ½ in (63.5 mm)
Cartridge Inside Diameter
DOE – 1 1/16 in (27 mm)
SOE – 1 in. (25.4 mm)

**Filtration Ratings**
99% at 0.5µm, 1µm, 5µm, 10µm, 30µm, and 60µm 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 (ß) =**

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

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

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 1cks 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 (µm) @ Removal Efficiency of:**

| Cartridge | ß=5000 99.98% | ß=1000 99.9% | ß=100 99% | ß=50 98% | ß=20 95% | ß=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)**

| Rating (µm) | Flow Factor |
|---|---|
| 0.5 | 0.0900 |
| 1.0 | 0.0530 |
| 5.0 | 0.0290 |
| 10.0 | 0.0068 |
| 30.0 | 0.0048 |
| 60.0 | 0.0030 |

**Poly-Mate Length Factors**

| Inches | Factor |
|---|---|
| 9 | 1 |
| 10 | 1 |
| 19 | 2 |
| 20 | 2 |
| 24 | 3 |
| 30 | 3 |
| 39 | 4 |
| 40 | 4 |

## Ordering Information

□ □ – □ □ □ – □ □

**Cartridge Code**

| | |
|---|---|
| PM | Standard |
| PXD | Xtra Duty |

**Pore Size**

| CODE | MICRON |
|---|---|
| 005 | 0.5 |
| 010 | 1.0 |
| 050 | 5.0 |
| 100 | 10.0 |
| 300 | 30.0 |
| 600 | 60.0 |

**Nominal Length**

| CODE | INCHES (MM) |
|---|---|
| 9 | 9 5/8 (244) |
| 10 | 9 13/16 (249) |
| 19 | 19 5/8 (498) |
| 20 | 19 15/16 (506) |
| 29 | 29 ¼ (743) |
| 30 | 30 1/16 (764) |
| 40 | 40 (1016) |

**Core**

| CODE | MATERIAL |
|---|---|
| A | Natural Polypropylene (PM core only) |
| F | Glass-filled polypropylene (PXD core only) |
| G | 304 stainless steel (core only) |

**Seal Material**

| CODE | MATERIAL |
|---|---|
| P | Polyfoam (DOE gasket only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T | PFA Encapsulated Viton® (222, 226 O-ring only)* |
| V | Viton® |
| X | No seal material |

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

**End Cap Configuration**

| CODE | DESCRIPTION |
|---|---|
| AR | 020 O-ring/Recessed cap |
| DO | Double open end (DOE) |
| DX | Double open end/extended core |
| LL | 120/120 (Filterlite LMO & Nuclepore Polymeric Vessels)** |
| LR | 120 O-ring/Recessed (Nuclepore)** |
| PR | 213 O-ring/Recessed cap (Ametek® & Parker LT Polymeric Vessels) ** |
| TC | 222 O-ring/Flat |
| TF | 222 O-ring/Fin |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |

**Available only in 9 5/8" (-9) and 19 5/8" (-10) lengths

**Special Options**

| CODE | DESCRIPTION |
|---|---|
| B | Bubble-point test |
| R | DI water rinse (5 minutes) |
| Z6 | Individual Poly bag only (PXD only) |
| Z15 | Individual Poly bag 15/ctn. (20", 30", 40") (PXD only) |
| Z30 | Individual Poly bag 30/ctn. (10") (PXD only) |

Specifications are subject to change without notification.
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DS_IP_Poly-Mate Rev. B



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# 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, 5.0µm, 30.0µm, 50.0µm, 100.0µm.

## Contact Information

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## 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
- ISO 9001 registered company

## Applications

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

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# 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 11/16 in.

Cartridge Inside Diameter:
- DOE: 1 1/16 in.
- SOE: 1 5/32 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

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

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

**Notes:**

1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow Factor is psid/gpm at 1cks 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:**

| Cart. | ß=1000 99.9% | ß=100 99% | ß=50 98% | ß=20 95% | ß=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

PMP — [ ] [ ] — [ ] — [ ] — [ ] — [ ]

**Cartridge Code**

| | |
|---|---|
| PMP | Poly-Mate Plus |

**Pore Size**

| CODE | MICRON |
|---|---|
| 002 | 0.25 |
| 004 | 0.45 |
| 008 | 0.8 |
| 020 | 2 |
| 030 | 3 |
| 050 | 5 |
| 100 | 10 |
| 300 | 30 |
| 500 | 50 |
| 1000 | 100 |

**Nominal Length**

| CODE | INCHES |
|---|---|
| 4 | 4 |
| 10 | 9 13/16 |
| 20 | 19 15/16 |
| 30 | 30 1/16 |
| 40 | 40 |

**Support Construction**

| CODE | MATERIAL |
|---|---|
| A | Natural Polypropylene (All support components) |

**Seal Material**

| CODE | MATERIAL |
|---|---|
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T | PFA/Viton® (SOE) |
| V | Viton® |

**End Cap Configuration**

| CODE | DESCRIPTION |
|---|---|
| AR | 020 O-ring/Recessed cap |
| DO | Double open end (DOE) |
| DX | Double open end/extended core |
| LL | 120/120 (Filterlite LMO & Nuclepore Polymeric Vessels)** |
| LR | 120 O-ring/Recessed (Nuclepore)** |
| PR | 213 O-ring/Recessed cap (Ametek® & Parker LT Polymeric Vessels) ** |
| TC | 222 O-ring/Flat |
| TF | 222 O-ring/Fin |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |

**Available only in 9 5/8" (-9) and 19 5/8" (-10) lengths

**Special Options**

| CODE | DESCRIPTION |
|---|---|
| No Symbol | No Option |
| B | Bubble-point test |
| R | DI water rinse (5 minutes) |
| Z6 | Individual Poly bag only |

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DS_IP_Poly-Mate Plus Rev. C

# 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

Parker

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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.

## Contact Information

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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
- ISO 9001 registered company

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# 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

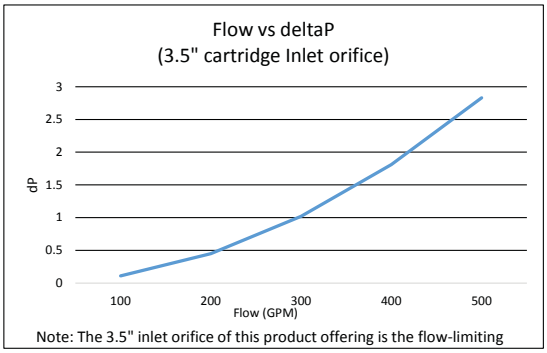
**Maximum Differential Pressure:**
70 lb.

**Maximum Recommended Operating Conditions:**

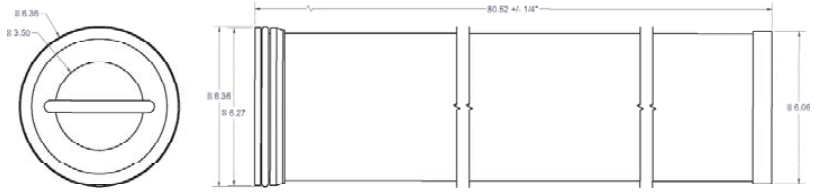
- Glass media with Polypropylene support is recommended for most applications where the operating temperature is up to 180 °F with no presence of Hydrocarbons.
- Glass media with Polyester support is recommended for most applications where the operating temperature is up to 258 °F with no presence of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

| ß=5000 Absolute | ß=1000 99.9% | ß=100 99% | ß=50 98% | ß=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 |



Note: The 3.5" inlet orifice of this product offering is the flow-limiting



## Ordering Information

HF – 80 – CS

| Cartridge Series |
|---|
| High Flow 80" |

| Media | |
|---|---|
| Code | Description |
| GN | Microglass media with nylon support |
| GP | Microglass media with polyester support |
| PP | Microglass media with polypropylene support |

| Micron Rating | |
|---|---|
| Code | Micron |
| 0-45 | .45 |
| 1-0 | 1.0 |
| 2-0 | 2.0 |
| 4-5 | 4.5 |
| 10 | 10 |
| 20 | 20 |
| 40 | 40 |
| 50 | 50 |
| 100 | 100 |

| Efficiencies | |
|---|---|
| Code | Description |
| A | Absolute (ß=5000) |
| N | Nominal (ß=10) |

| Length | |
|---|---|
| Code | Inches/mm |
| 80 | 80 |

| Seal Material | |
|---|---|
| E | EPDM |
| N | Buna-N |
| S | Silicon |
| V | Viton® |

| Body Material | |
|---|---|
| CS | Tin plated steel |

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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
- All cartridges constructed with polypropylene (MXGP) are FDA listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO 9001 registered company

## Applications

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

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# 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 | ß=5000 Absolute | ß=1000 \| 99.90% | ß=100 \| 99% | ß=50 \| 98% | ß=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

**MXGP** — ☐ – ☐ ☐ – ☐

| Cartridge Series |
|---|
| MXGP Polypropylene |

| Micron Rating | |
|---|---|
| 005 | 0.5 |
| 020 | 2.0 |
| 050 | 5.0 |
| 100 | 10 |
| 200 | 20 |
| 400 | 40 |
| 700 | 70 |

| Length | |
|---|---|
| Code | Inches |
| 30 | 30 |
| 40 | 40 |

| Seal Material | |
|---|---|
| E | EPR |
| N | Buna-N |
| V | Viton® |
| S | Silicon |
| T | PFA/Viton® |

| End Cap Configuration | |
|---|---|
| SM | 226 O-Ring/Flat Cap w/handle |

**MXGC** — ☐ – ☐ ☐ – ☐

| Cartridge Series |
|---|
| MXGP Cellulose |

| Micron Rating | |
|---|---|
| 020 | 2.0 |
| 100 | 10 |
| 150 | 15 |
| 700 | 70 |

| Length | |
|---|---|
| Code | Inches |
| 30 | 30 |
| 40 | 40 |

| Seal Material | |
|---|---|
| E | EPR |
| N | Buna-N |
| V | Viton® |
| S | Silicon |
| T | PFA/Viton® |

| End Cap Configuration | |
|---|---|
| SM | 226 O-Ring/Flat Cap w/handle |

Specifications are subject to change without notification.
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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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- All cartridges constructed with polypropylene (MGSP) are FDA listed as acceptable for potable and edible contact according to CFR Title 21
- Manufactured with strict quality control
- ISO 9001 registered company

## Applications

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

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# Fulflo® MaxGuard™ SELECT Filter Cartridges

## SPECIFICATIONS

### Materials of Construction

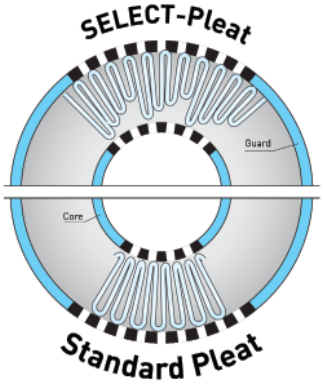
- Media:
  MGSP (polypropylene)
- Support/Drainage:
  Polypropylene (MGSP), stainless
- Structural components:
  Polypropylene (MGSP)
- Seal Material:
  Various

### 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 - 176ºF (80ºC) @
  30psid (2.1bar)
- Maximum Differential Pressure:
  Forward:
  70psid (4.8bar) @ 77ºF (25ºC)
  30psid (2.1bar) @ 176ºF (80ºC)




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 | ß = 5000 Absolute | ß = 1000 99.9% | ß = 100 99% | ß = 50 98% | ß = 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

MGSP □ – □ □ – □

| Cartridge Series |
|---|
| MaxGuard Select |

| Micron Rating | |
|---|---|
| 005 | 0.5 |
| 020 | 2 |
| 050 | 5 |
| 100 | 10 |
| 200 | 20 |
| 400 | 40 |
| 700 | 70 |

| Length | |
|---|---|
| Code | Inches |
| 30 | 30 |
| 40 | 40 |

| Seal Material | |
|---|---|
| E | EPR |
| N | Buna-N |
| V | Viton® |
| S | Silicon |
| T | PFA/Viton® |

| End Cap Configuration | |
|---|---|
| SM | 226/flat cap w/handle |

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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.

## Contact Information

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**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

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industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- All cartridges constructed with polypropylene are FDA listed as acceptable for potable and edible contact according to CFR Title 21
- Horizontal and vertical housings are available for flow rates up to 3,325gpm (12,586 lpm)
- ISO 9001 registered company

## Applications

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

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# Fulflo® 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

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

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.

## Ordering Information

MCN [ ] [ ] — 40 [ ]

| Cartridge Code |
|---|
| MegaFlow Nominal Series |

| Media | |
|---|---|
| P | Polypropylene |
| C | Cellulose |

| Micron Rating | |
|---|---|
| 005 | 0.5µm |
| 010 | 1µm |
| 050 | 5µm |
| 100 | 10µm |

| Length (in.) | |
|---|---|
| 40 | 40" |

| O-Ring Material | |
|---|---|
| E | EPR |
| N | Buna-N |
| S | Silicone |
| V | Viton® |

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DS_IP_MegaFlow Rev. A



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# 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.

## Contact Information

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118 Washington Avenue
Mineral Wells, TX 76067

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**www.parker.com/industrialprocess**

## 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
- All cartridges constructed with polypropylene are FDA listed as acceptable for potable and edible contact according to CFR Title 21
- Horizontal & vertical housings available for flow rates up to 3325gpm (12,586 lpm)
- Reduces process interruptions
- ISO 9001 registered company

## Applications

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

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# Fulflo® MegaFlow™ Plus Filter Cartridges

## SPECIFICATIONS

**Absolute Filtration Ratings**
**($\beta_x$ = 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 m$^2$)

| 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**

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

Clean ΔP = Flow Rate x Viscosity x 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 □ □ – □ □

| Cartridge Code |
|---|
| MegaFlow Plus Absolute Series |

| Media | |
|---|---|
| CODE | DESCRIPTION |
| P | Polypropylene |
| C | Cellulose |

| Micron Rating | |
|---|---|
| CODE | µm |
| 010 | 1 (P) |
| 020 | 2 (P) |
| 050 | 5 (P) |
| 100 | 10 (P, C) |
| 150 | 15 (C) |
| 200 | 20 (P) |
| 250 | 25 (C) |
| 400 | 40 (P) |
| 700 | 70 (P) |
| 1000 | 100 (C) |
| 1500 | 150 (C) |

| Length | |
|---|---|
| CODE | IN. |
| 40 | 40" |

| O-Ring Material | |
|---|---|
| CODE | DESCRIPTION |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| V | Viton® |

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DS_IP_MegaFlow Plus Rev. A



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# 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.

## Contact Information

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**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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 of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Manufactured with strict quality control
- ISO 9001 registered company

## Applications

- Process water
- Water
- Spirits
- Food and beverage

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# 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

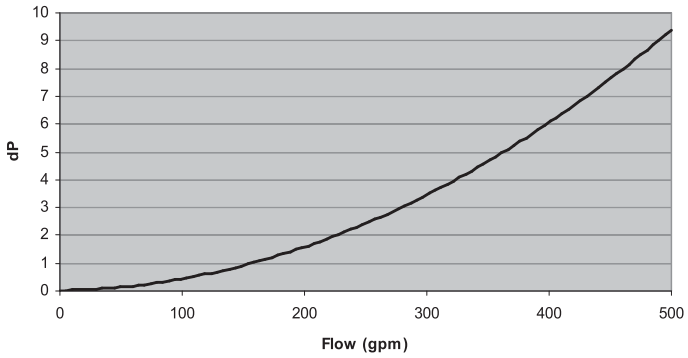
**Maximum Operating Conditions:**
Maximum Temperature
176°F (80°C) @ 30psid (2.1bar)

**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

| Cartridge Code | |
|---|---|
| Code | Description |
| RCP* | Polypropylene |
| RMG** | Glass |

*Avail. in all micron sizes
**Avail. in all micron sizes except 90 micron

| Micron Rating | |
|---|---|
| Code | µm |
| 008 | 0.8 |
| 010 | 1.0 |
| 030 | 3.0 |
| 045 | 4.5 |
| 100 | 10 |
| 200* | 20 |
| 400* | 40 |
| 900 | 90 |

*Non-FDA compliant in glass only

| Length | |
|---|---|
| Code | Inches |
| 20 | 20˝ (50.8 cm) |
| 40 | 40" (101.6 cm) |
| 60 | 60" (152.4 cm) |

| Seal Material | |
|---|---|
| Code | Description |
| E | EPDM |
| N | Buna-N |
| S | Silicon |
| V | Viton® |

PP

| End Cap Configuration | |
|---|---|
| Code | Description |
| PP | 435 O-ring/Closed |

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DS_IP_ ParMax Cartridge Rev. C

# 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.

## Contact Information

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**www.parker.com/industrialprocess**

## Benefits

- Large diameter yields higher flow rates than traditional 2.5″ filters
- High flow capacity allows for fewer elements and less capital expense
- 100% thermally welded
- Inside-out flow pattern ensures positive capture of contaminants
- Absolute retention ratings for critical filtration
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Manufactured with strict quality control
- ISO 9001 registered company

## Applications

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

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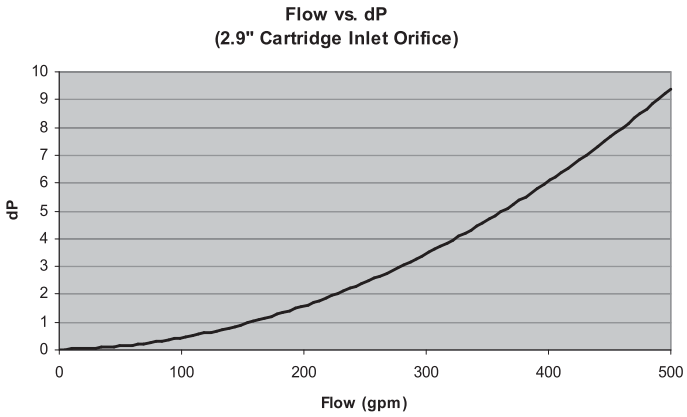
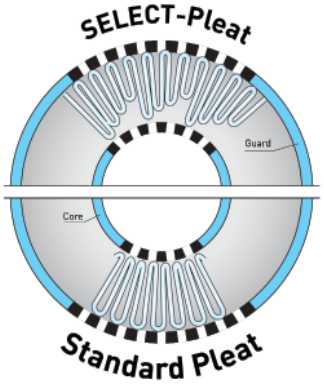
# Fulflo ParMax™ SELECT Cartridge

## ParMax™ Select High Flow Cartridge




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

[ ] [ ] – [ ] [ ] PP

| Cartridge Code | |
|---|---|
| Code | Description |
| RSCP* | Polypropylene |
| RSMG** | Glass |

*Avail. in all micron sizes
**Avail. in all micron sizes except 90 micron

| Micron Rating | |
|---|---|
| Code | µm |
| 008 | 0.8 |
| 010 | 1.0 |
| 030 | 3.0 |
| 045 | 4.5 |
| 100 | 10 |
| 200* | 20 |
| 400* | 40 |
| 900 | 90 |

*Non-FDA compliant in glass only

| Length | |
|---|---|
| Code | Inches |
| 20 | 20″ (50.8 cm) |
| 40 | 40" (101.6 cm) |
| 60 | 60" (152.4 cm) |

| Seal Material | |
|---|---|
| Code | Description |
| E | EPDM |
| N | Buna-N |
| S | Silicon |
| V | Viton® |

| End Cap Configuration | |
|---|---|
| Code | Description |
| PP | 435 O-ring/Closed |

Specifications are subject to change without notification.
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DS_IP_ParMax Select Rev. C



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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

Parker

www.parker.com/industrialprocess



Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

Toll free sales & technical support:
940.325.2575
industrialprocess.na@parker.com

# 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.

## Contact Information

Parker Hannifin Corporation
**Bioscience Division - N.A.**
2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## 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 of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21

## 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)

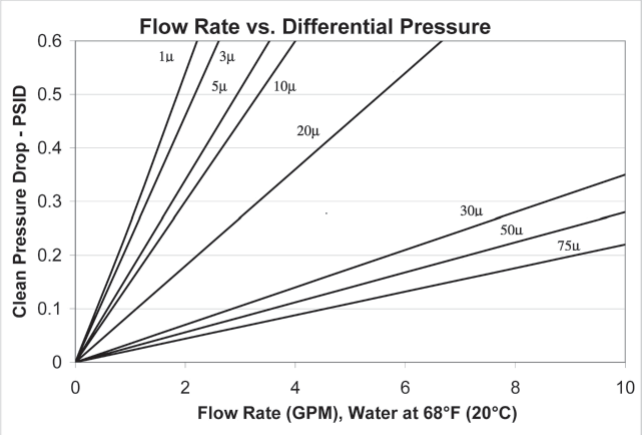
Flow Rate
5gpm (18.9 lpm) per 10" length

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 centipose.

## Ordering Information

AVS [ ] M [ ] — [ ] — [ ]

| Cartridge Code | |
|---|---|
| AVS | AVS Cartridge |

| Micron Rating |
|---|
| 1 |
| 3 |
| 5 |
| 10 |
| 20 |
| 30 |
| 50 |
| 75 |

| Nominal Length | | |
|---|---|---|
| CODE | INCHES | MM |
| 4 | 4 | 102 |
| 9.75 | 9.75 | 248 |
| 10 | 10 | 254 |
| 19.5 | 19.5 | 495 |
| 20 | 20 | 508 |
| 29.25 | 29 ¼ | 743 |
| 30 | 30 | 762 |
| 39 | 39 | 991 |
| 40 | 40 | 1016 |

| End Cap Configuration | |
|---|---|
| CODE | DESCRIPTION |
| None | Double Open End (DOE) w/o gaskets |
| DO | DOE |
| LL | 120 O-ring both ends** |
| LR | 120 O-ring/Recessed** |
| OB | Std. open end/Polypropylene spring closed end |
| PR | 213 O-ring/Recessed** |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| TB | 222 Open end, poly 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 |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| None | Omit |
| A | Poly foam gaskets w/ collars (DO only) |
| E | EPR |
| N | Buna-N |
| S | Silicone (o-ring only) |
| T | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |
| W | Poly foam gaskets w/o collars (DO only) |

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

Specifications are subject to change without notification.
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DS_IP_Avasan Rev. B



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# 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.

## Contact Information

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**Bioscience Division - N.A.**
2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## 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
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Polyolefin construction provides broad chemical compatibility for a variety of applications 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
- ISO 9001 registered company

## 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**

| Rating (µm) | Aqueous Service psi/gpm per 10 in cartridge |
|---|---|
| DBC1 | 0.109 |
| DBC3 | 0.087 |
| DBC5 | 0.073 |
| DBC10 | 0.058 |
| DBC25 | 0.031 |
| DBC50 | 0.022 |
| DBC75 | 0.015 |
| DBC100 | 0.012 |

**DBC 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

Flow Rate (gpm):
Clean ΔP x Length Factor
Viscosity x Flow Factor

Clean ΔP:
Flow Rate x Viscosity x Flow Factor
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.

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

| Cartridge | ß=1000 \| 99.9% | ß=100 \| 99% | ß=20 \| 95% | ß=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 (ß) = Upstream Particle Count @ Specified Particle Size and Larger / Downstream Particle Count @ Specified Particle Size and Larger

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

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 | |
|---|---|
| DBC | DuraBond |

| Micron Rating |
|---|
| 1 |
| 3 |
| 5 |
| 10 |
| 25 |
| 50 |
| 75 |
| 100 |

| Nominal Length | | |
|---|---|---|
| CODE | IN. | mm |
| 9-4 | 9-¾ | 248 |
| 10 | 10 | 254 |
| 19-4 | 19-½ | 495 |
| 20 | 20 | 508 |
| 29-4 | 29-¼ | 743 |
| 30 | 30 | 762 |
| 39-4 | 39 | 991 |
| 40 | 40 | 1016 |
| 50 | 50 | 1270 |

| End Cap Configuration | |
|---|---|
| CODE | DESCRIPTION |
| None | Double Open End (DOE) w/o gaskets |
| AR | 020 Flat (Gelman) |
| DO | DOE |
| LL | 120 O-ring both ends** |
| LR | 120 O-ring/Recessed** |
| OB | Std. open end/Polypropylene spring closed end |
| PR | 213 O-ring/Recessed** |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| TB | 222 Open end, poly 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 |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| None | No Seal Mat. (Std. DOE) |
| A | Poly foam gaskets w/collars (DO only) |
| E | EPR |
| N | Buna-N |
| S | Silicone (O-ring only) |
| T | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |
| W | Poly foam gaskets w/o collars (DO only) |

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

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- ISO 9001 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

### Ordering Information (Ultrafine Wound Depth Cartridge)

□ □ □ □ – □ – □

**Filter Medium**

| Code | Description |
|---|---|
| C | FDA Grade Cotton |
| E | FDA Grade Rayon |
| M | FDA Grade Polypropylene |
| T | Industrial Grade Polypropylene |
| WC | Industrial Grade White Cotton |

**Nominal Length**

| Code | Size (Inches) |
|---|---|
| 9-4 | 9-⅞ |
| 10 | 10 |
| 19-4 | 19-½ |
| 20 | 20 |
| 29-4 | 29-¼ |
| 30 | 30-3/16 |
| 39-4 | 39 |
| 40 | 40-3/16 |

**Core Material**

| Code | Description |
|---|---|
| None | Tinned Steel |
| A | Polypropylene |
| A3 | Glass-filled Polypropylene |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |

**Core Cover Material**

| Code | Description |
|---|---|
| None | Glass paper with polyester overlay |
| B | Nylon |
| V | Non-woven Polyester |
| Y | Polypropylene |

**End Cap Configuration**

| Code | Description |
|---|---|
| None | DOE (w/o gaskets) |
| DO | DOE (w/ gaskets) |
| OB | Std. Open End/ Polypro Spring Closed End |
| TB | 222/Open end/ Polypro Spring Closed End |
| TC | 222/Closed |
| TF | 222/Fin |
| TX | 222/Flex fin |
| SC | 226/Closed |
| SF | 226/Fin |
| SX | 226/Flex fin |
| XA | Polypro Extender |
| XB | Extended Core Open End/Polypro Spring Closed End |
| XC | Extended Metal |

**Seal Material**

| Code | Material |
|---|---|
| None | Std. DOE |
| A | Polyfoam |
| E | EPDM |
| N | Buna-N |
| S | Silicone |
| T | Teflon Encapsulated Viton® |
| V | Viton® |

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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:**
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.

**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 (Standard Wound Depth Cartridge)

**Filter Medium**

| Code | Description |
|---|---|
| None | Cotton (FDA) |
| E | FDA Grade Rayon |
| K* | Baked Glass Fiber |
| M | FDA Grade Polypropylene |
| N | Nylon (FDA) |
| S | Polyester (FDA) |
| T | Industrial Grade Polypropylene |
| U | Natural Cotton |
| UK | Unbaked Glass Fiber |
| WC | White Cotton |

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

**Density**

| Code | Micron |
|---|---|
| 6R | 150 |
| 8R | 100 |
| 10R | 75 |
| 11R | 50 |
| 12R | 40 |
| 13R | 30 |
| 14R | 25 |
| 15R | 20 |
| 17R | 15 |
| 19R | 10 |
| 21R | 7 |
| 23R | 5 |
| 27R | 3 |
| 39R | 1 |

**Nominal Length**

| Code | Size (Inches) |
|---|---|
| 3 | 3 |
| 4 | 4 |
| 5 | 5 |
| 6 | 6 |
| 7 | 7 |
| 8 | 8 |
| 9-4 | 9-⅞ |
| 10 | 10 |
| 19-4 | 19-½ |
| 20 | 20 |
| 29-4 | 29-¼ |
| 30 | 30-3⁄16 |
| 39-4 | 39 |
| 40 | 40-3⁄16 |
| 50 | 50 |

**Core Material**

| Code | Description |
|---|---|
| None | Tinned Steel |
| A | Polypropylene |
| A3 | Glass-filled Polypropylene |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |
| SR | Passivated 316 Stainless Steel (Special Order) |

**Core Cover Material**

| Code | Description |
|---|---|
| None | No Cover |
| B | Nylon |
| V | Non-woven Polyester |
| W | Cellulosic Paper |
| Y | Polypropylene |

**End Treatment**

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

**Nominal Cartridge Diameter**

| Code | Description |
|---|---|
| None | 1" ID x 2-7⁄16" OD |
| -2 | 1" ID x 2-11⁄16" OD |
| -45 | 1" ID x 4-½" OD (9-⅞" and 20" length only) for Fulflo LTG and Ametek Big Blue Vessels |

**End Cap Configuration**

| Code | Description |
|---|---|
| None | DOE- Double open end (w/o gaskets) |
| DO | DOE (w/ gaskets) |
| OB | Std. Open End/ Polypro Spring Closed End |
| TB | 222/Open End/ Polypro Spring Closed End |
| TC | 222/Closed |
| TF | 222/Fin |
| TX | 222/Flex fin |
| SC | 226/Closed |
| SF | 226/Fin |
| XA | Polypro Extender |
| XB | Extended Core Open End/Polypro Spring Closed End |
| XC | Extended Metal |

**Seal Material**

| Code | Material |
|---|---|
| None | Std. DOE |
| A | Polyfoam |
| E | EPDM |
| N | Buna-N |
| S | Silicone |
| T | Teflon Encapsulated Viton® |
| V | Viton® |

**Packaging Options**

| Code | Description |
|---|---|
| Z | Individual Poly Bag |
| TIS | Tissue Wrap |

Specifications are subject to change without notification.
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DS_IP_Honeycomb Rev. D

# 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.

## Contact Information

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2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## 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 |

**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.

**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 |

## Ordering Information

MBN [ ] M [ ] — [ ] — [ ]

**Cartridge Code**

| MBN | MegaBond Nominal |
|---|---|

**Micrometer Rating (µm)**

| |
|---|
| .5 |
| 1 |
| 5 |
| 10 |
| 25 |
| 50 |

**Nominal Length**

| Code | Inches | mm |
|---|---|---|
| 9-4 | 9¾ | 248 |
| 10 | 10 | 254 |
| 19-4 | 19½ | 495 |
| 20 | 20 | 508 |
| 29-4 | 29¼ | 743 |
| 30 | 30 | 762 |
| 39-4 | 39 | 991 |
| 40 | 40 | 1016 |
| 50 | 50 | 1270 |
| 75 | 75 | 1905 |

**End Cap Configuration**

| Code | Description |
|---|---|
| None | DOE (w/o gaskets) |
| AR | 020/Flat (Gelman) |
| DO | DOE |
| LL | 120 O-ring both ends** |
| LR | 120 O-ring/Recessed** |
| OB | Std. open end/Polypropylene spring closed end |
| PR | 213 O-ring/Recessed** |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| 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/Poly-propylene spring closed end |

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

**Seal Material**

| Code | Material |
|---|---|
| None | No Seal Material (Std. DOE) |
| A | Poly Foam Gaskets w/ Collars (DO only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |
| W | Poly Foam Gaskets w/o Collars (DO only) |

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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 (ß = 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
- ISO 9001 registered company

## Contact Information

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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 (ß) =

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

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

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 1cks 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 | ß=5000 Absolute | ß=1000 \| 99.0% | ß=100 \| 99% | ß=50 \| 98% | ß=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

**MBP** [ ] **M** [ ] [ ] — [ ] — [ ]

| Cartridge Code | |
|---|---|
| MBP | MegaBond Plus |

| Micron Rating |
|---|
| 1 |
| 3 |
| 5 |
| 10 |
| 15 |
| 20 |
| 30 |
| 40 |
| 70 |
| 90 |
| 120 |

| Nominal Length | |
|---|---|
| CODE | INCHES |
| 9-4 | 9¾ |
| 10 | 10 |
| 19-4 | 19½ |
| 20 | 20 |
| 29-4 | 29¼ |
| 30 | 30 |
| 39-4 | 39 |
| 40 | 40 |

| Support Construction | |
|---|---|
| CODE | MATERIAL |
| N | Polypropylene |
| G | 304 SS (Core Only) |

| End Cap Configuration | | | |
|---|---|---|---|
| CODE | DESCRIPTION | CODE | DESCRIPTION |
| None | Std. Double Open End (DOE) / Polyfoam | SSC | SS inserted 226 O-ring/Closed |
| AR | 020/Flat (Gelman) | SSF | SS inserted 226 O-ring/Fin |
| DO | DOE | STC | SS inserted 222 O-ring/Closed |
| DX | DOE with Polypro extender | STF | SS inserted 222 O-ring/Fin |
| LL | 120 O-ring both ends** | TC | 222 O-ring/Flat |
| LR | 120 O-ring/Recessed** | TF | 222 O-ring/Fin |
| OB | Std. open end/Polypropylene spring closed end | TX | 222 O-ring/Flex Fin |
| PR | 213 O-ring/Recessed** | XA | DOE w/Extended Core |
| SC | 226 O-ring/Flat | XB | Ext. core open end/Polypropyl-ene spring closed end |
| SF | 226 O-ring/Fin | | |

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

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| None | Polyfoam (DOE only) |
| E | EPR |
| N | Buna-N |
| S | Silicone |
| T | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |

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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.

## Contact Information

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**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## 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 shredable
- 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

PRO [ ] – [ ] [ ] – [ ]

| Cartridge Code | |
|---|---|
| PRO | ProBond Series |

| Micron Rating (µm) |
|---|
| 2 |
| 5 |
| 10 |
| 25 |
| 50 |
| 75 |
| 125 |
| 150 |
| 200 |
| 250 |

| Nominal Length | | |
|---|---|---|
| CODE | IN. | mm |
| 9 | 9-¾ | 248 |
| 10 | 10 | 254 |
| 19 | 19-½ | 495 |
| 20 | 20 | 508 |
| 29 | 29-¼ | 743 |
| 30 | 30 | 762 |
| 39 | 39 | 991 |
| 40 | 40 | 1016 |

| End Cap Configuration | |
|---|---|
| CODE | DESCRIPTION |
| None | Std. double open end (DOE) coreless |
| CXC | Extended tinned steel core |
| C | Tinned steel core |
| NTC | Single open end 222 o-ring/Flat cap (Nylon) |
| OB | Std. open end/Polypropylene spring closed end |
| TC | Single open end 222 O-ring/Flat cap (ABS Plastic) |
| XA | Poly extender |
| XB | Extended core open end/ Polypropylene spring closed end |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| None | DOE and XA |
| E | EPR |
| N | Buna-N |
| S | Silicone (O-ring only) |
| T | PFA Encapsulated Viton® (222, 226 O-ring only) |
| V | Viton® |

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DS_IP_ProBond Rev A.



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# 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.

## Contact Information

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Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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
- ISO 9001 registered company

## Applications

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

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# 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 2-⅜ 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

SWC [ ] [ ] [ ] [ ] [ ] [ ] – [ ]

| Cartridge Code | |
|---|---|
| Code | Description |
| SWC | String Wound Cartridge |

| Micron Rating (Nominal) | |
|---|---|
| Code | Micron |
| 1 | 1.0 |
| 3 | 3.0 |
| 5 | 5.0 |
| 10 | 10.0 |
| 15 | 15.0 |
| 20 | 20.0 |
| 25 | 25.0 |
| 30 | 30.0 |
| 50 | 50.0 |
| 75 | 75.0 |
| 100 | 100.0 |

| Fiber Type | |
|---|---|
| Code | Material |
| C | Cotton (FDA Grade) |
| M | Polypropylene (FDA grade) |
| T | Polypropylene (Industrial grade) |
| U | Cotton, natural |
| WC | White cotton |

| Nominal Length | |
|---|---|
| Code | Inches |
| 9-4 | 9⅞ |
| 10 | 10 |
| 19-4 | 19½ |
| 20 | 20 |
| 29-4 | 29¼ |
| 30 | 30 3/16 |
| 39-4 | 39 |
| 40 | 40 3/16 |

| Core Material | |
|---|---|
| Code | Description |
| None | Tinned Steel |
| A | Polypropylene |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |

| Core Cover Material | |
|---|---|
| Code | Description |
| None | No Cover |
| V | Non-woven Polyester |
| Y | Polypropylene |

| Core Extender | |
|---|---|
| Code | Description |
| None | No Extender |
| OB | Std. Open End/ Polypro Spring Closed End |
| XA | Snap-in (Polypropylene) |
| XB | Extended Core Open End/Polypro Spring Closed End |
| XC | Integral (Tinned Steel 304SS or 316SS) |

| Packaging Options | |
|---|---|
| Code | Material |
| Z | Individual Poly Bag |

Specifications are subject to change without notification.
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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.

## Contact Information

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**www.parker.com/industrialprocess**

## Benefits

- Offer significant cost savings based on fewer system interruptions, decreased change-out labor expenses, reduced inventory and cartridge disposal costs, and extended cartridge life savings
- 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 of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- Continuous strand roving geometry provides performance consistency
- A special snap-in extender is available for polypropylene cores
- Extended center cores are available in tinned steel, 316 stainless steel and 304 stainless steel
- Fit all Fulflo vessels and most competitive vessels without compromising final product clarity or flow characteristics of the cartridge
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components
- ISO 9001 registered company

## Applications

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

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# Fulflo® XTL™ 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;
180°F (82°C) with glass-filled polypropylene cores

Cotton**:**
250°F (121°C) with tinned steel or stainless steel cores;
120°F (49°C) with polypropylene cores;
180°F (82°C) with glass-filled polypropylene cores

**Recommended Maximum:**
Change Out ΔP: 30psi (2.4bar)
Operating ΔP @ Ambient Temperature: 60psi (4.1bar)
Flow Rate: 5gpm (18.9 lpm) per 10 in. length

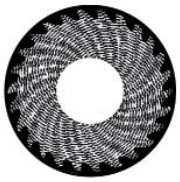
**Dimensions**
1 in. ID x 2 7/16 in. OD (nominal) 10, 20, 30 and 40 in. lengths nominal)

**Filtration Ratings**
1µm, 3µm, 5µm, 10µm, 20µm and 30µm @ 90% nominal efficiency

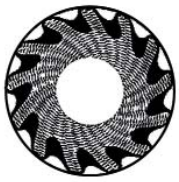
**Flow Rate and Pressure Drop Formulas**

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

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



Brand A @ 15psid



XTL @ 15psid

*Most wound cartridges tend to surface load thus preventing the maximum use of their internal surface area. As a result of a unique design and manufacturing process, the XTL cartridge allows the maximum use of its internal surface area. Shown here are illustrations of typical dirt-loading characteristics of a standard wound cartridge and an XTL cartridge at 15psi differential.*

**Length Factors**

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

**XTL Flow Factors (psid/gpm @ 1cks)**

| Rating (µm) | Cotton | Polypropylene |
|---|---|---|
| 1 | 2.00 | 0.75 |
| 3 | 0.63 | 0.33 |
| 5 | 0.36 | 0.24 |
| 10 | 0.19 | 0.14 |
| 20 | 0.11 | 0.09 |
| 30 | 0.09 | 0.07 |

**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 orΔP from 10 in. (single length) to required cartridge length.

## Ordering Information

XTL [ ] [ ] [ ] [ ] [ ] [ ] [ ] – [ ]

| Description |
|---|
| 'Extended Life' Wound Cartridge |

| Micron Rating (Nominal) | |
|---|---|
| Code | Micron |
| 1 | 1.0 |
| 3 | 3.0 |
| 5 | 5.0 |
| 10 | 10.0 |
| 20 | 20.0 |
| 30 | 30.0 |

| Fiber Type | |
|---|---|
| Code | Material |
| C | Cotton (FDA Grade) |
| M | Polypropylene (FDA grade) |
| T | Polypropylene |
| WC | White cotton |

| Core Material | |
|---|---|
| Code | Description |
| None | Tinned Steel |
| A | Polypropylene |
| A3 | Glass-filled polypropylene |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |

| End Treatment | |
|---|---|
| Code | Description |
| None | No treatment |
| L | Laquer |
| M | Singed |

| End Cap Configuration | |
|---|---|
| Code | Description |
| None | DOE- Double open end (w/o gaskets) |
| DO | DOE |
| OB | Std. Open End/ Polypro Spring Closed End |
| TB | 222 Open End/ Polypro Spring Closed End |
| TC | 222 O-ring/Flat |
| TF | 222 O-ring/Fin |
| TX | 222 O-ring/Flex fin |
| SC | 226 O-ring/Flat |
| SF | 226 O-ring/Fin |
| XA | Polypro/Extender |
| XB | Extended Core Open End/Polypro Spring Closed End |
| XC | Metal extender |

| Seal Material | |
|---|---|
| Code | Material |
| None | Std. DOE |
| A | Polyfoam |
| E | EPDM |
| N | Buna-N |
| S | Silicone |
| V | Viton® |

| Nominal Length | |
|---|---|
| Code | Inches |
| 9-4 | 9-⅞ |
| 10 | 10 |
| 19-4 | 19-½ |
| 20 | 20 |
| 29-4 | 29-¼ |
| 30 | 30 |
| 39-4 | 39 |
| 40 | 40 |

| Core Cover Material | |
|---|---|
| Code | Description |
| None | No cover |
| V | Non-woven polyester |
| Y | Polypropylene |

| Packaging Options | |
|---|---|
| Code | Material |
| Z | Individual Poly Bag |

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DS_IP_XTL Rev. C

# 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



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# 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
- ISO 9001 registered company

## Applications

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

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# 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**

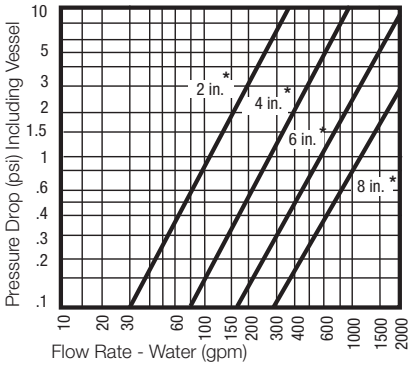
1. From the pressure drop chart below, determine the pressure drop through the vessel using the known flow rate and inlet/outlet size. The chart is for water flowing through a vessel containing a clean 20 mesh basket.
2. To determine the pressure drop for a vessel with other strainers, multiply the above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




*Vessel Port Size*

## Ordering Information

**Strainer Baskets With Handles**

| Single Length Stainless Steel (for CB, SB, & FB Vessels) | |
|---|---|
| **Type** | **Part #** |
| 1/8 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 (for CB, SB, & FB Vessels) | |
|---|---|
| **Type** | **Part #** |
| 1/8 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. B

# 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 Fulfo® 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 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

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# 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:**
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 single length bag.
4. 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

**C □ □ – □**

| Bag Size |
|---|
| 1 |
| 2 |

| | Polypropylene Media Micron (µm) |
|---|---|
| P | 1 |
| | 3 |
| | 5 |
| | 10 |
| | 25 |
| | 50 |
| | 100 |

| | Polyester Media Micron (µm) |
|---|---|
| PE | 1 |
| | 3 |
| | 5 |
| | 10 |
| | 25 |
| | 50 |
| | 75 |
| | 100 |
| | 200 |

| Seal Options | |
|---|---|
| None | Polypropylene Quik Seal Ring |
| F | Flex Band Seal |

**G □ □ – □**

| Bag Size |
|---|
| 1 |
| 2 |

| | Polypropylene Media Micron (µm) |
|---|---|
| P | 1 |
| | 3 |
| | 5 |
| | 10 |
| | 25 |
| | 50 |
| | 100 |

| | Polyester Media Micron (µm) |
|---|---|
| PE | 1 |
| | 3 |
| | 5 |
| | 10 |
| | 25 |
| | 50 |
| | 75 |
| | 100 |
| | 200 |

| Seal Options | |
|---|---|
| None | Carbon Steel Snap Ring |
| S | Stainless Steel O-ring |
| Q | Top Sealing Polypropylene Plastic Ring |

**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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## Polyester Multi-Filament Bags

C [ ] PEMU [ ] – [ ]

| Bag Size |
|---|
| 1 |
| 2 |

| Polyester Media |
|---|
| **Micron (µm)** |
| 150 |
| 200 |
| 250 |
| 300 |
| 400 |
| 800 |

| Seal Options | |
|---|---|
| None | Polypropylene Quik Seal Ring |
| F | Flex Band Seal |
| PE | Polyester Quik-Seal Ring |

G [ ] PEMU [ ] [ ] – H

| Bag Size |
|---|
| 1 |
| 2 |

| Polyester Media |
|---|
| **Micron (µm)** |
| 150 |
| 200 |
| 250 |
| 300 |
| 400 |
| 800 |

| Seal Options | |
|---|---|
| None | Carbon Steel Snap Ring |
| Q | Top Sealing Polypropylene Plastic Ring |

| Other Options | |
|---|---|
| H | Cotton Handle |

## Nomex Felt Bags

C [ ] NOM [ ] – F

| Bag Size |
|---|
| 1 |
| 2 |

| Nomex Media |
|---|
| **Micron (µm)** |
| 10 |
| 25 |
| 50 |
| 100 |

| Seal Options | |
|---|---|
| F | Flex Band Seal (Required) |

G [ ] NOM [ ] [ ] – H

| Bag Size |
|---|
| 1 |
| 2 |

| Nomex Media |
|---|
| **Micron (µm)** |
| 10 |
| 25 |
| 50 |
| 100 |

| Seal | |
|---|---|
| None | Carbon Steel Snap Ring |

| Other Options | |
|---|---|
| H | Cotton Handle |

## Nylon Mono-Filament Bags

C [ ] MNO [ ] – [ ]

| Bag Size |
|---|
| 1 |
| 2 |

| Nylon Media |
|---|
| **Micron (µm)** |
| 100 |
| 200 |
| 300 |
| 400 |
| 600 |

| Seal Options | |
|---|---|
| None | Polypropylene Quik Seal Ring |
| F | Flex Band Seal |
| PE | Polyester Quik-Seal Ring |

G [ ] MNO [ ] [ ] – Q

| Bag Size |
|---|
| 1 |
| 2 |

| Nylon Media |
|---|
| **Micron (µm)** |
| 100 |
| 200 |
| 300 |
| 400 |
| 600 |

| Seal | |
|---|---|
| None | Carbon Steel Snap Ring |

| Seal Options | |
|---|---|
| Q | Top Sealing Polypropylene Plastic Ring |

**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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www.parker.com/industrialprocess

# 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
- ISO 9001 registered company

## 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

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# 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
3-¼ 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:**

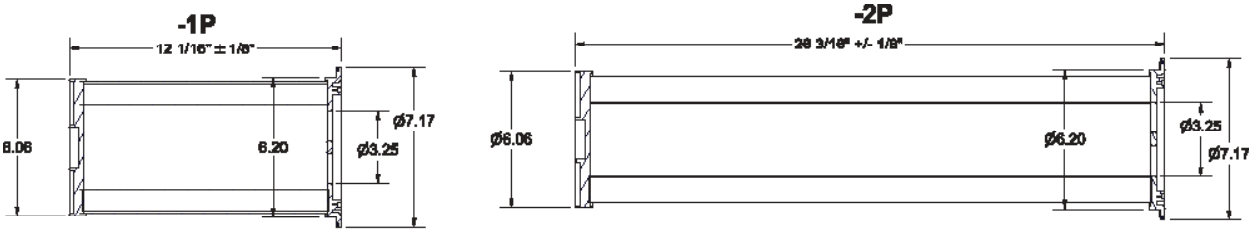
1. Clean ΔP is psi differential at start.
2. Viscosity is centistokes. Use Conversion Tables for other units.
3. Flow factor is psid/gpm at 1cks for 10 in. (or single).
4. Length factors convert flow or ΔP from 10 in. (single length) to required cartridge length.

| 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

HSPB — [ ] — [ ][ ] — US — [ ]

| Cartridge Series |
|---|
| High Surface Pleated Bag |

| Media Options | |
|---|---|
| Code | Micron |
| XF | 1-10 |
| F | 10-25 |
| M | 25-50 |
| MC | 50-100 |
| C | 100-200 |
| XC | 200-300 |

| Bag Size | |
|---|---|
| Code | End cap Material |
| 1 | P (Polypropylene) |
| 2 | E (Polyester) |

| End Cap | |
|---|---|
| Code | Description |
| US | Under seal |

| Seal Material | |
|---|---|
| E | EPR |
| N | Buna-N |
| V | Viton® |

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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.

## Contact Information


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**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

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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 contaminates 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
- All polypropylene constructed cartridges are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21
- ISO 9001 registered company

## Applications

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

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# 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
- Claripor CPPB
- Glass-Mate GMPB
- Poly-Mate PMPB
- Poly-Mate Plus PPPB

**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 membrance 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 | | | | |

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# Fulflo® Pleated Bag (PB) Series

## Ordering Information

### PMPB

Poly-Mate

| Micron Rating | |
|---|---|
| Code | µm |
| 010 | 1 |
| 025 | 2.5 |
| 050 | 5 |
| 150 | 15 |
| 480 | 48 |

| Bag Length |
|---|
| 1 |
| 2 |

| Hardware | |
|---|---|
| Code | Description |
| P | Polypropylene |

| Ring Style | |
|---|---|
| Code | Description |
| CQ | Plastic: “Q” Parker Top Sealing |
| CA | Elastomeric: Parker |
| GQ | Plastic: “Q” Competitive Top Sealing |
| GB | Elastomeric: GAF/FSI Side Entry Seal |
| GC | Elastomeric: Pall/FTC |
| GD | Elastomeric: FSI/Hayward Over the Top Seal |

| Seal Type (A, B, C, D only) | |
|---|---|
| Code | Description |
| N | Buna-N |
| E | EPR |
| V | Viton® |

### PPPB

Poly-Mate Plus

| Micron Rating | |
|---|---|
| Code | µm |
| 010 | 1 |
| 030 | 3 |
| 050 | 5 |
| 100 | 10 |
| 200 | 20 |
| 400 | 40 |
| 700 | 70 |
| 900 | 90 |

| Bag Length |
|---|
| 1 |
| 2 |

| Hardware | |
|---|---|
| Code | Description |
| P | Polypropylene |

| Ring Style | |
|---|---|
| Code | Description |
| CQ | Plastic: “Q” Parker Top Sealing |
| CA | Elastomeric: Parker |
| GQ | Plastic: “Q” Competitive Top Sealing |
| GB | Elastomeric: GAF/FSI Side Entry Seal |
| GC | Elastomeric: Pall/FTC |
| GD | Elastomeric: FSI/Hayward Over the Top Seal |

| Seal Type (A, B, C, D only) | |
|---|---|
| Code | Description |
| N | Buna-N |
| E | EPR |
| V | Viton® |

### CPPB

Claripor

| Micron Rating | |
|---|---|
| Code | µm |
| 015 | 1.5 |
| 030 | 3 |
| 045 | 4.5 |
| 100 | 10 |
| 200 | 20 |
| 300 | 30 |
| 400 | 40 |
| 700 | 70 |
| 900 | 90 |

| Bag Length |
|---|
| 1 |
| 2 |

| Hardware | |
|---|---|
| Code | Description |
| P | Polypropylene |

| Ring Style | |
|---|---|
| Code | Description |
| CQ | Plastic: “Q” Parker Top Sealing |
| CA | Elastomeric: Parker |
| GQ | Plastic: “Q” Competitive Top Sealing |
| GB | Elastomeric: GAF/FSI Side Entry Seal |
| GC | Elastomeric: Pall/FTC |
| GD | Elastomeric: FSI/Hayward Over the Top Seal |

| Seal Type (A, B, C, D only) | |
|---|---|
| Code | Description |
| N | Buna-N |
| E | EPR |
| V | Viton® |

### GMPB

Glass-Mate

| Micron Rating | |
|---|---|
| Code | µm |
| 015 | 1.5 |
| 030 | 3 |
| 100 | 10 |
| 200 | 20 |
| 400 | 40 |

| Bag Length |
|---|
| 1 |
| 2 |

| Hardware | |
|---|---|
| Code | Description |
| P | Polypropylene |

| Ring Style | |
|---|---|
| Code | Description |
| CQ | Plastic: “Q” Parker Top Sealing |
| CA | Elastomeric: Parker |
| GQ | Plastic: “Q” Competitive Top Sealing |
| GB | Elastomeric: GAF/FSI Side Entry Seal |
| GC | Elastomeric: Pall/FTC |
| GD | Elastomeric: FSI/Hayward Over the Top Seal |

| Seal Type (A, B, C, D only) | |
|---|---|
| Code | Description |
| N | Buna-N |
| E | EPR |
| V | Viton® |

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# 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.

## Contact Information

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**Industrial Process Filtration - N.A.**
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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
- ISO 9001 registered company

## Applications

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

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# 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

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

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

**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 single length bag.
4. 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.

Beta Ratio (ß):
Upstream Particle Count @ Specified Particle Size & Larger
Downstream Particle Count @ Specified Particle Size & Larger

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

## Ordering Information

**C [ ] XLH [ ] – [ ]**

| Bag SIZE |
|---|
| 1 |
| 2 |

| Micron Rating |
|---|
| .5µm |
| 1µm |
| 2.5µm |
| 10µm |
| 25µm |

| Seal Options | |
|---|---|
| None | Quik Seal |
| F | Flex Band Seal |

**G [ ] XLH [ ] – [ ] [ ]**

| Bag SIZE |
|---|
| 1 |
| 2 |

| Micron Rating |
|---|
| .5µm |
| 1µm |
| 2.5µm |
| 10µm |
| 25µm |

| Seal Options | |
|---|---|
| Q | Top Sealing Plastic Ring |

| Other Options | |
|---|---|
| None | Quik Seal |
| H | Cotton Handle |

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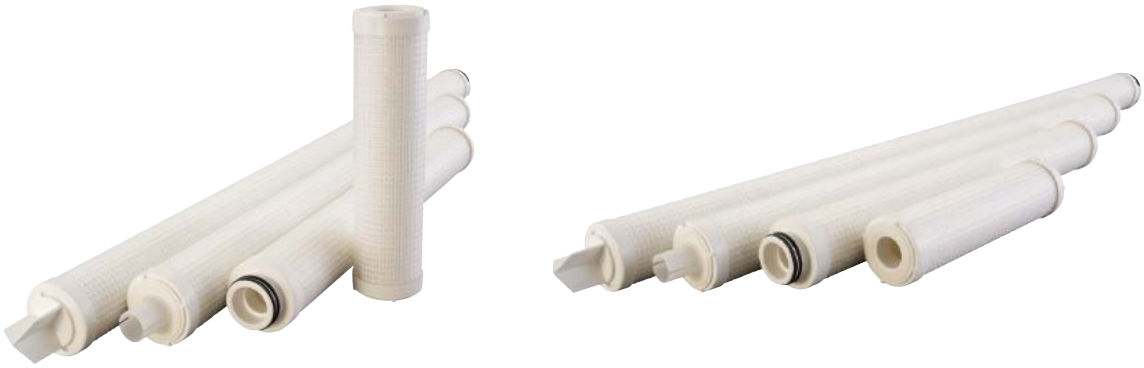
# Sorbent Media Series

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



Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark



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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.

## Contact Information

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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
- Variety of cartridge sizes & end cap options increase housing selection
- TruBind cartridges are completely incinerable
- ISO 9001 registered company

## 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

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# 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: 1 1/16″ 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.

1. 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.
2. 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 orgallons 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.
3. 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.

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

| 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 |

*Note: Cost per gallon decreases significantly with longer cartridges.*

## Ordering Information

TBC – [ ] – [ ] – [ ]

| Cartridge Series |
|---|
| TruBind Absorbent Cartridge |

| Length | | |
|---|---|---|
| Code | Inches | mm |
| 9 | 9 5/8 | 244 |
| 10 | 9 13/16 | 249 |
| 19 | 19 5/8 | 498 |
| 20 | 19 15/16 | 506 |
| 29 | 29 1/4 | 743 |
| 30 | 30 1/16 | 764 |
| 39 | 39 | 991 |
| 40 | 40 | 1016 |

| Support Core | |
|---|---|
| Code | End cap Material |
| A | Standard Wall Polypropylene Core |

| End Cap Configuration | |
|---|---|
| Code | Description |
| DO | Double open end (gasket seal) |
| DX | DOE with core extender |
| TC | Single open end (222 O-ring seal) |
| TX | 222 O-ring/Flex fin |

| Seal Material | |
|---|---|
| Code | Description |
| A | Polyolefin foam gasket (Std. for DO seal design) |
| E | EPDM |
| N | Buna-N O-ring (Std. for TC seal design) |
| S | Silicone |

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DS_IP_TruBind 300 Rev. B

# 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.

## Contact Information

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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
- ISO 9001 registered company

## 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

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# 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 ½ 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.

1. 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.
2. 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 orgallons 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.
3. 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:
Life (Hrs.) = 800/PPM
Removal Rate (Grams/Min) = 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

TBC – [ ] [ ] [ ] – [ ] – [ ]

| Cartridge Series |
|---|
| TruBind Absorbent Cartridge |

| Outside Diameter | | |
|---|---|---|
| Code | Inches | mm |
| 4 | 4 ½ | 114 |

| Cartridge Length | | |
|---|---|---|
| Code | Inches | mm |
| 10 | 9 13/16 | 249 |
| 20 | 19 15/16 | 506 |

| Support Core | |
|---|---|
| Code | End cap Material |
| A | Standard Wall Polypropylene Core |

| End Cap Configuration | |
|---|---|
| Code | Description |
| DO | Double open end (gasket seal) |

| Seal Material | |
|---|---|
| Code | Description |
| A | Polyolefin foam gasket (Std. for DO seal design) |

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DS_IP_TruBind 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

www.parker.com/industrialprocess

Tel: +45 63 12 83 00 | Email: ps@hymatik.com | www.hymatik.com | Hvidkaervej 27a, DK-5250 Odense SV, Denmark

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940.325.2575
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# 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.

## Contact Information

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Mineral Wells, TX 76067

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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 aggressive chemical compatibility
- 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/high temperature systems
- Cartridges can be cleaned & 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
- Pleated surface maximizes filtration area for longer service life
- Plain (cylindrical) surface provides ease of cleaning
- Welded and crimped construction eliminates the need for adhesives which can be a contaminant source and limit temperature range
- 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

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# 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:
  - 1500ºF (816°C) - NPTF & NPTM styles only
  - 500ºF (260°C) - Any cartridge style with PTFE grommet
  - 400ºF (204°C) - Any cartridge style with Viton® or PFA encapsulated Viton® seal material
  - 300ºF (149°C) - Any cartridge style with EPDM seal material
  - 250ºF (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 $ft^2$/10 in. length (465 $cm^2$/254mm)
Pleated
1.7 $ft^2$/10 in. length (1580 $cm^2$/254 mm)

**Dimensions**

- Outside Diameter:
  - Cylindrical: 2-½ in (64 mm)
  - Pleated: 2-⅝ 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 1-⅞ in. (48 mm) OD

**Flow Rate and Pressure Drop Formulas**

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

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

**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 | N/A |
| 5 | 14 | 200 x 1400 | N/A |
| 10 | 18 | 165 x 1400 | N/A |
| 20 | 32 | 200 x 600 | N/A |
| 40 | 55 | 120 x 400 | N/A |
| 75 | - | 190 x 200 | 35 |
| 100 | - | 30 x 150 | 31 |
| 150 | - | 90 x 100 | 33 |
| 190 | - | 70 x 80 | 35 |
| 230 | - | 50 x 60 | 41 |
| 280 | - | 40 x 50 | 35 |
| 370 | - | 40 x 40 | 36 |
| 540 | - | 30 x 30 | 45 |
| 840 | - | 20 x 20 | 52 |

*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 |
|---|---|
| 9-¾", 10 | 1 |
| 19-½", 20 | 2 |
| 29-¼", 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 | |
|---|---|
| CODE | DESCRIPTION |
| CSS | Cylindrical Stainless Steel |
| PSS | Pleated Stainless Steel |

| Nominal Micrometer Rating (µm) |
|---|
| 2 |
| 5 |
| 10 |
| 20 |
| 40 |
| 75 |
| 100 |
| 150 |
| 190 |
| 230 |
| 280 |
| 370 |
| 540 |
| 840 |

| Nominal Length | | |
|---|---|---|
| CODE | INCH | mm |
| 4 | 4 | 102 |
| 9 | 9.75 | 248 |
| 10 | 10 | 254 |
| 19 | 19.5 | 495 |
| 20 | 20 | 508 |
| 29 | 29.25 | 743 |
| 30 | 30 | 762 |
| 40 | 40 | 1016 |

| Media \| Support Construction | |
|---|---|
| CODE | DESCRIPTION |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |

| Seal Material | |
|---|---|
| CODE | MATERIAL |
| E | EPDM |
| F | PTFE (Grommet only) |
| N | Buna-N |
| T | PFA \| Viton® (O-ring only) |
| V | Viton® |
| X | No seal material (FC, MC style) |

| End Cap Configuration | |
|---|---|
| CODE | MATERIAL |
| DO | Double open end (DOE) |
| DX | Double open end w/extended core |
| FC | Single open end w/1" NPTF female connection |
| MC | Single open end w/ 1" NPTM male |
| SC | 226 O-ring \| Flat |
| TC | 222 O-ring \| Flat |

| Special Options | |
|---|---|
| CODE | DESCRIPTION |
| H | High pressure core (316 SS) |
| P | Pleat protector sleeve (316 SS) |

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DS_IP_Metallic Filter Rev. C

# 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 calendering 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

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# 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)

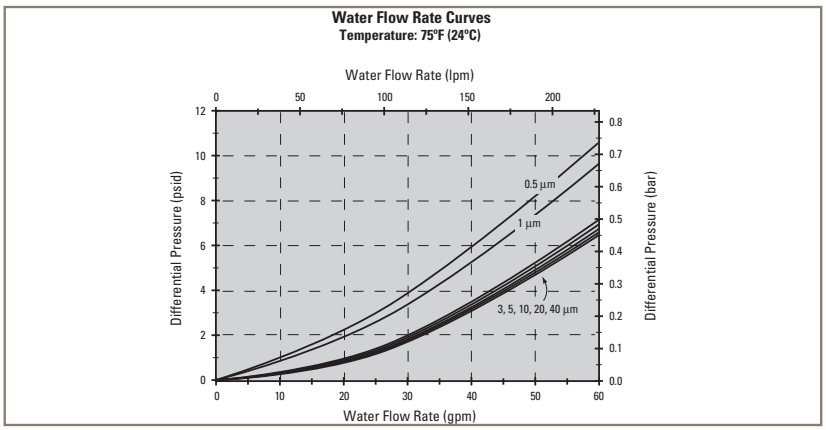
### Effective Filtration Area

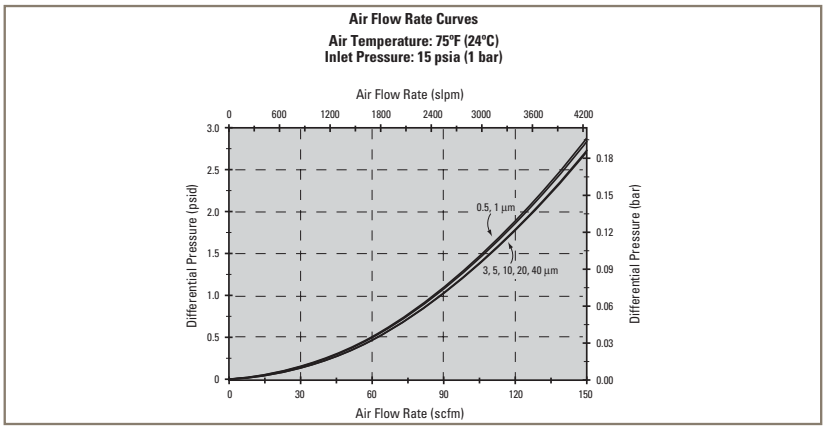
1.8ft² (0.17m²) per nominal 10 inch (250mm) cartridge.

### 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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DS_IP_Steelflow Rev. A

# 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



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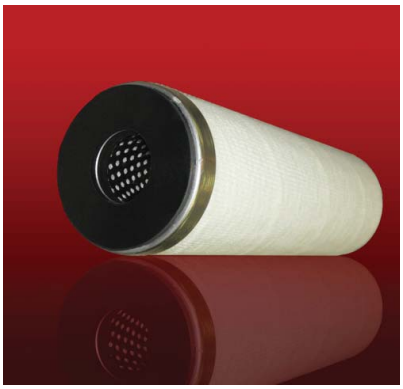
# Fulflo® LC Hydrocarbon Liquid-Liquid Coalescer

Optimized for removing water from hydrocarbons or hydrocarbons from water

Oil & Gas



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.

## Contact Information

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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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# Naphtha Coalescer

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

Oil & Gas

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 | 20-½" & 40-½", nominal (520.7 & 1028.7 mm) |
| Outside diameter | 3-¾" (95.25 mm) (4-¼" (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.

## Contact Information

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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, reformate
- Light catalytic cracked naphtha (LCN)
- Production of gasoline, jet fuel, ethylene, propylene

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# Solvent and Caustic Coalescer

Removes carried-over water and caustics from hydrocarbons

Oil & Gas

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.

## Contact Information

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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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www.parker.com/industrialprocess

# 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, commerical (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 baffel sleeve deflectors for two-stage moisture removal.

## Contact Information

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**www.parker.com/industrialprocess**

## 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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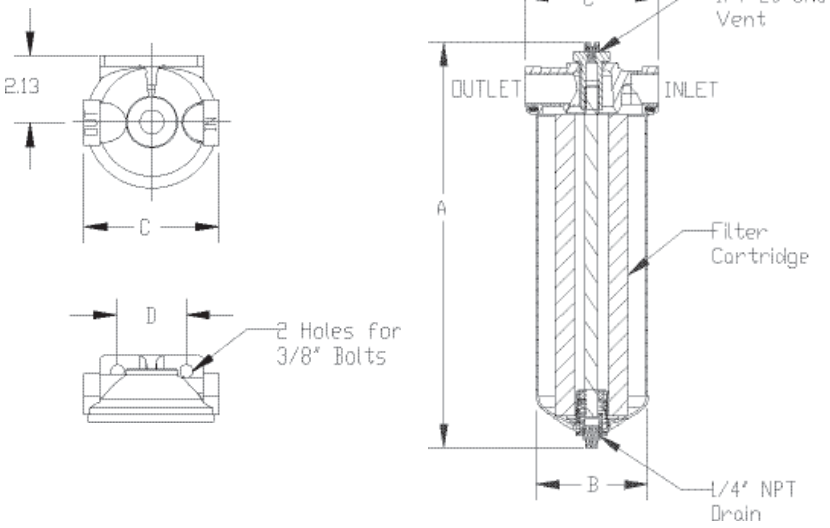
# Fulflo® B Filter Vessel

**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 |

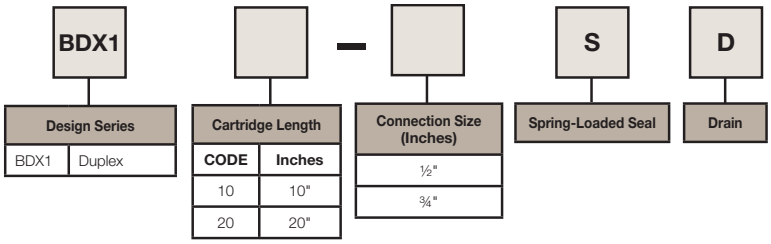
Note: B3A, B5A and B7A vessels supplied with 10µm Fulflo wound cotton cartridge

*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.

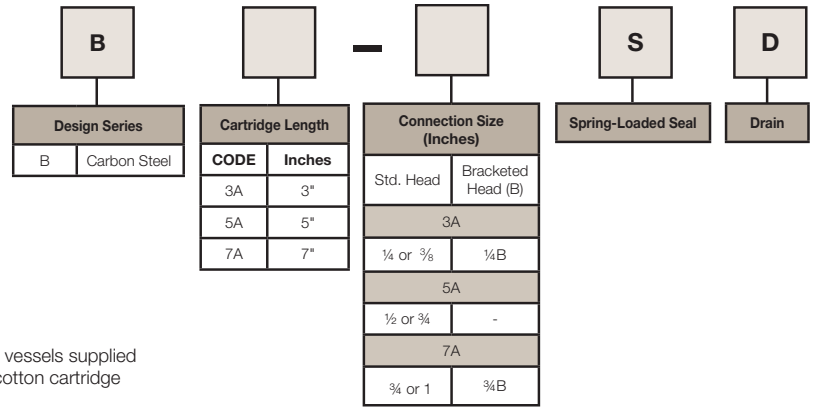
Specifications are subject to change without notification.
For User Responsibility Statement, see www.parker.com/safety

## Ordering Information

### DUPLEX

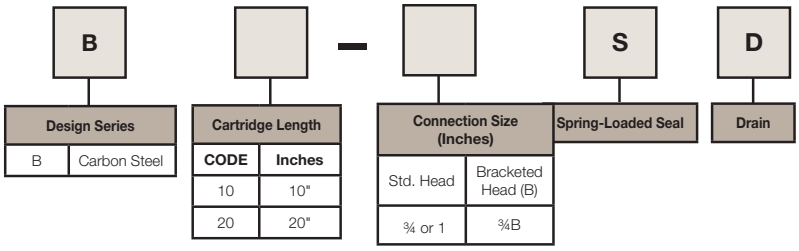



### AIR & OTHER GASES




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

### LIQUIDS

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Toll free sales & technical support:
**940.325.2575**
**industrialprocess.na@parker.com**

www.parker.com/industrialprocess

# 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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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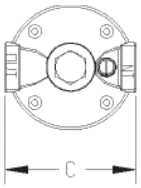
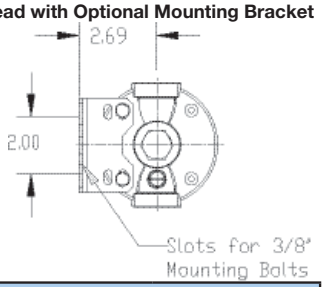
# Fulflo® BSSB Filter Vessel

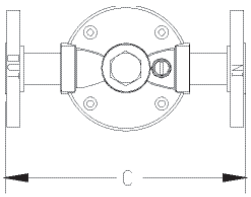
**Head**

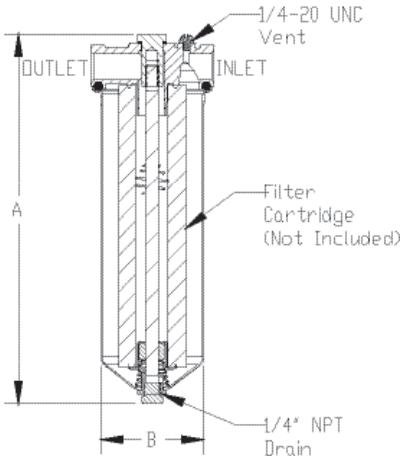



**Head with Optional Mounting Bracket**




**Flanged Head Connection**




| 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) |
|---|---|---|---|---|---|---|---|---|---|
| BSSB10-¾ SD | 5 | (1) 10 | 150psi (10.3bar) | 175psi (12.1bar) | 12.75 | 3.63 | 4.31 | ¾ FNPT | 6.0 |
| BSSB20-¾ SD | 10 | (1) 20 | 150psi (10.3bar) | 175psi (12.1bar) | 22.88 | 3.63 | 4.31 | ¾ FNPT | 10.50 |
| BSSB30-¾ SD | 15 | (1) 30 | 150psi (10.3bar) | 175psi (12.1bar) | 33.25 | 3.63 | 4.31 | ¾ 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 |
| BSSB10-¾ FSD | 5 | (1) 10 | 150psi (10.3bar) | 175psi (12.1bar) | 12.75 | 3.63 | 8.0 | ¾ Flange | 9.0 |
| BSSB20-¾ FSD | 10 | (1) 20 | 150psi (10.3bar) | 175psi (12.1bar) | 22.88 | 3.63 | 8.0 | ¾ Flange | 13.5 |
| BSSB30-¾ FSD | 15 | (1) 30 | 150psi (10.3bar) | 175psi (12.1bar) | 33.25 | 3.63 | 8.0 | ¾ 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

**BSSB** [ ] – [ ] [ ] **S** **D**

| Cartridge Length | |
|---|---|
| **CODE** | **Inches** |
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |

| Connection Size |
|---|
| ¾" |
| 1" |

| Connection Type | |
|---|---|
| **CODE** | **DESCRIPTION** |
| Blank | NPT |
| F | Flange |

| Spring-Loaded Seal |
|---|

| Drain |
|---|

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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).

## Contact Information

Parker Hannifin Corporation
**Bioscience Division - N.A.**
2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## 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

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# 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
¼" NPT vent & drain

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

| 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)** |

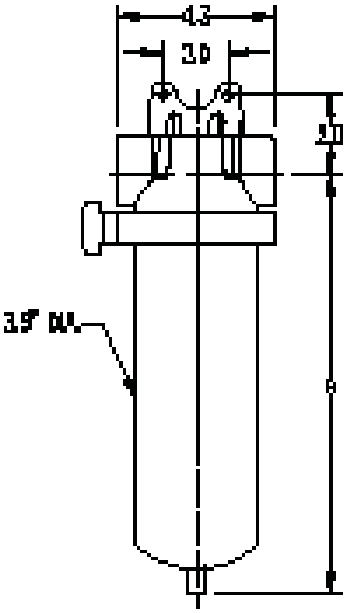
* EPDM o-ring is standard
**Vessel temperature limited to 300°F (149°C)

| Cartridge Configurations | |
|---|---|
| 222 O-ring SOE<br>226 O-ring SOE | PP spring closed end** |
| | 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

EH [ ] 01 [ ] [ ] – [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |
| S | 316 SST |

| Cartridge Qty. |
|---|
| 1 |

| Element Length | |
|---|---|
| Size | Inches |
| S | 10 |
| D | 20 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 1T | 1" NPT |

| Cartridge Style | |
|---|---|
| Code | Style |
| Blank | DOE/SOE 222 |
| 226* | 226 bayonet |

*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 |

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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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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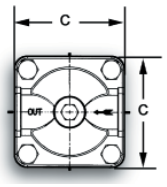
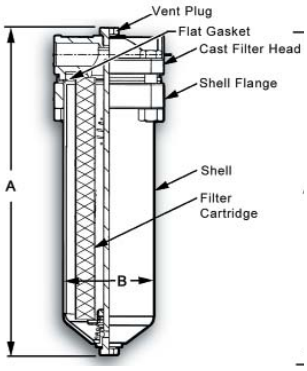
# Fulflo® High-Pressure Single Cartridge Filter Vessel

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



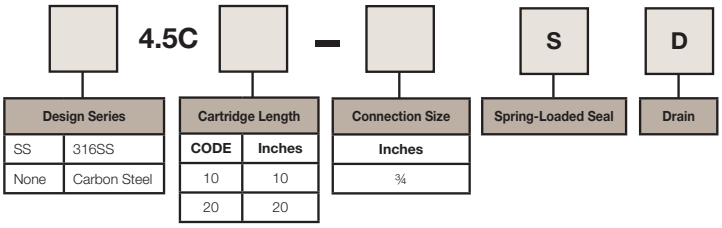




**Design Specifications**

| 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
- 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

## Contact Information

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**Industrial Process Filtration - N.A.**
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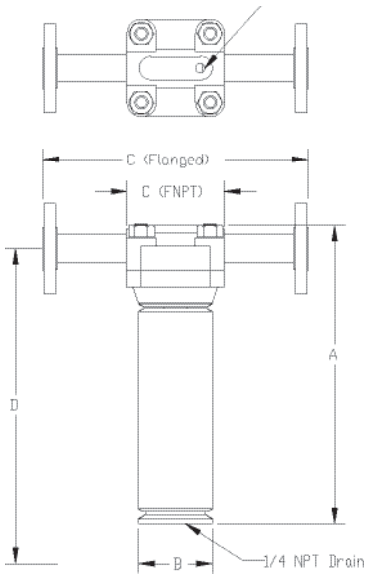
# Fulflo® "M" Series Single Cartridge Vessels

## SPECIFICATIONS

Carbon steel or 316 stainless steel material
Drain: ¼ in. NPT
Vent: ¼ in. NPT
Bolting: (4) ⅝-11 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

M [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

| Material | |
|---|---|
| C | Carbon Steel |
| S | 316SS |

| Design | |
|---|---|
| CODE | Description |
| N | Non-Code |
| U | ASME U-Stamp |

| Columns | |
|---|---|
| 1 | 1 Element |

| Length | |
|---|---|
| CODE | Inches |
| S | 10 |
| D | 20 |
| T | 30 |

| Inlet \| Outlet | |
|---|---|
| CODE | Inches |
| 1 | 1 |

| Inlet \| Outlet Type | |
|---|---|
| CODE | Description |
| T | FNPT |
| F | Flanged 150# |
| H | Flanged 300# |
| J | Flanged 600# |
| K | Flanged 900# |
| L | Flanged 1500# |
| M | Flanged 2500# |

| Gasket Material | |
|---|---|
| CODE | Description |
| N | Buna-N |
| E | EPR |
| V | Viton® |
| T | FEP Encap. Viton® |
| L | FEP Encap. Silicone |

| Internal Option | |
|---|---|
| CODE | Description |
| Blank | Center Post for DOE |
| TC | 222 O-ring Adapter |

| Special Temperature for Flanged Units | |
|---|---|
| CODE | Description |
| Blank | 250° (121°C) |

Specifications are subject to change without notification.
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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.

## Contact Information

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118 Washington Avenue
Mineral Wells, TX 76067

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industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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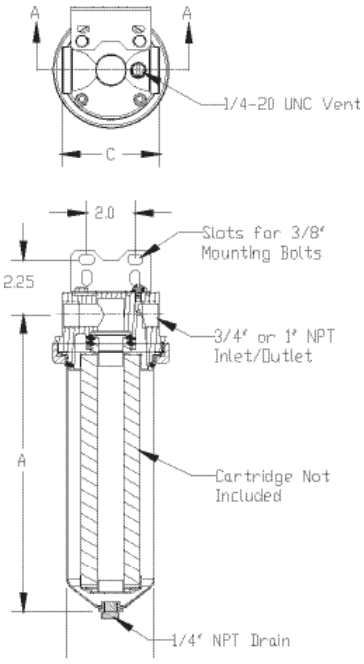
# Fulflo® TC Single Cartridge Filter Vessel

| 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**

| Part # | 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

**SS** | **TC** | [ ] – [ ]

| Design Series | |
|---|---|
| SS | 316SS Shell & Head |

| Cartridge Seal |
|---|
| 222 O-ring/Flat Cap |

| Cartridge Length | |
|---|---|
| **Code** | **Inches** |
| 10 | 10 |
| 20 | 20 |
| 30 | 30 |

| FNPT Connection Size | |
|---|---|
| **Code** | **Inches** |
| 075 | ¾ |
| 100 | 1 |

**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 ¾″ NPT or ¾″ butt weld inlet and outlet connections available.

## Contact Information

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118 Washington Avenue
Mineral Wells, TX 76067

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industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## Benefits

- High purity PFA construction
- Also available in PVDF
- Broad chemical compatibility
- Extremely low extractables
- Standard ¼” 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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# Trufluor™

## 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

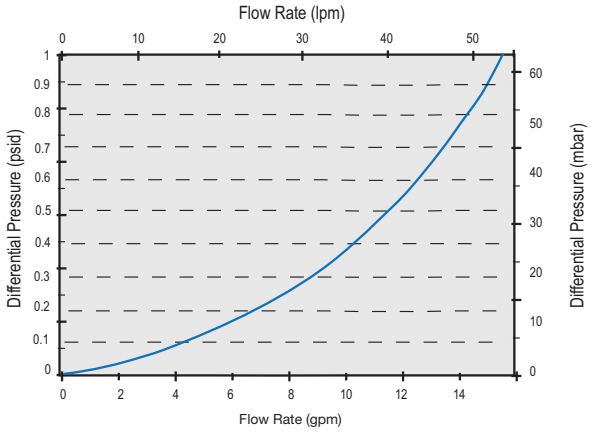
Inlet | Outlet: ¾" NPT or Butt Weld
Vent and Drain: ¼" NPT

### Maximum Operating Specifications

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

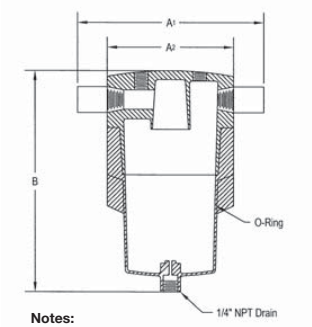
TVH (PVDF):
110psig @ 203°F (95°C)
150psig @ 68°F (20°C)

### Housing Differential Pressure vs. Liquid Flow Rate




### Cartridge Configurations Supported

| Size | Description |
|---|---|
| 10″ | 222 \| Flat End Cap<br>SS Reinforced 222 \| Flat End Cap |




**Notes:**
1. Dim. A1 = ¾″ Butt-weld
   Dim. A2 = ¾″ NPT

| Housing Part# | Overall Width (A) | | Overall Length (B) | | Minimum Clearance for Cartridge Removal | |
|---|---|---|---|---|---|---|
| | Inches | cm | Inches | cm | Inches | cm |
| TFH10N08N02T | 4-⅞ | 12.4 | 16 | 40.6 | 13 | 33.0 |
| TFH10W08N02T | 7-21/32 | 19.4 | 16 | 40.6 | 13 | 33.0 |
| TVH10N08N02T | 4-⅞ | 12.4 | 16 | 40.6 | 13 | 33.0 |
| TVH10W08N02T | 7-21/32 | 19.4 | 16 | 40.6 | 13 | 33.0 |

*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

| | 10 | | 08 | | 02 | T |
|---|---|---|---|---|---|---|
| Model | Bowl Length | Connection Type | Connection Size | Drain/Vent Type | Drain/Vent Size | Seal Material |

**Model**

| CODE | DESCRIPTION |
|---|---|
| TFH | Trufluor PFA |
| TVH | Trufluor PVDF |

**Bowl Length**

| CODE | INCHES |
|---|---|
| 10 | 10″ |

**Connection Type**

| CODE | DESCRIPTION |
|---|---|
| N | NPT |
| W | Butt -weld |

**Connection Size**

| CODE | INCHES (mm) |
|---|---|
| 08 | ¾″ |

**Drain/Vent Type**

| CODE | DESCRIPTION |
|---|---|
| N | NPT |
| W | Butt-weld |

**Drain/Vent Size**

| CODE | INCHES (mm) |
|---|---|
| 02 | ¼″ (6.35mm) |

**Seal Material**

| CODE | DESCRIPTION |
|---|---|
| T | FEP Encapsulated Viton® |

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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.

## Contact Information

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118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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# Trufluor™+

## SPECIFICATIONS

### Materials of Construction

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

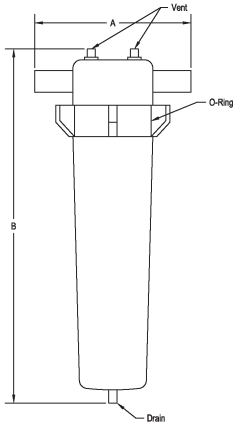
### Connections

Inlet/Outlet ¾″ or 1″ Flare
¾″ or 1″ Butt Weld

Vent/Drain ¼″ Flare
¼″ Butt Weld
¼″ NPTF
⅜″ Closed
⅜″ Flare

### Maximum Operating Specifications

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

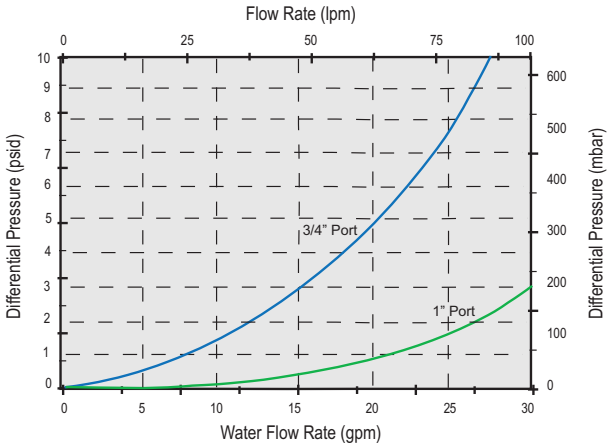



### Dimensional Data

| 10″ Filter | | |
|---|---|---|
| **Housing Style** | **Overall Width (A)** | **Overall Length (B)** |
| ¾″ Butt Weld Pipe | 9.0″ \| 22.9 cm | 16.0″ \| 40.6 cm |
| ¾″ 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)** |
| ¾″ Butt Weld Pipe | 12.0″ \| 30.5 cm | 25.7″ \| 65.3 cm |
| ¾″ 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)** |
| ¾″ Butt Weld Pipe | 12.0″ \| 30.5 cm | 35.5″ \| 90.2 cm |
| ¾″ 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<br>SS Reinforced 222/Flat End Cap |
| 20 | |
| 30 | |




## Ordering Information

TFP [ ] [ ] [ ] [ ] 02 T

| Bowl Length | |
|---|---|
| CODE | Inches (mm) |
| 10 | 10" (254mm) |
| 20 | 20" (508mm) |
| 30 | 30" (762mm) |

| Connection Type | |
|---|---|
| CODE | Description |
| F | Flare |
| W | Butt Weld |

| Connection Size | |
|---|---|
| CODE | Inches (mm) |
| 08 | ¾" (19.05mm) |
| 10 | 1" (25.40mm) |

| Drain \| Vent Type | |
|---|---|
| CODE | Description |
| C | Closed* |
| F | Flare* |
| W | Butt Weld |
| N | NPTF |

*Additional charges apply

| Drain \| Vent Size | |
|---|---|
| CODE | Inches (mm) |
| 02 | ¼" (6.35mm) |

| Seal Material | |
|---|---|
| CODE | Description |
| T | FEP Encapsulated Viton® |

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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, commerical (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

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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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**www.parker.com/industrialprocess**

## 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

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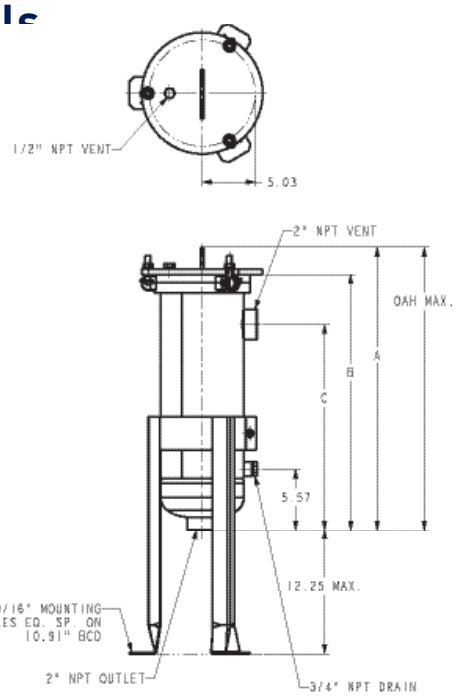
# Fulflo® CH Multi-Cartridge Filter Vessels

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

**Product Configurations**
Pipe size or connection:
2″ NPT inlet & outlet
½″ NPT vent
¾″ NPT drain

**Number of Cartridges**
Five 10 inch, 20 inch or 30 inch x 2.70″ OD (Max) end caps

**Fulflo® CH Vessel Series Rated Capacity**
25gpm, 50gpm, 75gpm




| Cartridge Configurations | |
|---|---|
| 222 O-ring SOE | Flat |
| | PP spring closed end |
| | Flex fin |
| Gasket SOE | 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 [ ] 5 [ ] [ ] [ ]

| Material | |
|---|---|
| Code | Description |
| C | Carbon Steel |
| G | 304 Stainless Steel |
| S | 316 Stainless Steel |

| Element Length | |
|---|---|
| Code | Inches |
| S | 10 |
| D | 20 |
| T | 30 |

| Inlet/Outlet 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):
CHC5S2T
CHG5D2TSL

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DS_IP_CH Vessel Rev. A



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# 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.

## Contact Information

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**www.parker.com/industrialprocess**

## 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

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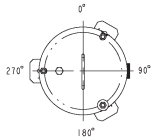
# Fulflo® CP Multi-Cartridge Filter Vessel

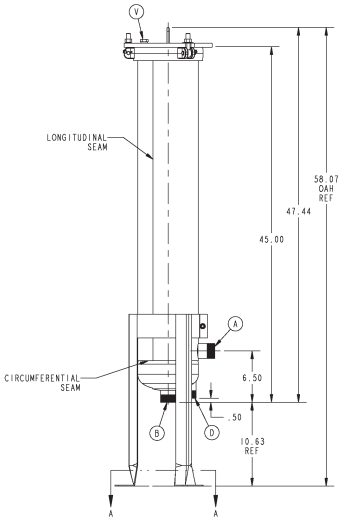



| Material of Construction | Max. Allowable Pressure (MAP) (psi @ MAT °F) | Max. Allowable Temp. (MAT) (°F @ MAP psi) |
|---|---|---|
| Carbon Steel | 175psi (12.1bar) | 250°F (121°C) |

†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

**CPC1** [ ] **1.5T†** [ ]

| Elements (18˝) | |
|---|---|
| Code | Quantity |
| S | 1 |
| D | 2 |

| Support Options | |
|---|---|
| Code | Description |
| Blank | Zinc plated carbon steel legs |
| W | Wall Mounted/No legs |

†Male NPT

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

Specifications are subject to change without notification.
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# 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.

## Contact Information

Parker Hannifin Corporation
**Bioscience Division - N.A.**
2340 Eastman Avenue
Oxnard, CA 93030

phone +1 805 604 3583
bioscience.na@parker.com

**www.parker.com/bioscience**

## 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

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# 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 |

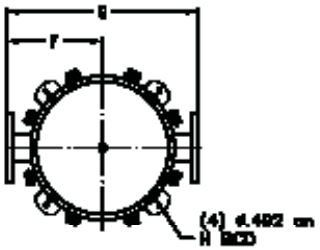
* G or S

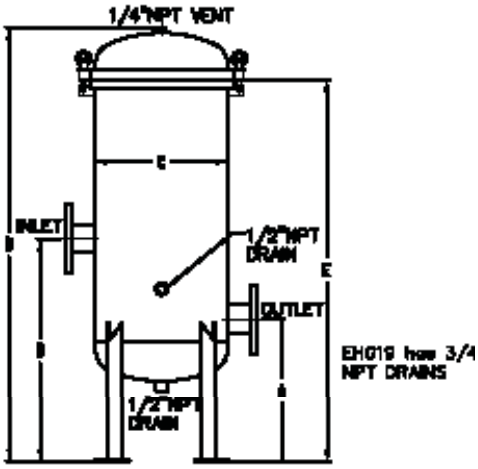
| Vessel dimensions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Model | A | B | C | D | E | F | G | H | Weight (lbs) |
| EHG05S2T | 9.85 | 15.75 | 8.00 | 29.33 | 26.00 | 6.00 | 12.00 | 12.40 | 41 |
| EHG05D2T | 9.85 | 19.69 | 8.00 | 39.17 | 35.84 | 6.00 | 12.00 | 12.40 | 48 |
| EH*05T2T | 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)

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# Fulflo® EH Multi-Cartridge Filter Vessel

## Ordering Information

**EH** [ ] **05** [ ] [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SS |
| S | 316 SS |

| Cartridge Qty. |
|---|
| 5 |

| Element Length | |
|---|---|
| Size | Inches |
| S* | 10 |
| D* | 20 |
| T | 30 |
| Q | 40 |

*Only avail. in 304SS

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 2T | 2" NPT |

**EH** [ ] **07** [ ] [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Cartridge Qty. |
|---|
| 7 |

| Element Length | |
|---|---|
| Size | Inches |
| T | 30 |
| Q | 40 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 2T | 2" NPT |

**EH** [ ] **11** [ ] [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Cartridge Qty. |
|---|
| 11 |

| Element Length | |
|---|---|
| Size | Inches |
| T | 30 |
| Q | 40 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 3F | 3" Flange |

**EH** [ ] **19** [ ] [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Cartridge Qty. |
|---|
| 19 |

| Element Length | |
|---|---|
| Size | Inches |
| T | 30 |
| Q | 40 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 4F | 4" Flange |

| 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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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# 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

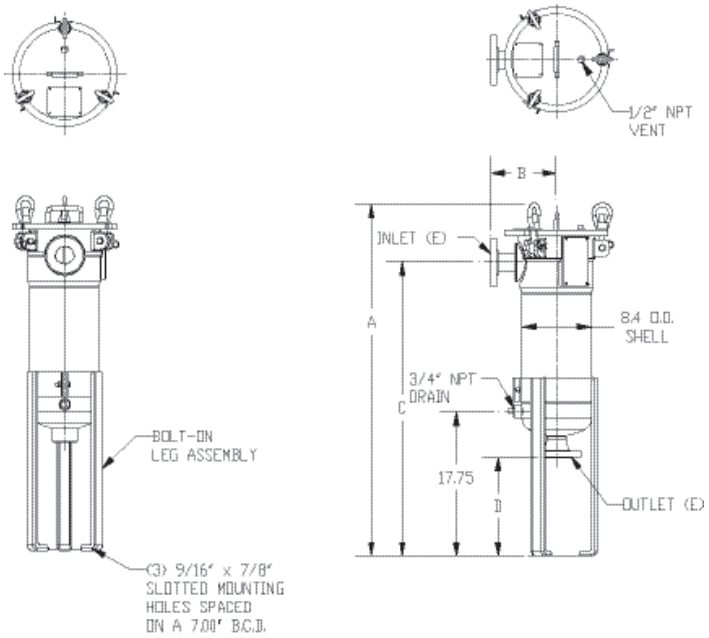
| Material of Construc-tion | Max. Allowable Pressure (MAP) (psi @ MAT °F) | Max. Allowable Temp. (MAT) (°F @ MAP psi) |
|---|---|---|
| Carbon Steel | 150psi (10.3bar) | 450°F (232°C)* ** |
| 304L Stainless | 150psi (10.3bar) | 450°F (232°C)** |
| 316L Stainless | 150psi (10.3bar) | 450°F (232°C)**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

*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

FE 6 — ☐ — ☐ ☐ — ☐

| Material of Construction | |
|---|---|
| **Code** | **Description** |
| None | Carbon Steel |
| 4L | 304L Stainless Steel |
| 6L | 316L Stainless Steel |

| Cartridge Qty. | |
|---|---|
| **Code** | **Amount** |
| 6 | 6 |

| Cartridge Length | |
|---|---|
| **Code** | **Inches** |
| 1 | 10 |
| 2 | 20 |
| 3 | 30 |

| Connection Size | |
|---|---|
| **Code** | **Inches** |
| 2 | 2 |
| 3 | 3 |

| Connection Type | |
|---|---|
| **Code** | **Description** |
| Blank | NPT |
| F | ANSI 150 lb. flange |

| Support Options | |
|---|---|
| **Code** | **Description** |
| Blank | Zinc plated carbon steel legs |
| SL | 304 Stainless steel legs |
| 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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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# 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

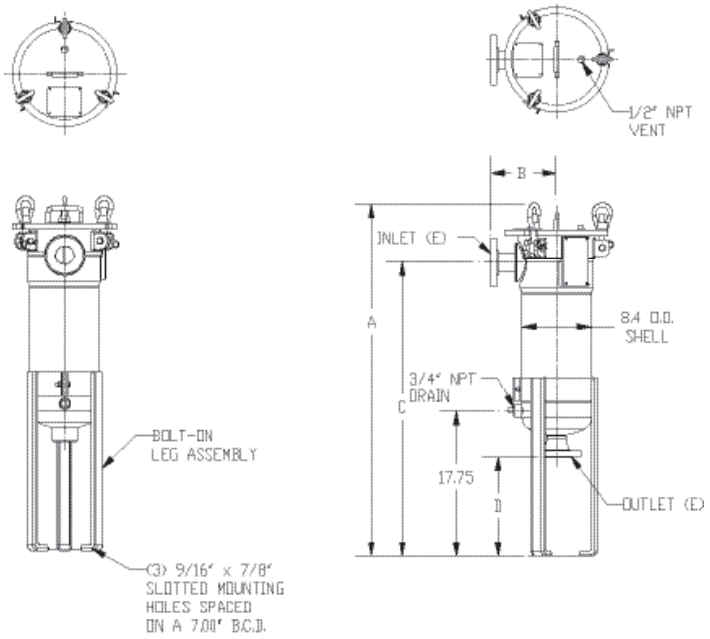
| Material of Construc-tion | Max. Allowable Pressure (MAP) (psi @ MAT °F) | Max. Allowable Temp. (MAT) (°F @ MAP psi) |
|---|---|---|
| Carbon Steel | 150psi (10.3bar) | 450°F (232°C)* ** |
| 304L Stainless | 150psi (10.3bar) | 450°F (232°C)** |

*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

FP 1 — — —

| Material of Construction | |
|---|---|
| Code | Description |
| None | Carbon Steel |
| 4L | 304L Stainless Steel |

| Cartridge Qty. | |
|---|---|
| Code | Columns |
| 1 | 1 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 1 | 18 |
| 2 | 36 |

| Connection Size | |
|---|---|
| Code | Inches |
| 2 | 2 |
| 3 | 3 |

| Connection Type | |
|---|---|
| Code | Description |
| Blank | NPT |
| 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

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

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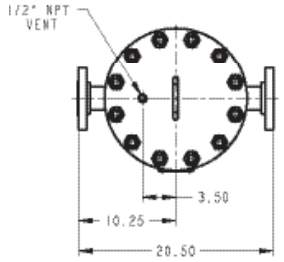
# Fulflo® HT Filter Vessels

### Design Specifications

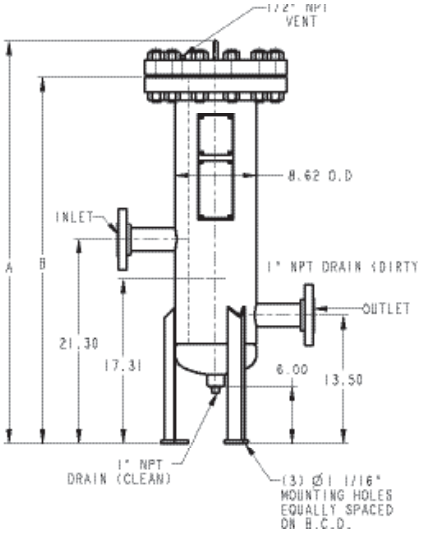
| Model | Cart. Qty. & Length (in.) | Flow† | A | B | Shipping Weight (lbs) | |
|---|---|---|---|---|---|---|
| | | | | | 150 U \| UM | 300 U \| UM |
| HT6-1-2F | 6 (10) | 30 | 32.38 | 28.63 | 175 | 260 |
| HT6-2-2F | 6 (20) | 60 | 42.44 | 38.69 | 190 | 275 |
| HT6-3-2F | 6 (30) | 90 | 52.50 | 48.75 | 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

HT — 6 — [ ] — 2F — [ ]

| Design Series |
|---|
| High Temperature |

| Cartridge Qty. |
|---|
| 6 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 1 | 10 |
| 2 | 20 |
| 3 | 30 |

| Inlet \| Outlet Flange Size | |
|---|---|
| Code | Inches |
| 2F | 2 |

| Code Stamp |
|---|
| Option |
| UM150 |
| UM300 |
| U150 |
| U300 |

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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).

## Contact Information

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118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
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**www.parker.com/industrialprocess**

## 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

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# Fulflo® MegaFlow™ Filter Vessel

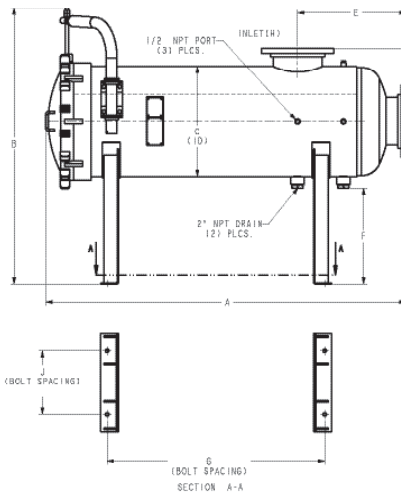
### Maximum Operating Conditions

| 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 | Horizontal Model Dimensions (in.) | | | | | | | | | Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qty. | 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 | |
|---|---|
| Code | Description |
| C | Carbon Steel |
| G | 304L Stainless Steel |
| S | 316L Stainless Steel |

| Design Series | |
|---|---|
| Code | Description |
| N | Non-code |
| U | ASME Code |

| Cartridge Qty. | |
|---|---|
| Code | Amount |
| 01 | 1 |
| 02 | 2 |
| 03 | 3 |
| 04 | 4 |
| 05 | 5 |
| 07 | 7 |
| 08 | 8 |
| 12 | 12 |
| 15 | 15 |
| 19 | 19 |

| Vessel Orientation | |
|---|---|
| Code | Description |
| V | Vertical |
| H | Horizontal |

| Inlet \| Outlet Size | |
|---|---|
| Code | Inches |
| 06 | 6 |
| 08 | 8 |
| 10 | 10 |
| 12 | 12 |
| 14 | 14 |
| 16 | 16 |

| Inlet \| Outlet Connection Type | |
|---|---|
| Code | Description |
| F | ANSI 150 lb. flange |
| H | ANSI 300 lb. flange |

| Finish | |
|---|---|
| Code | Description |
| C | Painted |
| B | Glass bead blast |
| P | Passivated |
| E | Electropolished |

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# 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.

## Contact Information

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**Industrial Process Filtration - N.A.**
118 Washington Avenue
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**www.parker.com/industrialprocess**

## 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

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# 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.**

Specifications are subject to change without notification.
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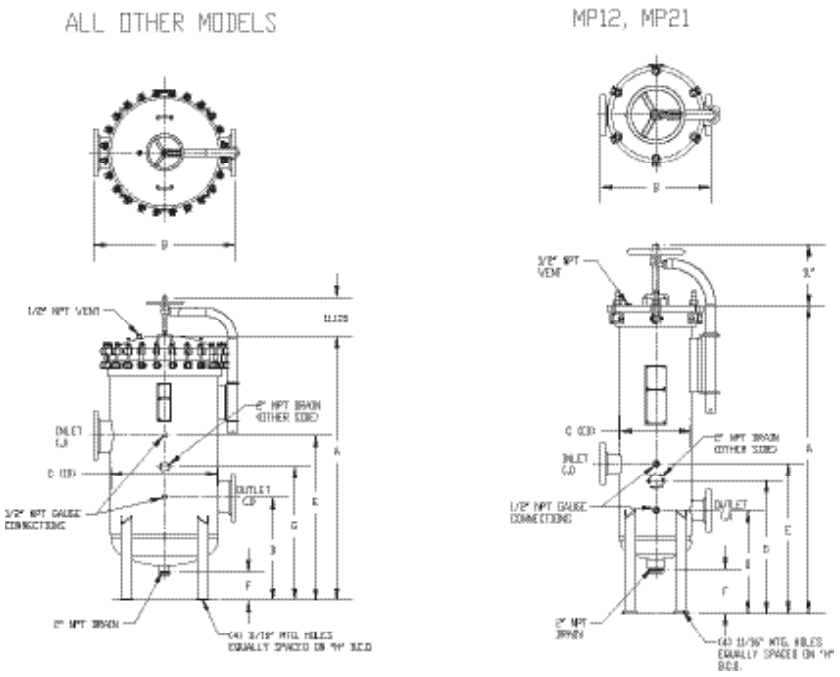
# Fulflo® MP Filter Vessel




**Design Specifications**

| No. & Model | Cartridges | | Dimensions (in.) | | | | | | | | | Shipping Weight (lbs.) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qty. | Length (in.) | A | B | C | D | E | F | G | H | J | |
| 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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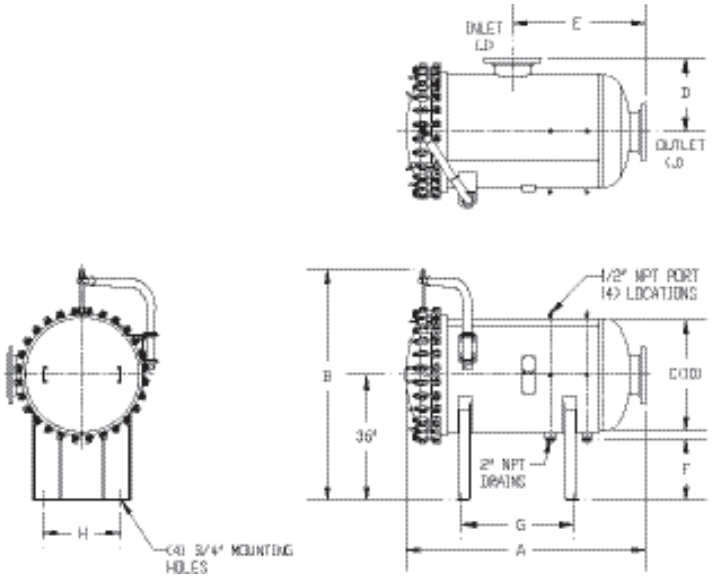
# Fulflo® MP Filter Vessel




**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

MP – – 

| Material of Construction | |
|---|---|
| Code | Description |
| 4L | 304 LSS |
| 6L | 316L SS |

| Cartridge Qty. | |
|---|---|
| Orientation | Range |
| Vertical | 12-176 |
| Horizontal | 40-176 |

| Design Series | |
|---|---|
| Code | Description |
| Blank | Vertical |
| H | Horizontal |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 3 | 30 |
| 4 | 40 |

| Inlet \| Outlet Flange Options |
|---|
| Code |
| 3F |
| 4F |
| 6F |
| 8F |
| 10F |
| 12F |
| 14F |

| Coverlift Option | |
|---|---|
| Code | Description |
| No symbol | None |
| K1 | Mechanical |
| K2 | Hydraulic |

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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.

## Contact Information

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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

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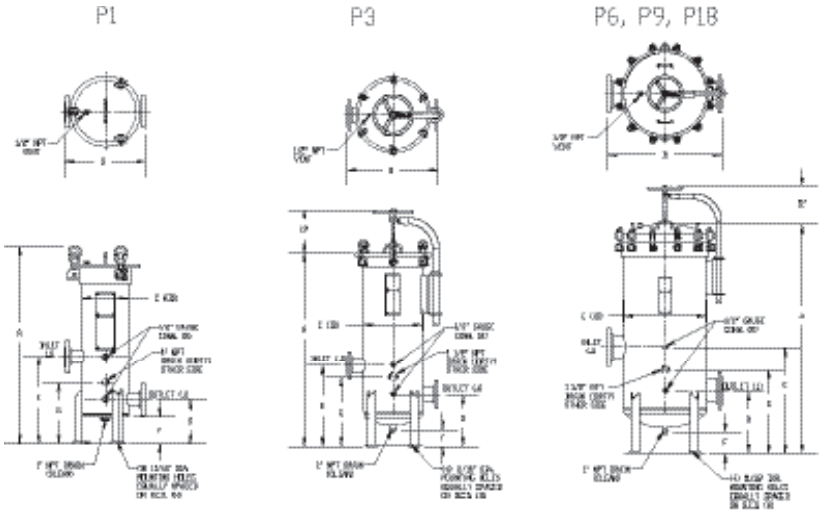
# Fulflo® P Filter Vessel




## 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

P

| Cartridge Qty. | |
|---|---|
| Code | Columns |
| 1 | 1 |
| 3 | 3 |
| 6 | 6 |
| 9 | 9 |
| 18 | 18 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 1 | 18 |
| 2 | 36 |

| Inlet \| Outlet Flange Size | |
|---|---|
| Code | Description |
| 2F | 2 inch flange |
| 3F | 3 inch flange |
| 6F | 6 inch flange |
| 8F | 8 inch flange |

| Coverlift Option | |
|---|---|
| Code | Description |
| K1 | Mechanical |
| K2 | Hydraulic |

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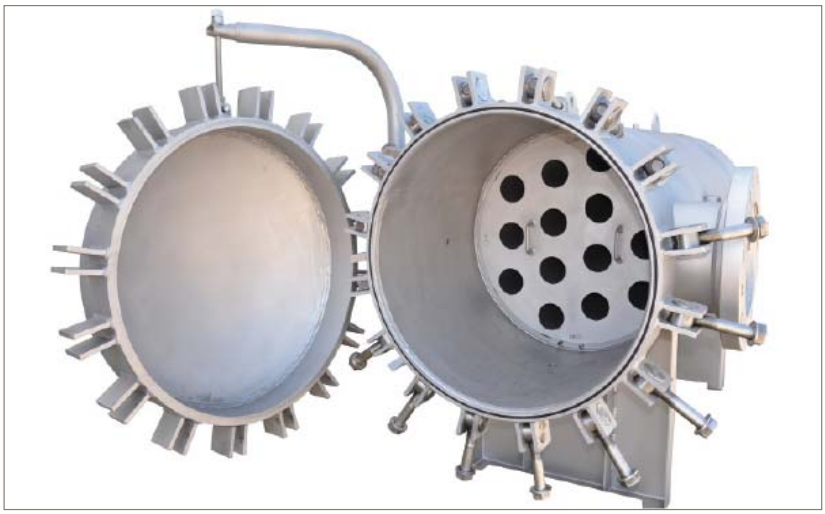
# ParMax™ Multi-Cartridge Filter Vessel

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.



## Contact Information

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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 contaminates 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

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# 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.

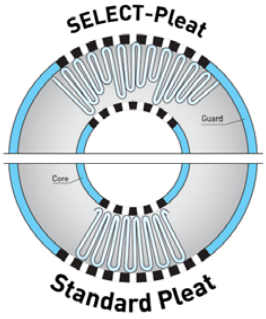
### SELECT Design

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 ($ft^2$) | Flux Rate ($gpm/ft^2$) |
|---|---|---|
| **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 ($ft^2$)** | **Flux Rate ($gpm/ft^2$)** |
| **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 |

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.




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

Specifications are subject to change without notification.
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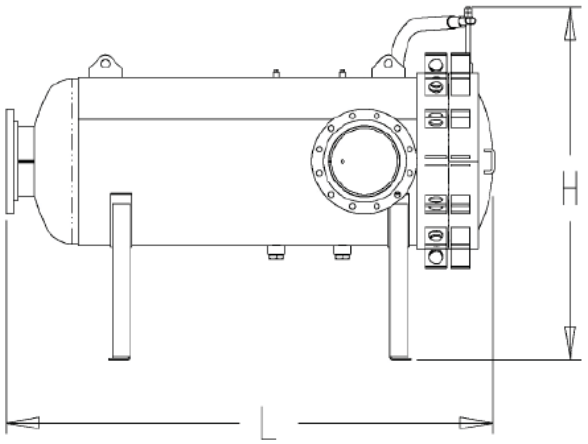
# ParMax™ Filter Vessel

**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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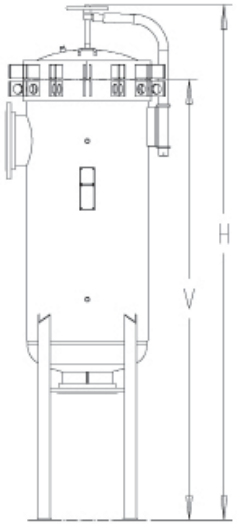
# ParMax™ Filter Vessel

## 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

**PX** ☐ **U** ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

| Material | |
|---|---|
| Code | Description |
| C | Carbon Steel |
| G | 304L Stainless Steel |
| S | 316L Stainless Steel |

| Design | |
|---|---|
| Code | Description |
| U | ASME Code |

| Cartridge Qty. | |
|---|---|
| Code | Amt. |
| 01 | 1 |
| 03 | 3 |
| 05 | 5 |
| 07 | 7 |
| 08 | 8 |
| 12 | 12 |
| 15 | 15 |
| 19 | 19 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 40 | 40 |
| 60 | 60 |

| Vessel Orientation | |
|---|---|
| Code | Description |
| H | Horizontal |
| V | Vertical* |

*60" vertical not recommended.

| Optimal Inlet/Outlet Size | |
|---|---|
| Code | Inches |
| 03 | 3 |
| 04 | 4 |
| 06 | 6 |
| 08 | 8 |
| 10 | 10 |
| 12 | 12 |
| 14 | 14 |
| 16 | 16 |
| 18 | 18 |

| Inlet/Outlet Connection Type | |
|---|---|
| Code | Description |
| F | ANSI 150 lb. flange |
| H | ANSI 300 lb. flange |

F=150 PSI vessel design
H=300 PSI vessel design

| Finish | |
|---|---|
| Code | Description |
| C | Painted |
| B | Glass Bead Blast |
| P | Passivated |

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.

## Contact Information

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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

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# 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.

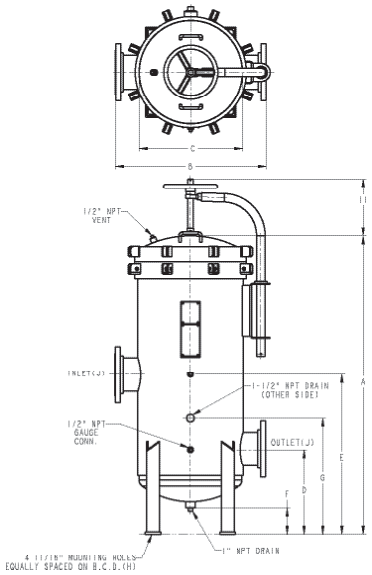
### Maximum Operating Conditions

| 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

| | | S | | – | | – | | |
|---|---|---|---|---|---|---|---|---|
| Material of Construction | | Design Series | | Cartridge Qty. | Cartridge Length | | Inlet \| Outlet Flange Size | | Coverlift Option | |
| Code | Description | Code | Description | | Code | Inches | Code | Size | Code | Description |
| Blank | Carbon Steel | Blank | 150 psi | 25 | 3 | 30 | 4F | 4" Flange | K1 | Mechanical |
| 4 | 304 SS | H | 300 psi | 35 | 4 | 40 | 6F | 6" Flange | K2 | Hydraulic |
| 6 | 316 SS | | | 40 | | | 8F | 8" Flange | | |
| | | | | 52 | | | | | | |
| | | | | 85 | | | | | | |
| | | | | 102 | | | | | | |

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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.

## Contact Information

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**www.parker.com/industrialprocess**

## 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

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# Fulflo® SF Filter Vessels

### Design Specifications

| No. & Model | Cartridges | | Flow (gpm) | Dimensions (in.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qty. | Length (in.) | | A† | B | C | D | E | F | G | H | J†† | Shipping Weight (lbs.) |
| 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.

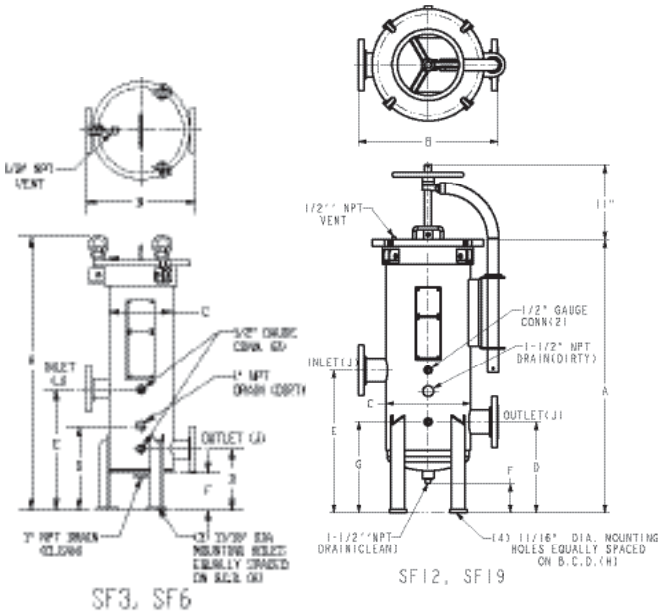
### Maximum Operating Conditions

| 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

SF [ ] – [ ] – [ ]

| Material of Construction | |
|---|---|
| Code | Description |
| Blank | Carbon Steel |
| 4 | 304 SS |
| 6 | 316 SS |

| Design Series | |
|---|---|
| Code | Description |
| Blank | 150 psi |
| H | 300 psi |

| Cartridge Qty. |
|---|
| 3 |
| 6 |
| 12 |
| 19 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| 1 | 10 |
| 2 | 20 |
| 3 | 30 |
| 4 | 40 |

| Inlet \| Outlet Flange Size | |
|---|---|
| Code | Size |
| 2F | 2" Flange |
| 3F | 3" Flange |
| 4F | 4" Flange |

| Coverlift Option | |
|---|---|
| Code | Description |
| K1 | Mechanical |
| K2 | Hydraulic |

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DS_IP_SF Vessel Rev. A



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# 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.

## Contact Information

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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

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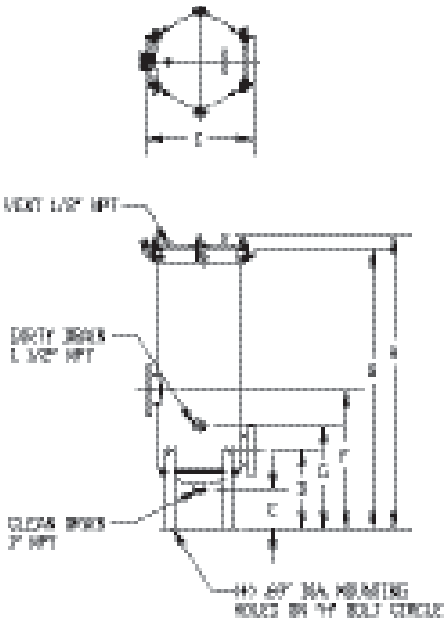
# Fulflo® WH Filter Vessels

### Design Specifications

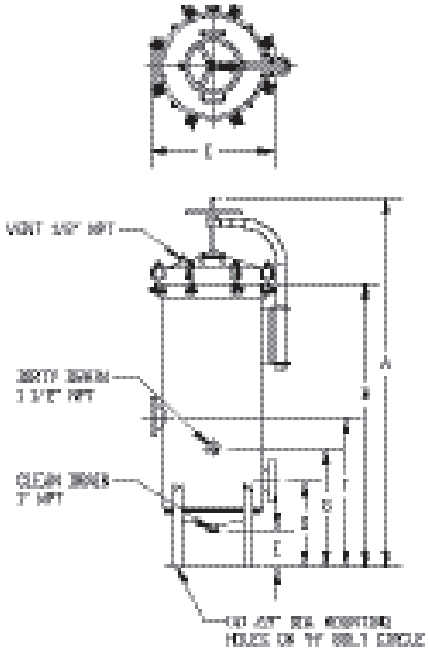
| Model *Material of Construction (G or S) | Cartridges | | Typical Flow† (gpm) | Dimensions (in.) | | | | | | | | Shipping Weight (lbs) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Qty. | Length (in.) | | A | B | C | D | E | F | G | H | |
| WH*4S1.5T | 4 | 10 | 28 | 22.56 | 19.56 | 10.06 | 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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# Fulflo® WH Filter Vessels

| 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 | |
|---|---|
| Code | Description |
| G | 304 SS |
| S | 316L SS |

| Cartridge Qty. |
|---|
| 4 |
| 9 |
| 12 |
| 16 |
| 21 |
| 29 |
| 35 |

| Cartridge Length | |
|---|---|
| Code | Inches |
| S | 10 |
| D | 20 |
| T | 30 |
| Q | 40 |

| Inlet \| Outlet | |
|---|---|
| Code | Inches |
| 1.5 | 1.5 |
| 2 | 2 |
| 3 | 3 |
| 4 | 4 |
| 6 | 6 |

| Inlet \| Outlet Type | |
|---|---|
| Code | Description |
| F | ANSI 150lb RFSO Flange |
| T | FNPT |

| Finish | |
|---|---|
| CODE | DESCRIPTION |
| P | Passivated |

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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 Fulfo 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.

## 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

## Contact Information

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# Fulflo® CB Bag Filter Vessels

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

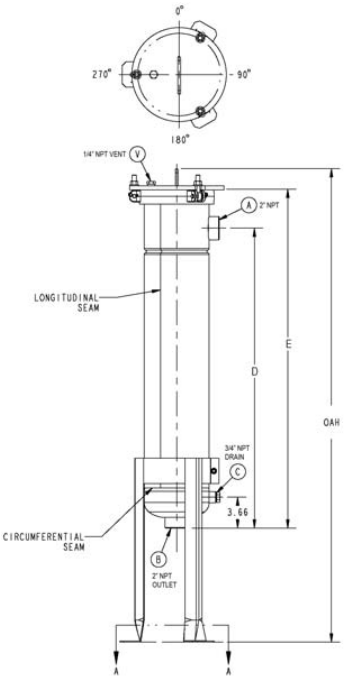
| Material of Construction | Max. Allowable Pressure (MAP) (psi @ MAT ºF) | Max. Allowable Temp. (MAT) (ºF @ MAPpsi) |
|---|---|---|
| Carbon Steel | 175psi (12.1bar) | 400ºF (204ºC)* ** |
| 304 Stainless | 175psi (12.1bar) | 400ºF (204ºC)** |
| 316 Stainless | 175psi (12.1bar) | 400ºF (204ºC)** |

* Limited to 250ºF by the paint

**Limited to 250ºF 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 [ ] 2T [ ]

| 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

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DS_IP_ CB Vessel Rev. A

# 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.

## Contact Information

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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

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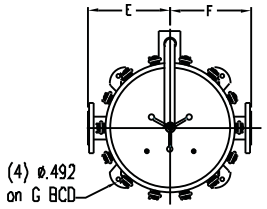
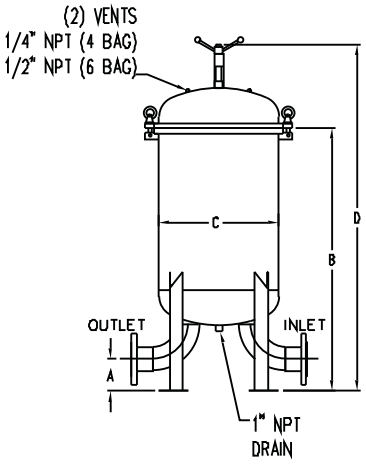
# Fulflo® EB Multi-Bag Filter Vessel

| 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

EB

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Bag | |
|---|---|
| Code | Qty. |
| 4 | 4 |

| Bag Length | |
|---|---|
| Size | Inches |
| D | 31.5 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 4F | 4" Flange |

### 6 Bag Vessel

EB

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Bag | |
|---|---|
| Code | Qty. |
| 6 | 6 |

| Bag Length | |
|---|---|
| Size | Inches |
| D | 31.5 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 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.

## Contact Information

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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

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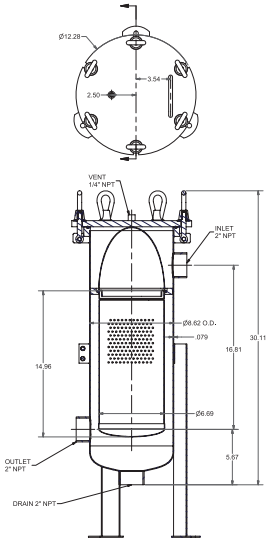
# Fulflo® EB Single Bag Filter Vessel

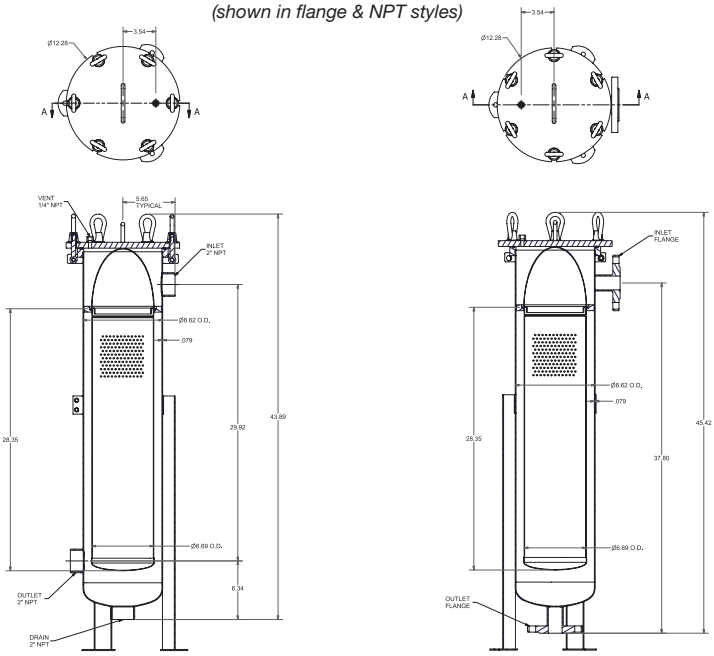
## SIZE S




Vessel designed to use (1) **#1**
Parker 'G' style bag with 7-1/4" diameter rim
Inlet elevation adjustable from approx. 21" to 33"

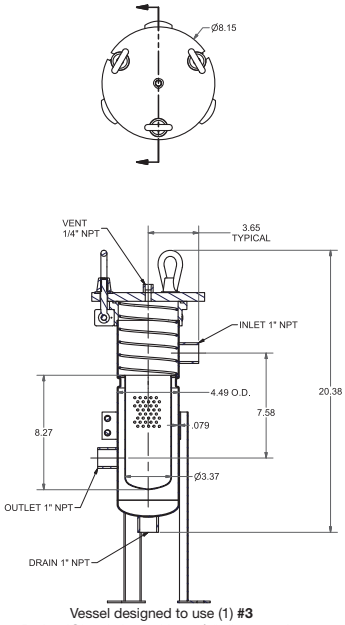
## SIZE D

*(shown in flange & NPT styles)*



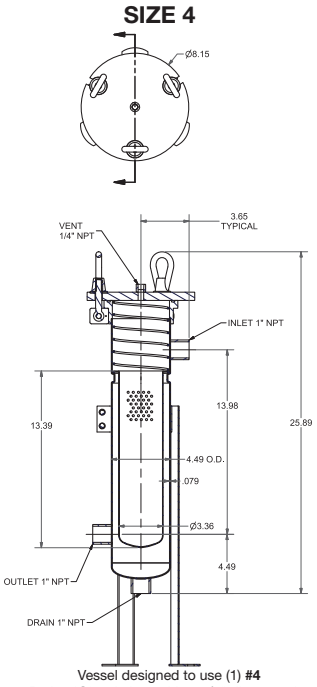

Vessel designed to use (1) **#2**
Parker 'G' style bag with 7-1/4" diameter rim
Inlet elevation adjustable from approx. 37" to 53"

## 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) |

**Typical Aqueous Flow**
Based on 160 gpm water per #2 double bag & 80 gpm per #1 single bag

| 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)

| 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)** | | | | | | | |
| 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

**EB S 1 ☐ ☐**

| Material of Construction | |
|---|---|
| Code | Description |
| S | 316 SST |

| Cartridge Qty. |
|---|
| 1 |

| Bag Length | |
|---|---|
| Size | Inches |
| D | 32 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 2F | 2" Flange |
| 2T | 2" NPT |

**EB G 1 ☐ ☐**

| Material of Construction | |
|---|---|
| Code | Description |
| G | 304 SST |

| Cartridge Qty. |
|---|
| 1 |

| Bag Length | |
|---|---|
| Size | Inches |
| 3* | 8 |
| 4* | 14 |
| S** | 16 |
| D*** | 32 |

| Inlet/Outlet Connection | |
|---|---|
| Code | Size |
| 1T | 1" NPT |
| 2F | 2" Flange |
| 2T | 2" NPT |

** 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.

## Contact Information

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## Benefits

- Single O-ring design closure assures quick, positive cover sealing (O-rings are not required to seal filter bags.)
- Swing bolts with eyenuts 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

Parker

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# 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

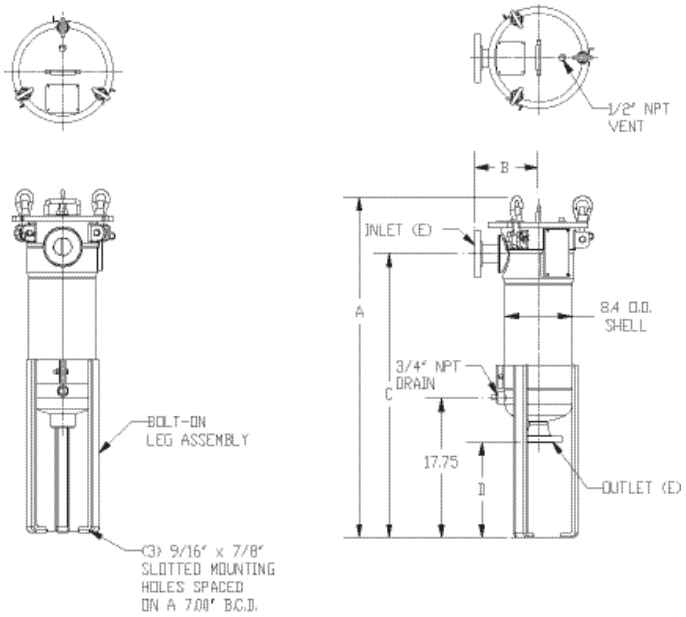
| Material of Construction | Max. Allowable Pressure (MAP) (psi @ MAT °F) | Max. Allowable Temp. (MAT) (°F @ MAP psi) |
|---|---|---|
| Carbon Steel | 150psi (10.3bar) | 450°F (232°C)* ** |
| 304L Stainless | 150psi (10.3bar) | 450°F (232°C)** |
| 316L Stainless | 150psi (10.3bar) | 450°F (232°C)** |

*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.




## Ordering Information

FB1 [ ] — [ ] [ ] [ ]

| Material | |
|---|---|
| Code | Description |
| None | Carbon Steel |
| 4L | 304L Stainless Steel |
| 6L | 316L Stainless Steel |

| Media Requirement | |
|---|---|
| Code | Description |
| 1 | One single bag |
| 2 | One double bag |

| Connection Size | |
|---|---|
| Code | Inches |
| 2 | 2 |
| 3 | 3 |

| Connection Type | |
|---|---|
| Code | Description |
| Blank | NPT |
| F | NPS |

| Support Options | |
|---|---|
| Blank | Zinc plated carbon steel legs |
| SL | Stainless steel legs |
| 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

Parker Hannifin Corporation
**Industrial Process Filtration - N.A.**
118 Washington Avenue
Mineral Wells, TX 76067

phone +1 940 325 2575
industrialprocess.na@parker.com

**www.parker.com/industrialprocess**

## 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

ENGINEERING YOUR SUCCESS.

# 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 |

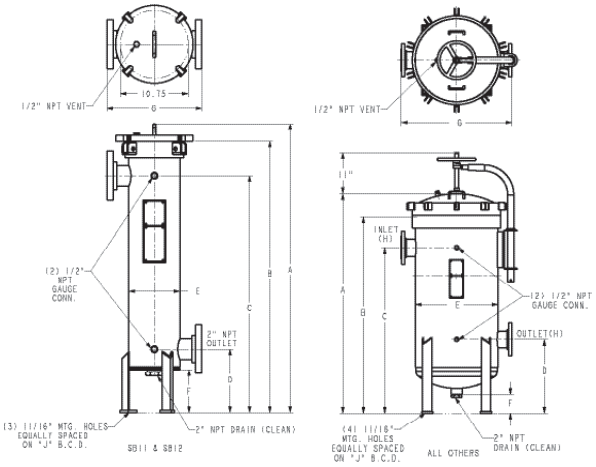
†Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult flow charts for each application.

## 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

SB [ ] — [ ]

| Material | |
|---|---|
| Code | Description |
| None | Carbon Steel |
| 4 | 304 Stainless Steel |
| 6 | 316 Stainless Steel |

| Design Series | |
|---|---|
| Code | Description |
| Blank | 150psi |
| H | 300psi |

| Number of Bags | |
|---|---|
| Code | Description |
| 1 | 1 bag |
| 3 | 3 bags |
| 4 | 4 bags |
| 5 | 5 bags |
| 6 | 6 bags |
| 7 | 7 bags |
| 8 | 8 bags |
| 9 | 9 bags |

| Bag Length | |
|---|---|
| Code | Description |
| 1 | Single |
| 2 | Double |

| Inlet \| Outlet Flange Size | |
|---|---|
| Code | Description |
| None | NPT |
| 2F | 2 inch flange |
| 3F | 3 inch flange |
| 4F | 4 inch flange |
| 6F | 6 inch flange |
| 8F | 8 inch flange |

| Coverlift Option | |
|---|---|
| Code | Description |
| Blank | None |
| K1 | Mechanical |
| K2 | Hydraulic |

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DS_IP_SP Vessel Rev. A

# Appendix

End Cap Configurations

Glossary of Filtration Technology

Standard Screen Micrometer Conversion Chart

Offer of Sale

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industrialprocess.na@parker.com

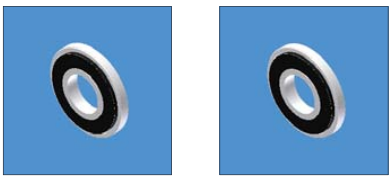
Parker

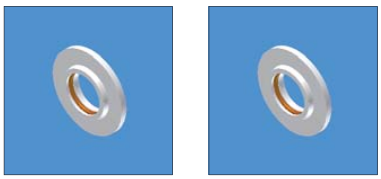
# End Cap Configurations

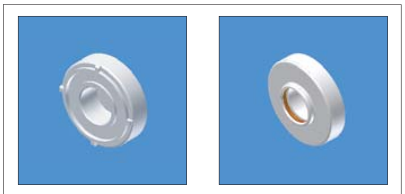
**Please use the following as a guideline in determining end cap styles.**

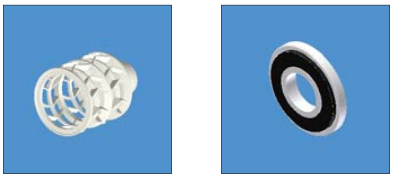
APPENDIX

AR 020 O-ring with recessed cap

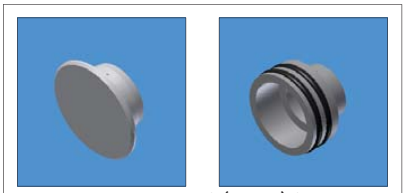

DO Double open end

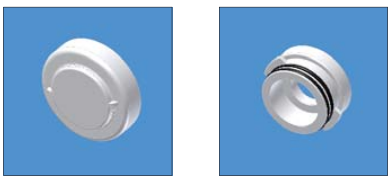

LL 120 O-ring


LR 120 O-ring & closed recessed end


OB Open end with spring

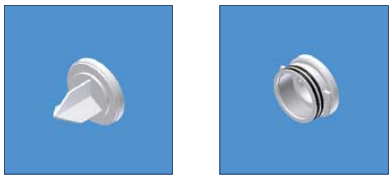
PR 213 O-ring with recessed cap


ProBond NTC (nylon) &
TC (ABS plastic) tube adapter


SC 226 O-ring with closed end

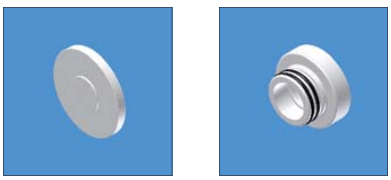
SF 226 O-ring with fin

SSC 226 O-ring w/closed end & SS insert


SSF 226 O-ring with fin & SS insert

STC 222 O-ring w/closed end & SS insert

STF 222 O-ring with fin & SS insert


TC 222 O-ring with closed end

TF 222 O-ring with fin

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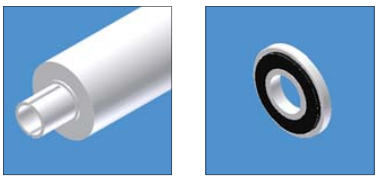
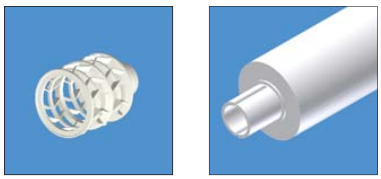
# End Cap Configurations *(continued)*

APPENDIX

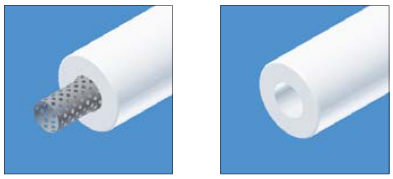
TX 222 O-ring with flex fin



XA DX double open end with poly core extender

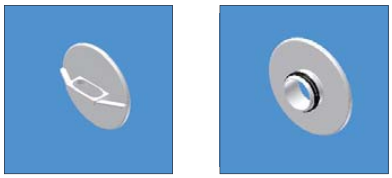


XB spring with poly core extender



XC metal extended core, plain end

## LARGE DIAMETER FORMATS

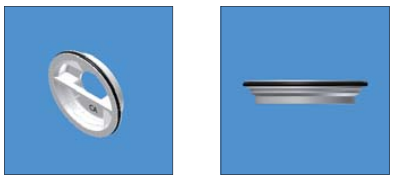


MaxGuard

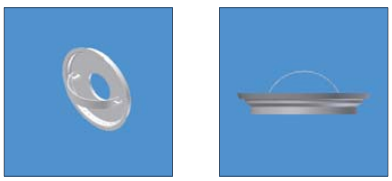
MegaFlow & MegaFlow Plus

ParMax & ParMax Select

## PLEATED BAG FORMATS

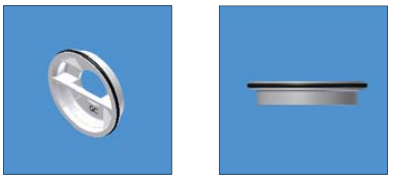


Pleated Bag - CA style

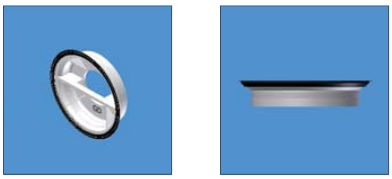


Pleated Bag - CQ style

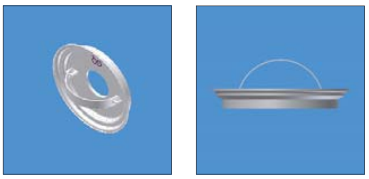
Pleated Bag - GB style



Pleated Bag - GC style



Pleated Bag - GD style



Pleated Bag - GQ style



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# 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 dirtholding 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

(Glossary 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.



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# Glossary of Filtration Terminology APPENDIX

(Glossary continued)

**Flux:**
A relationship of flow to surface area; expressed asgallons 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 asgpm/psi).

**Porosity:**
A measure of the open area of a filter medium. Sometimes expressed as a void volume.



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# 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.



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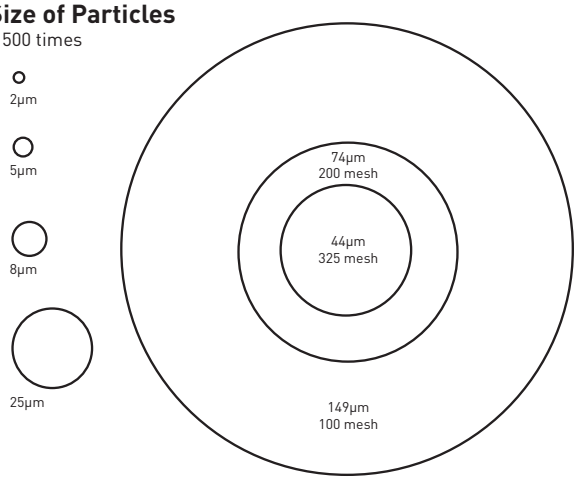
# Standard Screen Micrometer Conversion Chart

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 |

Note: Lower limit of visibility (naked eye) - 40µm

| 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 | $^9/_5$ (°C+32) |
| Cks | cps ÷ spg |

| 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 | $^5/_9$ (°F-32) |

**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 = $\frac{\text{(gpm) x (total head in ft.) x (specific gravity)}}{\text{(3960) x (pump efficiency)}}$



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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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