



Filtration Systems Products

Process Filtration Division

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- Consistent quality
- Technical innovation
- Premier customer service

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Hydraulic, Lubrication & Coolant Filtration

High-performance filtration systems for production machinery in industrial, mobile and military/marine.



Compressed Air & Gas Filtration

Complete line of compressed air/gas filtration products; coalescing, particulate and adsorption filters in many applications in many industries.



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Liquid filtration systems for beverage, chemical and food processing; cosmetic, paint, water treatment; photo-processing; and micro-chip fabrication.



Fuel Conditioning & Filtration

Parker air, fuel and oil filtration systems provide quality protection for engines operating in any environment, anywhere in the world.



Legal Notifications



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This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection for the products and systems and assuring that all performance, safety and warning requirements of the application are met.

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Foreword

Introduction

We are pleased to provide the following edition of the Parker Hannifin Corporation, Process Filtration Division, catalog. The information contained in this manual is for the use of Parker Hannifin Corporation, Process Filtration Division, distributors and their customers in the selection and specification of Process Filtration Division vessels and media.

In order to keep this catalog complete and correct, we will periodically send revised catalogs with updated materials.

Please fill out the card below to receive updated catalogs and send it to:

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Process Filtration Division



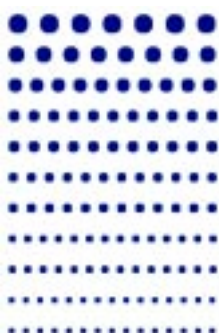


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NEW

NEW

Process Filtration Division

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Introduction

Parker Hannifin Corporation is comprised of eight global operating groups: Filtration, Climate and Industrial Controls, Aerospace, Hydraulics, Instrumentation, Automation, Fluid Connectors and Seal.

The Filtration group consists of ten filtration technical sales and service locations, including the Process Filtration Division, Filtration & Separation Division, Hydraulic Filter Division, Racor Division, Filter Division Europe, Finn Filter Division, and Parker Hannifin, Brazil and Parker Hannifin Korea Limited.

Customer Support Information

Meeting Your Exact Filter Needs

Parker knows the importance of selecting the right filtration system for optimum effectiveness and efficiency. Our computer-aided product selection systems help you find the right filter for each application. Evaluating size, flow, efficiency, media and other variables will take the guesswork out of the process. This provides maximum value for each application: "as fine as necessary" rather than "as fine as possible."

Technical Support You Can Count On

Parker's technical resources assure you of the right filtration technologies, advanced designs, consistent manufacturing and a network of helpful, specialized professionals trained to support your team.

We listen to you. Then we design the right filtration system. Parker holds over 150 patents on innovative filtration products, including filtration membranes, differential pressure indicators, separators, cartridge bypass valves and spin-on/spin-ins.

Parker Filtration makes the technological investments needed to assure the highest quality products. Examples are modern cleanrooms, sophisticated testing systems such as E.S.M., CAD/CAM engineering, CNC integrated equipment and an extensive computer database (inPHorm) that is helping us develop tomorrow's filtration products today.

Quality Is Top Priority at Parker

Parker Filtration has had a Total Quality Management System in place for years, as well as a Director of Corporate Quality for all of Parker. This structure helps us continually meet our customers' expectations for the highest technical standards, reliable supply and responsive service. From the Group President on down, "Quality" at Parker Filtration means more than making a product the right way. Quality permeates our whole organization so that every employee thinks about what he or she does and what is expected by our customers.

Always at Our Customers' Service

Parker filtration distributors provide local stock and technical design help including 24-hour emergency service. And they are further supported by our "ever ready" manufacturing teams. We service a variety of filtration applications and have quality replacement elements for competitive products.

So if you need more technical literature or applications support, please call 1-800-C-Parker for the name and location of the nearest distributor.

For additional manuals or to request sales support or technical materials, contact the Process Filtration Division marketing department at (317)-275-8300.

And remember, the applications information contained in this catalog is general in nature. For technical applications assistance and problem solving, contact the Process Filtration Division engineering department at (317) 275-8300 or call 1-888-C-FULFLO.

For more printed technical information, ask for our text titled "Filtration Technology" or our filtration selection software package, inPHorm.



Product Line Overview

Introduction

An Innovator in Filtration Technology

Parker manufactures a wide variety of filtration products. These products, including both vessels and replaceable media, are used extensively in the beverage, chemical processing, cosmetic, food processing, metalworking, paint, ink, pharmaceutical and photo-processing industries. They're also used for prefiltration of feed water in reverse-osmosis water treatment plants. Several of these products are "Certified to ANSI/NSF 61" standard for contact with drinking water components.

In microfiltration, Parker is pioneering breakthroughs for micro-chip fabricators. Our systems improve yields by delivering ultra-pure chemicals and water filtered to the limits of detection.

When you need process fluid filters to remove contamination, such as gels or grit, Parker can deliver. In such applications as oil and gas exploration/production processing or removal of wastes and byproducts, Parker filters remove particles from 0.03 to 840 microns.

Our process filtration capabilities also include such applications as adhesives, resins, water, paints, edible oils, photographic chemicals and magnetic coatings. Advanced technology, ultra-pure, chemically inert filtration applications include electronic components, pharmaceuticals, beverages and reverse-osmosis membrane prefiltration protection.

Parker's broad filter line includes membrane cartridges, pleated cartridges, vessels (ASME code and non-code), high-efficiency filter bags, melt blown cartridges, stainless steel media and more. Our filter media provide a wide range of micron removal choices from 0.03 to 840 microns, with efficiencies as high as 99.99+ percent.

Further, Parker's leadership in ultra-pure microprocess filtration is recognized by a growing number of customers. We contribute to improved yields by helping to deliver ultra-pure chemicals and water to the wafer surface.

Finally, Parker bag media and bonded media (ProBond™) are available for high-viscosity applications such as the removal of oversize particles in paints and inks. The wound cartridge (HFT or XTL™) is an economical choice for general clarification operations on a wide variety of liquids from water to corrosive liquids to organic liquids. Wound cartridges, bag media and pleated products that meet FDA requirements are available for food contact service such as potable water, edible oils, soft drinks, beer and corn syrup.

Membrane Cartridges

Parker's line of membrane cartridges is ideal for critical applications when high performance is necessary. They are available in two types of media: polyethersulfone, and PTFE fluoropolymer.

Pleated Polypropylene Cartridges

Pleated polypropylene filter elements, such as our backwashable Poly-Mate™ cartridge used in beer filtration and similar applications, provide better filtration value.

Resin Bonded Cartridges

Parker's ProBond™ cartridges provide two-stage filtration in an innovative one-piece filter. The outer layer of ProBond™ acts as a prefilter trapping large particles, while the inside layer provides final filtration. The ProBond™ is available in particle removal ratings from 2 to 150 microns.

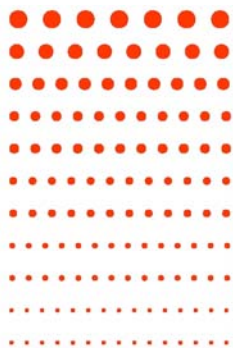
Melt Blown Cartridges

Process Filtration's MegaBond Plus Cartridges are absolute-rated depth media that offer consistent production yields and quality due to fixed pore structure and finer removal ratings for use in a wide variety of applications.

Vessels

Parker ASME code and non-code filter vessels are available in a variety of configurations for a broad range of liquid, compressed air and gas applications.

Process Filtration Division



Advantage™ AF Filter Cartridges

■ PTFE Membrane

Mega-Pure Membrane Series

Increased Flow Rate With Next Generation, All Fluoropolymer Membrane Filter Cartridges

A unique PTFE membrane provides superior flow rate and efficiency maximizing the performance of the fluoropolymer Advantage™ AF filter cartridge. The Advantage Mega-Pure AF Series of filter cartridges meets or exceeds the requirements of the filtration of UHP liquids used in the fabrication of state-of-the-art microelectronic devices.

The Mega-Pure Advantage AF Membrane Series is available in 0.05µm, 0.1µm, 0.2µm, 0.45µm and 1µm pore sizes.

Applications

UHP Water

- Ozonated
- Cold
- Hot

UHP Chemicals

- Acids
- Solvents
- Photoresists
- Alkalies
- Developers

- Mixed Acids
- Strippers

Equipment

- Point-of-Use Tools
- Chemical Delivery System
- Cleaning
- Etching
- Photolithography
- Wet Benches

Features and Benefits

Superior PTFE Membrane Yields Maximum Filtration Results

- Unique PTFE membrane ensures high flow rates and superior retention.
- Rinsed to 18 megohm-cm resistivity with pulsed, ozonated, UHP water.
- Available prewetted for immediate use in process.
- Advantage AF cartridges are non-fiber releasing and superior in extractable levels.
- Engineered for high temperature resistance.



Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable in situ
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Specifications

Materials of Construction:

- Membrane: hydrophobic PTFE
- Membrane Support/Drainage: PFA
- Structural Components: PFA
- Seal Material: various
- Sealing Method: thermal welding

Dimensions:

- Outside Diameter: 2.5 in (63.5 mm)
- Inside Diameter 0.825 in (22.2 mm)
- Lengths: 2-30 in (10-76 cm)

Surface Area (10 in cartridge):

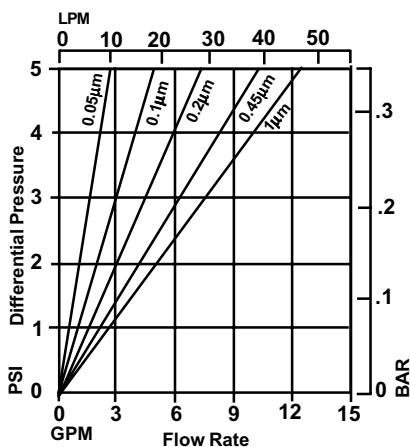
- Minimum 6.5 ft² (0.9 m²)

Integrity Test:

- Bubble Point (Using N₂ and a membrane wet with 100% IPA at 73°F [23°C]):
 - 0.05µm: ≥ 50 psi (3.4 bar)
 - 0.1µm: ≥ 24 psi (1.7 bar)
 - 0.2µm: ≥ 16 psi (1.1 bar)
 - 0.45µm: ≥ 6 psi (0.4 bar)
 - 1µm: ≥ 3 psi (0.2 bar)

PTFE Cartridges (4 in):

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



Recommended Operating Conditions:

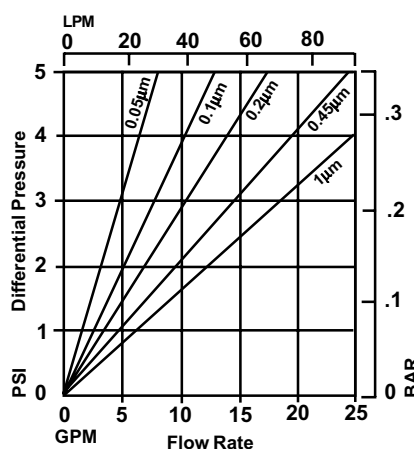
- Maximum Temperature: 302°F (150°C) at 20 ΔP (1.4 bar)
- Maximum Differential Pressure:
 - Forward: 70 psi (4.8 bar) at 77°F (25°C)
 - 30 psi (2.1 bar) at 315°F (157°C)
 - Reverse: 50 psi (3.4 bar) at 77°F (25°C)

Quality Standard

- Each cartridge is flushed with pulsed UHP ozonated water and monitored downstream for TOC and particle count.
- The release criteria are no TOC contribution (ppb) and less than 4 particles/ml at the rating or greater for 15 minutes.
- Each lot of cartridges is evaluated for metallic ion contribution in 10% HNO₃ after a 24-hour static soak.
- Total metals contribution cannot exceed 25 ppb.

PTFE Cartridges (10 in):

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



Flow Advantages

- Advantage™ AF cartridges offer greater flow rate while decreasing processing time and increasing recirculation, fluid cleanliness, yields and capacity.
- Maintaining the current flow rate while lowering the differential pressure allows Advantage AF cartridges to achieve longer life and lower particle counts.
- Maintaining the current flow rate and differential pressure with Advantage AF cartridges allows the use of smaller filter housings with smaller footprint.
- Maintaining the current flow rate and differential pressure with lower micron-rated Advantage AF cartridges improves yields and provides cleaner fluids.

Flow Factors (4 in cartridge):

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.05	0.6	33	1.7	0.031
0.1	1.0	55	1.0	0.018
0.2	1.5	82	0.7	0.013
0.45	2.0	110	0.5	0.009
1	2.4	132	0.4	0.007

Flow Factors (10 in cartridge):

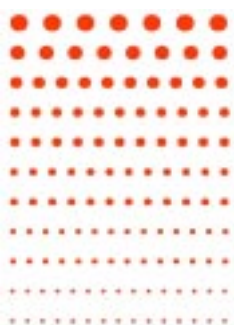
Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.05	1.5	82	0.67	0.012
0.1	2.5	137	0.40	0.007
0.2	3.5	192	0.30	0.005
0.45	5.0	274	0.20	0.004
1	6.0	329	0.17	0.003

Ordering Information

AF	D	A	10	T	TC	W
Cartridge Code	Pore Size (µm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Special Preparation
AF = All Fluoro-polymer	D = 0.05 S = 0.1 F = 0.2 R = 0.45 Q = 1	A = 2.5	02 = 2 04 = 4 10 = 10 20 = 20 30 = 30	D = CR 570 E = EPDM K = KR 4079 T = PFA/Viton* (O-ring) PTFE (gasket) V = Viton* X = No O-Ring	BC = 015 O-Ring/Flat (4 in only) DC = 116 O-Ring/Flat (4 in only) HH = DOE SC = 226 O-Ring/Flat TC = 222 O-Ring/Flat	W = Prewetted With Ozonated UHP Water

* A trademark of E. I. duPont de Nemours & Co.

** Consult factory for gas flow data.



Advantage™ AF⁺ Filter Cartridges

■ PTFE Membrane

Mega-Pure Membrane Series

Maximized Flow Rate With Next Generation All Fluoropolymer Membrane Filter Cartridges

A unique PTFE membrane provides superior flow rate, surface area and efficiency maximizing the performance of the all fluoropolymer Advantage™ AF⁺ membrane filter cartridge. The Mega-Pure Advantage AF⁺ Series of filter cartridges meets or exceeds the requirements for the filtration of UHP liquids used in the fabrication of state-of-the-art microelectronic devices.

The Mega-Pure Advantage AF⁺ Membrane Series is available in 0.05µm, 0.1µm, 0.2µm, 0.45µm and 1µm pore sizes.

Applications

UHP Water

- Ozonated
- Cold
- Hot

- Mixed Acids
- Strippers

Equipment

- Point-of-Use Tools
- Chemical Delivery System

UHP Chemicals

- Acids
- Solvents
- Photoresists
- Alkalines
- Developers
- Etching
- Photolithography
- Wet Benches



Features and Benefits

Superior PTFE Membrane Yields Maximum Filtration Results.

- Highest flow rate cartridge available for smallest footprint requirement.
- Rinsed to 18 megohm-cm resistivity with pulsed, ozonated, UHP water.
- Unique PTFE membrane ensures high flow rates and superior retention.
- Available prewetted for immediate use in process.
- Advantage AF⁺ cartridges are non-fiber releasing and superior in extractable levels.
- Engineered for high temperature resistance.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class V1-121°C Plastic Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Specifications

Materials of Construction:

- Membrane: hydrophobic PTFE
- Membrane Support/Drainage: PFA
- Core, Sleeve, Adaptors: PFA/PTFE alloy
- End Caps: PFA
- Seal Material: various
- Sealing Method: thermal welding

Dimensions:

- Outside Diameter: 3.25 in (82.6 mm)
- Inside Diameter: 1.125 in (29 mm)
- Lengths: 4-30 in (10-76 cm)

Surface Area (10 in cartridge):

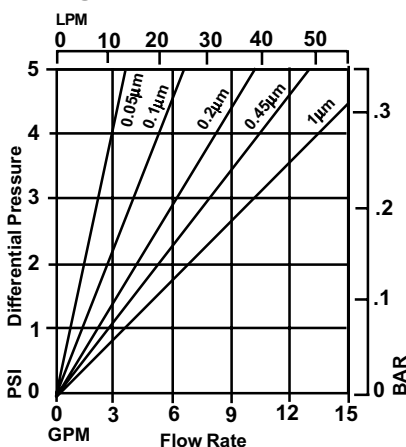
- Minimum 10.5 ft² (0.9 m²)

Integrity Test:

- Bubble Point (Using N₂ and a membrane wet with 100% IPA at 73°F [23°C]):
 - 0.05µm: ≥ 50 psi (3.4 bar)
 - 0.1µm: ≥ 24 psi (1.7 bar)
 - 0.2µm: ≥ 16 psi (1.1 bar)
 - 0.45µm: ≥ 6 psi (0.4 bar)
 - 1µm: ≥ 3 psi (0.2 bar)

PTFE Cartridges (4 in):

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



Recommended Operating Conditions:

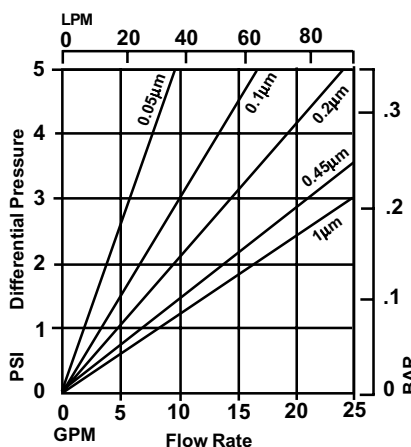
- Maximum Temperature: 375°F (191°C) at 20 ΔP (1.4 bar)
- Maximum Differential Pressure:
 - Forward: 70 psi (4.8 bar) at 77°F (25°C)
 - 30 psi (2.1 bar) at 315°F (157°C)
 - Reverse: 50 psi (3.4 bar) at 77°F (25°C)

Quality Standard

- Each cartridge is flushed with pulsed UHP ozonated water and monitored downstream for TOC and particle count.
- The release criteria are no TOC contribution (ppb) and less than 4 particles/ml at the rating or greater for 15 minutes.
- Each lot of cartridges is evaluated for metallic ion contribution in 10% HNO₃ after a 24-hour static soak.
- Total metals contribution cannot exceed 25 ppb.

PTFE Cartridges (10 in):

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



Flow Advantages

- Advantage™ AF⁺ cartridges offer 30% greater flow rate while decreasing processing time and increasing recirculation, fluid cleanliness, yields and capacity.
- Maintaining the current flow rate while lowering the differential pressure allows Advantage AF⁺ cartridges to achieve longer life and lower particle counts.
- Maintaining the current flow rate and differential pressure with Advantage AF⁺ cartridges allows the use of smaller filter housings with smaller footprint.
- Maintaining the current flow rate and differential pressure with lower micron-rated Advantage AF⁺ cartridges improves yields and provides cleaner fluids.

Flow Factors (4 in cartridge):

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.05	0.8	44	1.3	0.024
0.1	1.3	71	0.8	0.015
0.2	2.0	110	0.5	0.009
0.45	2.8	153	0.4	0.007
1	3.3	181	0.3	0.005

Flow Factors (10 in cartridge):

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.05	2.0	110	0.50	0.009
0.1	3.3	181	0.30	0.005
0.2	5.0	274	0.20	0.004
0.45	7.1	389	0.14	0.003
1	8.3	455	0.12	0.003

Ordering Information

A F	D	C	10	T	TC	W
Cartridge Code	Pore Size (µm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Special Preparation
AF = All Fluoropolymer	D = 0.05 S = 0.1 F = 0.2 R = 0.45 Q = 1	C = 3.25	04 = 4 10 = 10 20 = 20 30 = 30	D = CR 570 E = EPDM K = KR 4079 T = PFA/Viton* V = Viton* X = No O-Ring	TC = 222 O-Ring/Flat	W = Prewetted With Ozonated UHP Water

* A trademark of E. I. duPont de Nemours & Co.

** Consult factory for gas flow data.



Advantage™ PS Filter Cartridges

■ Polyethersulfone Membrane

Ultra-Pure Membrane Series

High Flow Rate Capability With Polyethersulfone Membrane Filter Cartridges

Ultra-Pure polyethersulfone membrane cartridges provide superior flow rates and stand up to a wide variety of chemicals in applications including chemical, food and beverage, and pharmaceutical. Unique polyethersulfone construction features a high-surface area design which allows for excellent flow rates and high particle removal efficiency. Hydrophilic polyethersulfone membrane cartridges are ready for use and do not require prewetting.

The Ultra-Pure Polyethersulfone Membrane Series is available in 0.1µm, 0.2µm, 0.45µm and 0.65µm pore sizes.

Applications

Food & Beverage

- Bottled Water
- Wine
- Beer
- Process Water
- Vinegar
- Aseptic Packaged Liquids
- Edible Oils

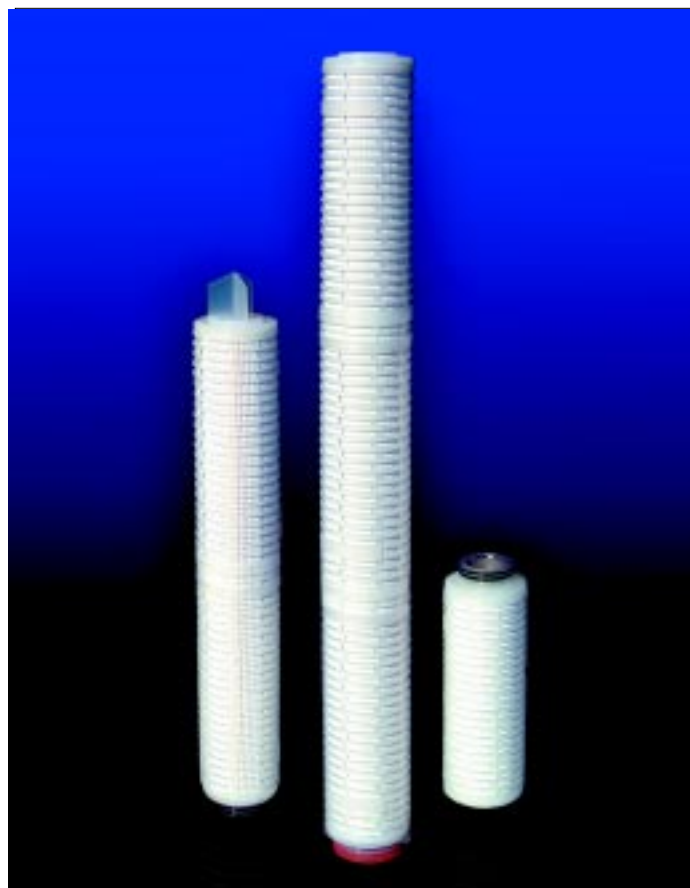
Information

Storage

- Optical Disk Manufacturing
- Hard Disk Manufacturing
- Optical Coatings
- Photographic Films

Chemicals

- Bulk Chemicals
- Process Water
- Pharmaceutical Intermediates
- Diagnostics & Reagents
- Electroless Nickel Plating
- Point-of-Use & Distribution



Features and Benefits

Superior Polyethersulfone Membrane Yields Maximum Filtration Results

- High surface area design provides excellent flow rates and life while maintaining high particle removal efficiency.
- Rinsed with 18 megohm-cm UHP water for high purity.
- Excellent resistance to most sanitizing agents such as hot water, concentrated hydrogen peroxide and active chlorine compounds.
- Low pressure drops improve filtration efficiency and extend filter life.
- Spunbonded polypropylene support materials eliminate sites for potential shedding and increased particle counts.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Ultra-Pure Membrane Series

Specifications

Materials of Construction:

- Membrane: hydrophilic polyethersulfone
- Membrane Support/Drainage: polypropylene
- Core/Cage: polypropylene
- End Fittings: polypropylene
- Seal Material: various
- Sealing Method: thermal welding

Dimensions:

- Diameter: 2.70 in (6.8 cm)
- Lengths: 10-40 in (25-102 cm)

Surface Area (10 in cartridge):

- Minimum 6.5 ft² (0.6 m²)

Endotoxins:

- < 0.25 EU/ml

Integrity Test:

- Bubble Point (in UHP water):
 - 0.1µm ≥ 70 psig (4.8 bar)
 - 0.2µm ≥ 45 psig (3.1 bar)
 - 0.45µm ≥ 24 psig (1.7 bar)
 - 0.65µm ≥ 16 psig (1.1 bar)
- Diffusion Rate (10 in cartridge):
 - 0.1µm ≤ 33cc/min at 40 psig (2.7 bar)
 - 0.2µm ≤ 33cc/min at 30 psig (2.1 bar)
 - 0.45µm ≤ 33cc/min at 15 psig (1.0 bar)
 - 0.65µm ≤ 33cc/min at 10 psig (0.7 bar)

Recommended Operating Conditions:

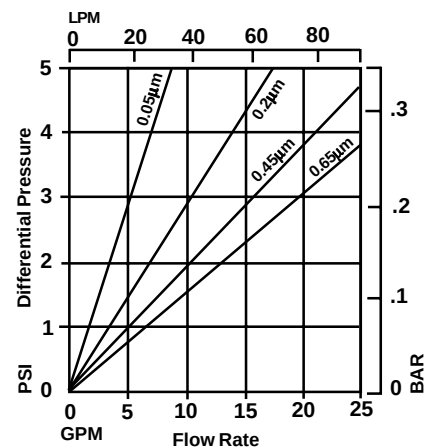
- Maximum Temperature: 176°F (80°C) @ 30 ΔP (2.1 bar)
- Maximum Differential Pressure:
 - Forward: 70 psi (4.8 bar) @ 77°F (25°C)
 - 30 psi (2.1 bar) @ 176°F (80°C)
 - Reverse: 50 psi (3.4 bar) @ 77°F (25°C)

Sterilization/Sanitization Methods:

- Hot Water: 190°F (88°C)
- 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
- Hydrogen Peroxide
- Sodium Hypochlorite
- Sanitizing Agents (see Materials Selection Guide)

Polyethersulfone Cartridges:

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



Flow Factors:

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.1	1.8	99	0.56	0.010
0.2	3.5	192	0.29	0.005
0.45	5.5	301	0.18	0.003
0.65	6.5	356	0.15	0.003

Ordering Information

P S

Cartridge Code

PS = Polyethersulfone

F

Pore Size (µm)

T = 0.03
S = 0.1
F = 0.2
R = 0.45
H = 0.65

B

Diameter (in)

B = 2.7

10

Length (in)

10 = 10
20 = 20
30 = 30
40 = 40

E

Seal Material

B = Buna N
E = EPDM
S = Silicone
T = PFA/Viton*¹
V = Viton*
X = No O-Ring/
No Gaskets

TC

End Cap Configuration

AR = 020 O-Ring/Recessed
HH = DOE (Gaskets)
LL = 120/120***
LR = 120 O-Ring/Recessed***
PR = 213 O-Ring/Recessed***
SC = 2-226/Flat
SF = 2-226/Fin
TC = 2-222/Flat
TF = 2-222/Fin

U

Grade

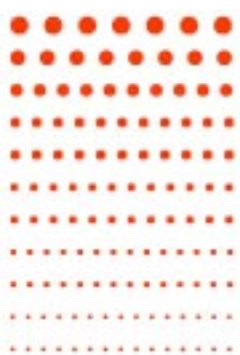
U = Ultra-Pure

* Trademark of E. I. du Pont de Nemours & Co.

** Consult Process Filtration Division for gas flow data.

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

¹ PFA/Viton is O-Ring only; for DOE (HH), gasket is expanded PTFE.



Advantage™ PS Filter Cartridges

■ Polyethersulfone Membrane

Mega-Pure Membrane Series

High Flow Rate Capability With Polyethersulfone Membrane Filter Cartridges

Mega-Pure polyethersulfone membrane cartridges provide superior flow rates over the competition. The unique construction features a high-surface area design that allows for excellent flow rates and high particle removal efficiency. Hydrophilic polyethersulfone membrane cartridges require no pretreatment and are ready to use. The Mega-Pure Polyethersulfone Membrane Series of filter cartridges meets or exceeds requirements for the filtration of UHP liquids used in the fabrication of state-of-the-art microelectronic devices.

The Mega-Pure Polyethersulfone Membrane Series is available in 0.03µm, 0.1µm, 0.2µm and 0.45µm pore sizes.

Applications

UHP Water

- Central PAD
- Polishing Stations
- Point-of-Use

UHP Chemical

- Specialty Chemicals
- Point-of-Use
- Bulk Photoresists and Solvents

Microelectronics

- Semiconductor
- Optical Disks
- Printed Circuits
- Hard Disks



Features and Benefits

Superior Polyethersulfone Membrane Yields Maximum Filtration Results

- High surface area design provides excellent flow rates and extended filter life while maintaining high particle removal efficiency.
- Rinsed to 18 megohm-cm resistivity with UHP water.
- Spunbonded polypropylene support materials eliminate sites for potential shedding and increased particle counts.
- Provides broad chemical compatibility.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



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)

Surface Area (10 in cartridge):

- ? Minimum 6.5 ft² (0.6 m²)

Integrity Test:

- ? Bubble Point (in UHP water):
 - 0.03µm ≥ 90 psig (6.2 bar)
 - 0.1µm ≥ 70 psig (4.8 bar)
 - 0.2µm ≥ 45 psig (3.1 bar)
 - 0.45µm ≥ 24 psig (1.7 bar)

■ Diffusion Rate (10 in cartridge):

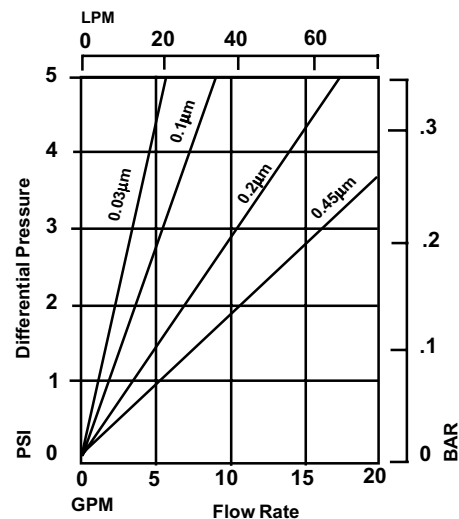
- 0.03µm ≤ 33cc/min at 45 psig (3.1 bar)
- 0.1µm ≤ 33cc/min at 40 psig (2.7 bar)
- 0.2µm ≤ 33cc/min at 30 psig (2.1 bar)
- 0.45µm ≤ 33cc/min at 15 psig (1.0 bar)

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)

Polyethersulfone Cartridges:

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



Flow Factors:

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.03	1.2	66	0.85	0.015
0.1	1.8	99	0.56	0.010
0.2	3.5	192	0.29	0.005
0.45	5.5	301	0.18	0.003

Ordering Information

P S	T	B	10	E	T C	E
Cartridge Code	Pore Size (µm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Grade
PS = Polyethersulfone	T = 0.03 S = 0.1 F = 0.2 R = 0.45	B = 2.7	10 = 10 20 = 20 30 = 30 40 = 40	B = Buna N E = EPDM S = Silicone T = PFA/Viton* V = Viton* X = No O-Ring	HH = DOE (Gaskets) SC = 2-226/Flat SF = 2-226/Fin TC = 2-222/Flat TF = 2-222/Fin	E = Electronics

Process Filtration Division

* Trademark of E. I. du Pont de Nemours & Co.
** Consult Process Filtration Division for gas flow data.





Advantage™ PS Filter Cartridges

■ Polyethersulfone Membrane

General Grade Membrane Series

High Flow Rate Capability With Polyethersulfone Membrane Filter Cartridges

The General Grade polyethersulfone membrane cartridges are specifically designed to provide superior flow rates at an economical cost. The unique construction features a high-surface area design that allows for excellent flow rates and high particle removal efficiency. Hydrophilic polyethersulfone membrane cartridges require no pretreatment and are ready to use. All materials of construction are the same as used in the electronics grade Mega-Pure series polyethersulfone cartridges from Parker. This assures a cost effective device while maintaining excellent performance in UPW pad applications and other recirculation applications.

The General Grade is also ideal for final filtration of water and aqueous solutions in plating, chemical process, photographic, food and beverage and bulk pharmaceutical applications.

The General Grade Polyethersulfone Membrane Series is available in 0.03µm, 0.1µm, 0.2µm, 0.45µm and 0.65µm pore sizes.

Applications

UHP Chemical

- Specialty Chemicals
- Bulk Photoresists and Solvents

UHP Water

- Central PAD
- Polishing Stations

Food & Beverage

- Bottled Water
- Wine
- Beer
- Process Water
- Vinegar
- Edible Oils
- Aseptic Packaged Liquids

Miscellaneous

- Pre, Post and Point-Of-Use DI Water Filtration
- Pharmaceutical Intermediates
- Plating Solutions
- Bulk Chemicals



Features and Benefits

Superior Polyethersulfone Membrane Yields Maximum Filtration Results

- High surface area design provides excellent flow rates and extended filter life while maintaining high particle removal efficiency.
- Spunbonded polypropylene support materials eliminate sites for potential shedding and increased particle counts.
- Provides broad chemical compatibility.
- Excellent resistance to most sanitizing agents.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



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)

Surface Area (10 in cartridge):

- Minimum 6.5 ft² (0.6 m²)

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)

Endotoxins:

- <0.25 eu/ml

Sterilization/Sanitization Methods:

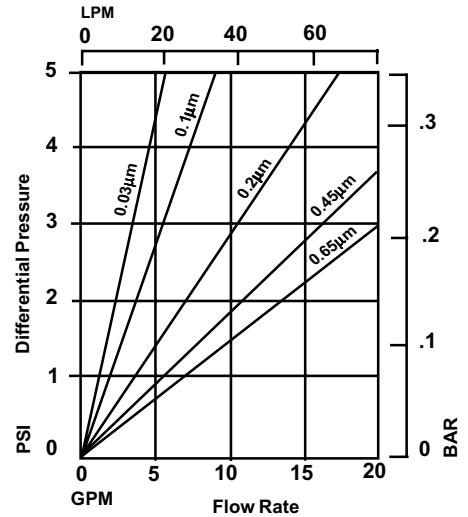
- Isopropyl Alcohol
- Sodium Hydroxide
- Hydrogen Peroxide
- Hot Water: 190°F (88°C) @ 5 psid (0.3 bar)
- Autoclave: 250°F (121°C) for 30 minutes at 15 psi (1.0 bar)
- In Situ Steam: 284°F (140°C) for 60 minutes at 15 psi (1.0 bar)
- Chlorine
- Sodium Hypochlorite
- Sanitizing Agents (see Materials Selection Guide, Bulletin C-770)

Installation Rinse-In:

- Cartridges typically rinse to back ground resistivity in less than five minutes at 2 gpm/10" equivalent

Polyethersulfone Cartridges:

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



Flow Factors:

Pore Size (μm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.03	1.2	66	0.85	0.015
0.1	1.8	99	0.56	0.010
0.2	3.5	192	0.29	0.005
0.45	5.5	301	0.18	0.003
0.65	6.5	356	0.15	0.003

Ordering Information

PS	T	B	10	E	TC	G
Cartridge Code	Pore Size (μm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Grade
PS = Polyethersulfone	T = 0.03 S = 0.1 F = 0.2 R = 0.45 H = 0.65	B = 2.7	10 = 10 20 = 20 30 = 30 40 = 40	B = Buna-N E = EPDM S = Silicone T = PFA/Viton* ¹ V = Viton* X = No O-Ring/ No Gaskets	AR = 020 O-Ring/Recessed HH = DOE (Gaskets) LL = 120/120*** LR = 120 O-Ring/Recessed*** PR = 213 O-Ring/Recessed*** SC = 2-226/Flat SF = 2-226/Fin TC = 2-222/Flat TF = 2-222/Fin	G = General

* Trademark of E. I. duPont de Nemours & Co.

** Consult Process Filtration Division for gas flow data.

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

¹ PFA/Viton is O-Ring only; for DOE (HH), gasket is expanded PTFE.



Evadur™ Filter Cartridges

■ Polyethersulfone Membrane

General Grade Membrane Series

Evadur™ High Flow, High Purity Membrane Cartridge

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.

Applications

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



Features and 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 biosafe in accordance with USP Class VI-121°C Plastic Test.
- All materials listed as acceptable for potable and edible contact according to CFR Title 21.
- Manufactured in a zone Class 10 clean room.
- Manufactured with strict quality control measuring rinse-up, integrity testing, flow rate, and extractable levels.
- Parker Process Filtration Division is an ISO9000:2000 Certified Division.

Process Filtration Division



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)

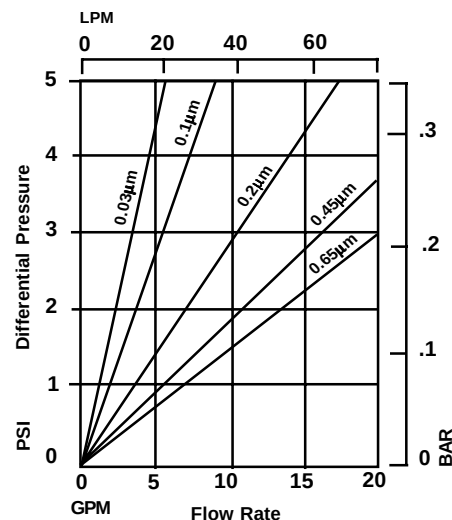
Sterilization/Sanitization Methods:

- ? 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 (see Materials Selection Guide, Bulletin C-770)

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

* Trademark of E. I. duPont de Nemours & Co.

** Consult Process Filtration Division for gas flow data.

Process Filtration Division





Advantage™ PF Filter Cartridges

■ PTFE Membrane

Ultra-Pure Membrane Series

Double the Flow With Next Generation PTFE Membrane Filter Cartridges

Ultra-Pure PTFE membrane filter cartridges perform at the highest flow rate to provide the cleanest fluids at the lowest possible cost. Parker's unique PTFE membrane construction serves as a low-cost alternative to all fluoropolymer cartridges in less aggressive applications and maintains broad chemical compatibility with low extractable levels and high particle retention rates.

The Ultra-Pure PTFE Membrane Series is available in 0.1µm, 0.2µm, 0.45µm and 1µm pore sizes.

Applications

Pharmaceutical

- Tank Vents
- Filtration of Compressed Gases
- Filtration of Solvents

Process Gases

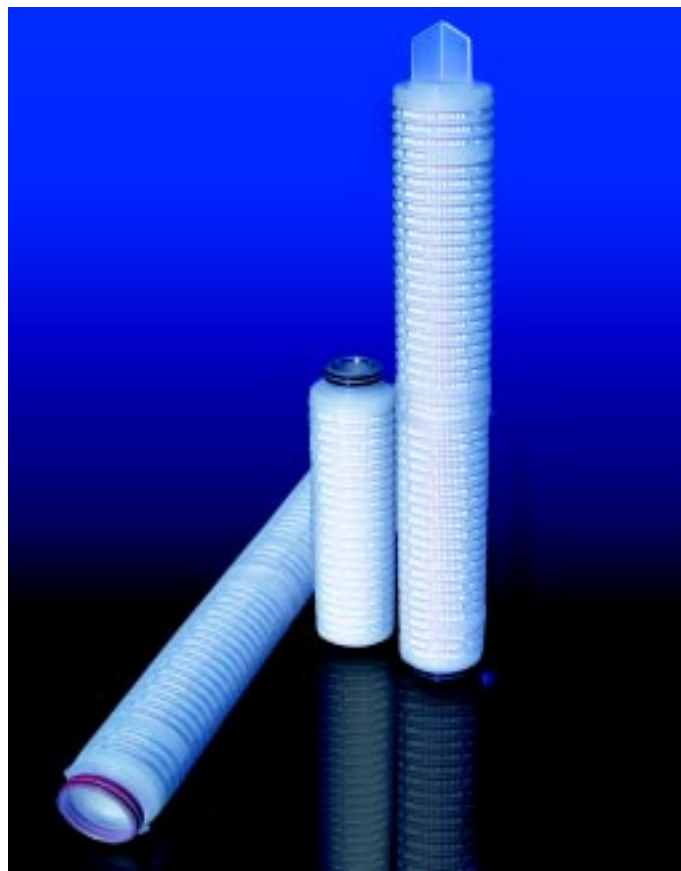
- Bulk and Point-of-Use Gases
- Compressed Air

Food and Beverage

- Sterile Venting of Holding Tanks
- Sterile CO₂ Filtration
- Microbial Control of Inlet Air for Bioprocessing of Foods

Chemicals

- Solvents
- Bulk Filling
- Acids



Features and Benefits

Superior PTFE Membrane Yields Maximum Filtration Results

- High flow rates and optimized surface area reduce processing time and filter consumption.
- Rinsed with 18 megohm-cm UHP water for high purity.
- Non-fiber releasing.
- All-polypropylene component construction complemented by a variety of O-ring seals withstands demanding operating parameters.
- Narrow pore size distribution ensures the ultimate in retention and flow rate.
- Naturally hydrophobic membrane maintains air flow rates in venting and gas applications.
- Available prewetted for immediate use in process.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Ultra-Pure Membrane Series

Specifications

Materials of Construction:

- Membrane: hydrophobic PTFE
- 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)

Surface Area (10 in cartridge):

- Minimum 7.5 ft² (0.7 m²)

Endotoxins:

- < 0.25 EU/ml

Integrity Test:

- Bubble Point (100% IPA):
0.1µm ≥ 24 psig (1.7 bar)
0.2µm ≥ 16 psig (1.1 bar)
0.45µm ≥ 6 psig (0.4 bar)
1µm ≥ 3 psig (0.2 bar)

Recommended Operating Conditions:

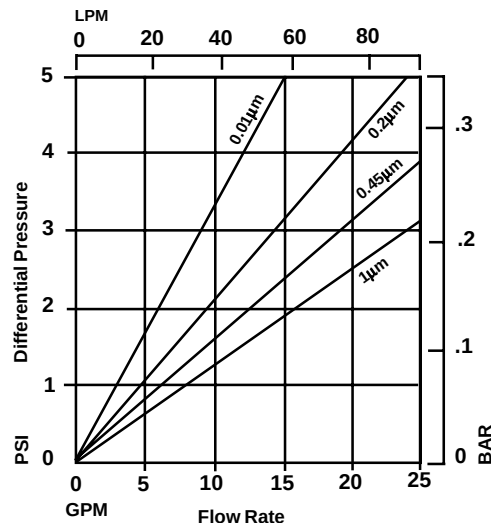
- Maximum Temperature: 176°F (80°C) @ 30 ΔP (2.1 bar)
- Maximum Differential Pressure:
Forward:
70 psi (4.8 bar) @ 77°F (25°C)
30 psi (2.1 bar) @ 176°F (80°C)
Reverse:
50 psi (3.4 bar) @ 77°F (25°C)

Sterilization/Sanitization Methods:

- Autoclave or *in situ* Steam: 250°F (121°C) for 30 minutes at 15 psi (1.0 bar)
- 70% IPA
- 10% Hydrogen Peroxide

PTFE Cartridges:

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



Flow Factors:

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.1	3.0	164	0.33	0.006
0.2	4.5	247	0.22	0.004
0.45	6.5	356	0.15	0.003
1	7.5	411	0.13	0.002

Ordering Information

PF	F	B	10	E	TC	U	W
Cartridge Code	Pore Size (µm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Grade	Special Preparation
PF = PTFE	S = 0.1 F = 0.2 R = 0.45 Q = 1 D = 0.05	B = 2.7	10 = 10 20 = 20 30 = 30 40 = 40	B = Buna N D = CR 570 E = EPDM S = Silicone T = PFA/Viton* ¹ V = Viton* X = No O-Ring/ No Gaskets	AR = 020 O-Ring/Recessed HH = DOE (Gaskets) LL = 120/120*** LR = 120 O-Ring/Recessed*** PR = 213 O-Ring/Recessed*** SC = 2-226/Flat SF = 2-226/Fin TC = 2-222/Flat TF = 2-222/Fin	U = Ultra-Pure	W = Prewetted With Ozonated UHP Water

Process Filtration Division

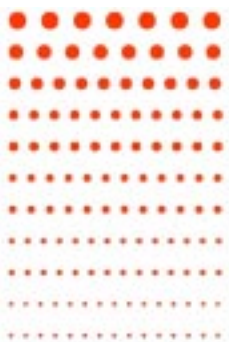
* Trademark of E. I. duPont de Nemours & Co.

** Consult Process Filtration Division for gas flow data.

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

¹ PFA/Viton is O-Ring only; for DOE (HH), gasket is expanded PTFE.





Advantage™ PF Filter Cartridges

■ PTFE Membrane

Mega-Pure Membrane Series

Twice the Flow and Recirculation Rate With Next Generation PTFE Membrane Filter Cartridges

Mega-Pure PTFE membrane filter cartridges provide unsurpassed flow rate capability. Parker's PTFE membrane cartridge outperforms all competitive cartridges of the same rating at a ratio of 2 to 1 or greater, thus reducing the number of cartridges and housings required. PTFE membrane filter cartridges are a low-cost alternative to all fluoropolymer cartridges. The Mega-Pure PTFE Membrane Series of filter cartridges meets or exceeds requirements for the filtration of UHP liquids used in the fabrication of state-of-the-art microelectronic devices.

The Mega-Pure PTFE Membrane Series is available in 0.05µm, 0.1µm, 0.2µm, 0.45µm and 1µm pore sizes.

Applications

UHP Chemicals

- | | | |
|----------------|-----------------|-----------------|
| ■ Acids | ■ Developers | ■ Process Gases |
| ■ Solvents | ■ Strippers | & Compressed |
| ■ Photoresists | ■ Recirculation | Air |
| ■ Tank Vents | ■ Wet-Etch | ■ Polymer |
| ■ Etchants | Systems | Filtration |
| ■ Alkalies | ■ Rinse Baths | |



Features and Benefits

Superior PTFE Membrane Yields Maximum Filtration Results

- High flow rates and reduced pressure drops for improved filtration efficiency.
- Rinsed to 18 megohm-cm resistivity with UHP water.
- Large, high-purity filtration area for maximum yields.
- Non-fiber releasing.
- Narrow pore size distribution ensures the ultimate in retention and flow rate.
- Available pretwetted for immediate use in process.

Parker's TQM System Assures Consistent Performance and Reliable Filtration

- Strict quality control measures include rigorous testing for rinse up, shedding, flow rate and extractable levels.
- Integrity-tested and testable *in situ*.
- Thermally welded, eliminating adhesive extractables.
- Biosafe in accordance with USP Class VI-121°C Plastics Tests.
- Specifically designed to ensure cleanliness.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Specifications

Materials of Construction:

- Membrane: hydrophobic PTFE
- 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)

Surface Area (10 in cartridge):

- Minimum 7.5 ft² (0.7 m²)

Integrity Test:

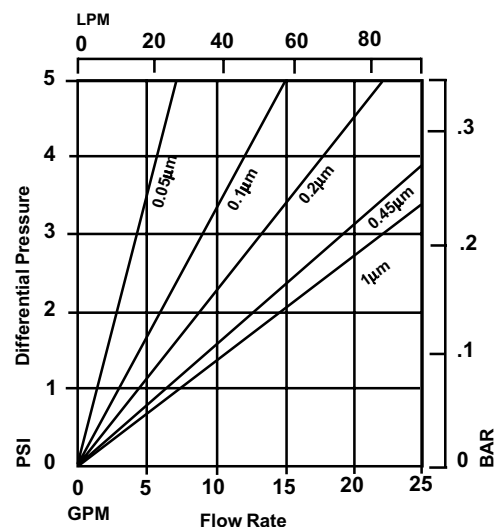
- Bubble Point (100% IPA):
 - 0.05µm ≥ 50 psig (3.4 bar)
 - 0.1µm ≥ 24 psig (1.7 bar)
 - 0.2µm ≥ 16 psig (1.1 bar)
 - 0.45µm ≥ 6 psig (0.4 bar)
 - 1µm ≥ 3 psig (0.2 bar)

Recommended Operating Conditions:

- Maximum Temperature: 176°F (80°C) @ 30 DP (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)

PTFE Cartridges:

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



Flow Factors:

Pore Size (µm)	GPM/ 1 PSID	LPM/ 1 Bar	PSID/ 1 GPM	Bar/ 1 LPM
0.05	1.5	82	0.67	0.012
0.1	3.0	164	0.33	0.006
0.2	4.5	247	0.22	0.004
0.45	6.5	356	0.15	0.003
1	7.5	411	0.13	0.002

Ordering Information

PF	F	B	10	E	TC	E	W
Cartridge Code	Pore Size (µm)	Diameter (in)	Length (in)	Seal Material	End Cap Configuration	Grade	Special Preparation
PF = PTFE	D = 0.05 S = 0.1 F = 0.2 R = 0.45 Q = 1	B = 2.7	10 = 10 20 = 20 30 = 30 40 = 40	B = Buna N D = CR 570 E = EPR K = KR4079 S = Silicone T = PFA/Viton* ¹ V = Viton* X = No O-Ring/ No Gaskets	AR = 020 O-Ring Recessed HH = DOE (Gaskets) LL = 120/120*** LR = 120 O-Ring Recessed*** PR = 213 O-Ring Recessed*** SC = 2-226/Flat SF = 2-226/Fin TC = 2-222/Flat TF = 2-222/Fin	E = Electronics	W = Prewetted With Ozonated UHP Water

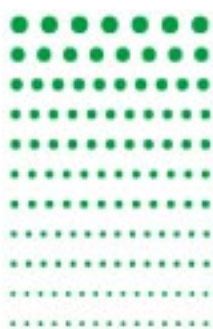
Process Filtration Division

* Trademark of E. I. duPont de Nemours & Co.

** Consult Process Filtration Division for gas flow data.

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

¹ PFA/Viton is O-Ring only; for DOE (HH), gasket is expanded PTFE.



Fulflo® Advantage™ Filter Cartridges

■ Polypropylene

Pleated Series

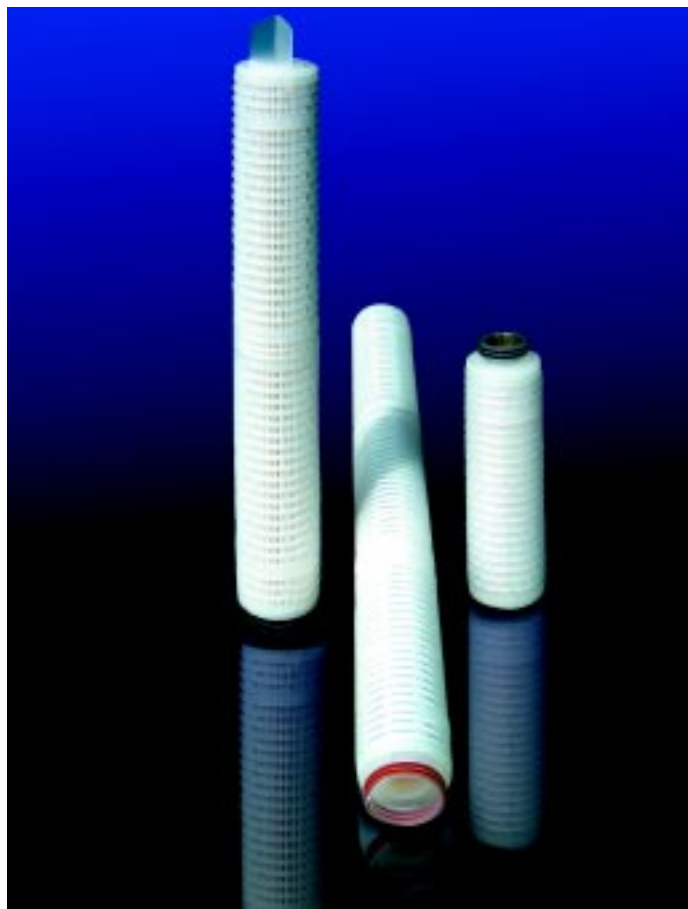
Absolute Rated High Efficiency From All-Polypropylene Pleated Cartridges

Fulflo® Advantage™ Cartridges, made of pleated polypropylene microfiber, provide high efficiency and high purity filtration. The high submicron efficiency of the Advantage line makes it an ideal membrane prefilter or cost-effective alternative to membrane cartridges in a wide range of applications.

Advantage Pleated Cartridges are available in 0.3µm, 0.6µm, 1.2µm, 2.5µm, 5µm, 10µm, 20µm, 40µm and 70µm absolute rated pore sizes (99.99% removal; $\beta = 10,000$).

Applications

- Chemicals
- Electronic
- Food & Beverage
- Magnetic Media
- Pharmaceuticals
- Cosmetics
- Medical
- Photographic



Features and Benefits

- All-polypropylene media and construction meet a broad range of performance requirements.
- One-piece fused construction is 100% bonded for maximum cartridge integrity.
- High surface area design provides superior flow rates and extended service life.
- All media and structural components comply with biological, USP XXI Class VI requirements for plastic and are nontoxic per WI-38 Human Cell Cytotoxicity Test.
- 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 efficiency.
- Major end seal options are available to fit most vessel requirements.
- Advantage cartridges are non-fiber releasing.

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

- 99.99% at 0.3µm, 0.6µm, 1.2µm, 2.5µm, 5µm, 10µm, 20µm, 40µm and 70µm pore sizes

Materials of Construction:

- Type of Construction: integrally sealed, all-polypropylene pleated media supported by all-polypropylene construction
- Filter Media: composite, spunbonded/melt blown continuous polypropylene microfiber matrix
- Pleat Support Layer (Upstream): polypropylene
- Pleat Drainage Layer (Downstream): polypropylene
- Media Support Core: high-strength polypropylene

- Media Protective Cage: molded polypropylene

- Pleat Pack Side Seal: fused polypropylene

- DOE Caps: polypropylene

- SOE Caps/O-Ring Adaptors: polypropylene

- Gaskets (DOE Style): Buna-N, FDA grade (standard)

- O-Rings (SOE Style): silicone, FDA grade (standard)

- Optional Gasket Materials: (non-FDA): EPR, Viton*, silicone

- Optional O-Ring Materials: (non-FDA): EPR, Viton*, Buna-N, PFA encapsulated Viton*

Maximum Recommended Operating Conditions:

- Temperature: 200°F (93°C)
- Temperature @ 35 psid: 160°F (71°C)
- Change Out ΔP: 35 psi (2.4 bar)
- ΔP @ Ambient 70°F (21°C): 70 psi (4.8 bar)
- ΔP @ 200°F (93°C): 20 psi (1.4 bar)
- Flow Rate: 10 gpm (38 lpm) per 10 in length

Dimensions:

- Overall Length: See Bulletin A-700
- SOE fits standard Fulflo vessels with dual sump seats.
- Cartridge Outside Diameter: 2-11/16 in
- Cartridge Inside Diameter: DOE: 1-1/16 in
SOE: 1-5/32 in

Advantage™ Length Factors

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

Advantage Cartridge Flow Factors (psid/gpm @ 1 cks)

Rating (µm)	Flow Factor
0.3	1.600
0.6	0.900
1.2	0.770
2.5	0.300
5	0.120
10	0.020
20	0.020
40	0.010
70	0.008

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

Cartridge	β=10000 Absolute	β=1000 99.9%	β=100 99%	β=50 98%	β=20 95%	β=10 90%
AP 003	0.3	<0.3	<0.3	<0.3	<0.3	<0.3
AP 006	0.6	0.5	<0.3	<0.3	<0.3	<0.3
AP 012	1.2	1	0.6	0.4	<0.3	<0.3
AP 025	2.5	2.1	1	0.6	<0.3	<0.3
AP 050	5	3.8	1.4	0.8	0.4	<0.3
AP 100	10	6.6	2	1.1	0.5	<0.5
AP 200	20	12.7	3.1	1.8	0.8	<0.5
AP 400	40	22	5.8	3.2	1.2	0.6
AP 700	70	50	22	15	8	5.2

Beta Ratio (β) =

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

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

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

Notes:

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

Flow Rate and Pressure Drop Formulas:

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

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

Ordering Information

AP	025	10	A	N	DO	R
Cartridge Code	Particle Removal Rating (µm)	Nominal Length (in)	Support Construction	Seal Material	End Cap Configuration	Special Options
AP = Advantage Polypropylene	003 = 0.3 006 = 0.6 012 = 1.2 025 = 2.5 050 = 5 100 = 10 200 = 20 400 = 40 700 = 70	10 = 9 13/16 20 = 19 15/16 30 = 30 1/16 40 = 40	A = Heavy-Wall Polypropylene X = Coreless Cartridge	E = EPR N = Buna-N S = Silicone T = PFA Encapsulated Viton* ¹ (O-ring only) V = Viton* X = No Seal Material	AR = 020 O-Ring/Recessed (Gelman) DO = Double Open End (DOE) DX = DOE With Core Extender LL = 120/120 (Filterite LMO)** LR = 120 O-Ring/Recessed** (Nuclepore) PR = 213 O-Ring/Recessed SC = 226 O-Ring/Cap SF = 226 O-Ring/Fin SSC = S.S. Inserted 226 O-Ring/Closed SSF = S.S. Inserted 226 O-Ring/Fin STC = S.S. Inserted 222 O-Ring/Closed STF = S.S. Inserted 226 O-Ring/Fin TC = 220 O-Ring/Cap TF = 222 O-Ring/Fin	No Symbol = No Option B = 100% Bubble-Point Test R = Rinse with DI Water (5 minutes) ZB = Individual Poly Bag Only

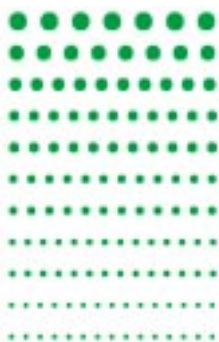
Process Filtration Division

* A trademark of E. I. duPont de Nemours & Co.

¹ PFA/Viton is O-Ring; for DOE, T is expanded PTFE gasket.

For pleated cartridge configurations and dimensions, see Bulletin A-700 in the Appendix.





Fulflo® PCC Filter Cartridge

■ Cellulosic/Phenolic

Pleated Series

Unique Cartridge Construction Improves Particle Retention, Service Life and Flow Rates

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

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

Applications

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



Features and 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 and 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.

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

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

Materials of Construction:

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

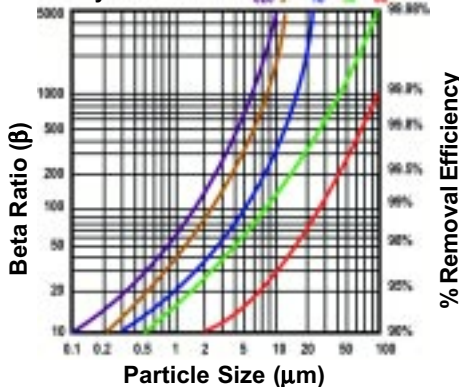
Recommended Operating Conditions:

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

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

Cartridge	β=5000 Absolute	β=1000 99.9%	β=100 99%	β=50 98%	β=20 95%	β=10 90%
PCG 020	10	7.0	1.8	0.9	0.3	0.1
PCC 3	12	9.5	3.0	1.7	0.6	0.2
PCC 10	22	17.0	5.5	3.0	1.0	0.3
PCC 30	100	50.0	11.0	5.5	1.5	0.5
PCC 60	150	100.0	30.0	15.0	5.0	2.0

■ PCC Particle Removal Efficiency Over Life



Ordering Information

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

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

* A trademark of E. I. duPont de Nemours & Co.

For pleated cartridge configurations and dimensions, see Bulletin A-700 in the Appendix.

■ PCC / PCG Flow Factors (psid/gpm @ 1 cks)

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

■ PCC / PCG Length Factors

Length (in)	Length Factor
9	1.0
10	1.0
19	2.0
20	2.0
29	3.0
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** is PSI differential at start.
2. **Viscosity** is centistokes. Use Conversion Tables for other units.
3. **Flow Factor** is ΔP/GPM at 1 cks for 10 in (or single).
4. **Length Factors** convert flow or ΔP from 10 in (single length) to required cartridge length.

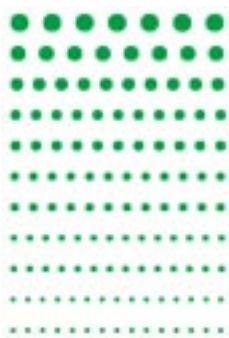
$$\text{Beta Ratio } (\beta) = \frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$$

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

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

Process Filtration Division





Fulflo® 1401, High Pressure Filter Cartridge

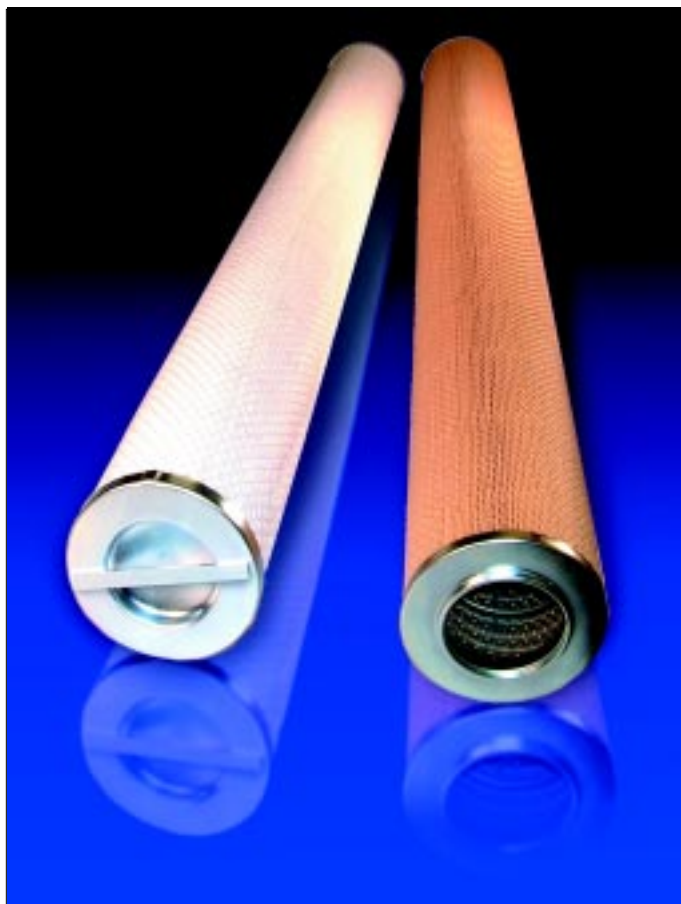
Pleated Series

High Efficiency, Flow Rate, Dirt Holding Capacity & High Pressure Pleated Cartridges

Parker's Fulflo® 1401 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 2.5, 6, 10, 12, 22, and 100 microns ($\beta = 5000$, 99.98%)

Applications

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



Features and 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

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

- 99.98% at 2.5µm, 6µm, 10µm, 12µm, 22µm, and 100µm pore sizes

Operating Conditions:

- Pressure rating - 150 PSID
- Temperature Rating - 275°F
- Recommended flow rate - 75 GPM
- Change out ΔP - 35 PSID

Dimensions:

- 3 3/4" OD x 2 1/8" ID x 38-3/4"long

Materials of Construction:

- Filter media;
 - PPC/PCG - phenolic impregnated cellulose
 - PPC - Polypropylene
- Core & End Cap: Steel
- Outer Mesh Sleeve: Polypropylene
- Internal O-Ring: Buna-N

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

Cartridge	β=5000 99.98%	β=1000 99.9%	β=100 99%	β=20 95%	β=10 90%
PPC005-1401	2.5	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
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	3.0	<1.0

1401 Cross Reference

Pall	Process Filtration
MCC 1401JO25 - H13	PPC005 - 1401
MCC 1401JO60 - H13	PPC010 - 1401
MCC 1401 J100 - H13	PPC020 - 1401
MCC 1401 E100 - H13	PCG020 - 1401
MCC 1401E280 - H13	PCC10 - 1401
MCC 1401E500 - H13	PCC30 - 1401
	PCC3 - 1401

Beta Ratio (β) =

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

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

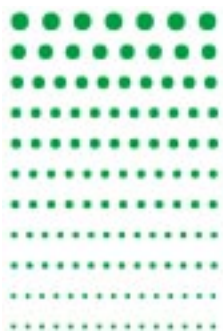
Performance determined per ASTM F-795-88. single-pass test using AC test dust in water.

Ordering Information

PCC	10	1401
Cartridge Code	Nominal Particle (µm) Removal Rating	Size Code (Length)
PPC = Pleated Polypropylene Cartridge	005 = 0.5 010 = 1.0 020 = 2.0	1401 = 38.75 in
PCC = Pleated Cellulosic Cartridge	3 = 3.0 10 = 10.0 30 = 30.0	

Process Filtration Division





Fulflo® Poly-Mate™ Filter Cartridges

■ Polypropylene

Pleated Series

Quality, Economical Filtration for Critical Process Applications

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

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

Applications

- | | |
|----------------------------------|---------------------|
| ■ Food & Beverage | ■ Disposal Wells |
| ■ Photographic | ■ Process Water |
| ■ High-Technology | ■ Fine Chemicals |
| ■ Coatings | ■ Wastewater |
| ■ Deionized Water | ■ Plating Chemicals |
| ■ R.O. Membrane
Prefiltration | |



Features and 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. See page 4 for procedure.
- 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.

Process Filtration Division



The Filters of Choice for . . .

Foods and Beverages

Foods and beverages must be filtered with products made from components complying with FDA regulations for food contact use. Extraction of binders, chemical additives and media fragments into foods and beverages is unacceptable. Poly-Mate™ cartridges are thermally bonded and meet all FDA required standards. In many applications, Poly-Mate™ cartridges are a more cost-effective alternative to melt blown and spunbonded depth cartridges.

High Technology Coatings

High tech coatings used on magnetic tape, floppy discs, lenses and optical fibers require filtration with products that capture agglomerates and large contaminants with high efficiency while allowing the smaller coating particles to pass. The desired cutoff particle size should not change during filtration of the batch. This requires the high surface area and fixed pore media found in Poly-Mate cartridges.

Photographic

Photographic gelatins, emulsions, rinses and chemicals benefit from filtration with Poly-Mate cartridges. They are non-photosensitive, do not leach harmful contaminants and provide long service life at low initial pressure drop.

R.O. Filtration

Prefiltration requirements for reverse osmosis membranes are similar to those for foods and beverages, although FDA acceptability is often not required. The finish-free, thermally bonded media and large surface area of Poly-Mate cartridges make them the perfect choice for this liquid process application.

Specifications

Filtration Ratings:

- 99% at 0.5µm, 1µm, 5µm, 10µm, 30µm, and 60µm pore sizes

Effective Filtration Area:

- Up to 6.0 ft²/10 in (0.6m²/254mm)

Materials of Construction:

- Filter Media and Support Layers: polypropylene
- Bonding Polymer: none, completely fusion-sealed
- Surface Treatment: none (fusion-sealed), chemically inert and neutral
- Media Protection:
PM - polypropylene netting
PXD - polypropylene cage
- Support Core:
PM - polypropylene
PXD - glass-filled polypropylene
- 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:
Change Out ΔP: 35 psid (2.4 bar)
Maximum Temperature: 200°F (93°C)
Maximum Temperature @ 35 psid (2.4 bar): 125°F (52°C)
Maximum ΔP @ 70°F (21°C): 60 psid (4.1 bar)
Maximum ΔP @ 200°F (93°C): 10 psid (0.7 bar)
- Poly-Mate Xtra-Duty™ Cartridges:
Change Out ΔP: 35 psid (2.4 bar)
Maximum Temperature: 200°F (93°C)
Maximum Temperature @ 35 psid (2.4 bar): 200°F (93°C)
Maximum ΔP @ 70°F (21°C): 90 psid (6.1 bar)
Maximum ΔP @ 200°F (93°C): 35 psid (2.4 bar)

Dimensions:

- Overall Length: See bulletin A-700.
SOE fits standard vessels with O-ring receptacles.
- Cartridge Outside Diameter: 2-1/2 in (63.5 mm)
- Cartridge Inside Diameter: DOE - 1-1/16 in (27 mm);
SOE - 1 in (25.4 mm)

Recommended Maximum Flow Rate:

- Maximum 10 gpm per 10 in length

Designed Flow Rate (in water):

- 2.5 gpm per 10 in length
(9.5 lpm per 254 mm)

* A trademark of E. I. duPont de Nemours & Co.

Performance Profile

Parker's Process Filtration Division test procedures address the varying filtration requirements of customers. Selection of media of the Poly-Mate™ product line maximizes performance in terms of efficiency, dirt-holding capacity, flow and other characterization variables. Tests and analyses were conducted using microprocessor technology for accuracy.

High Filtration Efficiency

Filtration efficiency is affected by media pore size and fluid velocity. The removal efficiency below is based on a design flow rate of 2.5 gpm per 10 in (9.5 lpm per 254 mm cartridge). Lower flow rates yield higher efficiencies. Higher flow rates result in lower efficiencies.

Higher Throughput

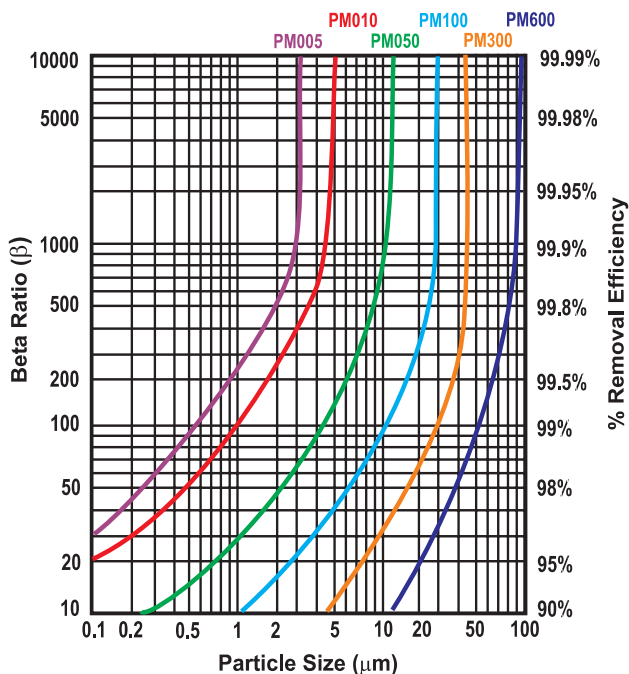
Higher flow rates result in the use of fewer cartridges and smaller housings to achieve system flow rate requirements. In addition, lower ΔP will reduce power requirements and pump wear and tear.

The initial clean water (1 centistoke) ΔP through a 10 in (254 mm) cartridge is very low. The flow rate restriction from the filter vessel is the determining factor when considering the system ΔP . The high dirt-holding capacity of Poly-Mate cartridges provides longer service life and reduces the frequency of filter change out and associated costs. The Poly-Mate Xtra-Duty™ cartridge is designed specifically for backwash applications and can reduce cartridge disposal and labor costs.

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

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

■ Poly-Mate / PXD Particle Removal Efficiency Over Life



$$\text{Beta Ratio } (\beta) = \frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$$

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

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

■ Poly-Mate Length Factors

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

■ Poly-Mate / PXD 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

Flow Rate and Pressure Drop Formulae:

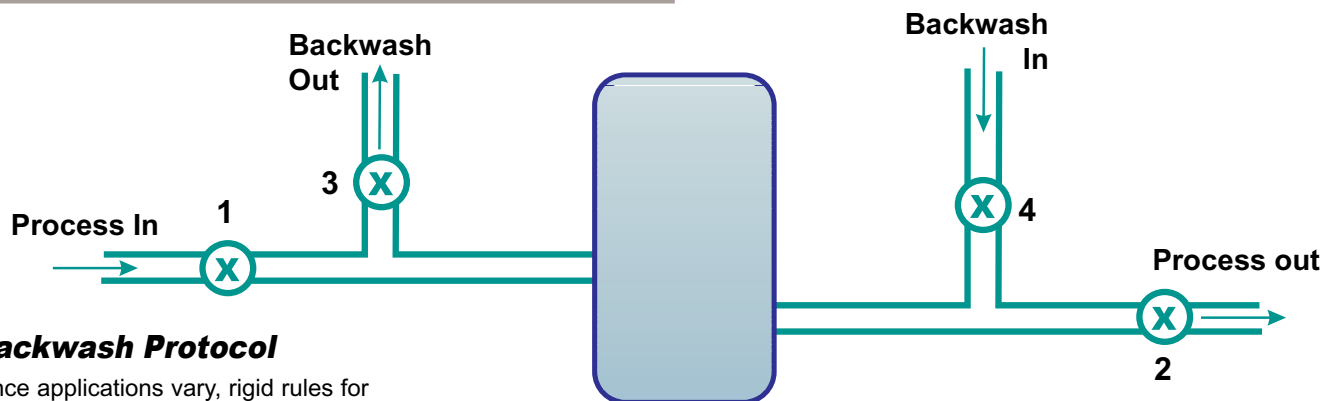
$$\text{Flow Rate (gpm)} = \frac{\text{Clean } \Delta P \times \text{Length Factor}}{\text{Viscosity} \times \text{Flow Factor}}$$

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

Notes:

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

Pleated Series



Backwash Protocol

Since applications vary, rigid rules for backwash operation are impossible. Please use these guidelines:

Backwash Schematic

- Initiate a backwash cycle when the pressure drop rises about 3-4 psid (0.2 to 0.3 bar) above the initial value (1-5 psid [0.1 to 0.4 bar] for most systems) or alternately on a timed cycle, e.g., daily.
- Stop the process flow by closing valves 1 and 2.
- Begin backwash flow by opening valves 3 and 4.
- Backwash pressure should be about 10 psi (0.7 bar) greater than the existing pressure drop.
- A momentary pressure surge is beneficial in breaking particles free.
- Backwash flow rate is critical. It should be 1 to 1-1/2 times the process flow rate. Allow sufficient time to flush the contaminant from the vessel.
- Close valves 3 and 4 and open valves 1 and 2 to resume normal filtration. Vent the vessel. Note the decrease in pressure drop.
- Continue backwash cycles until the pressure drop no longer decreases. Change cartridges at about 35 psid (2.4 bar).
- Note: Valves 3 and 4 could be attached to the vessel's dirty and clean drains, respectively.

Ordering Information

PM050	10	A	N	TC	R
Cartridge Code (μm)		Core	Seal Material	End Cap Configurations	Special Options
PM = Standard		A = Natural	A = Poly Foam	AR = 020 O-Ring/Recessed	B = Bubble Point Test
PXD = Xtra Duty		Polypropylene	(DOE Gasket only)	(Gelman)	R = Rinse with DI
PM005 – 0.5		F = Glass-Filled	E = EPR	DO = Double Open End (DOE)	water (5 minutes)
PM010 – 1.0		Polypropylene	N = Buna-N	DX = DOE With Core Extender	Z6 = Individual Poly bag
PM050 – 5.0		(PXD core only)	S = Silicone	LL = 120/120 (Filterite LMO)**	only (PXD Only)
PM100 – 10.0		G = 304 Stainless Steel	T = PFA Encapsulated	LR = 120 O-Ring/Recessed**	Z15 = Individual poly bag
PM300 – 30.0		(Core only)	Viton** ¹ (222,226	(Nucleopore)	15/ctn. (20", 30", 40")
PM600 – 60.0		N = Natural	O-Ring only)	OB = Std. Open End/Polypro	(PXD only)
		Polypropylene (All	V = Viton*	Spring Closed End	Z30 = Individual poly bag
		support components)	X = No Seal Material	PR = 213 O-Ring/Recessed	30/ctn. (10") (PXD only)
		X = Coreless Cartridge		(Ametek and Parker LT	
				Polymeric Vessels)**	
	Nominal Length			SC = 226 O-Ring/Cap	
	(code) (in) (mm)			SF = 226 O-Ring/Fin	
	9 9-5/8 244			SSC = S.S. Inserted 226	
	10 9-13/16 249			O Ring/Closed	
	19 19-5/8 498			SSF = S.S. Inserted 226 O ring/Fin	
	20 19-15/16 506			STC = S.S. Inserted 222	
	29 29-1/4 743			O Ring/Closed	
	30 30-1/16 764			STF = S.S. Inserted 226 O ring/Fin	
	40 40 1016			TC = 222 O-Ring/Cap	
				TF = 222 O-Ring/Fin	
				TX = 222 O Ring/Flex Fin	
				XB = Ext. Core Open End/	
				Polypro Spring Closed End	

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

* A trademark of E. I. duPont de Nemours & Co.

¹ PFA/Viton is O-Ring only; for DOE, T is expanded PTFE gasket.

For pleated cartridge configurations and dimensions, see Bulletin A-700 in the Appendix.

Process Filtration Division

LENNTECH bv

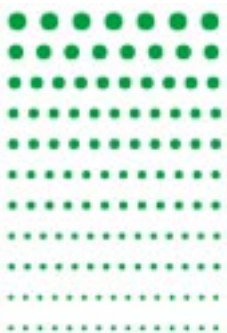


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Fulflo® Glass-Mate™ Filter Cartridge

■ Microfiberglass

Pleated Series

Absolute, Economical Filtration with Pleated Microfiberglass Cartridges

Parker's Fulflo® 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 prefiltration and point of use filtration for many industrial applications.

Glass-Mate pleated cartridges are available in 0.45µm, 1µm, 2µm, 3µm, 5µm, 10µm, 20µm and 40µm absolute-rated pore sizes.

Markets

- Chemical Processing
- Oil/Gas Production
- Food & Beverage
- Photographic
- Coatings
- Power Generation
- Pharmaceutical

Applications

- Membrane Prefiltration
- Corn Syrup
- Critical Lubricating Oils
- Sterile Air
- Aromatic Hydrocarbons
- R.O. Prefiltration
- Oilfield Completion Fluids
- Wine Clarification
- Beer Stabilization



Features and Benefits

- Absolute-rated media provide reliable pore size control.
- Thermal bonding eliminates particle bypass.
- Laminated media/support layer maximizes flow capacity and media utilization and minimizes media migration.
- Variety of construction/seal options increases compatibility choices.
- Several end fitting options provide competitive housing retrofit capability.
- All FDA listed components biosafe per USP Class V1-121°C Plastic Tests allows filtration of edible and potable liquids.
- Optional stainless steel O-ring adapter inserts provide added stability for *in situ* sterilization.
- High surface area yields high flow rate/low differential pressure capability.
- Non-fiber-releasing media with minimal extractables provides high purity filtrate.

Process Filtration Division



Technology

The high surface area and high void volume matrix provided by pleated microfiberglass media optimize flow rate and service life capability unattainable with any other microfiber technology. The hydrophilic nature of the microglass medium also enhances flow rate capability. The microfiber matrix lends itself well to optimizing the pore size geometry necessary to provide absolute-rated filtration performance. A polyester laminated support layer maintains pore size consistency of the microglass medium, improves flow through the pleat configuration and eliminates fiber migration. Acrylic binder in the microglass medium also contributes significantly to media migration control.

Microglass media is non-protein binding, i.e. it doesn't remove flavor enhancing proteins from beer, wine and similar beverages. Glass-Mate cartridges can be used as final filters to clarify red wines and other beverages which are not normally sterile filtered. In addition the medium has the unique ability to remove high molecular weight carbohydrates, such as β -glucans, from these same beverages. β -Glucans are gel forming materials which tend to plug microporous membranes used in the stabilization (sterile filtration) of beverages. When used as pre-filters, Glass-Mate cartridges will significantly increase the throughput of expensive membrane final filters.

Construction

Four distinct support constructions are available to maximize chemical compatibility and application requirements. All available construction types are generally satisfactory for water and water-based solutions, organic solvents and inorganic chemicals in a pH range of 5-10. General application areas include plating chemicals, syrups, alcoholic beverages, polymers, lubricating oils, brines, emulsions, process air and magnetic media.

1. Polypropylene Heavy-Duty ("F" Code): this special construction features standard polypropylene end capping, but has a glass-filled polypropylene core and pure polypropylene extruded outer cage. This construction withstands temperatures up to 200°F @ 35 Δ P. In addition backwashing may be accomplished to enhance service life or to perform *in situ* sanitization or sterilization required by many beverage applications. Hot water may also be used to dissolve proteins and carbohydrates collected during beverage filtration.
2. Polyester ("P" Code): core, end caps and outer netting of polyester are required for the filtration of specific aggressive fluids not generally compatible with polypropylene components. These fluids include halogenated and aromatic organic solvents and mineral oil based lubricants. One primary application is the filtration of the benzene-based organic used in the peroxide manufacturing process. The maximum recommended temperature for this construction is 140°F @ 35 Δ P.
3. Stainless Steel ("G" Code): stainless steel components allow usage of the cartridge up to 275°F @ 35 Δ P. An outer netting of polyester is used

with this style cartridge.

4. Stainless Steel Insert ("S" Code): a stainless steel insert can be installed into the I.D. of the 222 or 226 O-ring adapter to enhance the *in situ* sterilization capability of the Glass-Mate cartridge. The insert prevents distortion to the O-ring adapter due to the cyclic hot and cold temperatures associated with steam sterilization, autoclaving and similar processes.



Stainless Steel Inserts

Efficiency, flow capability and service life are similar for all available constructions.

Performance

The Glass-Mate product line offers absolute-rated efficiency performance as determined by the ASTM F795-88 Filter Test Method. Published absolute particle removal ratings were established at 99.98% ($\beta_x=5000$) efficiency at 2.5 gpm design flow rate.

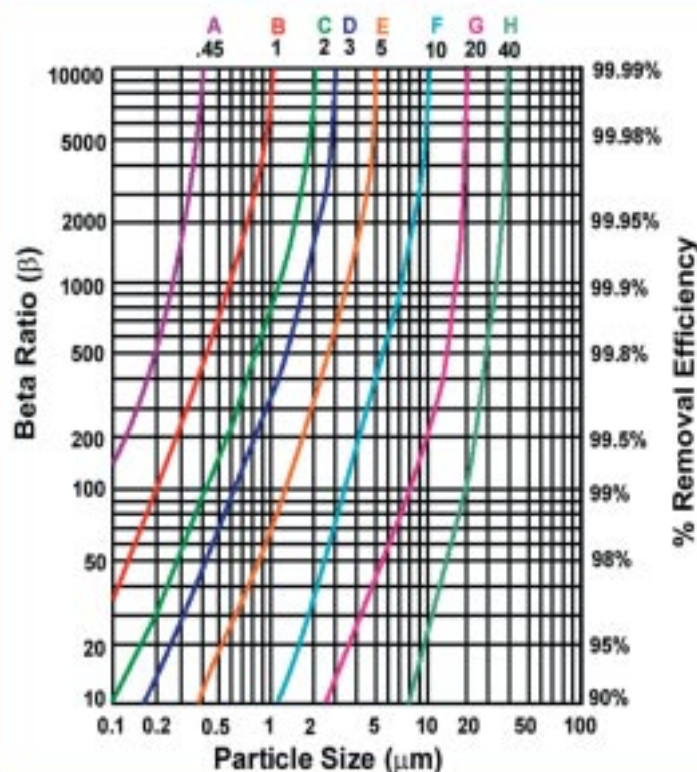
Pleat configuration was optimized to maximize dirt holding capacity and flow rate capability. The clean pressure drop for all ratings is less than 1.1 psi at maximum recommended flow rate of 10.0 gpm.

Due to the variability of processes, testing is recommended to optimize the final filter element selection.

Pleated Series

Performance Profile

Glass-Mate Particle Removal Efficiency Over Life



A = PMG004 D = PMG030 G = PMG200
 B = PMG010 E = PMG050 H = PMG400
 C = PMG020 F = PMG100

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

Cartridge	β = 5000 Absolute	β = 1000 99.9%	β = 100 99%	β = 20 95%	β = 10 90%
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	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

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$

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

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

Flow Rate Capability:

Glass-Mate Length Factors

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

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

Rating (μm)	Flow Factor
0.45	.108
1	.102
2	.095
3	.090
5	.072
10	.060
20	.042
40	.018

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 1 cks for 10 in (or single).
4. **Length Factors** convert flow or ΔP from 10 in (single length) to required cartridge length.

Specifications

Absolute Filtration Ratings:

- ? 99.98% ($B_x=5000$) removal efficiency at 0.45µm, 1µm, 2µm, 3µm, 5µm, 10µm, 20µm and 40µm pore sizes

Effective Filtration Area:

- ? 5 ft²/10 in (0.46 m²/254 mm) minimum

Materials of Construction:

- ? Filter Medium: Borosilicate microfiberglass with acrylic binder
- ? Support/Drainage Layers: Spun-bonded polyester; laminated on the downstream side
- ? Polypropylene Support ("F" Code): Glass-filled polypropylene core; polypropylene end caps and outer extruded cage; sonic welded side seal; hot melt polypro bonded end caps
- ? Polyester Support ("P" Code): Polyester core, end caps and outer netting; sonic welded side seal; FDA grade hot melt polyester-adhered end caps
- ? Stainless Steel ("G" Code): 304 SS core and end caps; polyester outer netting; sonic welded side seal; FDA grade white urethane bonded end caps

- ? O-Ring Adapter Insert: 316 stainless steel
- ? Seal Materials:
 - Polyethylene foam: standard gasket for DOE polypropylene supported cartridge
 - Viton: standard gasket for DOE polyester or stainless steel supported cartridges
 - See nomenclature for other gasket and O-ring options

Recommended Operating Conditions:

- ? Changeout Differential Pressure: 35 psi (2.4 bar)
- ? Maximum Flow Rate: 10 gpm per 10 in length (38 lpm/254 mm)
- ? Design Flow Rate: 2.5 gpm per 10 in length (9.5 lpm/254mm)
- ? Maximum Temperature:
 - Glass-Filled Polypropylene: 200°F @ 35ΔP (93°C/2.4 bar)
 - Polyester: 140°F @ 35ΔP (60°C/2.4 bar)
 - Stainless Steel: 275°F @ 35ΔP (135°C/2.4 bar)
- ? Maximum Differential Pressure:
 - Glass-Filled Polypropylene: 90 psi @ 75°F (6.2bar/24°C)
 - Polyester: 70 psi @ 75°F (4.8 bar/24°C)
 - Stainless Steel: 75 psi @ 275°F (5.1 bar/135°C)

Cartridge Dimensions:

- ? Lengths: Various. See Ordering Information and catalog sheet A-700
- ? Outside Diameter: 2.5 in (63.5 mm)
- ? Inside Diameter:
 - DOE - 1-1/16 in (27 mm)
 - SOE - 1 in (25.4 mm)

Biological Safety/Product Purity:

- ? Meets USP XXI Class VI requirements for plastics
- ? All components FDA listed per CFR, Title 21
- ? Non-fiber releasing per FDA Part 210.3B (5) and (6)
- ? Non-photo sensitive

Sterilization/Sanitization:

- ? Hot water ("F" construction): 180°F (82°C) for 30 minutes at maximum 15 psid (1 bar).
- ? In-Line Steam/Autoclave ("F" construction with stainless steel sleeve): 60 minutes at 255°F (140°C) at 2 psid (0.14 bar) maximum pressure.

Ordering Information

PMG	100	10	F	N	STC	Z6
Cartridge Code	Absolute Particle Removal Rating (µm)	Nominal Length	Support Construction	Seal Material	End Cap Configurations	Special Options
Pleated	004 = 0.45		F = Glass-Filled Polypropylene (Core Only)	A = Poly Foam (DOE gasket "P" Code Only))	AR = 020 O-Ring/Recessed	Z6 = Individual Poly Bag Only
Micro	010 = 1.0		G = 304 Stainless Steel*	E = EPDM	DO = Double Open End (DOE)	Z15 = Individual Poly Bag 15/ctn. (20", 30", 40")
Glass	020 = 2.0		P = Polyester	N = Buna-N	DX = DOE with Core Extender	Z30 = Individual Poly Bag 30/ctn. (10')
	030 = 3.0		X = Coreless Cartridge	S = Silicone	LL = 120 O-Ring (Both Ends)***	
	050 = 5.0			T = PFA Encapsulated Viton (222, 226 O-ring Only)**1	LR = 120 O-Ring/Recessed***	
	100 = 10.0			V = Viton**	OB = Std. Open End/Polypro Spring Closed End	
	200 = 20.0			X = No Seal Material	PR = 213 O-Ring/Recessed***	
	400 = 40.0				SC = 226 O-Ring/Closed	
		Code in mm			SF = 226 O-Ring/Fin	
		9 9-5/8 244			SSC = S.S. Inserted 226 O-Ring/Closed	
		10 9-13/16 249			SSF = S.S. Inserted 226 O-Ring/Fin	
		19 19-5/8 498			STC = S.S. Inserted 222 O-Ring/Closed	
		20 19-15/16 506			STF = S.S. Inserted 222 O-Ring/Fin	
		29 29-1/4 743			TC = 222 O-Ring/Closed	
		30 30-1/16 764			TF = 222 O-Ring/Fin	
		39 39 991			TX = 222 O-Ring/Flex Fin	
		40 40 1016			XB = Ext. Core Open End/ Polypro Spring Closed End	

* "G" Code cartridges are available in SOE style with polyester O-Ring adapters.

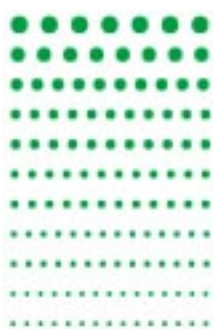
** Trademark of E.I. duPont Nemours & Co.

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

¹ PFA /Viton is O-Ring only; for DOE.

Process Filtration Division





Fulflo® Poly-Mate™ Plus Filter Cartridges

■ Polypropylene

Pleated Series

High Surface Area and High Efficiency All-Polypropylene Pleated Cartridges

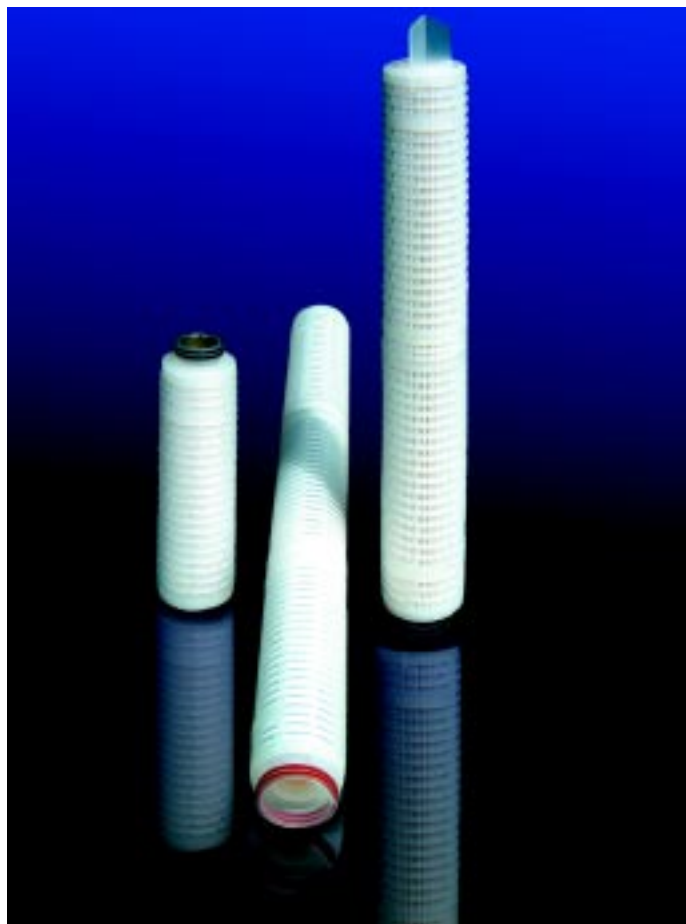
Fulflo® Poly-Mate™ Plus Cartridges, made of pleated polypropylene microfiber, provide high efficiency and high purity filtration. The high efficiency of the Poly-Mate Plus line makes it an ideal membrane prefilter or cost-effective alternative to membrane cartridges in a wide range of applications.

Poly-Mate Plus Pleated Cartridges are available in the following pore sizes:

- | | |
|----------|-----------|
| ■ 0.25µm | ■ 5.0µm |
| ■ 0.45µm | ■ 10.0µm |
| ■ 0.8µm | ■ 30.0µm |
| ■ 2.0µm | ■ 50.0µm |
| ■ 3.0µm | ■ 100.0µm |

Markets/Applications

- | | |
|-------------------|-----------------------|
| ■ Chemicals | ■ Photographic |
| ■ Electronic | ■ DI Water |
| ■ Food & Beverage | ■ Process Water |
| ■ Magnetic Media | ■ Membrane Pre-Filter |
| ■ Pharmaceuticals | ■ Bottled Water |
| ■ Cosmetics | ■ Beer & Wine |
| ■ Medical | ■ Plating Chemicals |



Features and 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 media and structural components comply with biological, USP XXI Class VI requirements for plastic and are nontoxic per WI-38 Human Cell Cytotoxicity Test.
- 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.

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

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

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:

- Overall Length: See Bulletin A-700
SOE fits standard Fulflo vessels with dual sump seats.
- 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 @ 35 psid: 160°F (71°C)
- Change Out ΔP: 35 psi (2.4 bar)
- ΔP @ Ambient 70°F (21°C): 70 psi (4.8 bar)
- ΔP @ 200°F (93°C): 20 psi (1.4 bar)
- Flow Rate: 10 gpm (38 lpm) per 10 in length

Biological Safety/Product Purity:

- Meets USP XXI VI requirements for plastics
- All components FDA listed per CFR, Title 21
- Non-fiber releasing per FDA Part 210.3B (5) and (6)
- Non-photo sensitive

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

Parker	90%	95%	98%	99.90%	99.98%
PMP002	0.30	0.45	0.90	1.6	2.2
PMP004	0.45	0.75	1.4	2.9	3.1
PMP008	0.8	1.5	3.2	8.0	9.2
PMP020	1.7	3.1	8.6	9.5	15.0
PMP030	3.0	4.6	6.1	11.0	12.0
PMP050	5.0	8.4	10.6	12.0	14.0
PMP100	10.0	12.0	15.0	17.0	21.0
PMP300	15.0	24.0	35.0	44.0	52.0
PMP500	50.0	56.0	62.0	68.0	71.0
PMP1000	100.0	109.0	117.0	126.0	138.0

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

Ordering Information

PMP	030	10	A	N	DO	B
Cartridge Code	Particle Removal Rating (μm)	Nominal Length (in)	Support Construction	Seal Material	End Cap Configuration	Special Options
PMP =						
Poly-Mate Plus	002 = 0.25 004 = 0.45 008 = 0.8 020 = 2 030 = 3 050 = 5 100 = 10 300 = 30 500 = 50 1000 = 100	4 = 4 10 = 9 13/16 20 = 19 15/16 30 = 30 1/16 40 = 40	A = Natural Polypropylene (All support components)	E = EPR N = Buna-N S = Silicone T = PFA Encapsulated Viton* (O-ring only) V = Viton*	AR = 020 O-Ring/Recessed Cap DO = Double Open End (DOE) DX = DOE With Core Extender LL = 120 O-Ring/Recessed Cap LR = 120 O-Ring/Recessed Cap PR = 213 O-Ring/Recessed Cap SC = 226 O-Ring/Cap SF = 226 O-Ring/Fin TC = 222 O-Ring/Cap TF = 222 O-Ring/Fin	No Symbol = No Option B = Bubble-Point Test R = DI Water Rinse (5 minutes) Z6 = Individual Poly Bag only

Poly-Mate Plus Cartridge 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

Length (in)	Length Factor
4	0.4
10	1.0
20	2.0
30	3.0
40	4.0

Flow Rate and Pressure Drop Formulas:

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

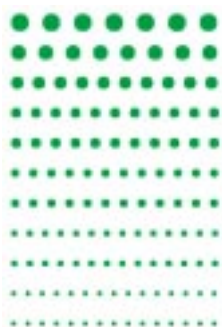
$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

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

* A trademark of E. I. duPont de Nemours & Co.

For pleated cartridge configurations and dimensions, see Bulletin A-700 in the Appendix.



Fulflo® Abso-Mate® Filter Cartridges

■ Polypropylene

Pleated Series

Absolute, Cost-Effective Filtration From All-Polypropylene Cartridges

Parker's Fulflo® Abso-Mate® Cartridges provide the ultimate in economical filtration for even the most critical process fluids. The proprietary melt blown media are 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.

Applications

- Electronics
- Membrane Prefilter
- Food & Beverage
- Pharmaceuticals
- Water
- Chemicals
- Precious Metal Recovery
- Catalyst Recovery
- Waste Water



Features and Benefits

- Absolute ratings for consistent and reliable performance (99.98%; $\beta = 5000$).
- Backwashable media, reduces replacement maintenance and cartridge disposal costs. See page 4 for procedure.
- 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 multilength 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.

Process Filtration Division



Ultimate Pleated Cartridge Performance

Fulflo® Abso-Mate® Filter Cartridges offer high efficiency, high purity, high flow rate capability and long service life. Abso-Mate extractable levels in water are less than 0.001% by weight. The result is a line of cartridges with

broad particle removal ratings that meet critical filtration requirements.

Abso-Mate cartridges make an ideal membrane prefilter and serve as a cost-effective alternative to membrane filters in many applications.

The unique construction allows for backwash cleaning that extends service life and reduces handling and disposal costs. Abso-Mate cartridges can be incinerated, significantly reducing hazardous material disposal costs.

Specifications

Absolute Filtration Ratings:

- 99.98% removal efficiency at 0.2µm, 0.45µm, 1µm, 2µm, 5µm, 10µm, 20µm, 40µm and 70µm pore sizes.

Effective Filtration Area:

- Up to 7.2 ft²/10 in (0.7 m²/254mm)

Materials of Construction:

- Filter Media and Support Layers: Polypropylene
- Bonding Polymer: none, completely fusion-sealed
- Surface Treatment: none, chemically inert and neutral
- Media Protection: polypropylene cage
- Support Core: Glass filled Polypropylene
- Pleat Pack Side Seal: fused polypropylene
- End Caps: polypropylene
- Seals: Buna-N, EPR, silicone, Viton,* PFA encapsulated Viton* O-rings; polyethylene foam gaskets

Maximum Recommended Operating Conditions:

- Change Out ΔP: 35 psi (2.4 bar)
- Temperature: 200°F (93°C)
- Temperature @ 35 psid (2.4 bar): 200°F (93°C)
- ΔP @ 70°F (21°C): 90 psid (6 bar)
- ΔP @ 200°F (93°C): 35 psid (2.4 bar)
- Flow Rate: 10 gpm (38 lpm) per 10 in length

Dimensions:

- Overall Length: See Bulletin A-700.
- Cartridge Outside Diameter: 2-1/2 in (63.5 mm)
- Cartridge Inside Diameter: DOE - 1-1/16 in (27 mm) SOE - 1 in (25.4 mm)

Biological Safety:

- Meets USP XXI Class VI requirements for plastics
- Nontoxic per WI-38 Human Cell Cytotoxicity Test

Product Purity:

- All components FDA acceptable per 21 CFR, Section 177-1520
- Non-fiber releasing per FDA Part 210.3B (5) and (6). Refer to TAP-004 (Contact Parker for TAP-004)
- Water Extractables: <0.001% by weight per USP XXI Physico-Chemical Test Procedures
- Non-photosensitive
- Low Total Organic Carbon (TOC) extractables. Refer to TAP-003 (Contact Parker for TAP-003)

Sterilization Parameters:

- Maximum 10 cycles @ 250°F (121°C) for 15 minutes @ 15 psi (1.3 bar)
- Hot water @ 180°F (82°C) for 30 minutes

Deionized Water Rinse-up Properties:

- Refer to TAP-002 (Contact Parker for TAP-002)

Performance Profile

Parker's Process Filtration Division test procedures address the varying filtration requirements of customers. Selection of media of the Fulflo® Abso-Mate™ product line maximizes performance in terms of efficiency, dirt-holding capacity, flow and other characterization variables. Tests and analyses were conducted using microprocessor technology.

High Filtration Efficiency

Filtration efficiency is affected by media pore size and fluid velocity. The removal efficiency is based on a

design flow rate of 2.5 gpm per 10 in (9.5 lpm per 254 mm) cartridge. Lower flow rates yield higher efficiencies. Higher flow rates result in lower efficiencies.

Test Conditions Liquid Service:

Particle Removal efficiencies were determined by challenging cartridges with aqueous dispersions of industry standard contaminants at a constant flow rate until a ΔP of 35 psi (2.4 bar) was reached. Performance validation of sub-

micron rated media is based on a variety of bacterial challenge tests. Consult the Process Filtration Division for specific test data.

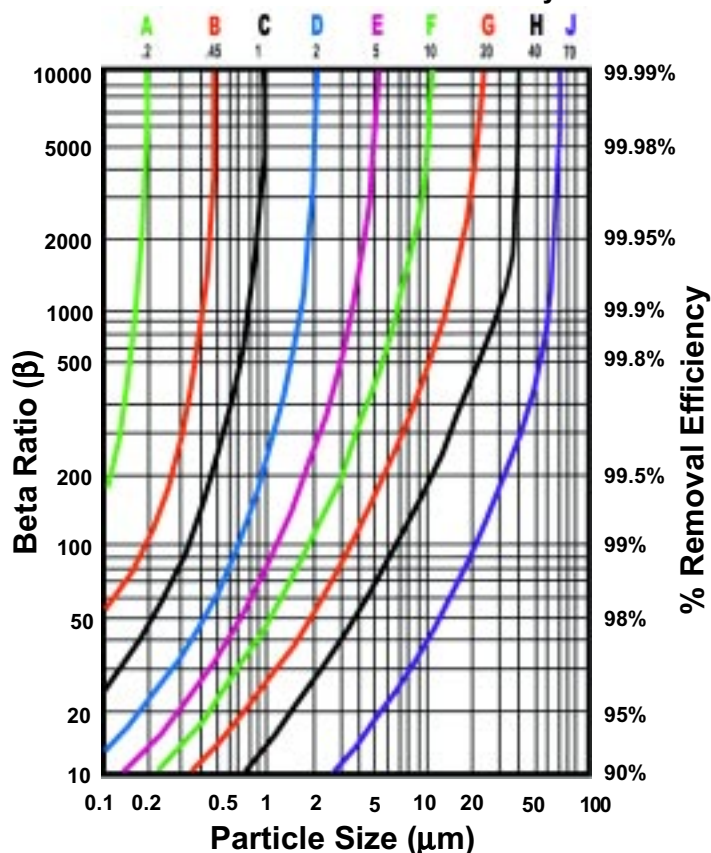
Gas Service:

Removal efficiencies for gas are determined using Mil-Std 282. This procedure challenges the media with thermally generated DOP (dioctylphthalate) smoke (0.3µm dispersion in air) at a flow rate of 3.2 cfm through a 10 in cartridge.

* Trademark of E.I. duPont Nemours & Co.

Performance Profile

Abso-Mate Particle Removal Efficiency Over Life



A-PAB002 **D-PAB020** **G-PAB200**
B-PAB004 **E-PAB050** **H-PAB400**
C-PAB010 **F-PAB100** **J-PAB700**

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$

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

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

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

Cartridge	$\beta=5000$ Absolute	$\beta=1000$ 99.9%	$\beta=100$ 99%	$\beta=50$ 98%	$\beta=20$ 95%
A PAB002	0.2	<0.2	<0.2	<0.2	<0.1
B PAB004	0.45	0.4	0.2	<0.2	<0.1
C PAB010	1	0.8	0.4	<0.2	<0.1
D PAB020	2	1.9	0.8	<0.2	<0.1
E PAB050	5	3.8	1.4	0.4	0.15
F PAB100	10	7	2	0.5	0.25
G PAB200	20	13	4	1.8	0.35
H PAB400	40	22	7	3.2	0.8
J PAB700	70	52	22	15	5.5

Abso-Mate Length Factors

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

Abso-Mate Cartridge Flow Factors (psid/1 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

Flow Rate and Pressure Drop Formulae:

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

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

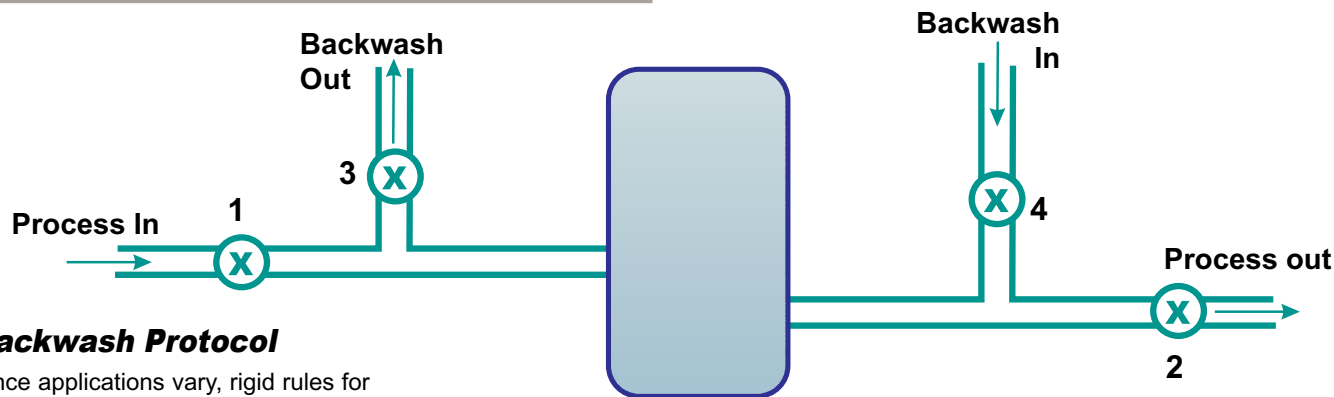
Notes:

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

Performance Data by Cartridge Grade:

		Water [†] ΔP	Gas Efficiency	Air Flow Rate
Cartridge		PSID @ 1 gpm/10 in	DOP Efficiency	SCFM @ 1 psid
A	PAB002	3.100	99.999+	13
B	PAB004	1.000	99.999+	25
C	PAB010	0.750	99.999	10
D	PAB020	0.300	99.999	34
E	PAB050	0.072	99.900	126
F	PAB100	0.031	93.500	320
G	PAB200	0.021	80.000	362
H	PAB400	0.012	53.000	400
J	PAB700	0.008	18.000	400

[†]Pressure drops are for water @ 1.0 cks and S.G. = 1. For other liquids multiply pressure drop by the viscosity in cks



Backwash Protocol

Since applications vary, rigid rules for backwash operation are impossible. Please use these guidelines:

- Initiate a backwash cycle when the pressure drop rises about 3-4 psid (0.2 to 0.3 bar) above the initial value (1-5 psid [0.1 to 0.4 bar] for most systems) or alternately on a timed cycle, e.g., daily.
- Stop the process flow by closing valves 1 and 2.
- Begin backwash flow by opening valves 3 and 4.
- Backwash pressure should be about 10 psi (0.7 bar) greater than the existing pressure drop.
- A momentary pressure surge is beneficial in breaking particles free.
- Backwash flow rate is critical. It should be 1 to 1-1/2 times the process flow rate. Allow sufficient time to flush the contaminant from the vessel.
- Close valves 3 and 4 and open valves 1 and 2 to resume normal filtration. Vent the vessel. Note the decrease in pressure drop.
- Continue backwash cycles until the pressure drop no longer decreases. Change cartridges at about 35 psid (2.4 bar).
- Note: Valves 3 and 4 could be attached to the vessel's dirty and clean drains, respectively.

Ordering Information

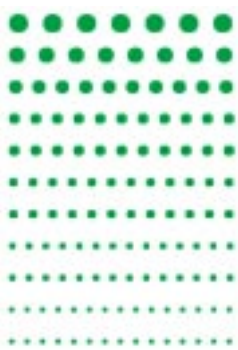
PAB004	10	F	A	DO	R
Rating (μm)		Support Construction	Seal Material	End Cap Configurations	Special Options
002 - 0.2		F = Glass-Filled Polypropylene (core only)	A = Polyethylene Foam (DOE Gasket only)	AR = 020 O-Ring/Recessed	B = Bubble Point Test
004 - 0.45		G = 304 Stainless Steel (Core only)	E = EPR	DO = Double Open End (DOE)	R = Rinse with DI water (5 minutes)
010 - 1		N = Natural Polypropylene (All support components)	N = Buna-N	DX = DOE with Core Extender	Z6 = Individual Poly bag only
020 - 2		X = Coreless Cartridge	T = PFA Encapsulated Viton* (222,226 O-Ring only)	LL = 120 O-Ring (Both Ends)**	
050 - 5			V = Viton*	LR = 120 O-Ring/Recessed**	
100 - 10			X = No Seal Material	OB = Std. Open End/Polypro Spring Closed End	
200 - 20				PR = 213 O-Ring/Recessed**	
400 - 40				SC = 226 O-Ring/Closed	
700 - 70				SF = 226 O-Ring/Fin	
				SSC = S.S. Inserted 226 O-Ring/Closed	
				SSF = S.S. Inserted 226 O-Ring/Fin	
				STC = S.S. Inserted 222 O-Ring/Closed	
				STF = S.S. Inserted 222 O-Ring/Fin	
				TC = 222 O-Ring/Closed	
				TF = 222 O-Ring/Fin	
				TX = 222 O-Ring/Flex Fin	
				XB = Ext. Core Open End/ Polypro Spring Closed End	

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

* A trademark of E. I. duPont de Nemours & Co.

Process Filtration Division





Fulflo® Slurry-Mate™ Filter Cartridges

■ Polypropylene

Pleated Series

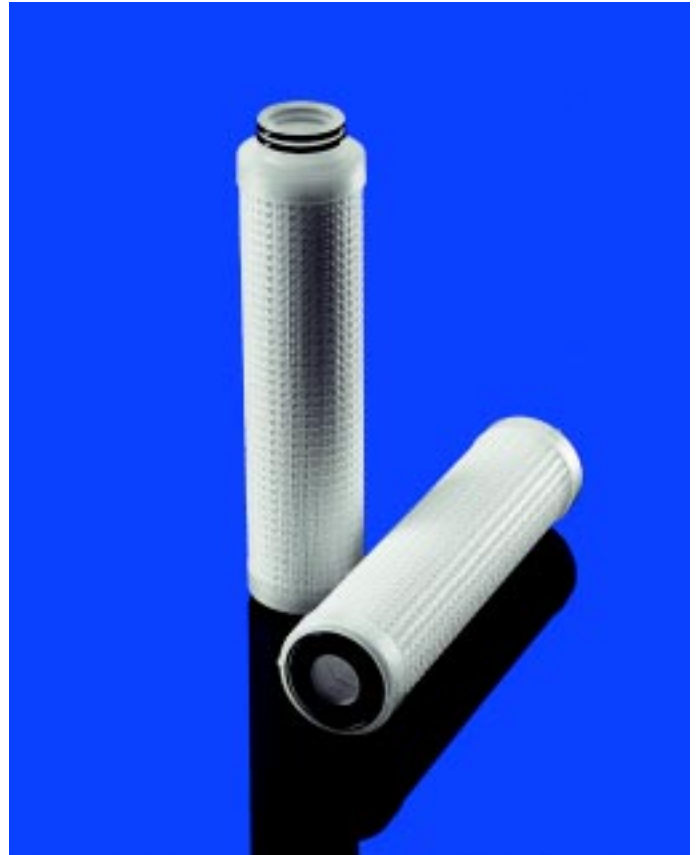
Maximize Planarization Yield with Slurry-Mate Filter Cartridges

Parker's Fulflo® CMP Slurry-Mate™ Filter Cartridges provide uniform slurry delivery while optimizing the chemical mechanical planarization of wafer interlayer dielectric (ILD) and tungsten and copper metal layers. A unique proprietary melt blown media provides a particle classification effect, which improves service life while maintaining optimum polishing characteristics of alumina and silica based slurries.

Several particle classification matrices are available to match the wide range of CMP oxide and metal polishing slurries in recirculation and distribution loops as well as point-of-use CMP tools.

Applications

Oxide Polishing Slurries:	Metal Polishing Slurries:
Point of Use	Point of Use
Distribution	Distribution
Recirculation Loop	Recirculation Loop



Features and Benefits

- Classification matrix extends slurry life and maintains consistent slurry delivery.
- All polypropylene construction provides excellent compatibility for both acidic and basic slurries.
- Sieve-like filtration matrix provides sharp particle size cutoff to remove only agglomerated particles causing wafer surface damage.
- Heavy duty construction handles rigors of CMP process fluid conditions.
- Increase wafer yield by removing oversized, agglomerated or foreign particulate matter.
- Large Surface area provides high flux rate.
- All polymeric construction is totally incinerable.
- Thermal bonding eliminates particle bypass.
- Parker's TQM system assures consistent performance.
- Several classification matrices are available to accommodate wide range of polishing slurry formulations.
- Fits standard Fulflo and similar competitive filter vessels.

Process Filtration Division



Pleated Series

Specifications

Particle Classification Codes:

■ 02, 04, 06, 08, 10, 12, 14, 16

Materials of Construction:

- Filter Medium: Melt Blown Polypropylene
- Filter Medium Support: Polypropylene
- Structural Components: Natural polypropylene
- O-Ring Material: EPDM, Viton, PFA/Viton
- Gasket Material: Polyethylene Foam
- Sealing Method: Thermal bonding

■ Flow Factors (psid/gpm @ 1 cks per 10-inch cartridge)

Code	Flow Factors
02	1.00
04	0.75
06	0.50
08	0.13
10	0.03
12	0.02
14	0.01
16	0.01

+ P=Flow Rate X Viscosity
(cks) X Flow Factor

Dimensions:

- Diameter: 2.5 in (64 mm)
- Lengths: 4-30 in (102-764 mm)

Maximum Recommended Operating Conditions:

- Temperature:
200°F (93°C) @ 10 ΔP (0.7 bar)
- Differential Pressure:
70 psi (4.8 bar) @ 77°F (25°C)
10 psi (0.7 bar) @ 200°F (93°C)
- Flow Rate:
10 gpm (38 lpm) per 10 in cartridge
- Changeout Net ΔP :
10 psi (0.7 bar)

■ Cartridge Selection Guide

Slurry Particle Size Range (micrometers)	Recommended Cartridge Code	Typical Application
0.05 - 0.1	02	Point of Use
0.10 - 0.2	04	
0.20 - 0.4	06	
0.50 - 1.0	08	
1.00 - 2.0	10	Distribution
2.00 - 4.0	12	
4.00 - 8.0	14	Recirculation Loop
7.00 - 14.0	16	

Note: Cartridge selection based on removing particles larger than the slurry particle size range specified.

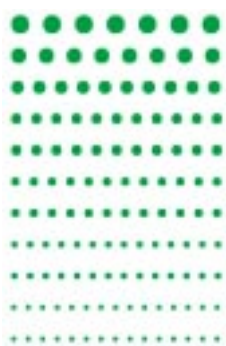
Ordering Information

SMC	12	10	N	V	TC
Cartridge Code	Particle Classification Code	Nominal Length	Support Construction	Seal Material	End Cap Configuration
SMC = Slurry-Mate Cartridge	02 04 06 08 10 12 14 16	Code (in) (mm) 04 4 102 10 9-13/16 249 20 19-15/16 506 30 30-1/16 764	N = Natural Polypropylene	A = Poly Foam Gasket (DO Only) E = EPDM O-ring T = PFA/Viton* O-ring V = Viton* O-ring	DO = Double Open End TC = 222 O-ring/Cap

Process Filtration Division

* Trademark of E. I. du Pont de Nemours & Co.





MegaFlow+™ Fulflo® Filter Cartridges

- Polypropylene
- Cellulose

Pleated Series

Absolute Rated, High Flow Capacity, Coreless Pleated Filter Cartridges.

Parker's Fulflo® MegaFlow+™ cartridges are ideally suited for high flow applications where absolute particle removal is required. Each MegaFlow+™ cartridge can handle flow rates up to 250 gpm (950 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 10 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+™ cartridges are available with pleated polypropylene or cellulose media for use in a wide variety of fluids. Absolute ratings range from 1 µm to 150 µm.

Applications

- | | |
|-------------------|---------------------|
| ■ Potable Water | ■ Coolants |
| ■ Reverse Osmosis | ■ Petrochemicals |
| ■ Pre-Filtration | ■ Wastewater |
| ■ Vegetable Oil | ■ Food and Beverage |
| ■ Lubricants | |



Features and Benefits

- | | |
|---|--|
| ■ High flow capacity means fewer cartridges and less time to change. | ■ High surface area pleated design provides low pressure drop and long service life. |
| ■ High flow capacity allows smaller housings. | ■ Polypropylene cartridges comply with FDA regulations per CFR Title 21. |
| ■ Coreless construction reduces disposal volume and cost. | ■ Horizontal and vertical housings available for flow rates up to 4750 gpm (18,000 lpm). |
| ■ Built in handle makes change fast, easy and safe. | ■ Reduces process interruptions. |
| ■ O-ring seal assures filtration integrity. | |
| ■ Choice of polypropylene or cellulose media expands fluid compatibility. | |

Process Filtration Division



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

Media: Polypropylene microfiber (P Code)

Cellulose with phenolic binder (C Code)

Support layers: Polypropylene (P Code)

End Caps: Polypropylene (glass filled)

O-rings: Buna N, EPR, Silicone, Fluoroelastomer

Dimensions:

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

Surface Area

- 55 - 60 ft.² (5.1 - 5.6 m²)

Recommended Operating Conditions:

Changeout Differential Pressure:

35 psid (2.4 bar)

Maximum Flow Rate:

250 gpm (950 lpm)

Maximum Temperature:

200°F (93°C)

Maximum Differential Pressure:

150 psid (10 bar)

Cartridge Code	Absolute Rating	Media	Removal Rating (Microns) at Efficiency				Flow Factor* [PSID/GPM (Mbar/lpm)]
			99.98%	99.9%	99%	98%	
MFAP010	1	Polypropylene	1	0.8	0.45	<0.2	0.078 (1.4)
MFAP020	2	Polypropylene	2	1.5	0.8	0.2	0.031 (0.6)
MFAP050	5	Polypropylene	5	4	1	0.45	0.008 (0.01)
MFAP100	10	Polypropylene	10	7	2	0.5	0.003 (0.06)
MFAP200	20	Polypropylene	20	13	4	2	0.002 (0.04)
MFAP400	40	Polypropylene	40	22	7	3	0.001 (0.02)
MFAP700	70	Polypropylene	70	52	22	15	0.0008 (0.015)
MFAC100	10	Cellulose	10	8	2	1	0.003 (0.05)
MFAC150	15	Cellulose	15	10	3	2	0.002 (0.03)
MFAC250	25	Cellulose	25	20	5	3	0.0002 (0.003)
MFAC1000	100	Cellulose	100	85	10	5	0.0001 (0.002)
MFAC1500	150	Cellulose	150	100	30	15	0.00005 (0.0009)

Flow Rate and Pressure Drop Formulas:

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

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

Notes:

1. **Clean ΔP** is PSI differential at start.
2. **Viscosity** is centistokes.
Use Conversion Tables for other units.
3. **Flow Factor** is $\Delta P/\text{GPM}$ at 1 cks

*In water at 1 cks

Ordering Information

MFA

Mega Flow+™
Absolute Series

P

Media

P = Polypropylene
C = Cellulose

010

Micron Rating

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

40

Length

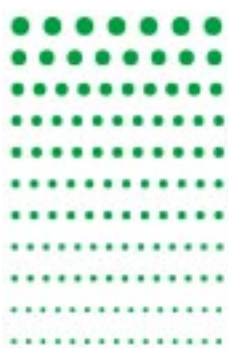
40 = 40"

N

O-Ring

N = Buna - N
E = EPR
S = Silicone
V = Fluoroelastomer

Process Filtration Division



MegaFlow™ Fulflo® Filter Cartridges

- Polypropylene
- Cellulose

Pleated Series

High Flow Capacity Coreless Pleated Filter Cartridges

Parker's Fulflo® MegaFlow™ cartridges provide a cost effective alternative to wound and other 2 1/2 inch OD style filter cartridges in high flow applications such as reverse osmosis pre-filtration and similar applications where nominal efficiency is sufficient. Each MegaFlow™ cartridge can handle flow rates up to 250 gpm (950 lpm), significantly reducing the number of cartridges required and the housing size. Each 6 inch (152 mm) diameter MegaFlow™ cartridge has flow capacity equal to 10 standard 2 1/2 inch OD X 40 inch long filter cartridges. Positive O-ring seals and a built in handle make cartridge installation reliable, fast and easy.

MegaFlow™ cartridges are available in either pleated polypropylene or cellulose media with nominal ratings of 0.5, 1, 5 and 10 micron.

Applications

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



Features and Benefits

- High flow capacity means fewer cartridges and reduces labor costs to change.
- High flow capacity allows smaller housings and less capital expenditure.
- Coreless construction reduces disposal volume and cost.
- Built in handle makes change fast, easy and safe.
- O-ring seal assures filtration integrity.
- Choice of polypropylene or cellulose media allows use in both aqueous and non-aqueous fluid applications.
- Thermally bonded polypropylene and phenolic resin bonded cellulose filter media prevent particle bleed through and unloading that commonly occurs with wound cartridges.
- High surface area pleated design provides lower pressure drop and longer service life than other cartridges.
- All materials of construction in polypropylene cartridges comply with FDA regulations per CFR Title 21.
- Horizontal and vertical housings are available for flow rates up to 4,750 gpm (18,000 LPM)

Process Filtration Division



Specifications

Nominal Filtration Ratings (90%)

■ 0.5, 1, 5 and 10 µm

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

Dimensions:

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

Surface Area:

55 - 60 ft² (5.1 - 5.6 m²)

Recommended Operating Conditions:

Change Out
Differential Pressure: 35 psid (2.4 bar)
Maximum Flow Rate: 250 gpm (950 lpm)
Maximum Temperature: 200°F (93°C)
Maximum Differential Pressure: 150 psid (10 bar)

Cartridge Code	Nominal Rating	Media	Removal Rating (Microns) at Efficiency					Flow Factor* [PSID/GPM (Mbar/lpm)]
			90%	95%	98%	99%	99.9%	
MFNP005	0.5	Polypropylene	0.5	1	2	5	10	0.003 (0.06)
MFNP010	1	Polypropylene	1	3	7	10	30	0.0007 (0.014)
MFNP050	5	Polypropylene	5	10	20	30	50	0.0004 (0.008)
MFNP100	10	Polypropylene	10	30	50	60	90	0.0003 (0.006)
MFNC005	0.5	Cellulose	0.5	1	2	3	10	0.002 (0.03)
MFNC010	1	Cellulose	1	2	3	5	20	0.0002 (0.003)
MFNC050	5	Cellulose	5	8	10	15	85	0.0001 (0.002)
MFNC100	10	Cellulose	10	12	15	30	100	0.00005 (0.0009)

*In water at 1 cks

Flow Rate and Pressure Drop Formulas:

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

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

Notes:

1. **Clean ΔP** is PSI differential at start.
2. **Viscosity** is centistokes.
Use Conversion Tables for other units.
3. **Flow Factor** is ΔP/GPM at 1 cks

Ordering Information

MFN

Cartridge Code

MegaFlow™
Nominal Series

C

Media

P = Polypropylene
C = Cellulose

050

Micron Rating

005 - 0.5 µm
010 - 1 µm
050 - 5 µm
100 - 10 µm

40

Length

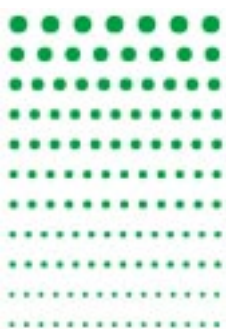
40 = 40"

N

O-Ring
Material

N = Buna N
E = EPR
S = Silicone
V = Fluoroelastomer

Process Filtration Division



Fulflo® Filter Cartridges

■ 336 Pleated Cartridges

Pleated Series

Pleated cartridge construction improves filtration efficiency, dirt holding capacity & flow rates

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

Applications

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



Features and Benefits

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

Process Filtration Division



Pleated Series

Specifications

Materials of Construction:

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

Dimensions:

- OD: 3 in (76 mm)
- ID: 1-9/16 in (40 mm)
- Length: 34-3/4 in (883 mm) less spring:
37-1/8 in (943 mm) with spring

Recommended Operating Conditions:

- Maximum 33 GPM per cartridge
- Polypropylene Support:
 - Maximum Temperature @ 10 PSID (0.7 km/cm²) : 200°F (93°C)
 - Maximum Temperature @ 35 PSID (2.5 km/cm²): 125°F (52°C)
 - Maximum Temperature @ 60 PSID (4.2 km/cm²): 75°F (24°C)
 - Optimum Change Out at ΔP : 35 PSID (25 km/cm)
- Steel Support:
 - Maximum Temperature: 250°F (121°C)
 - Maximum ΔP: 50 PSID (3.5 km/cm²)
 - Optimum change Out ΔP: 35 PSID (2.5 km/cm²)

Length	Length Factor
336	4

Cartridge	Flow Factor
PPC005	0.090
PCG020	0.026
PCC2	0.017
PCC10	0.002
PCC30	0.001

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

Beta Ratio (β) =

Upstream Particle Count @ Specified Particle Size and Larger
Downstream Particle Count @ Specified Particle Size and Larger

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

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

Flow Rate and Pressure Drop Formulae:

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

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

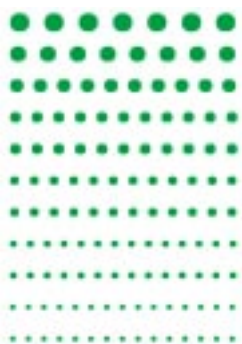
Notes:

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

Ordering Information

PCG020	336	A	N	GS
Cartridge Code (μm absolute)	Length	Support	Gasket	Spring Code
PPC005 - (3)	336 = 34-3/4in (883 mm)	A - Polypropylene	N - Buna N	GSY - st. stl. w/ yellow code (PPC005)
PCG020 - (10)		C - Steel	E - EPR	GSR - st. stl. w/ red code (PCG020)
PCC2 - (12)				GSW - st. stl. w/ white code (PCC2)
PCC10 - (22)				GS - st. stl. w/ no code
PCC30 - (100)				

Process Filtration Division



Fulflo® Flo-Pac® Filter Cartridges

■ Cellulosic/Phenolic

Pleated Series

Superior Industrial Filtration From a Pleated Cartridge Design

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

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

Applications

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



Features and 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 100 psid.
- 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.

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

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

Materials of Construction:

- Filter Media: phenolic impregnated cellulose
- Cores: 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

Maximum Recommended Operating Conditions

- Temperature: 250°F (121°C)
- Differential Pressure; 70 psi (4.8 bar)
- Change Out ΔP: 35 psid (2.4 bar)
- Flow Rate per Single Length Cartridge:

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

Dimensions:

- 300 Series -
2-1/2 in OD x 1 in ID x 9-5/8 in,
19-3/4 in, 29-1/4 in, 29-5/8 in,
40 in long
- 500 Series -
4-1/2 in OD x 1-3/4 in ID x 18 in long

- 600 Series -
6-1/4 in OD x 3-1/12, 1-9/16, in or
1-1/4 in ID x 14-3/8, 29 or 43-3/8 in long
- 700 Series -
6-1/4 in OD x 2-5/8 in or
2-1/8 in ID x 18, 36, or 54 in long

Packaging:

- 300 Series -
310 - 24/carton (12 lb ≈ shipping weight)
320 - 12/carton (12 lb ≈ shipping weight)
330 - 12/carton (18 lb ≈ shipping weight)
340 - 12/carton (24 lb ≈ shipping weight)
- 500 Series -
518 - 6/carton (14 lb ≈ shipping weight)
- 600 Series -
614 - 6/carton (20 lb ≈ shipping weight)
629 - 4/carton (26 lb ≈ shipping weight)
644 - 4/carton (40 lb ≈ shipping weight)
- 700 Series -
718 - 6/carton (20 lb ≈ shipping weight)
736 - 4/carton (26 lb ≈ shipping weight)
754 - 4/carton (39 lb ≈ shipping weight)

FP Length Factors

Style	Length Factor
FP310	1.0
FP320	2.0
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

FP Flow Factors (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

Liquid Particle Retention Ratings (µm) at Removal Efficiencies of:

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

Notes:

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

Flow Rate and Pressure Drop Formulas:

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

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

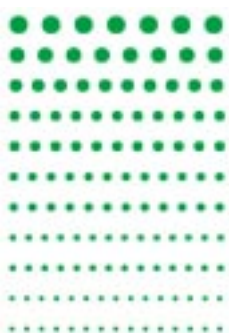
Ordering Information

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

Process Filtration Division

* Trademark of E. I. duPont de Nemours & Co.





Fulflo® Flo-Pac®+ Filter Cartridges

■ Cellulosic/Phenolic

Pleated Series

Special Construction for Organic Solvent Filtration

Parker Fulflo® Flo-Pac®+ Cartridges are the filters of choice for many industrial filtration requirements. Flo-Pac+ Pleated 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, and 60µm pore sizes (95% removal; $\beta = 20$).

Applications

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



Features and 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 and configurations to fit most industrial vessels.
- Impregnated phenolic resin provides strength, integrity and high contaminant capacity.
- Suitable for operating temperatures to 250°F (121°C).
- Perforated outer metal sleeve protects the 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 100 psid.

Process Filtration Division



Pleated Series

Specifications

Filtration Ratings:

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

Materials of Construction:

- Filter Media: phenolic impregnated cellulose
- Cores: 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: 35 psi (2.4 bar)
- Flow Rate per Single Length Cartridge:

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

Dimensions:

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

600 Series -

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

700 Series -

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

Packaging:

300 Series -

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

600 Series -

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

700 Series -

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

FP+ Length Factor

Style	Length Factor
310	1.0
320	2.0
330	3.0
340	4.0
614	3.6
629	7.2
718	6.5
736	13.0

FP+ Flow Factors (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

Liquid Particle Retention Ratings (µm) at Removal Efficiencies of:

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

Notes:

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

Flow Rate and Pressure Drop Formulae:

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

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

Ordering Information

FPE	7	18	—	5	—	8	A
Cartridge Code	Outside Diameter	Length		Micron Rating (µm)		Inside Diameter	Seals
FPE = Flo-Pac+	3 = 2-1/2 in (300 Series)	(code) (in)	(series)	0.5		None = 1 in (300 Series)	A = Vellumoid
	6 = 6-1/4 in (600 Series)	10 9-5/8 300		1		None = 3-1/2 in (600 Series)	C = Cork
	7 = 6-1/4 in (700 Series)	14 14-3/8 600		5		None = 2-5/8 in (700 Series)	V = Viton*
		18 18 700		10		8 = 2-1/8 in (700 Series)	N = Buna-N
		20 19-3/4 300		20		1 = 1-9/16 in (600 Series)	
		29 29 600		30			
		29 29-1/4 300		60			
		30 29-5/8 300					
		36 36 700					
		40 40 300					

Process Filtration Division

* A trademark of E. I. duPont de Nemours & Co.





Fulflo® Honeycomb™ Filter Cartridges

- | | |
|-------------|-----------------|
| ■ Cotton | ■ Polypropylene |
| ■ Rayon | ■ Nylon |
| ■ Polyester | ■ Glass |

Wound Depth Series

Multipurpose Filtration Solutions With Parker's Wound Depth Cartridges

Parker Process Filtration 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 range.

Applications

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



Features and Benefits

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

Process Filtration Division



Wound Depth Series

Specifications

Wound Depth Cartridge Design and Function

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

filtration by trapping its share of particles. Wound cartridges offer a gradual pressure increase during cartridge life versus surface-type media that have an abrupt flow cutoff

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

Ultrafine Wound Depth Cartridges for Critical Filtration Applications

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

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

Applications include:

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

Ultrafine Ordering Information

M	10	A	Y	XA
Filter Medium	Nominal Length	Core Material	Core Cover Material	End Cap Configuration
C = FDA Grade Cotton E = FDA Grade Rayon M = FDA Grade Polypropylene T = Industrial Grade Polypropylene WC = Industrial Grade White Cotton	9-4 = 9-7/8 10 = 10 19-4 = 19-1/2 20 = 20 29-4 = 29-1/4 30 = 30-3/16 39 = 39 40 = 40-3/16	No Symbol = Tinned Steel A = Polypropylene A3 = Glass Filled Polypropylene G = 304 Stainless Steel S = 316 Stainless Steel	No Symbol = No Cover B = Nylon V = Nonwoven Polyester W = Cellulosic Paper Y = Polypropylene	None = DOE (without gaskets) - DO = DOE (With Gaskets) - TC = 222/Closed - OB = Std. Open End/Polypro Spring Closed End - TF = 222/Fin - SC = 226/Closed - SF = 226/Fin XA = Polypro Extender - XB = Ex. Core Open End/Polypro Spring Closed End XC = Extended Metal

Specifications

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

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 Nonaqueous (Solvent or Oil Based) Fluids (psid/gpm @ 1 cks)

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

Wound Cartridge Nominal Micrometer Ratings

Cartridge Designation	Rating (μm)	Compressed Air and Gas Micron Rating
8R, E8R, N8R, U8R, S8R, M8R, R8R, T8R, WC8R	100	15
10R, E10R, N10R, U10R, S10R, R10R, T10R, M10R, 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 Depth Series

Specifications

Nominal Removal Ratings:

- @ 90% efficiency from 0.5µm to 150µm

Maximum Recommended

Operating Conditions:

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

Dimensions:

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

Wound Cartridge Glass Fiber Nominal Micrometer Ratings

Cartridge Designation	Liquids	Compressed Air and 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 Temperature @ 35 psid

Cartridge Material	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 Material Selection Guide for additional compatibility information.

Ordering Information

T	13R		30		A		Y		M		X A	—		TIS
Filter Medium	Density Number	Micron Rating (um)	Nominal Cartridge Length (in)		Core Material		Core Cover Material		End Treatment		End Cap Configuration		Seal Material	Packaging Options
No Symbol = Cotton (FDA)	6R	150	3 = 3		No Symbol = Tinned Steel		No Symbol = No Cover		No Symbol = No Treatment		None = DOE (without gaskets)		None = Standard DOE	Z = Individual Poly Bag
E = FDA Grade Rayon	8R	100	4 = 4		A = Polypropylene		B = Nylon		D = Sodium Silicate		- DO = DOE (With Gaskets)		A = Poly Foam E = EPR	TIS = Tissue Wrap
K = Baked Glass Fiber	10R	75	5 = 5		A3 = Glass-Filled Polypropylene		V = Nonwoven Polyester		L = Lacquer		- OB = Std. Open End/Polyp		N = Buna N S = Silicone	
M = FDA Grade Polypropylene	11R	50	6 = 6		G = 304 Stainless Steel		W = Cellulosic Paper		M = Singed		Spring Closed End		V = Viton*	
N = Nylon (FDA)	12R	40	7 = 7		S = 316 Stainless Steel		Y = Polypropylene				- TC = 222/Closed			
R = Rayon	13R	30	8 = 8		SR = Passivated 316 SS (Special Order)						- TF = 222/Fin			
S = Polyester (FDA)	14R	25	9-4 = 9-7/8								- SC = 226/Closed			
T = Industrial Grade Polypropylene	15R	20	10 = 10								- SF = 226/Fin			
U = Natural Cotton	17R	15	19-4 = 19-1/2								XA = Polypro Extender			
UK = Unbaked Glass Fiber	19R	10	20 = 20								- XB = Ex.Core Open End/Polyp Spring Closed End			
WC = White Cotton	21R	7	29-4 = 29-1/4								XC = Extended Metal			
	23R	5	30 = 30-3/16											
	27R	3	39-4 = 39											
	39R	1	40 = 40-3/16											
			50 = 50											
					Nominal Cartridge Diameter									
					No Symbol = 1 in ID x 2-7/16 in OD									
					- 2 = 1 in ID x 2-11/16 in OD									
					- 45 = 1 in ID x 4-1/2 in OD (9-7/8 and 20 in length only) for Fulflo LTG and Ametek Big Blue Vessels									
Note: Consult factory for other options.					Process Filtration Division									

Note: Consult factory for other options.

Process Filtration Division

* A trademark of E. I. duPont de Nemours & Co.

Bulletin C-1000
Page 4 of 4





Fulflo® XTL™ Filter Cartridges

- Polypropylene
- Cotton

Wound Depth Series

Technologically Advanced Wound Cartridge Design Doubles Cartridge Life and Improves 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.

Applications

- Potable Liquids
- Organic Solvents
- Process Water
- Photoprocessing
- Chemical Process
- Disposal Well
- Pharmaceuticals
- Lubricants
- Cooking Oils
- Amines
- R.O. Prefiltration



Features and Benefits

- XTL cartridges result in significant cost savings based on fewer system interruptions, decreased labor expenses for change outs, and reduced inventory and cartridge disposal costs.
- Unique computer programming capability permits the design and manufacture of special cartridge constructions to suit the requirements of nearly any filtration application.
- "M" polypropylene and "C" cotton materials are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.
- Continuous strand roving geometry provides performance consistency
- XTL wound cartridges fit all Fulflo vessels and most competitive vessels without compromising final product clarity or flow characteristics of the cartridge. The most noticeable difference is the extended life savings offered by XTL cartridges.
- Extended center cores are available in tinned steel, 316 stainless steel and 304 stainless steel.
- A special snap-in extender is available for polypropylene cores.
- FDA grade polypropylene (DOE only) certified to ANSI/NSF61 standard for contact with drinking water components.

Process Filtration Division



Specifications

Filtration Ratings:

- 1 µm, 3 µm, 5 µm, 10 µm, 20 µm and 30 µm @ 90% nominal efficiency

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

- Change Out ΔP: 30 psi (2.4 bar)
- Operating ΔP @ Ambient Temperature: 60 psi (4.1 bar)
- Flow Rate: 10 gpm (38 lpm) per 10 in length

Dimensions:

- 1 in ID x 2-1/2 in OD (nominal)
- 10, 20, 30 and 40 in lengths nominal

Flow Rate and Pressure Drop Formulae:

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

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

Notes:

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

? XTL Length Factors

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

■ XTL™ Flow Factors (psid/gpm @ 1 cks)

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

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 15 psi differential.



Brand A @ 15 psid



XTL @ 15 psid

Ordering Information

XTL	10	C	30	A	Y	M	X A	—	TIS
Cartridge Code	Micron Rating (nominal) (µm)	Fiber Type	Nominal Length (in)	Core Material	Core Cover Material	End Treatment	End Cap Configuration	Seal Material	Packaging Options
"Extended Life" Wound Cartridge	1 3 5 10 20 30	C = Cotton (FDA) M = Polypropylene (FDA Grade) T = Polypropylene WC = White Cotton	9-4 = 9-7/8 10 = 10 19-4 = 19-1/2 20 = 20 29-4 = 29-1/4 30 = 30 39-4 = 39 40 = 40	No Symbol = Tinned Steel A = Polypropylene A3 = Glass-Filled Polypropylene G = 304 Stainless Steel S = 316 Stainless Steel	No Symbol = No Cover V = Nonwoven Polyester Y = Polypropylene	No Symbol = No Treatment L = Lacquer M = Singed	- DO = DOE (w/ gaskets) - TC = 222 / Closed - TF = 222 / Fin - OB = Std. Open End/Polypro spring closed end - SC = 226 / Closed - SF = 226 / Fin XA = Poly Extender - XB = Ex. Core Open End/ Polypro spring closed XC = Metal Extender None = DOE (w/o gaskets)	A = Poly Foam N = Buna-N E = EPR S = Silicone V = Viton** None = Standard DOE	Z = Individual Poly Bag TIS = Tissue Wrap

Process Filtration Division

* U.S. Patent No. 4,660,779

** A trademark of E. I. duPont de Nemours & Co.



Fulflo® SWC Filter Cartridges

- Polypropylene
- Cotton

Wound Depth Series

Economical Filtration Solutions With String Wound Depth Cartridges

Parker Process Filtration's 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 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.

Applications

- Animal Oils
- Concentrated Alkalies
- Dilute Acids & Alkalies
- Organic Acids & Solvents
- Mineral Acids
- Oxidizing Agents
- Petroleum Oils
- Potable Liquids
- Vegetable Oils
- Water
- Prefilter for R.O. Membranes



Features and Benefits

- SWC's provide excellent compatibility with a variety of organic solvents, animal, petroleum and vegetable oils.
- 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 multicartridge 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.

Process Filtration Division



Specifications

Nominal Removal Ratings:

- 90% efficiency from 100µm to 1µm

Materials of Construction:

- Polypropylene
- Cotton

Dimensions:

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

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: 30 psi (2.1 bar)

- ΔP @ Ambient Temperature:
60 psi (4.1 bar)

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

SWC Length Factors

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

SWC Flow Factors (psid/gpm @ 1 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

Flow Rate and Pressure Drop Formulae:

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

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

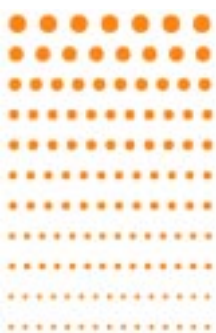
Notes:

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

Ordering Information

SWC	10 Nominal Micron Ratings	C Media	10 Nominal Length (in)	A Core Material	V Core Cover Material	XA Core Extender	TIS Packaging Options
SWC = String Wound Cartridge	1 3 5 10 15 20 25 30 50 75 100	C = Cotton (FDA Grade) L = Polypropylene (Utility Grade) M = Polypropylene (FDA grade) T = Polypropylene (Industrial Grade) U = Cotton, Natural WC = White Cotton (Industrial Grade)	9-4 = 9-7/8 10 = 10 19-4 = 19-1/2 20 = 20 29-4 = 29-1/4 30 = 30-3/16 39 = 39 40 = 40-3/16	A = Polypropylene G = 304 Stainless Steel S = 316 Stainless Steel None = Tinned Steel	No Symbol = No Cover V = Non-Woven Polyester Y = Polypropylene	No symbol = None - OB = Std. Open End/ Polypro Spring Closed End XC = Integral (Tinned Steel 304SS or 316SS) XA = Snap-in (Polypropylene) - XB = Ext. Core Open End/Polypro Spring Closed End	Z = Individual Poly Bag TIS = Tissue Wrap

Process Filtration Division



Fulflo® MegaBond Plus™ Filter Cartridges

■ Polypropylene

Bonded Depth Series

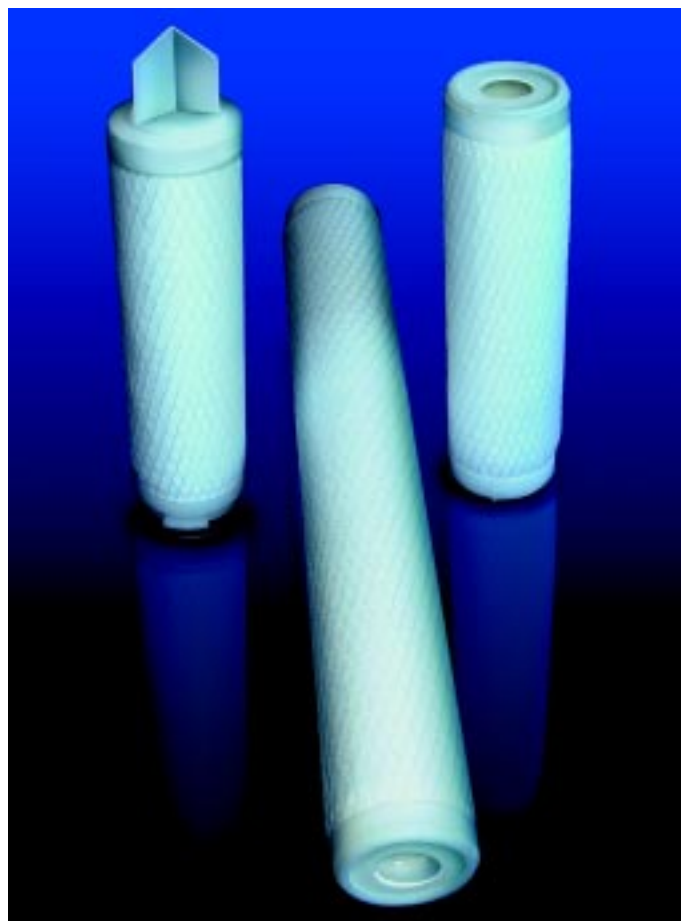
Fixed Pore Structure Depth Cartridges with High Dirt Holding Capacity & Absolute Rated Filtration Efficiency

Parker's Fulflo® MegaBond Plus™ are absolute rated depth cartridges. Using a new innovative manufacturing process, the MBP has higher dirt holding capacities offering long service life and virtually no contaminant migration. The MBP has a fixed core inner structure of thermally bonded continuous microfine polypropylene fibers. The outer layer fixed pore structure has been modified to maximize the graded density surface area to enhance dirt holding capacity.

Fulflo MegaBond Plus™ cartridges are available in absolute ($\beta = 5000$) ratings of 1µm, 3µm, 5µm, 10µm, 15µm, 20µm, 30µm, 40µm, 70µm, 90µm and 120µm.

Applications

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



Features and Benefits

- Fixed pore structure provides absolute rated filtration, consistent production yields and absolute particle retention.
- Microfine, thermally bonded fiber construction provides superior filtration and 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 ΔP increases during service, providing consistent particle retention.

Process Filtration Division



Specifications

Absolute Filtration Ratings:

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

Materials of Construction:

- Polypropylene: microfiber 100% melt blown construction
- Center Support Core/End Caps: natural polypropylene
- Thermally Bonded Gaskets: polyolefin closed cell foam

Maximum Recommended Operating Conditions:

- Temperature:
 - @ 60 psid (4.1 bar): 80°F (27°C)
 - @ 35 psid (2.4 bar): 160°F (71°C)
 - @ 15 psid (1.0 bar): 200°F (93°C)
- Flow Rate: 10 gpm (38 lpm) per 10 in length
- Change Out ΔP: 35 psi (2.4 bar)
- Operating Pressure @ Ambient Temperature: 60 psid (4.1 bar)

Dimensions:

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

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

Beta Ratio Efficiency	β = 5000 Absolute	β = 1000 99.9%	β = 100 99%	β = 50 98%	β = 10 90%
MBP1	1	0.9	0.5	0.4	0.2
MBP3	3	2.8	1.9	1.7	0.8
MBP5	5	3.7	2.3	1.6	1.2
MBP10	10	9.1	8.0	7.8	6.7
MBP15	15	12.0	9.6	8.9	7.2
MBP20	20	18.3	13.0	12.5	8.7
MBP30	30	25.0	20.0	18.0	13.0
MBP40	40	35.0	28.0	25.0	18.0
MBP70	70	60.0	48.0	42.0	30.0
MBP90	90	80.0	72.0	63.0	48.0
MBP120	120	105.0	95.0	85.0	70.0

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$

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

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

Ordering Information

MBP	10	M	10	N	TC	N	
Cartridge Code	Micron Rating (absolute) (µm)	Filter Medium	Nominal Length (in)	Support Construction	End Cap Configuration	Seal Material	
MBP = Mega Bond Plus	1 30 3 40 5 70 10 90 15 120 20	M = FDA Grade Polypropylene	9-4 = 9-3/4 10 = 10 19-4 = 19-1/2 20 = 20 29-4 = 29-1/4 30 = 30 39-4 = 39 40 = 40	N = FDA natural polypropylene core and end caps G = Stainless Steel (Core only)	None = Standard DOE /Polyfoam AR = 020/Flat (Gelman) DO = DOE (Gasket other than poly foam) DX = DOE with Polypro extender LL = 120/120 (Both Ends)** LR = 120 O-Ring/Recessed** OB = Std. Open End/Polypro Spring closed End PR = 213 O-Ring/Recessed** SC = 226/Closed SF = 226/Fin	SSC = S.S. Inserted 226 O-Ring/Closed SSF = S.S. Inserted 226 O-Ring/Fin STC = S.S. Inserted 222 O-Ring/Closed STF = S.S. Inserted 222 O-Ring/Fin TC = 222/Closed TF = 222/Fin TX = 222 O-Ring/Flex Fin XA = DOE w/Extended Core XB = Ext. Core Open End/Polypro Spring Closed End	None = Polyfoam (DOE Only) E = EPR N = Buna N S = Silicone (O-Ring only) T = PFA Encapsulated Viton*(222,226 O-Ring only) V = Viton*

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

* A trademark of E. I. duPont de Nemours & Co.

MBP Flow Factors

Rating (µm)	Aqueous Service PSI/ GPM per 10 in Cartridge
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 Formulae:

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

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

Notes:

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

Process Filtration Division

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Fulflo® DuraBond™ Filter Cartridges

■ Polyolefin

Bonded Depth Series

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

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

Applications

- | | |
|--------------------------|------------------------------|
| ■ Photographic Chemicals | ■ Food & Beverages |
| ■ DI Water | ■ Membrane Prefiltration |
| ■ Plating Solutions | ■ Chemical Processing Fluids |
| ■ R. O. Prefiltration | ■ Potable Water |
| ■ Organic Solvents | ■ Bleach |
| ■ Oilfield Fluids | ■ Magnetic Coatings |
| ■ Cosmetics | ■ Industrial Coatings |
| ■ Toiletries | |



Features and Benefits

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

Process Filtration Division



Specifications

Nominal Filtration Ratings: (90% efficiency)

- 1, 3, 5, 10, 25, 50, 75, 100 μm .

Materials of Construction

- Filter Medium: Thermal Bonded bicomponent 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.

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

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

Beta Ratio (β) = $\frac{\text{Upstream Particle Count @ Specified Particle Size and Larger}}{\text{Downstream Particle Count @ Specified Particle Size and Larger}}$

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

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

Ordering Information

DBC	10	M	10	
Cartridge Code	Micrometer Rating (μm)	Filter Medium	Nominal Length	
DBC = DuraBond Cartridge	1	M = FDA Grade Polyolefin	Code in mm	
	3		9-4 = 9-3/4	248
	5		10 = 10	254
	10		19-4 = 19-1/2	495
	25		20 = 20	508
	50		29-4 = 29-1/4	743
	75		30 = 30	762
	100		39-4 = 39	991
			40 = 40	1016
			50 = 50	1270

TC	N
End Cap Configuration	Seal Material
None DOE w/o gaskets	None = No Seal Material (Std. DOE)
AR = 020 O-Ring (Recessed)	A = Poly Foam Gaskets w/Collars (DO only)
DO = DOE with gaskets	E = EPR
LL = 120 O-Ring (Both Ends)**	N = Buna N
LR = 120 O-Ring/Recessed**	S = Silicone
OB = Std. Open End/Polypyo Spring Closed End	T = PFA Encapsulated
PR = 213 O-Ring/Recessed**	Viton* (222.2226 O-Ring only)
SC = 226 O-Ring/Flat Cap	V = Viton*
SF = 226 O-Ring/Fin	W = Poly Foam Gaskets without Collars (DO only)
TC = 222 O-Ring/Flat Cap	
TF = 222 O-Ring/Fin	
TX = 222 O-Ring/Flex Fin	
XA = DOE w/Core Extender	
XB = Ext. Core Open End/Polypyo Spring Closed End	

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

* A trademark of E. I. duPont de Nemours & Co.

DBC Flow Factors

Rating (μm)	Aqueous Service PSID/ 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 Formulae:

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

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

Notes:

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

Process Filtration Division

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Fulflo® EcoBond™ Filter Cartridges

■ Polypropylene

Bonded Depth Series

High Purity Filtration With Low Cost Melt Blown Depth Cartridges

Parker's Fulflo® EcoBond™ Cartridges are the most economical high purity filter cartridges available. Featuring a graded density matrix of uniform polypropylene fibers, the EcoBond 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.

Fulflo EcoBond Cartridges are available in nominal ratings of 1µm, 5µm, 10µm, 25 µm and 50µm.

Applications

- Photographic Chemicals
- DI Water
- Plating Solutions
- R.O. Prefiltration
- Organic Solvents
- Oilfield Fluids
- Food & Beverages
- Membrane Prefiltration
- Chemical Processing Fluids
- Potable Water
- Bleach



Features and Benefits

- Fixed pore structure provides efficiency integrity and optimum particle retention.
- 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) certified to ANSI/NSF61 standard for contact with drinking water components.
- 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.

Process Filtration Division



Specifications

Nominal Filtration Ratings (90%) :

- 1µm, 5µm, 10µm, 25µm, and 50µm.

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:
 - @ 40 psid (2.7 bar): 80°F (27°C)
 - @ 20 psid (1.4 bar): 140°F (60°C)
- Flow Rate:
 - 10 gpm (38 lpm) per 10 in length
- Change Out ΔP: 30 psi (2.1 bar)
- Operating Differential Pressure @ Ambient Temperature:
 - 40 psi (2.7 bar)

Dimensions:

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

EBC Flow Factors

Rating (µm)	Aqueous Service PSI/ GPM per 10 in Cartridge
EBC1	0.10
EBC5	0.08
EBC10	0.07
EBC25	0.06
EBC50	0.05

EBC 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 Formulae:

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

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

Notes:

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

Ordering Information

EBC	10	M	10	TC	N
Cartridge Code	Micrometer Rating (µm)	Filter Medium	Nominal Length	End Cap Configuration	Seal Material
EBC = EcoBond Cartridge	1 5 10 25 50	M = FDA Grade Polypropylene	Code in mm 9-4 = 9-3/4 248 10 = 10 254 19-4 = 19-1/2 495 20 = 20 508 29-4 = 29-1/4 743 30 = 30 762 39-4 = 39 991 40 = 40 1016 50 = 50 1270	None DOE w/o gaskets AR = 020 O-Ring (Recessed) DO = DOE with gaskets LL = 120 O-Ring (Both Ends)** LR = 120 O-Ring/Recessed** OB = Std. Open End/Polypro Spring Closed End PR = 213 O-Ring/Recessed** SC = 226 O-Ring/Flat Cap SF = 226 O-Ring/Fin TC = 222 O-Ring/Flat Cap TF = 222 O-Ring/Fin TX = 222 O-Ring/Flex Fin XA = DOE w/Core Extender XB = Ext. Core Open End/Polypro Spring Closed End	A = Poly Foam Gaskets w/Collars (DO only) E = EPDM N = Buna N S = Silicone T = PFA Encapsulated Viton* (222, 226 only) V = Viton* W = Poly Foam Gaskets without Collars (DO only)

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

* A trademark of E. I. duPont de Nemours & Co.

Process Filtration Division



AVASAN™ Filter Cartridges

■ Polypropylene

Bonded Depth Series

High Purity Melt Blown Depth Cartridges

Avasan™ (AVS) cartridges are manufactured with Parker's 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.

Applications

- DI Water
- R.O. Prefiltration
- Food & Beverages
- Potable Water



Features and Benefits

- Fixed pore construction provides consistent product quality and excellent particle retention.
- Continuous bonding of fibers throughout the filter matrix ensures non-fiber releasing construction.
- Superior inter-layer bonding provides true three dimensional filtration and 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 prefiltration and longer life.
- All materials biosafe in accordance with USP Class VI-121°C Plastic Test.
- All materials listed as acceptable for potable and edible contact according to CFR Title 21.
- Parker Process Filtration Division is an ISO9000:2000 Certified Division.

Process Filtration Division



Specifications

Nominal Filtration Ratings (90%) :

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

Materials of Construction:

- ? Filter Medium: 100% melt blown polypropylene
- ? End Caps/Adapters (optional): polyolefin copolymer
- ? 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
- Pending Certifications: NSF - Materials only

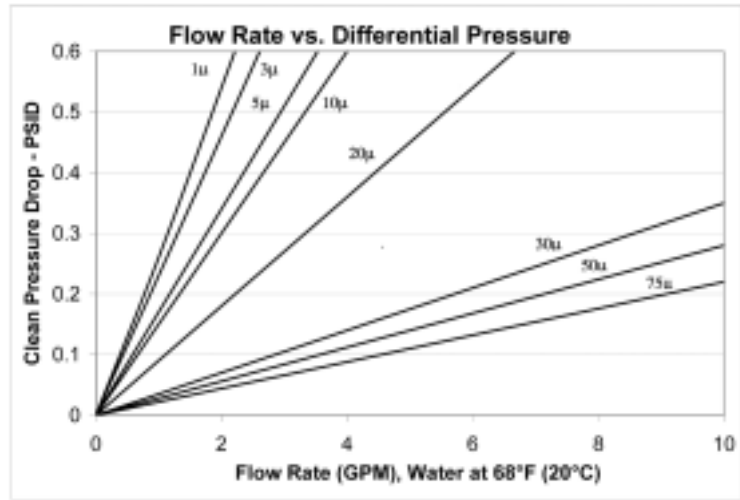
Maximum Recommended Operating Conditions:

- Temperature:
 - @ 50 psid (2.7 bar): 80°F (27°C)
 - @ 25 psid (1.4 bar): 140°F (60°C)
- Flow Rate: Actual flow rate depends on fluid viscosity, micron rating, contaminant and media.
- Change Out ΔP: 35 psi (2.1 bar)

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

AVS Pressure Drop Graph



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

Ordering Information

AVS	10	M	10	TC	N
Cartridge Code	Micron Rating (µm)	Filter Medium	Nominal Length	End Cap Configuration	Seal Material
AVS = AVS Cartridge	1 3 5 10 20 30 50 75	M = FDA Grade Polypropylene	Code in. mm 4 = 4 102 9.75 = 9.75 248 10 = 10 254 19.5 = 19.5 495 20 = 20 508 29.25 = 29.25 743 30 = 30 762 39 = 39 991 40 = 40 1016	None = DOE (w/o gaskets) DO = DOE (w/gaskets) LL = 120 O-Ring (Both Ends)** LR = 120 O-Ring/Recessed** OB = Std. Open End/Polypro Spring Closed End PR = 213 O-Ring/Recessed** SC = 226 O-Ring/Flat Cap SF = 226 O-Ring/Fin TC = 222 O-Ring/Flat Cap TF = 222 O-Ring/Fin TX = 222 O-Ring/Flex Fin XA = DOE with Core Extender XB = Ext. Core Open/Polypro Spring Closed End	A = Poly Foam gaskets with Collars (DO only) E = EPDM N = Buna-N S = Silicone T = PFA Encapsulated Viton* (222, 226 O-Ring Only) V = Viton* W = Poly Foam gaskets without Collars (DO only)

* A trademark of E. I. duPont de Nemours & Co.

**Available only in 9.75" and 19.5" lengths.

Process Filtration Division





Fulflo® ProBond™ Filter Cartridges

■ Acrylic/Phenolic

Bonded Depth Series

A Patented Breakthrough in Resin Bonded Cartridge Design

Parker ProBond™ cartridges have a unique, proprietary* two-stage filtration design to maximize particle removal and service life in viscous fluid filtration applications. An outer, spiral, prefilter wrap increases cartridge strength and eliminates residual debris associated with conventional, machined, resin bonded cartridges.

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

Applications

- | | |
|---------------------|----------------------|
| ■ Paints | ■ Petroleum Products |
| ■ Printing Inks | ■ Process Water |
| ■ Adhesives | ■ Oilfield Fluids |
| ■ Resins | ■ Animal Oils |
| ■ Emulsions | ■ Waxes |
| ■ Chemical Coatings | ■ Plasticizers |
| ■ Organic Solvents | |



Features and Benefits

- Outer, spiral wrap collects large particles and agglomerates, while inner layers control particle removal at rated size.
- Outer wrap increases surface area and 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 fluid viscosities up to 15,000 SSU (3200 cks).
- Withstands pressure surges up to 150 psid across cartridge (depending on fluid temperature).
- One-piece construction eliminates bypass concerns with multilength cartridges and eases change out.
- Silicone-free construction ensures no contamination to adversely affect adhesion properties of coatings.

Process Filtration Division



Bonded Depth Series

Specifications

Materials of Construction:

- Acrylic, long staple fiber; phenolic bonding resin

Type of Construction:

- Coreless, one-piece, rigid resin bonded fibrous matrix

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 lengths

End Adapters:

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

Maximum Recommended

Operating Conditions:

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

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

ProBond Length Factors

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

ProBond Flow Factors (psid/gpm @ 1cks)

Rating (µm)	Flow Factor
2	0.08
5	0.04
10	0.02
25	0.012
50	0.01
75	0.006
125	0.0013
150	0.0010

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** is **PSI** differential at start.
2. **Viscosity** is centistokes.
Use Conversion Tables for other units.
3. **Flow Factor** is $\Delta P/\text{GPM}$ at 1 cks for 10 in (or single).
4. **Length Factors** convert flow or ΔP from 10 in (single length) to required cartridge length.

Ordering Information

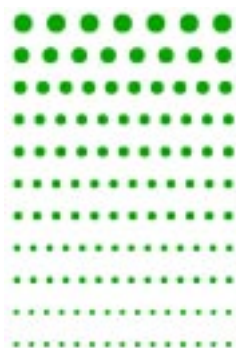
PRO	5	—	29	—	XA	—	N
Cartridge Code	Micron Rating (µm)		Length (code) (in) (mm)		End Cap Configurations		Seal Material
PRO = ProBond Series	2		(code) (in) (mm)		Omit = Standard DOE (coreless)		Omit = DOE or XA
	5		9 9-3/4 248		CXC = Extended Tinned Steel Core		N = Buna-N O-Ring
	10		10 10 254		C = Tinned Steel Core		E = EPDM O-Ring
	25		19 19-1/2 495		NTC = Single Open End 222 O-ring/Flat Cap (Nylon)		S = Silicone O-Ring
	50		20 20 508		OB = Std. Open End/Polypro Spring Closed End		V = Viton** O-Ring
	75		29 29-1/4 743		TC = Single Open End 222 O-Ring/Flat Cap (ABS Plastic)		W = Poly Foam Gaskets
	125		30 30 762		XA = Poly Extender		
	150		39 39 961		XB = Ext. Core Open End/Polypro Spring Closed End		
			39 39 991				
			40 40 1016				

Process Filtration Division

* U.S. Patent No. 5,639,370

** A trademark of E. I. duPont de Nemours & Co.





Fulflo® Basket Strainers

■ 316 Stainless Steel

Filter Bag and Media Strainer Series

Effective Large Particle Removal With Fulflo® Basket Strainers

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 prefilters for the collection of gross contaminants.

Applications

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



Features and Benefits

- Available in two standard sizes to fit all Fulflo 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 150 psi (9.0 bar) 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.

Process Filtration Division



Specifications

Maximum Operating Pressure Differential:

150 psid (10.3 bar)

Length:

(Basket Only)

- ? Single = 14-3/4 in (37 cm)
- ? Double = 27-3/4 in (70 cm)

Length:

(Including Handle)

- ? Single = 18-3/4 in (47 cm)
- ? Double = 31-3/4 in (80 cm)

Outer Diameter:

- ? Single = 7-7/16 in (19 cm)
- ? Double = 7-7/16 in (19 cm)

Basket Capacity:

- ? Single = 2.2 gal (8.3 liters)
- ? Double = 4.3 gal (16.3 liters)

Weight:

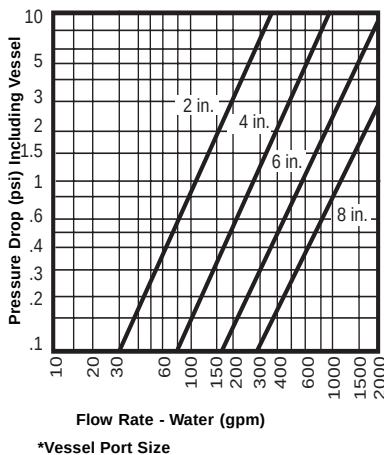
- ? Single = 5.4 lbs (2 kg)
- ? Double = 9.4 lbs (4.3 kg)

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):

Water Correction Factor

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

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 the 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

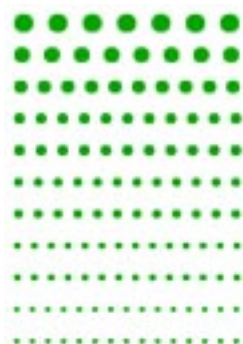
Ordering Information

Strainer Baskets With Handles

Single Length, Stainless Steel	Part Number
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	Part Number
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

Process Filtration Division



Fulflo® Bag Filter Basket

■ Coaxial Retainer Basket

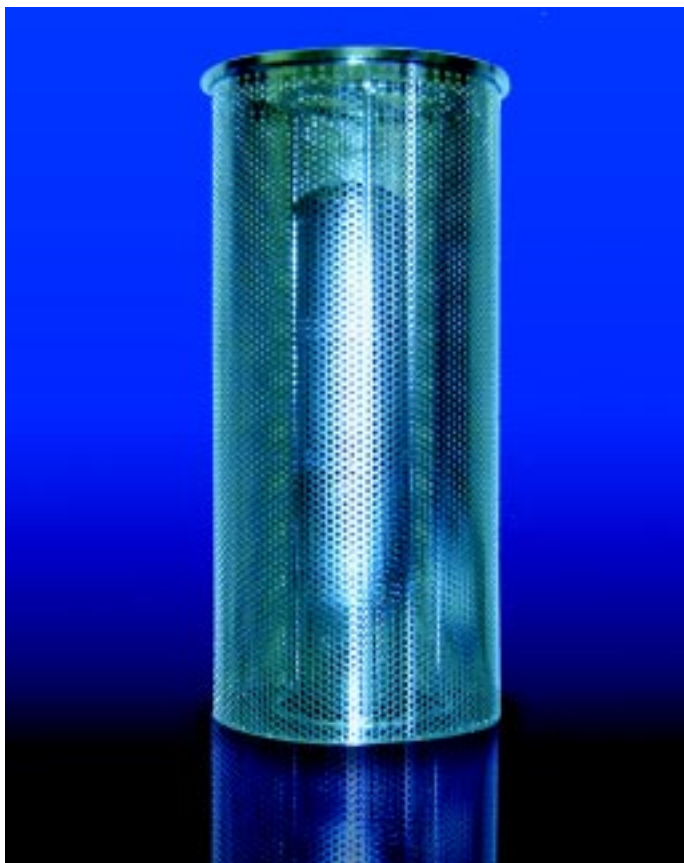
Filter Bag & Media Strainer Series

Parker's Coaxial Retainer Basket for Increased Flow Rate in Existing Single Length Parker Vessels

Parker's unique coaxial basket increases flow rates of existing single length bag housings by converting the housing to double length bags.

Applications

- Latex Emulsions
- Water Coolants
- Resins
- Solvents
- Coatings



Features and Benefits

- 316 stainless steel construction.
- Accepts double length bag in single length envelope.
- Special plunger to assist in filter bag installation.
- Shorter length disposal package.
- Retrofits all standard Fulflo bag housings.
- Requires less head room for spent filter bag removal.
- Increases flow rate in single length vessel.
- Increases life and efficiency at same flow rate.
- Designs for competitive vessels available (consult factory).

Process Filtration Division



Filter Bag & Media Strainer Series

Specifications

Materials of Construction:

- 316 stainless steel.

Recommended Media:

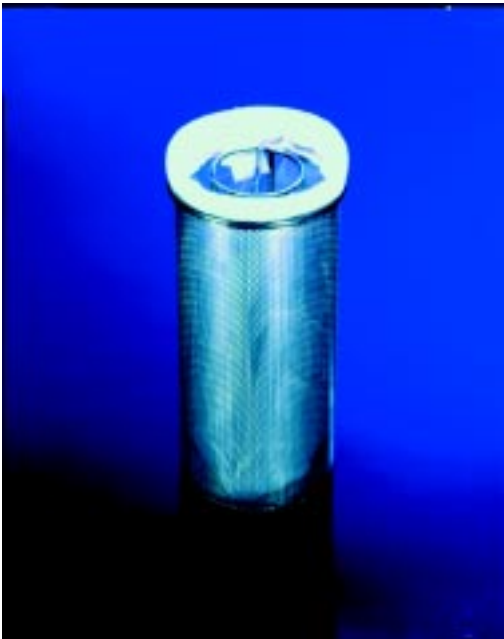
- For use with double length (size #2) mesh and needed felt media (100 micron and less) only.

Housing Retrofit:

- SB models
- FB models
- FCB models



- Coaxial basket and plunger.
- Double length mesh or felt bag in a single length envelope.
- Convert single length housing to double length bag option.
- Increase flow rate or increase efficiency and life at same flow rate.



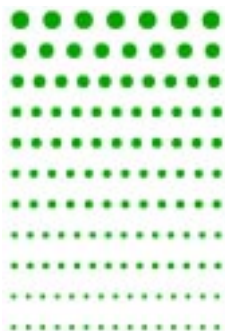
- Coaxial basket with “CX” bag installed.
- Add “CX” prefix to standard bag part number.
- “CX” bag has internal loop to assist in spent bag removal when installed in coaxial basket.

Ordering Information

Description	Part Number
Coaxial Basket	0370-5227
Plunger Tool	4540-5001

Process Filtration Division





Fulflo® Filter Bags

- | | |
|-----------------|-----------|
| ■ Polyester | ■ Nomex®* |
| ■ Polypropylene | ■ Nylon |
| ■ Rayon | |

Filter Bag and Media Strainer Series

Fulflo® Filter Bags Provide 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.

XLH high efficiency filter bags perform at efficiencies similar to depth cartridges. XLH bags are available in 0.5µm, 1µm, 2.5µm, 5µm, 10µm and 25µm particle retention ratings.

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

Applications

- | | |
|---------------------|-----------------------------------|
| ■ Adhesives | ■ Paints |
| ■ Beverages | ■ Parts Washing Systems |
| ■ Bulk Chemicals | ■ Petroleum Oils |
| ■ Coatings | ■ Prefilters for Finer Cartridges |
| ■ Coolants | ■ Resins |
| ■ Edible Oils | ■ Solvents |
| ■ Inks | ■ Water |
| ■ Liquid Detergents | |



Standard Bag

Features and Benefits

- Standard filter bags fit Fulflo vessels and most major competitive models.
- The "C" Style Fulflo bag features a standard, flexible, stainless steel band which positively self-seals the bag into standard Parker bag vessels.
- The "G" Style Fulflo bag features a carbon steel snap ring for positive sealing in Fulflo "GB" series and similar style competitive vessels.
- Fulflo Quik-Seal™ option is available for all "G" style Fulflo® filter bag media.
- Bags are available with glazed surface treatment to effectively control migration of fibers into the filtered product.
- Lofted mat type polyester bag is FDA grade.

XLH Features and 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 or polypropylene ring), reducing filter disposal costs.
- Heavy-duty fabric handle makes removal fast and simple.
- All materials of construction are FDA listed as acceptable for potable and edible liquid contact according to CFR Title 21.

Process Filtration Division



Specifications

Effective Removal Ratings:

- 0.5µm to 800µm

Maximum Recommended

Operating Conditions:

- Temperature:
 - Polyester: 275°F (136°C)
 - Viscose Rayon: 250°F (122°C)
 - Polypropylene: 200°F (94°C)
 - Monofilament and multifilament
 - Nylon Mesh and Needled Felt: 275°F (136°C)
 - Nomex®: 425°F (220°C)
 - Multifilament Polyester Mesh: 275°F (136°C)
- Flow Rate: (Per single length)
 - Standard Bag: 80 gpm (303 lpm)
 - XLH: 25 gpm (95 lpm)
- Changeout ΔP: 35 psi (2.4 bar)
- Pressure: 70 psid (4.8 bar)

PPD Bag Dimensions:

- C1: 7-1/2 in x 18-3/8 in (191 mm x 468 mm)
- C2: 7-1/2 in x 31-1/2 in (191 mm x 800 mm)
- G1: 7 in x 17-1/4 in (177 mm x 438 mm)
- G2: 7 in x 31-1/4 in (177 mm x 94 mm)

Surface Area per Bag (ft² / cm²)

- C1: 2.5 / 2325
- C2: 4.5 / 4185
- G1: 2.0 / 1860
- G2: 4.4 / 4092

Volume per Bag (gal / liter)

- C1: 2.5 / 9.5
- C2: 4.7 / 18
- G1: 2.1 / 8
- G2: 4.6 / 17.5

Ordering Information

G	2	PE	P	25	H	Q
Bag Style	Bag Size	Media	Construction	Micron	Options	
C = Flex Band (301/302 SS)	1 = #1 (single) 2 = #2 (double)	PE = Polyester	No Symbol = PPD Lofted Mat (FDA)	1, 3, 5, 10, 25, 50, 75, 100, 200 (PE)	H = Handle ("G" style)	DS = Drawstring Top
G = Snap Ring (Carbon Steel)		P = Polypropylene	P = Needled Felt (Non FDA)	1, 3, 5, 10, 25, 50, 100 (P)	N = Polyester Mesh Cover (150µm)	LR = Without Ring ("G" style)
		V = Viscose Rayon	PG = Glazed Needled Felt (P and PE media only)	5, 10, 25, 50, 75, 100 (V)	P = Polypropylene Ring ("G" Style)	Q = Quik-Seal™ Polypro Ring
		NOM = Nomex		5, 10, 25, 50, 100(NOM)	S = 304 SS Ring ("G" Style)	R = Reverse Collar
		MN = Nylon Multifilament		150 (MN)		XLH = High Efficiency Bag (Polypropylene Only)
		PEMU = Polyester Multifilament		150, 250, 300, 400, 600, 800 (PEMU)		
		MNO = Nylon Monofilament		50, 75, 100, 150, 200, 250, 300, 400, 600, 800 (MNO)		
				0.5, 1, 2.5, 5, 10, 25 (XLH)		

Note: XLH standard "G" ring is 304 SS.
"Q" style ring not available for viscose rayon

* A trademark of E. I. duPont de Nemours & Co.

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
5	5	8	18
10	10	14	22
25	25	30	40

Bag Media Selection:

- Microfiber:** FDA grade polypropylene microfiber used in the XLH bag series assures high-efficiency performance and is oil absorbent. Particle retention ratings from 0.5µm to 25µm.
- Felt:** Synthetic needled fabric offers cost-effective depth filtration. Particle retention ratings from 1µm to 200µm.
- Monofilament Mesh:** Single strand nylon with retention ratings from 50µm to 800µm.
- Glazed:** In polypropylene or polyester felts, the surface fibers are melt bonded to one another, reducing the possibility of fiber migration.
- Multifilament Mesh:** Strong fabric woven from twisted strands. Particle retention ratings from 150µm to 800µm.
- Lofted Mat With Scrim:** Lofted mat covered by a nonwoven layer to prevent fibers from migrating into the filtered product. Particle retention ratings from 1µm to 200µm. Only polyester is FDA grade
- High Temperature Nomex®**

XLH Flow Factors

Rating (µm)	Flow Factor
0.5	0.0185
1	0.0143
2.5	0.0133
5	0.0083
10	0.0043
25	0.0031

Standard Bag Flow Factors

Rating (µm)	Flow Factor
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 Formulae:

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

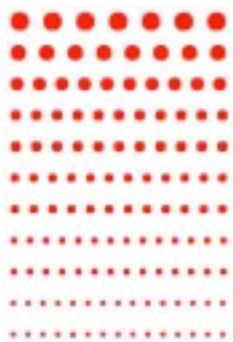
$$\text{Clean } \Delta P = \frac{\text{Flow Rate} \times \text{Viscosity} \times \text{Flow Factor}}{\text{Length Factor}}$$

Notes:

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

Process Filtration Division





Fulflo® TruBind™ Cartridges 300 Series

■ Polymeric Absorbent

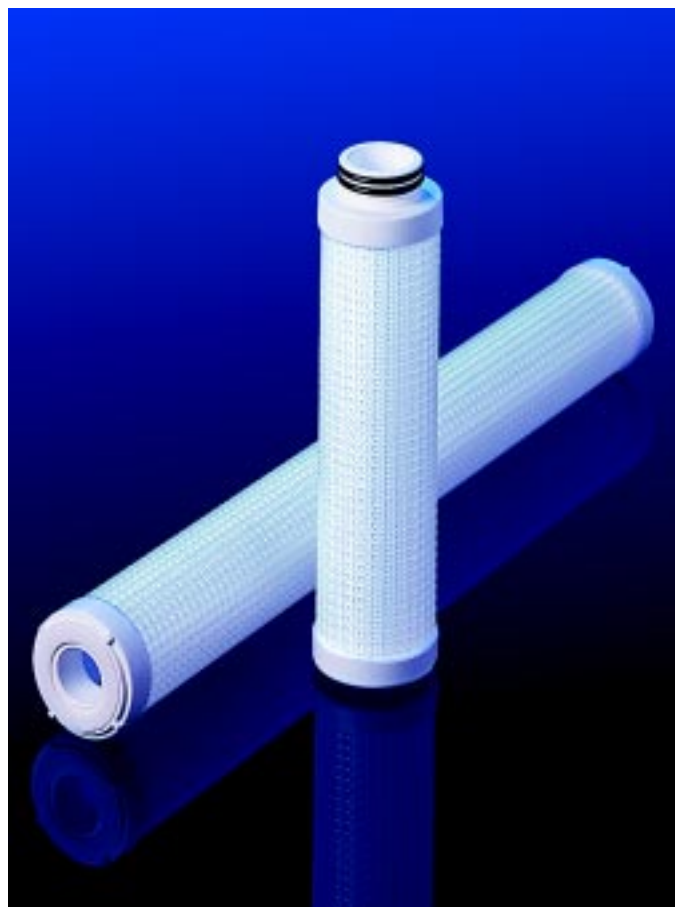
Sorbent Cartridge Series

Effective and 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.

Applications

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



Features and 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.
- A variety of cartridge sizes and end cap options increase housing selection.
- TruBind cartridges are completely incinerable.
- Parker's TQM system assures consistent and reliable performance.

Process Filtration Division



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 1.0 gpm 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 10 psi. 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 or gallons at several trace contaminant levels based on a 1.0 gpm flow rate per 10-inch cartridge. Absorbent capacity will decrease as density of hydrocarbon increases.

3. Flow Rate Capability: A maximum flow rate of 1.0 gpm per 10-inch length cartridge is recommended for the most effective removal of trace hydrocarbon contaminant.

Hydrocarbon (ppm)	Concentration (% by Weight)	Hydrocarbon Removal per Minute (grams)	Estimated Life in Hours	Gallons Fluid Treated	Estimated Cost per Gallon of Treated Fluid
10	.001	0.04	106.0	6,330	\$.003
100	.01	0.40	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	10	A	TC	N																											
Cartridge Series	Cartridge Length	Support Core	End Cap Configuration	Seal Material																											
TruBind Absorbent Cartridge	<table><tr><th>Code</th><th>in</th><th>mm</th></tr><tr><td>9</td><td>9-5/8</td><td>244</td></tr><tr><td>10</td><td>9-13/16</td><td>249</td></tr><tr><td>19</td><td>19-5/8</td><td>498</td></tr><tr><td>20</td><td>19-15/16</td><td>506</td></tr><tr><td>29</td><td>29-1/4</td><td>743</td></tr><tr><td>30</td><td>30-1/16</td><td>764</td></tr><tr><td>39</td><td>39</td><td>991</td></tr><tr><td>40</td><td>40</td><td>1016</td></tr></table>	Code	in	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	A = Standard Wall Polypropylene Core	DO= Double-Open-End (gasket seal) DX = DOE w/core extender TC = Single-Open-End (222 O-ring seal) TX = 222 O-ring/Flex Fin	A = Polyolefin Foam Gasket (standard for "DO" seal design) N = Buna-N O-Ring (standard for "TC" seal design)
Code	in	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																													
Example: TBC10A-TC-N																															

Process Filtration Division

Specifications

Materials of Construction:

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

Cartridge Dimensions (nominal)

- Lengths: 10-40 in (249mm-1016mm)
- Outside Diameter: 2-1/2 in (63.5 mm)
- Inside Diameter: 1-1/16 in (27 mm)

Maximum Recommended Operating Conditions:

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

BioSafety:

- 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 Fuflo vessels designed for 2-1/2 in OD cartridges.

Process Filtration Division





Fulflo® TruBind™ Cartridges 400 Series

■ Polymeric Absorbent

Sorbent Cartridge Series

Effective and 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.

Applications

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



Features and 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.
- Parker's TQM system assures consistent and reliable performance.

Process Filtration Division



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 3.0 gpm 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 10 psi. 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 or gallons at several trace contaminant levels based on a 3.0 gpm flow rate per 10-inch cartridge. Absorbent capacity will decrease as density of hydrocarbon increases.

3. Flow Rate Capability: A maximum flow rate of 3.0 gpm per 10-inch length cartridge is recommended for the most effective removal of trace hydrocarbon contaminant.

Hydrocarbon (ppm)	Concentration (% by Weight)	Hydrocarbon Removal per Minute (grams)	Estimated Life in Hours	Gallons Fluid Treated	Estimated Cost per Gallon of Treated Fluid
10	.001	0.11	80.0	14,400	\$.002
100	.01	1.10	8.0	1,400	\$.025
1,000	.1	11.00	0.8	144	\$.24

Ordering Information

TBC	4	10	A	DO	A
Cartridge Series	Outside Diameter	Cartridge Length	Support Core	End Cap Configuration	Seal Material
TruBind Cartridge	Code in mm	Code in mm	A = Standard Wall Polypropylene Core	DO = Double-Open-End (gasket seal)	A = Polyolefin Foam Gasket (standard for "DO" seal design)
	4 4-1/2 114	10 9-13/16 249 20 19-15/16 506			

Specifications

Materials of Construction:

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

Cartridge Dimensions (nominal)

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

Maximum Recommended Operating Conditions:

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

BioSafety:

- 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.



Fulflo® TruBind™ Cartridges 700 Series

■ Polymeric Absorbent

Sorbent Cartridge Series

Effective and Economical Hydrocarbon Removal with Enhanced Polymeric Absorbent Cartridges

Parker Hannifin's 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.

Applications

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



Features and 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.
- Retrofits parker P, FP, FPM vessel series and PC Series Portable Cart.
- TruBind cartridges are completely incinerable

Process Filtration Division



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 5 gpm per 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 10 psi. Series or multipass filtration can virtually eliminate hydrocarbon contamination.

2. Hydrocarbon Absorbent Capacity: The TruBind™ cartridge medium has the potential to remove up to 1200 grams (approximately one quart) of low density hydrocarbon contaminant. On this basis, the table below provides expected life data in hours or gallons at several trace contaminant levels based on a 5 gpm flow rate per cartridge. Absorbent capacity will decrease as density of hydrocarbon increases.

3. Flow Rate Capability: A maximum flow rate of 5 gpm per cartridge is recommended for the most effective removal of trace hydrocarbon contaminant.

Hydrocarbon Concentration (ppm)	Hydrocarbon Concentration (% by Weight)	Hydrocarbon Removal per Minute (grams)	Estimated Life in Hours	Gallons Fluid Treated	Estimated Cost per Gallon of Treated Fluid
10	.001	0.189	111.39	31746	\$0.003
100	.01	1.795	11.14	3175	\$0.030
1,000	.1	17.954	1.11	317.5	\$0.295

Ordering Information

TBC	7	18	A	DO	N
Cartridge Series	Outside Diameter	Cartridge Length	Support Core	Cartridge Seal Design	Seal Material
TruBind™ Absorbent Cartridge	Code 7 in 6-1/4 mm 159	Code 18 in 18 mm 457	A= Heavy Wall Polyethylene Core	DO = Double Open End	N = Buna N Gasket

Example:
TBC718A-DO-N

Specifications

Materials of Construction:

- Absorbent: Laminated Proprietary Polymer
- Support Construction: 100% polyolefin
- Seal Material: Buna-N gasket

Cartridge Dimensions (nominal)

- Length: 18 in (457 mm)
- Outside Diameter: 6-1/4 in (159 mm)
- Inside Diameter: 2-5/8 in (67 mm) with separate support core

Maximum Recommended Operating Conditions:

- Temperature: 150°F (65°C)@20 psid (1.4 bar); 180°F(82°C)@10 psid (0.7 bar)
- Pressure: 60 psid (4.1 bar) @ 75°F (24°C)
- Flow Rate: 5 gpm per cartridge
- Changeout Pressure Drop (net): 10 psi (0.7 bar)
- Flow Factor: 0.3 psid per 1 gpm at 1 cks viscosity per cartridge
- pH range: 2 -12

Recommended Vessels:

- Parker Fulflo "P", "FP", "FPM" Series and PC Series Portable Cart.

BioSafety:

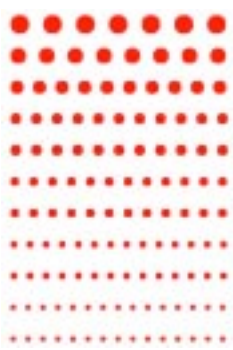
- The TruBind™ cartridge is classified as non-hazardous and incinerable. Disposal must be dictated by local regulations pertaining to the absorbed contaminant.

TruBind™ 700 Series is coreless and requires a support core prior to cartridge installation in vessel. The polyethylene core gives the cartridge sufficient strength and precludes cartridge collapse at recommended operating conditions. Support core is a reusable part and does not need to be replaced.

Part Number: 4452-5120



Process Filtration Division



Fulflo® MC and RC Carbon Filter Cartridges

■ Activated Carbon Media

Sorbent Cartridge Series

Activated Carbon Cartridge Eliminates Taste, Odor and Sediment in Potable Water.

Parker's FDA grade MC and RC activated carbon cartridge series provides effective control of taste and odor causing contaminants in water such as chlorine and dissolved organics. At the same time suspended solids are controlled to a nominal 5 micrometer level.

The MC Series features a unique 3-stage "treatment" matrix with a granular carbon chamber between two layers of 5 micron rated wound polypropylene medium. The RC Series is similarly constructed but with a larger outside diameter and in a variety of lengths to fit standard double open end Fulflo "B" series vessels.

The MMCT-10 is unique within this series as a single-open-end carbon bottle design in which flow is channeled through the entire length of the cartridge. With this design contact time is maximized for optimum adsorptive contaminant removal.

Applications

- Drinking Water ■ Waste Water Treatment
- Plating Solutions ■ Color Contaminated Fluids



Features and Benefits

- All components of the carbon cartridge series meet FDA guidelines for potable and edible liquid contact according to CFR Title 21.
- Six different cartridge sizes to accommodate most Fulflo and similar style competitive vessels.
- Unique design with prefiltration and post filtration stage to optimize activated carbon layer.
- Liquid phase high surface area activated carbon maximizes chlorine removal.
- Unique 3-stage water treatment capability from one filter cartridge.

Process Filtration Division



Specifications

Materials of Construction

- Adsorbent: Granulated 12 x 40 Mesh Activated Carbon
- Filter Medium: FDA Grade Wound Polypropylene
- Support Construction: Polypropylene
- End Caps (RC/MC): PVC
- End Cap Adhesive (RC/MC): PVC
- Gasket: EPDM

Particle Removal Rating

- 5 Micrometer Nominal

Maximum Recommended Operating Conditions

- Flow Rate: 1.0 gpm (3.8 lpm) per 10 in length for optimum adsorbent contact time.
- Temperature: 140°F (76°C) @ 30 psid (2.1 bar)
- Pressure: 60 psid (4.1 bar) @ 75°F (24°C)
- Changeout Pressure Drop: 30 psid (2.1 bar) or when objectionable taste and odor are detected in effluent water.

Packaging;

- All cartridges packaged 20 units per master carton.
- RC Series cartridges are packaged in individual boxes and include Buna N vessel shell gasket (P/N 2620-5046)
- MC Series cartridges are individually poly shrink wrapped with label but without individual carton.

■ Master carton weight (lbs.)

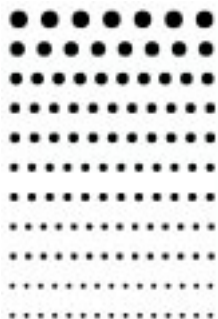
RC4:	11
RC10:	25
MC10-2:	17
MC20-2:	34
MC30-2:	26
MMCT-10:	19

■ Dimensions/Filter Vessel

Cartridge Part Number	Carbon Content (weight in grams)	Nominal Dimensions	Recommended Filter Vessel
RC4	95	3-13/16 in long x 3-1/4 in OD x 1-1/16 in ID	BR4-3/8 SD
RC10	275	9-13/16 in long x 3-1/4 in OD x 1-1/16 in ID	BR5B10 - 3/4 SD
MC10-2	115	9-13/16 in long x 2-3/4 in OD x 1-1/16 in ID	LT10 and all other Fulflo vessels except FE Series
MC20-2	250	19-15/16 in long x 2-3/4 in OD x 1-1/16 in ID	LT20 and all other Fulflo vessels except FE Series
MC30-2	395	30-1/16 in long x 2-3/4 in OD x 1-1/16 in ID	All Fulflo vessels except FE Series
MMCT-10	185	9-13/16 in long x 2-3/4 in OD x 1-1/16 in ID	LT10 only

Notes: (1) MMCT-10 is single open end style and fits only LT10 and similar competitive vessels.

(2) All other cartridges are double open end style. MC cartridges are stackable in multi-length vessels by using stainless steel spacers (P/N 5710-5022).



Fulflo® Metallic Filter Cartridges

■ Stainless Steel

Pleated & Cylindrical Series

Optimize Process Filtration with High Integrity Metallic Cartridges

Parker's Fulflo® stainless steel cartridges provide the optimum filtration solution 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.

Applications

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



Features and Benefits

- Temperature capability up to 500°F with synthetic seals; up to 1500°F with NPT connections.
- Available in 304 and 316 stainless steel for compatibility choice with aggressive chemicals.
- Available in fourteen nominal ratings from 2 to 840 microns for a wide range of particle size removal.
- Dimensional integrity of stainless steel media accommodates high flow rate and high temperature systems.
- Cartridges may be cleaned and reused.
- Available with a wide range of grommet and o-ring materials to optimize fluid and temperature compatibility.
- Variety of seal configurations allow retrofit in many filter vessel designs.
- Welded and crimped construction eliminates the need for adhesives which can be a contaminant source and limit temperature range.
- Pleated surface maximizes filtration area for longer service life.
- Plain (cylindrical) surface provides ease of cleaning.
- Optional perforated stainless steel pleat protectors minimize handling damage.
- Meets FDA guidelines for use with potable and edible liquids.

Process Filtration Division



Pleated and Cylindrical Series

Specifications

Particle Removal Ratings (Nominal):

- 14 ratings from 2 to 840 micrometers

Effective Filtration Area:

- Cylindrical: 0.5 ft²/10 in length (465 cm²/254mm)
- Pleated: 1.7 ft²/10 in length (1580 cm²/254 mm)

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).

Dimensions:

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

Maximum Recommended Operating Conditions:

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

Ordering Information:

PSS	40	10	G	X	MC	H
Cartridge Code	Nominal Micrometer Rating	Nominal Length	Media/Support Construction	Seal Material	End Cap Configuration	Special Options
		Code (in) (mm)				
CSS - Cylindrical Stainless Steel	2	9 = 9 3/4 248	G = 304 Stainless Steel	E = EPDM	DO = Double open end w/grommet seal	F = FDA Grade Seal Material
	5	10 = 10 254		F = PTFE (Grommet only)	DX = Double Open End with Extended Core	H = High Pressure Core (316 SS)
PSS - Pleated Stainless Steel	10	19 = 19 1/2 495	S = 316 Stainless Steel	N = Buna N	FC = Single open end w/1" NPTF female connection	P = Pleat Protector sleeve (316 SS)
	20	20 = 20 508		T = PFA/Viton* (O-ring only)	MC = Single open end w/1" NPTM male connection	
	40	29 = 29 1/4 743		V = Viton*	SC = Single open end w/226 o-ring seal	
	75	30 = 30 762		X = No Seal Material (FC, MC Style)	TC = Single open end w/222 o-ring seal	
	100					
	150					
	190					
	230					
	280					
	370					
	540					
	840					

*A trademark of E. I. duPont Nemours & Co.

Removal Rating/Mesh Count/Open Area

Micrometer Rating Nominal/(Absolute)	Mesh Count (per inch)	Per Cent Open Area
2 (9)	325 x 2300	NA
5 (14)	200 x 1400	NA
10 (18)	165 x 1400	NA
20 (32)	200 x 600	NA
40 (55)	120 x 400	NA
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

Flow Factors

Length (in)	Flow Factor
9 3/4, 10	0.00036
19 1/2, 20	0.00076
29 1/4, 30	0.00116

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

Flow Rate and Pressure Drop Formulae:

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

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

Notes:

- Clean ΔP** is PSI differential at start.
- Viscosity** is centistokes. Use Conversion Tables for other units.
- Flow Factor** is ΔP/length at 1 cks viscosity and 1 gpm flow rate.

Process Filtration Division

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Fulflo® Single Cartridge Filter Vessels

■ Carbon Steel

Single Cartridge Filter Vessel Series

Fulflo® “B” Series Filters Are Suitable for a Wide Range of Industrial Applications

Carbon Steel “B” Vessels feature 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.

Applications

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



Features and 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.

Process Filtration Division

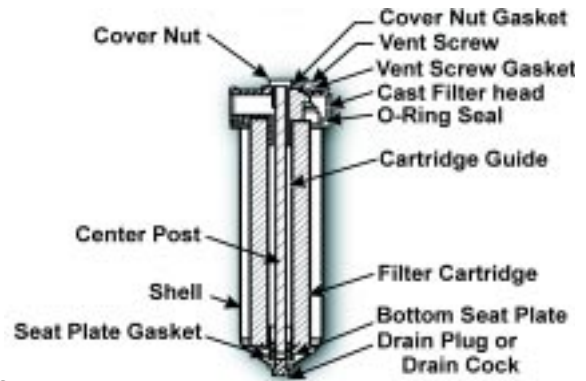
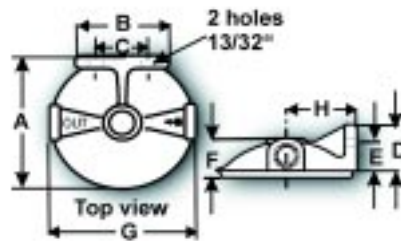


Single Cartridge Filter Vessel Series

“B” Series Description

Bracketed Head Dimensions (in)

	NPT 1/4 (in)	NPT 3/4 (in)
A	4.22	4.22
B	2.75	3.31
C	1.50	2.19
D	1.50	1.88
E	1.0	1.38
F	1.25	1.66
G	4.19	4.31
H	2.13	2.13



Duplex (BDX1) and Manifold (BMCX2) Design Specifications

Model	Typical Aqueous Flow* (gpm)	(Number) & Length of Cartridges (in)	Pipe Size (NPT) (in)	Maximum Operating Pressure (psi@200°F)	Overall Height (in)	Shipping Weight (lbs)
BDX1-10-1/2 SD	5/10	(2) 10	1/2	150 psi (10.3 bar)***	13.75	16
BMCX2-10-1 SD**	10	(2) 10	1	150 psi (10.3 bar)***	13.63	14

* Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult nomographs or flow curves for each application.

** Two shells in parallel. No bracket required.

*** Maximum available working pressure is 100 psi (6.9 bar) at 250°F (121°C).

Design Specifications

Model	Rated Capacity*	(Number) & Length of Wound Depth Cartridges (in)	Operating Pressure (psi@200°F)	Overall Height (in)	Outside Diameter (in)	Face-to-Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Weight (lbs)
Air and other gases								
B3A-(1/4 or 3/8)SD	65 scfm	(1) 3	125 psi (8.6 bar)	7.0	3.63	4.19	.25 - .38	3.0
B5A-(1/2 or 3/4)SD	110 scfm	(1) 5	125 psi (8.6 bar)	9.25	3.63	4.31	.5 - .75	3.75
B7A-(3/4 or 1)SD	150 scfm	(1) 7	125 psi (8.6 bar)	11.38	3.63	4.5	.75 - 1	5.25
AF7-3/4SD	180 scfm	(1) 7	150 psi (10.3 bar)†	11.38	3.63	4.31	.75	4.25
Liquids								
B10-3/4 SD	5 gpm	(1) 10	150 psi (10.3 bar)††	12.88	3.63	4.31	.75	6.0
B20-3/4 SD	10 gpm	(1) 20	150 psi (10.3 bar)††	23.0	3.63	4.31	.75	9.25
B10-1 SD	5 gpm	(1) 10	150 psi (10.3 bar)††	13.25	3.63	4.5	1.0	6.0
B20-1 SD	10 gpm	(1) 20	150 psi (10.3 bar)††	23.25	3.63	4.5	1.0	9.25

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

† Maximum allowable working pressure is 250 psi (17.2 bar) at 100°F (38°C).

†† Maximum allowable working pressure is 100 psi (6.9 bar) at 250°F (121°C).

Ordering Information

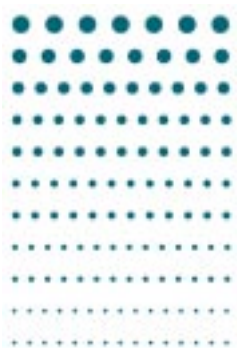
B	20	3/4	S	D
Design Series	Cartridge Length (in)	Connection Size (in)	Spring-Loaded Seal	Drain
B = Carbon Steel	3 A	1/4		
BDX1 = Duplex	5 A	3/8		
AF = Air	7 (AF only)	1/2		
	7 A	3/4		
	10	1		
	20			

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

Process Filtration Division

* A trademark of E. I. duPont de Nemours & Co.





Fulflo® Single Cartridge Filter Vessels

- Stainless Steel
- Brass

Single Cartridge Filter Vessel Series

Fulflo® Single Cartridge Stainless Steel and Brass Filter Vessels Are for Water and Corrosive Fluid Applications

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 BRSB vessels have a 316 stainless steel shell and feature a four-boss brass head.

The BR4 is for water and aqueous fluids. With a brass head and shell, it offers reliable, leak-free operation in corrosive environments.

Applications

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



Features and Benefits

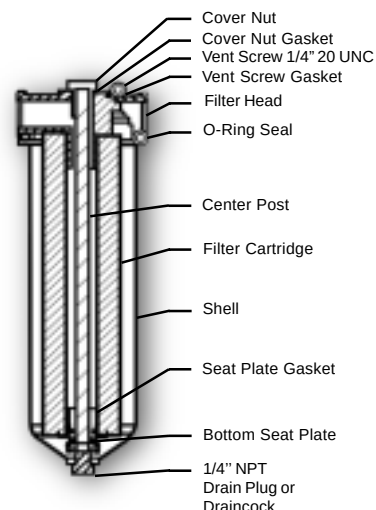
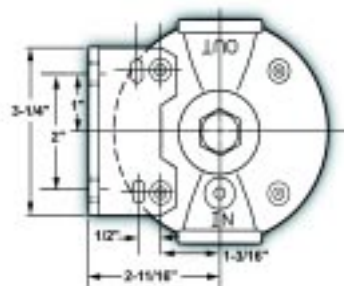
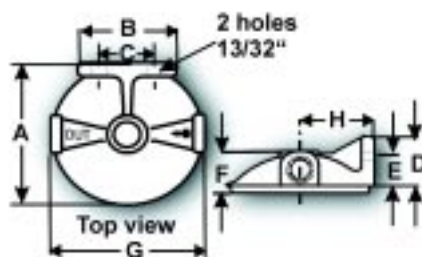
- Single center bolt for quick cartridge change.
- In-line pipe connections for easy installation.
- Bracket kit for installation on drilled head bosses for easy mounting.
- Spring-loaded bottom seats for positive cartridge sealing.
- O-ring closure seal provides positive sealing.
- Drain and vents standard on all models.



Single Cartridge Filter Vessel Series

■ **Bracketed Head Dimensions (*in*)**
(BR4-3/8SBD only)

	NPT 3/8 (in)
A	4.22
B	2.75
C	1.50
D	1.50
E	1.0
F	1.25
G	4.1
H	2.13



■ BR4 Design Specifications

Model	Rated Capacity* (gpm)	(Number) & Length of Wound Depth Cartridges (in)	Maximum Operating Pressure (psi@150°F)	Overall Height (in)	Outside Dia. (in)	Face- to-Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Weight (lbs)
BR4-3/8 SD	2	(1) 4	100 psi (6.9 bar)	7	3.63	4.25	.38	3.5
BR4-3/8 SBD**	2	(1) 4	100 psi (6.9 bar)	7	3.63	4.25	.38	3.5

* Rated liquid capacity based on initial pressure drop of 3 psig (.2 bar) with a 10µm Fulflo® EcoBond filter cartridge and fluid viscosity equivalent to water.

** B suffix indicates integrally cast head bracket.

■ BRSB/BSSB Design Specifications

Model	Typical Aqueous Flow* (gpm)	(Number) & Length of Wound Cartridges (in)	Maximum Operating Pressure	Overall Height (in)	Outside Dia. (in)	Face-to-Face Dim. (in)	pipe Size (NPT) (in)	Shipping Weight (lbs)
BR SB10-3/4 SD	5	(1) 10	150 psi (10.3 bar)@200°F	12.75	3.63	4.31	.75	6.0
BR SB20-3/4 SD	10	(1) 20	150 psi (10.3 bar)@200°F	22.88	3.63	4.31	.75	10.50
BSSB10-3/4 SD	5	(1) 10	150 psi (10.3 bar)@250°F†	12.75	3.63	4.31	.75	6.0
BSSB20-3/4 SD	10	(1) 20	150 psi (10.3 bar)@250°F†	22.88	3.63	4.31	.75	10.50
BSSB10-1 SD	5	(1) 10	150 psi (10.3 bar)@250°F†	13.0	3.63	4.5	1.0	6.0
BSSB20-1 SD	10	(1) 20	150 psi (10.3 bar)@250°F†	23.13	3.63	4.5	1.0	10.50
BSSB30-1 SD	15	(1) 30	150 psi (10.3 bar)@250°F†	33.25	3.63	4.5	1.0	15.00

* Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type. Consult nomographs or flow curves for each application.

† Maximum allowable working pressure is 175 psi (12.1 bar) at 200°F (94°C).

Ordering Information

BRSB	20	3/4	S	D
<i>Design Series</i>	<i>Cartridge Length (in)</i>	<i>Connection Size (in)</i>	<i>Spring-Loaded Seal</i>	<i>Drain</i>
BR = Brass Head/ 316 SS Shell	4 (BR Only) 10	3/8 3/4		
BRSB = 4 BOSS Brass Head/316 SS Shell	20 30	1		
BSSB = 4 BOSS 316 SS Head/316 SS Shell				

Note: BR4 Vessel supplied with EBC10M4

* A trademark of E. I. duPont de Nemours & Co.

Process Filtration Division

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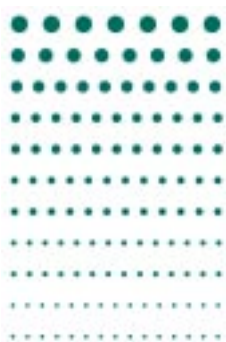
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Fulflo® Single Cartridge High-Pressure Filter Vessels

Single Cartridge Filter Vessel Series

Fulflo® High-Pressure Filter Vessels Are Ideal for High-Pressure Liquid and Gas Systems

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.

Applications

- Petrochemicals
- Process Water
- Coolants
- Solvents
- Hydraulic Oils
- Compressed Air and Gasses
- Other High-Pressure Liquids



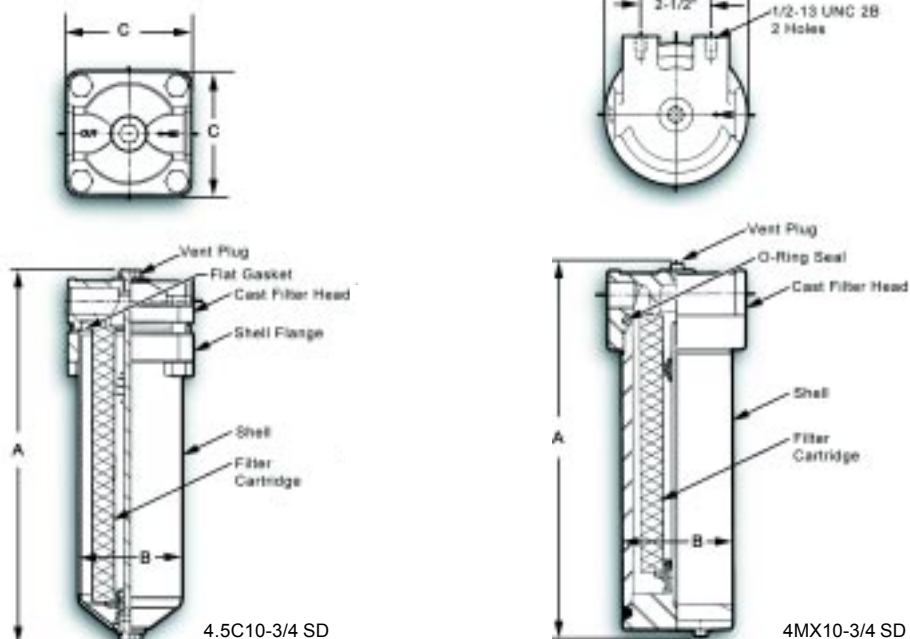
Features and Benefits

- 4MX10 has ductile iron head with integral mounting bosses for ease of mounting.
- 4MX10 has threaded cartridge to head with O-ring for positive seal.
- 4.5C features multiple bolt closure to meet high pressure requirements.
- In-line pipe connections for easy installation.
- Spring-loaded bottom seats for positive cartridge sealing.
- Drain and vents standard on all models.

Process Filtration Division



Single Cartridge Filter Vessel Series



Design Specifications

Model	Rated Capacity* (gpm) (scfm)		(Number) & Length of Wound Depth Cartridges (in)	Maximum Operating Pressure (psi)	Maximum Operating Temperature	A Overall Height (in)	B Outside Dia. (in)	C Face-to- Face Dim. (in)	Pipe Size (NPT) (in)	Shipping Weight (lbs)
4.5C10-3/4 SD	5	300	(1) 10	450 psi (31.0 bar)	400°F (204°C)	13.31	3.63	4.38	.75	9
4MX10-3/4 SD	5	800	(1) 10	4000 psi (276 bar)	250°F (121°C)**	13	4	5.0	.75	30
SS4.5C10-3/4 SD	5	-	(1) 10	450 psi (31.0 bar)	400°F (204°C)	13.31	3.63	4.38	.75	10

* Maximum flow rate for gases based on air at 70°F (21°C) and maximum operating pressure with initial pressure loss of 3 psig (.2 bar) with a 10µm viscose Fulflo® filter cartridge.

Rated liquid capacity based on initial pressure drop of 3 psig (.2 bar) with a 20µm cotton Fulflo® filter cartridge and fluid viscosity equivalent to water.

** Maximum operating temperature to 400°F (204°C) with Viton*** elastomer O-ring.

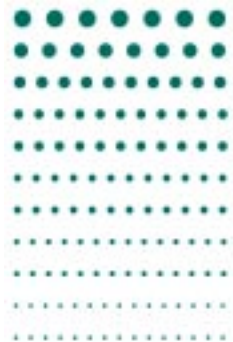
*** A trademark of E. I. du Pont de Nemours & Co.

Ordering Information

*4.5C	20	3/4	S	D
Design Series	Cartridge Length (in)	Connection Size (in)	Spring-Loaded Seal	Drain
SS4.5C = 450 PSIG Design Pressure 316SST	10 20			
4.5C = 450 PSIG Design Pressure Carbon Steel				
4MX = 4000 PSIG Design Pressure Carbon Steel	(Note: 4MX available in 10" only)			

Process Filtration Division





Fulflo® FB Oil Burner Filter Assemblies

Single Cartridge Filter Vessel Series

Fulflo® Oil Burner Filter Assemblies Provide Economical Fuel Oil Filtration

Fulflo Oil Burner Filter assemblies are specifically engineered to eliminate the expense of costly service calls by removing microscopic particles from fuel oil systems. The result is protection for nozzles, pumps and valves, therefore providing more efficient combustion and fuel savings. The range in filter sizes provides model choices for either a single space heater or furnaces and boilers for homes, apartments, commercial businesses, or any building relying on No. 1 or No. 2 fuel oil for heat.

Fulflo filter vessels are built with a cast iron head and a tough steel shell which resists warping or cracking. Straight line connections minimize piping. Standard gasket material is Buna-N. Installation requires only one inch of clearance between filter and floor to replace cartridge. The assembly operates with as little as six inches of gravity head or at pressures up to 25 psi.

Each Fulflo filter vessel contains a 50 micron nominally rated rayon wound cartridge. Replacement cartridges are available in service kits or bulk packs.

Service life varies with filter size and oil condition, but generally handles between 2,000 and 10,000 gallons before cartridge replacement.



Features and Benefits

- Vessels are built with a cast iron head and a tough steel shell which resists warping or cracking.
- Straight line connections minimize piping.
- Standard gasket material is Buna-N.
- UL approved
- Cover nut gasket is hard grey fiber.
- Requires only one inch of clearance between floor and filter to replace cartridge.
- Operates with as little as six inches of gravity head or at pressures up to 25 psi.
- Each vessel is supplied with filter cartridge for initial installation.

Process Filtration Division



Single Cartridge Filter Vessel Series

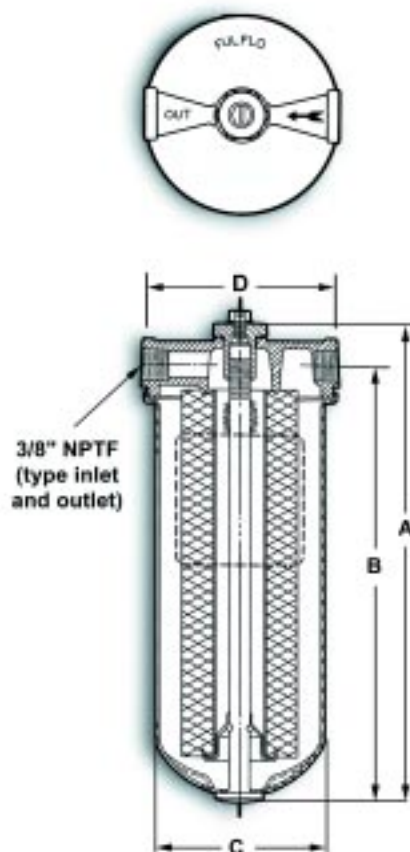
■ Fulflo Replacement Service Kit - With Gaskets Six (6) Cartridges and Six (6) Buna N Shell Gaskets

Filter Model	Kit Nomenclature	Standard Shipping Package	Shipping Weight (lbs.)
FB4	RF4B	12/6 pac (72 cartridges)	15

■ Fulflo Replacement Cartridges (Bulk Pack) Standard Pac Thirty (30) per Carton - No Gaskets

Filter Model	Cartridge Nomenclature	Nominal Length (in)	Shipping Weight (lbs.)
FB4	4 FO	4	4
FB6	6 FO	6	10
FB8	8 FO	8	12
FB10	10 FO	10	15

Note: 3FO cartridges available for discontinued FB3. All cartridges rated 50 micrometer nominal.



■ Filter Vessel Design Specifications

Model	Part Number	Maximum psi	Underwriters** Rating (gph)	Inlet and Outlet (in)	Dimensions				Quantity per Ship Case	Weight Std. Ship Case (lbs)
					A	B	C	D		
FB4*	9440-1116	25	20	.38	6.25	5.25	3.63	4.19	24	73
FB6	9440-1113	25	32	.38	8.25	7.25	3.63	4.19	12	50
FB8	9440-1114	25	40	.38	10.25	9.44	3.63	4.19	12	60
FB10	9440-1115	25	50	.38	12.25	11.44	3.63	4.19	12	65

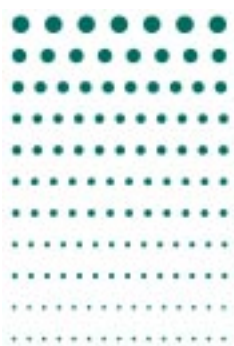
*FB4 available with bracketed head as model #FB4B (P/N 9440-1128).

**Listed by Underwriters Laboratories Reexamination Service for G.P.H. of consumed fuel oil not heavier than No. 3 heating oil as shown above.

Ordering Information

FB	6
Design Series	Shell Length
	4 = 4 in
	6 = 6 in
	8 = 8 in
	10 = 10 in

Process Filtration Division



Fulflo® “TC” Series Single Cartridge Filter Vessels

■ Stainless Steel

Single Cartridge Filter Vessel Series

Fulflo® Single Cartridge Stainless Steel Vessels Are for use with SOE-222 Style Filter Cartridges.

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.

The vessels are sealed using a ring type threaded closure which requires no special tools to change the cartridges.

Applications

- UHP Water
- DI Water
- Bottled Water
- Solvents
- Chemicals
- Potable Liquid
- Beverages
- Parts Washer



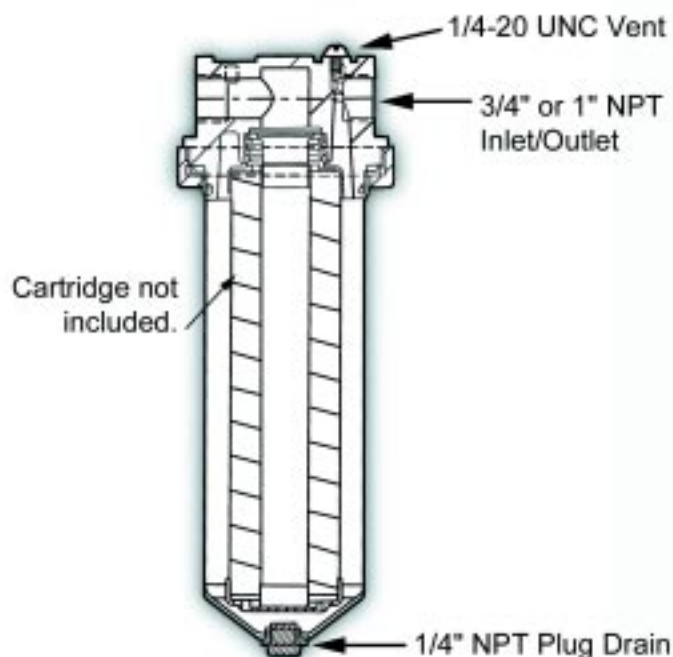
Features and Benefits

- 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" & 30" cartridge lengths.
- Vessel has no internal parts.
- Cartridge seating is positive and can be checked prior to closing.
- All components have electropolished finish.

Process Filtration Division



Single Cartridge Filter Vessel Series



Design Specifications

Model	Typical Aqueous Flow (gpm)	Length of Cartridge (in)	Operating Pressure (psi@250°F)	Overall Height (in)	Outside Diameter Face to Face (in)	Pipe Size (NPT) (in)	Shipping Weight (lbs)
SSTC10-075	5	10	200 psi (13.8 bar)	12.25	3.50	.75	7.80
SSTC20-075	10	20	200 psi (13.8 bar)	22.38	3.50	.75	9.00
SSTC30-075	15	30	200 psi (13.8 bar)	32.50	3.50	.75	10.20
SSTC10-100	5	10	200 psi (13.8 bar)	12.25	3.50	1.00	7.80
SSTC20-100	10	20	200 psi (13.8 bar)	22.38	3.50	1.00	9.00
SSTC30-100	15	30	200 psi (13.8 bar)	32.50	3.50	1.00	10.20

Optional Seals Provided as Separate Item

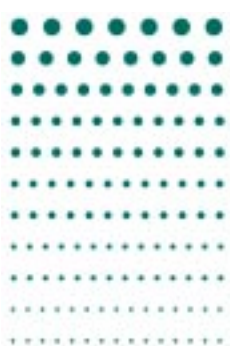
Viton	P/N 4152-8236
EPR	P/N 4154-5236
Silicone	P/N 4151-4236

Ordering Information

SS	TC	10	075	
Design Series	Cartridge seal	Cartridge Length (in)	Connection Size	Closure Seal
316 SS Shell & Head	222 o-ring	10 = 10 20 = 20 30 = 30	075 = 3/4 in FNPT 100 = 1 in FNPT	Buna-N (standard)

Bracket Assembly Kit P/N 0820-5060 included.
Flanges provided as optional item. (Consult factory for pricing.)

Process Filtration Division



Fulflo® “M” Series Single Cartridge Vessels

- Carbon Steel
- 316 Stainless Steel

Single Cartridge Filter Vessel Series

High Pressure Single Cartridge Vessels

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.

Applications

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



Features and 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.

Process Filtration Division



Single Cartridge Filter Vessel Series

Specifications

- Carbon steel or 316 stainless steel material
- Drain: 1/4 in NPT
- Vent: 1/4 in NPT
- Bolting: (4) 5/8-11 UNC
bright zinc plated carbon steel
- Head to shell seal

Maximum Allowable Working Pressure

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

Note: FNPT maximum pressure is 1610 psig 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 and Dimensions

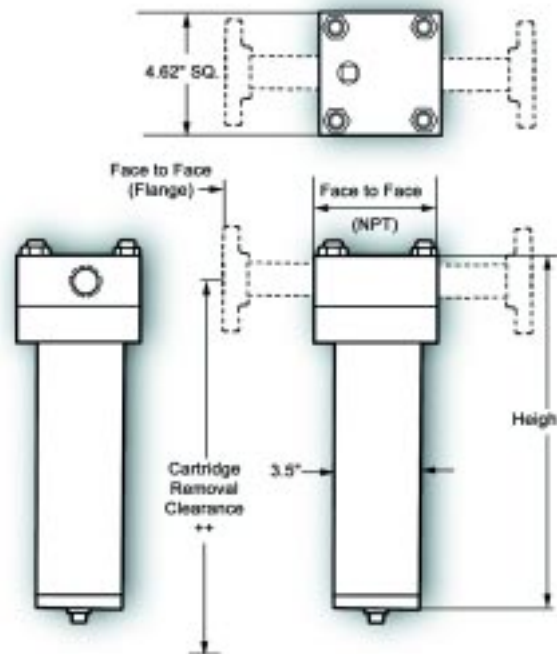
Model	Typical Aqueous [†] Flow Rate (gpm)	Cartridge Length (in)	Height (in) ⁺⁺	Inlet Face to Outlet Face (in)		Weight (lbs)		Cartridge Removal Clearance (in) ⁺⁺
				FNPT	Flanged	FNPT	Flanged	
MC(N or U)1S	6	10	14.5	4.62	12.62	37	45	22
MC(N or U)1D	12	20	24.5	4.62	12.62	46	54	42
MC(N or U)1T	18	30	34.5	4.62	12.62	55	63	62

[†] Actual flow is dependent on fluid viscosity, micron rating, contaminant, media type and desired initial pressure drop.

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

Ordering Information

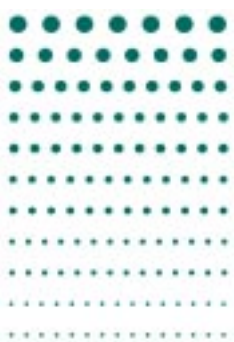
M	C	U	1	S	1	F	N	TC	XXX
Series	Material	Design	Columns	Length	Inlet/Outlet	I/O Type	Gasket Material	Internal Option	Special temperature for flanged units
	C = Carbon Steel S = 316 SS	N = Non-Code U = ASME U-Stamp	1 = 1 Element	S = 10" Cart. D = 20" Cart. T = 30" Cart.	1 = 1"	T = FNPT F = Flanged 150# H = Flanged 300# J = Flanged 600#	N = Buna-n E = EPR V = Viton* T = FEP encapsulated Viton* L = FEP encapsulated silicone	2-222 o-ring adapter Blank = center post for DOE	Blank = 250°(121°C)



Process Filtration Division

* A trademark of E. I. duPont de Nemours & Co.





Fulflo® LT Series Single Cartridge Vessels

■ SAN/Polypropylene

Single Cartridge Filter Vessel Series

Fulflo® Polymeric Vessels for Water Filtration

Parker Fulflo LT Series Polymeric Vessels are an ideal economical choice for low flow industrial and potable water applications. Standard and large diameter vessels accommodate 2-1/2 and 4-1/2 inch O.D. double-open-end Fulflo cartridges and meet FDA requirements for use with potable fluids. Both 10-in and 20-in vessels, with or without pressure relief vent, are available. Installation wrenches and brackets are optional.

Applications

- Potable Water
- Beverages
- Bottled Water
- DI Water
- Food Products
- Process Water
- Alkaline Parts Washing
- Compressor Condensate
- Industrial Discharge Water
- Leisure/Commercial Shipping Bilge Water
- Post Oil/Water Separator Polishing



Features and Benefits

- Fulflo® polymeric vessels are available in two diameters and lengths, with or without relief vent.
- The all-polymeric, corrosion-resistant LT series vessels are economical alternatives to stainless steel vessels when high temperature and high pressure are not specified.
- All models are made of materials that meet FDA requirements.
- The LTG model vessels provide both 1 in and 1-1/2 in NPT connection in same head.
- Positive head-to-shell "stop" prevents over tightening.
- Unique o-ring design ensures effective sealing by positive tangential contact and eliminates accidental misplacement.
- LT model vessels are ideal for Fulflo bonded, pleated and wound cartridges, as well as activated carbon core models MMCT-10, MC10-2, MC20-2 and MC30-2.
- LTG model vessels are ideal for Fulflo TruBind 400 series cartridges and 4-1/2 in O.D. wound cartridges in double-open-end style.
- Optional installation wrenches accommodate faster cartridge changeout.
- Mounting brackets are available for pipe and wall installation.
- LT series vessels are tested to industry standards of Water Quality Association for burst pressure, seal integrity, and fatigue resistance.

Process Filtration Division



Specifications

Materials of Construction:

- White talc-reinforced polypropylene head with clear styrene acrylonitrile (SAN) shell.
- Head-to-shell o-ring:
LT model: 2-240 Buna N
LTG model: 2-358 Buna N

Recommended Operating Conditions:

- Maximum operating temperature:
125°F (52°C) @ 100 psi (6.9 bar)
- Maximum operating pressure:
LT: 150 psi (10.3 bar) @ 75°F (22°C). LTG: 125 psi (8.6 bar) @ 75°F (22°C)
- Maximum recommended flow rate:
LT10: 6 gpm (23 lpm)
LT20: 12 gpm (45 lpm)
LTG10: 10 gpm (38 lpm)
LTG20: 20 gpm (76 lpm)

Connection Dimensions:

- LT: 3/4 in NPTF
- LTG: 1 and 1 1/2 in NPTF (dual connection)

Accepts Industry Standard Cartridge Sizes (Nominal):

- Lengths:
9 13/16 in (249 mm);
20 in (508 mm)
- I.D. 1 1/16 in (27mm)
- O.D. LT: 2 1/2 in (64 mm)
LTG: 4 1/2 in (114mm)

Optional Seal Configuration:

- LT: Accommodates 213 o-ring seal ("PR" cartridge code)

Available Options for LT Model

Option	Part Number
Wrench for 10 in Shell	6880-1-005
Wrench for 20 in Shell	6880-1-010
L-Bracket—Wall Mount	0820-6010
U-Bracket—Pipe Mount	0820-6015

Available Options for LTG Model

Option	Part Number
Wrench for 10 in Shell	6880-6000
Wrench for 20 in Shell	6880-6001
L-Bracket—Wall Mount	0820-6001

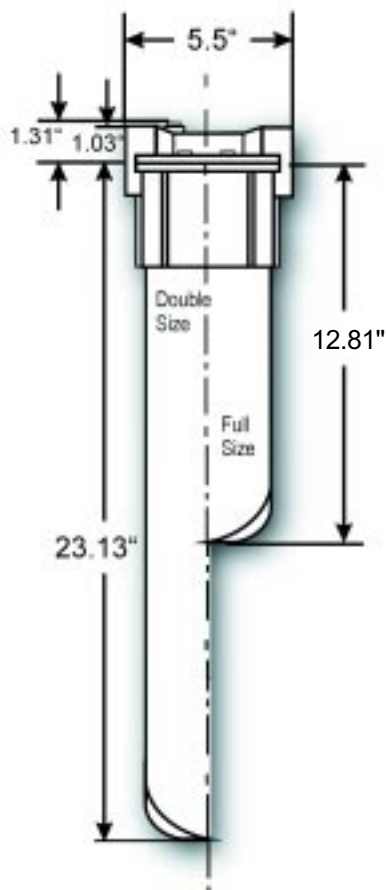
Available Vessel Part Numbers

LT Model	LTG Model
LT10	LTG10
LT10V	LTG10V
LT20	LTG20
LT20V	LTG20V

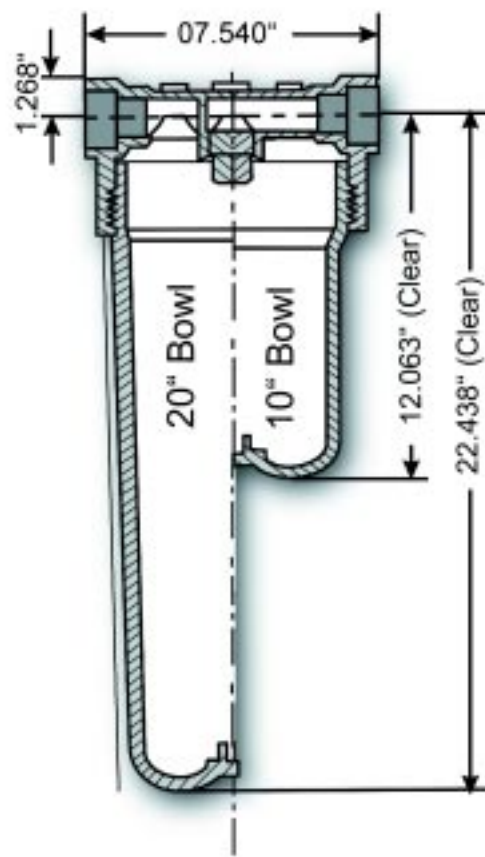
Ordering Information

LT	10	V
Series	Vessel Length (in)	Vent (in)
LT=Vessel for nominal 2 1/2 in O.D. cartridges	10 = 10 20 = 20	No Symbol = No Vent V = Vent

LTG=Vessel for nominal 4 1/2 in O.D. cartridges



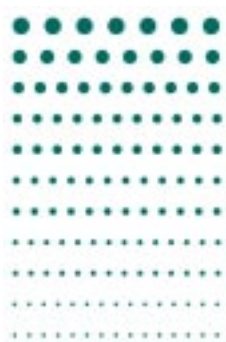
Model LT



Model LTG

Process Filtration Division





Advantage™ PFA Filter Vessels

■ Fluoropolymer

Single Cartridge Filter Vessel Series

Advantage™ PFA Vessels for Aggressive Aqueous Chemical Filtration

Parker Advantage PFA series fluoropolymer vessels are designed for the most challenging semiconductor and microelectronics chemical filtration applications. These high purity vessels accommodate all standard 2-222 single-open-end Advantage membrane cartridges. These vessels are available in 4-in, 10-in and 20-in lengths with vent, drain and sample port. Three common inlet/outlet configurations are available.

Applications

UHP Water

- Ozonated
- Cold
- Hot

UHP Chemicals

- Acids
- Solvents
- Photoresists
- Alkalies
- Developers
- Mixed Acids
- Strippers

Equipment

- Point-Of-Use Tools
- Chemical Delivery System
- Cleaning
- Etching
- Photolithography
- Wet Benches



Features and Benefits

- Advantage PFA vessels are available in three sizes to accommodate most common cartridge lengths.
- The PFA corrosion-resistant vessels meet industry standards for fatigue resistance, burst strength and negligible extractables.
- Three inlet/outlet connection configurations are available for versatile installation capability.
- PFA series vessels are ideal for Parker Advantage AF and AF+ pleated membrane cartridges to provide a 100% fluoropolymer filtration system.
- Three-piece construction with PVDF locking ring for ease of filter element changeout.
- Non-rotating bowl with locking ring ensures leakproof torsion-free sealing.
- Designed for clean room applications.
- Preflushed with UHP water for high purity contact surface.

Process Filtration Division



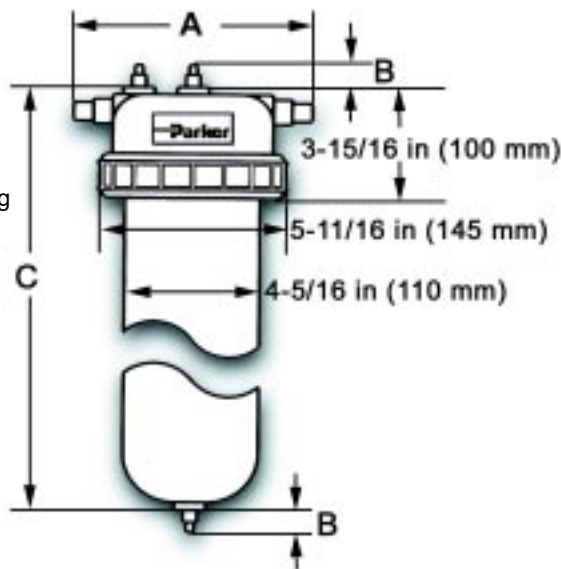
Specifications

Materials of Construction:

- Head and bowl: PFA (440 HP)
- Locking ring: PVDF (non-wetted)
- Head-to-bowl standard o-ring: 2-344 FEP encapsulated Viton*
Options: Various-refer to ordering information.

Dimensions:

- Vessels: Refer to drawing
- Inlet/Outlet connections:
NPTF: 3/4 in
Parflare: 3/4 in
Butt Weld pipe: 3/4 in
- Vent and sample port:
NPTF: 1/4 in
Parflare: 1/4 in
- Drain:
NPTF: 1/4 in
Parflare: 1/4 in



Vessel Dimensions

A
Parflare = 7-7/8 in (200 mm)
Butt Weld Pipe = 10 in (254 mm)
NPTF = 7-1/16 in (179 mm)

B
Parflare = 1 in (25.4 mm)
NPTF = 0 in

C
4 in Vessel = 8-7/16 in (214 mm)
10 in Vessel = 13-9/16 in (345 mm)
20 in Vessel = 23-7/16 in (595 mm)

Maximum Recommended

Operating Conditions:

- Pressure and Temperature:
150 psig (10.3 bar) @ 77°F (25°C)
60 psig (4.1 bar) @ 221°F (105°C)
- ? Flow rate:
3 gpm (11.4 lpm) for PFA 04
6 gpm (22.7 lpm) for PFA10
12 gpm (45.4 lpm) for PFA20

Accepts Industry Standard Cartridge Sizes:

- ? 2-1/2 in (64 mm) to 3-1/4 in (83 mm) OD
x 1 in (26 mm) ID x 4 in (102 mm),
10 in (508 mm) or 20 in (508 mm) long
with double 2-222 O-ring. (Parker "TC" style)
- ? Parker Advantage membrane cartridges:
AF: 2.5 in (64 mm) dia
AF+: 3.25 in (83 mm) dia
PF: 2.7 in (69 mm) dia

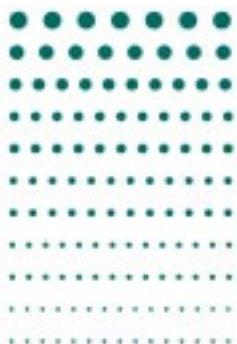
Ordering Information

PFA	10	F	08	F	02	F	02	T
Material of Construction	Bowl Length	Inlet/Outlet Configuration	Inlet/Outlet Size	Drain Configuration	Drain Size	Vent/Sample Port Configuration	Vent/Sample Port Size	Seal Material
PFA=PFA440HP head and bowl with PVDF closure nut	04 = 4 in 10 = 10 in 20 = 20 in	F= Parflare N=NPTF W= Butt Weld Pipe	08 = 3/4 in	F= Parflare N=NPTF	02= 1/4 in	F= Parflare N=NPTF	02= 1/4 in	D = Chem Raz 570 K = Kalrez 4079 L = FEP/Silicone P = Parofluor T = FEP/Viton* V = Viton* X = None

Process Filtration Division

* Trademark of E. I. duPont de Nemours & Co.





Fulflo® NP Filter Vessels

■ Natural Polypropylene

Single Cartridge Filter Vessel Series

Fulflo® Natural Polypropylene Vessels for High Purity Applications

Parker's Fulflo NP series vessels feature pure natural polypropylene construction. The NP series is an ideal economical alternative to stainless steel and fluoropolymer vessels for filtration of corrosive fluids. They are essential for applications and processes demanding high purity filtration. Availability of 10 inch and 20 inch lengths and both single and double-open-end seal designs adds additional versatility.

Markets

- Electronics
- Pharmaceutical
- Chemical Process
- Photographic
- Electroplating
- Pure Water
- Food & Beverage

Applications

- Electronic Grade Chemicals
- Process Gases
- Organic Solvents
- Photographic Solutions
- Inorganic Chemicals
- DI Water
- Potable & Edible Fluids



Features and Benefits

- Fulflo NP series vessels available in two lengths and two seal designs offer versatility.
- Several O-ring options maximize compatibility choices. Viton is standard.
- Smooth fluid contact surfaces prevent bacteria and contaminant build-up.
- U-bracket available for pipe mounting.
- Mounting bosses in head accommodate L-bracket.
- Securely retained head-to-shell O-ring ensures effective sealing by positive tangential contact and eliminates accidental misalignment.
- Positive head-to-shell "stop" prevents overtightening.
- Individual packaging ensures cleanliness until use.
- NP vessels accept all standard double-open-end and single-open-end 2-222 O-ring design Fulflo filter cartridges.
- NP vessels of pure polypropylene meet FDA requirements for edible and potable liquid filtration.
- Available with pressure relief vent or threaded vent and drain.
- Service wrenches available for easy installation.
- NP vessels totally incinerable after useful life.

Process Filtration Division



Single Cartridge Filter Vessel Series

Specifications

Materials of Construction:

- Vessel: 100% natural FDA grade polypropylene
- Head-to-shell 2-240 O-Ring:
 - Standard (Industrial Grade): Viton
 - Optional (FDA Grade): Buna-N, EPDM, Silicone, FEP encapsulated silicone
- Pressure Relief Button O-Ring: Buna-N only

Maximum Recommended Operating Conditions:

- Temperature: 125°F (52°C) @ 100 psi (6.9 bar)
- Pressure: 150 psi (10.3 bar) @ 75°F (22°C)
- Flow Rate: 6 gpm (23 lpm) for 10 in vessel; 12 gpm (45 lpm) for 20 in vessel

Recommended Cartridge Dimensions:

- NP10: 2-3/8 in to 2-3/4 in O.D. x 1 in I.D. x 9-5/8 in to 9-13/16 in long
- NP20: 2-3/8 in to 2-3/4 in O.D. x 1 in I.D. x 19-7/8 in to 20-1/16 in long

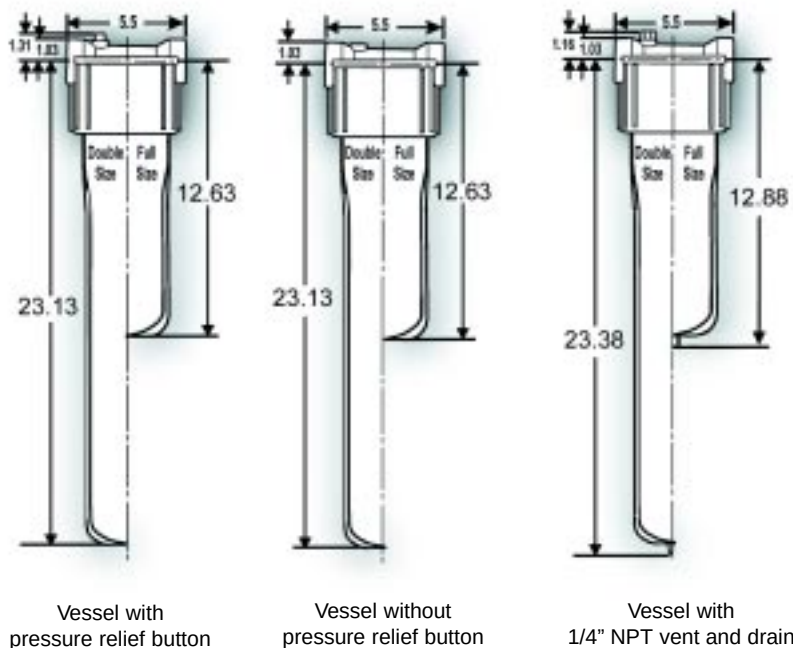
Connection Dimensions:

- Inlet/Outlet: 3/4 in (19 mm) NPTF
- Vent/Drain: 1/4 in (6.4 mm) NPTF

Cartridge Seal Designs:

- "TC": Single-Open-End with 222 O-ring receptacle
- "DO": Double-Open-End with knife edge seal; also accepts 213 O-ring seal cartridge (PR code)

■ Vessel Assembly Dimensions:



■ Compatible Semi-Conductor Chemicals (125°F max. temp.):

Acetic Acid 50%
Acetone 99.5%
Ammonium Fluoride 40%
Ammonium Hydroxide 10%
Hydrochloric Acid 37%
Hydrofluoric Acid 49%, 52%
Nitric Acid 10%
Phosphoric Acid 85%
Potassium Hydroxide 45%
Sodium Hydroxide 50%
Tetrachloroethylene 99.0%

■ Standard Vessel Assemblies:

NP10-DO-N-V	NP20-DO-N-V
NP10-DO-R-V	NP20-DO-R-V
NP10-DO-DV-V	NP20-DO-DV-V
NP10-TC-N-V	NP20-TC-N-V
NP10-TC-R-V	NP20-TC-R-V
NP10-TC-DV-V	NP20-TC-DV-V

Ordering Information

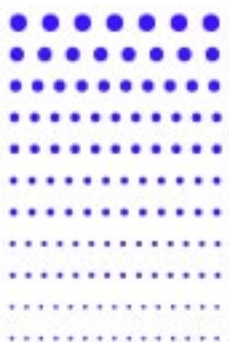
NP	10	TC	DV	V
Vessel Type	Shell Length	Cartridge Seal Design	Vent/Drain Options	Head-to-Shell 240 O-Ring
Natural Polypropylene	10 = 10 in 20 = 20 in	DO = Double-Open-End (gasket seal) TC = Single-Open-End (222 O-ring seal)	D = 1/4 in Female NPT Drain (Plugged) N = No Vent, Drain or Pressure Relief Button R = Pressure Relief Button* V = 1/4 in Female NPT Vent (Plugged)	E = EPDM (FDA Grade) L = FEP/silicone (FDA grade) N = Buna-N (FDA Grade) S = Silicone (FDA Grade) V = Viton** (Industrial Grade)

* Pressure Relief Button ("R") not recommended for hazardous fluid applications.

**A trademark of E. I. du Pont de Nemours & Co.

Process Filtration Division





Fulflo® WH Filter Vessels

- 304 Stainless Steel
- 316L Stainless Steel

Multi-Cartridge Filter Vessel Series

WH Vessels

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 bead blasted finish provides superior corrosion resistance and an excellent appearance. The swing type closure bolts and hinged cover design makes cartridge change-out quick and easy.

Applications

- Potable Water
- Process Water
- Edible Oils
- Beverages
- Chemicals
- Solvents
- Pre-Reverse Osmosis



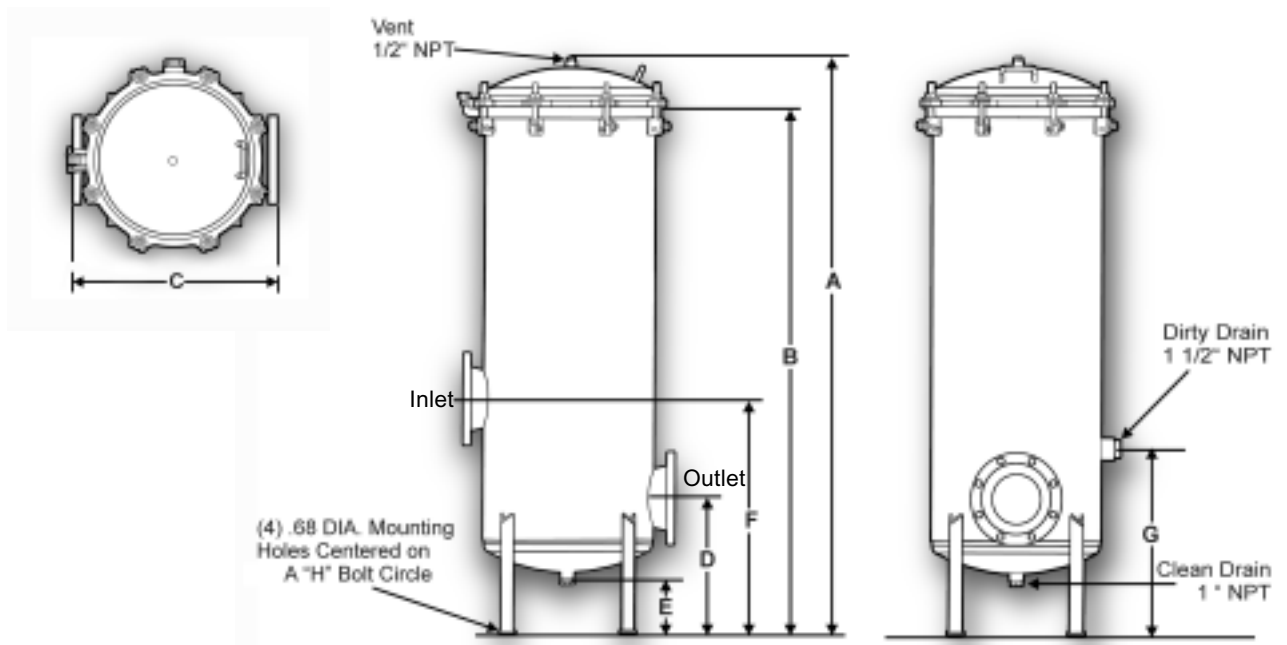
Features and Benefits

- Hinged cover and swing bolt closure for fast, easy cartridge changeout.
- Maximum design pressure is 150 psig (10.3 bar) at 250°F (121°C) for use in a wide range of operating conditions.
- 100% stainless steel for corrosion resistance.
- Dual purpose cartridge seats for use with double open end and 2-222 O-ring single open end cartridges.
- Standard flash electropolish eliminates need for passivation finish.
- 316 Stainless steel cartridge seats and tri-fold guides for long term use.
- Standard Buna-N O-ring with optional fluoroelastomer and EPR for wide range of applications.
- Vent, clean drain and dirty drain connections for safe, clean operation.
- Three types of finishes available for a wide range of applications.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



■ Dimensions

Model	Cartridge Qty.	Typical Flow +	A	B	C	D	E	F	G	H	Weight
WH*9T3F*	(9) 30"	189	54.62	48.50	15.46	14.00	5.81	21.50	18.25	10.42	130
WH*9Q3F*	(9) 40"	252	64.80	58.69	15.46	14.00	5.81	21.50	18.25	10.42	140
WH*12T3F*	(12) 30"	252	53.42	48.63	16.77	14.00	6.89	21.50	18.25	11.69	125
WH*12Q3F*	(12) 40"	336	63.48	58.69	16.77	14.00	6.89	21.50	18.25	11.69	135
WH*16T4F*	(16) 30"	336	53.68	48.63	19.02	14.00	6.62	24.50	18.25	13.71	160
WH*16Q4F*	(16) 40"	448	63.74	58.69	19.02	14.00	6.62	24.50	18.25	13.71	175
WH*21T4F*	(21) 30"	441	53.68	48.63	21.27	14.00	6.35	24.50	18.25	15.73	180
WH*21Q4F*	(21) 40"	588	63.74	58.69	21.27	14.00	6.35	24.50	18.25	15.73	195
WH*29T6F*	(29) 30"	609	58.00	52.56	23.46	16.00	6.59	27.75	22.00	17.74	260
WH*29Q6F*	(29) 40"	812	68.05	62.63	23.46	16.00	6.59	27.75	22.00	17.74	280
WH*35T6F*	(35) 30"	735	58.00	52.56	25.46	16.00	6.32	27.75	22.00	19.75	290
WH*35Q6F*	(35) 40"	980	68.05	62.63	25.46	16.00	6.32	27.75	22.00	19.75	310

+Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, and media type. Consult media flow charts for each application. Flow rates shown do not consider inlet velocity limitations.

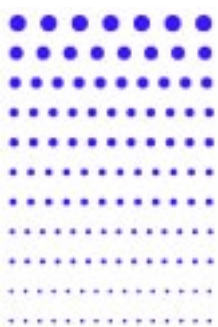
Ordering Information

WH	G	16	T	4	E	E
Design Series	Material of Construction	Number of Columns	Cartridge Length	Inlet/Outlet Size	Inlet/Outlet Type	Finish
	G = 304 SS	9	T = 30 in	3 = 3 in	F = ANSI 150 lb. Flange	P = Passivate
	S = 316/L SS	12	Q = 40 in	4 = 4 in		E = Electro Polish
		16		6 = 6 in		
		21				
		29				
		35				

Note: Passivation ("P") option available only for WH29 and WH35 models, which are not flash electropolished.

Process Filtration Division





Fulflo® WY Filter Vessels

- Iron and Steel
- Stainless Steel

Multi-Cartridge Filter Vessel Series

Fulflo® WY Multi-Cartridge Filter Vessels Suitable for a Wide Range of Industrial Applications

Fulflo® WY Multi-Cartridge Filter Vessels are specifically designed for the filtration of liquids used in inks and paints and are also suitable for other industrial applications. The WY vessel series can be quickly disassembled for fast and easy cleaning and servicing.

WY Filter Vessels accommodate either double-open-end (DOE) or single-open-end (SOE) filter cartridges in 10 in, 20 in and 30 in lengths.

Applications

- Inks
- Paints & Coatings
- Liquid Fuels
- Food & Beverage
- Pharmaceuticals
- Liquid Chemicals
- Petro Chemicals
- Mineral & Vegetable Oils
- Hydraulic Fluids



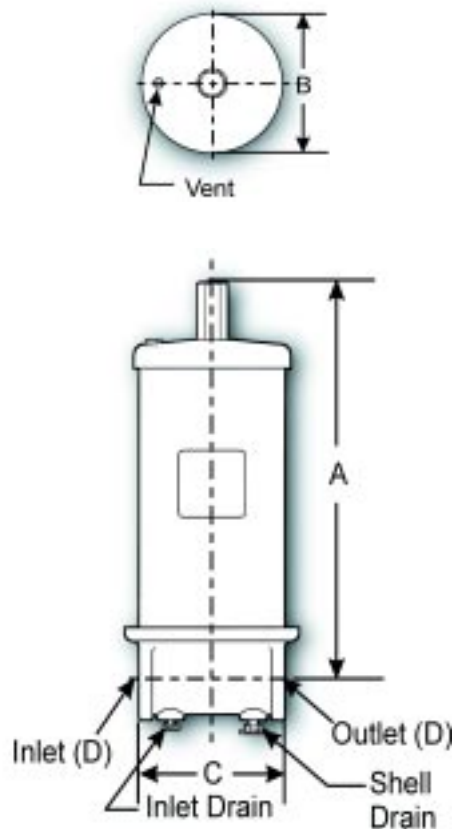
Features and Benefits

- In-line pipe connections for easy installation.
- Vents and drains standard on all models.
- Single center bolt construction allows filter head and shell separation for quick servicing and easy cleaning.
- Standard Buna-N flat gasket with optional Viton*, fluoropolymer or asbestos substitute gaskets.
- Dual purpose cartridge seats for use with double open end and 2-222 o-ring single open end cartridges.
- Flow rates to 90 gpm (341 lpm).
- Vents are 1/4-18 NPT with cock.
- Maximum operating pressure is 150 psi (10.3 bar) at 150°F (66°C).
- WY3 models have one 3/8-18 NPT body drain and one 1/4-NPT inlet drain.
- WYF models have two 1/2-14 NPT body drains and two 1/4-18 NPT inlet/outlet drains.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Design Specifications

Models		Maximum Flow Rate [†] (gpm)	No. & Length of Cartridges (in)	Dimensions (in)			D (NPT)	Shipping Weight (lbs)
Iron & Steel	Stainless Steel			A	B	C		
WY3S-10-1-1/2	WY3SS-10-1-1/2	15	(3) 10	17.63	7.56	6.63	1.5	46
WY3DS-10-1-1/2	WY3DSS-10-1-1/2	30	(3) 20	27.63	7.56	6.63	1.5	62
WYFS-10-2	WYFSS-10-2	30	(6) 10	18.75	9.38	8	2	68
WYFDS-10-2	WYFDSS-10-2	60	(6) 20	28.75	9.38	8	2	94
WYFTS-10-2	WYFTSS-10-2	90	(6) 30	38.75	9.38	8	2	120

[†] Rated liquid capacity based on initial pressure drop of 3 psi (0.2 bar) with a 20µm cotton wound depth cartridge and fluid viscosity equivalent to water. Flow rates for other fluids vary according to nature of fluid, contaminant, degree of clarity desired and operating conditions. Particle removal curves are available to help figure pressure drop and cleaning efficiency for every application.

Supplemental Data

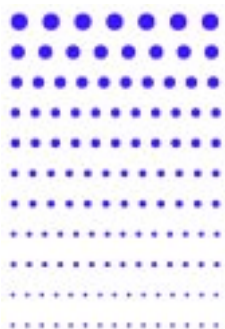
Raised face flanges can be supplied to mate with flanged piping. Add F suffix.

Ordering Information

WY	3	D	S	10	2F
Design Series	Number of Columns	Cartridge Length (in)	Material	Standard	Inlet/Outlet Size
	3 = 3 F = 6	No Symbol = 10 D = 20 T = 30	S = Carbon Steel SS = 316 Stainless Steel		F = Flanged No Symbol = NPT

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.



Fulflo® FH5 Filter Vessels

- Carbon Steel
- 304 Stainless Steel
- 316 Stainless Steel

Multi-Cartridge Filter Vessel Series

FH5 Filter Vessels Feature Patented Safety Latch Design

Fulflo® FH5 Cartridge Non-Code Filter Vessels are lightweight and provide economical filtration of liquids. A patented* safety-latch design prevents inadvertent separation of the head from the shell in the event of improper venting prior to clamp removal.

The FH5 Vessel Series accommodates either double-open-end (DOE) or single open-end (SOE) filter cartridges in 10 in, 20 in and 30 in lengths.

Applications

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



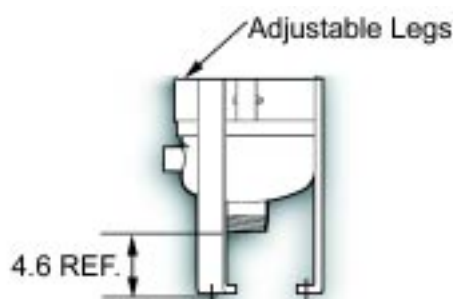
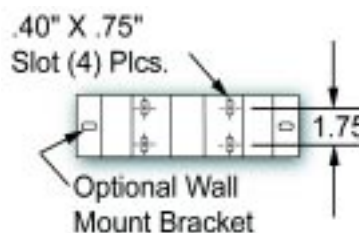
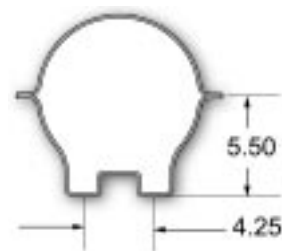
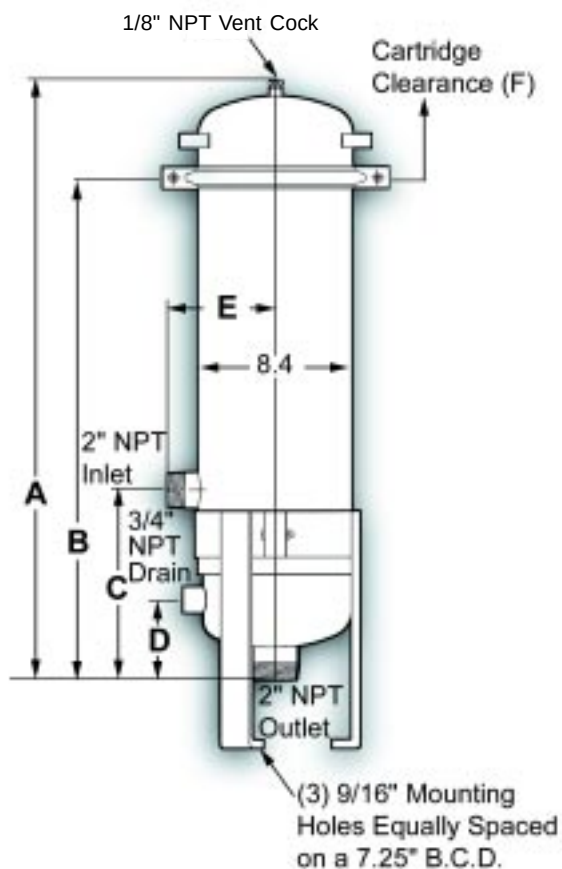
Features and Benefits

- Split-shell construction with V-band clamp permits easy cleaning and cartridge change out.
- Maximum design pressure is 100 psig (6.9 bar) at 200°F (94°C).
- Threaded vent and drain connections.
- Dual purpose cartridge seats for use with double open end and 2-222 O-ring single open end cartridges.
- Air vent, drain plug, leg assembly and optional wall bracket available.
- The shell O-ring is Buna-N. Butyl, Viton** and EPR elastomer O-rings available.
- Side inlet; cover opens without disconnecting piping.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Design Specifications

Models Iron & Steel	No. & Length of Cartridges (in)	Aqueous Flow (gpm)	Dimensions (in)		C	D	E	F	Shipping Weight (lbs)
			A	B					
FH510	(5) 10	25	22.06	16.88	9.69	4.75	4.95	4.95	45
FH520	(5) 20	50	32.19	26.94	9.69	4.75	5.00	5.00	55
FH530	(5) 30	75	42.25	37	9.69	4.75	5.00	5.00	65

- Rated liquid capacity based on initial pressure drop of 3 psi (0.2 bar) with a 20µm cotton wound depth cartridge and fluid viscosity of water. Steel models are furnished as follows: Standard models—stainless steel internals and iron pipe plug for vent and drains: FH SS = 304 SS construction with 316 SS internals and 304 vent plug. 6FH SS = 316 SS construction with 316 SS internals and vent plug.
- Actual flow rate is dependent on fluid viscosity, micron rating, contaminant and media type.

Ordering Information

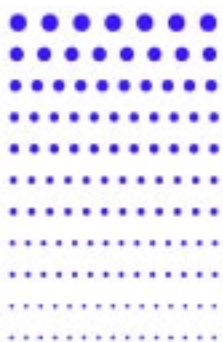
FH	SS	5	20	—	L
Design Series	Material	Number of Columns	Cartridge Length (in)		Options
	No Symbol = Carbon Steel		10		L = Legs
	SS = 304 SS		20		W = Wall Mount
	6SS = 316 SS		30		P = Plain

Process Filtration Division

* U.S. Patent No. 4,660,779

** A trademark of E. I. du Pont de Nemours & Co.





Fulflo® FH Filter Vessels

- 304 Stainless Steel
- 316L Stainless Steel

Multi-Cartridge Filter Vessel Series

FH 7 and 12 Cartridge Filter Vessels

The FH 7 and 12 cartridge filter vessels are a lightweight, economical industrial and commercial design suitable for a wide variety of filtration applications. The 100% stainless steel and bead blasted finish provides superior corrosion resistance and an excellent appearance. The closure V-retainer coupling features a unique filtration industry exclusive design that allows both the clamp and cover to remain attached to the vessel body during cartridge change-out. This hinged clamp and cover design makes cartridge change-out quick and easy.

Applications

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



Features and Benefits

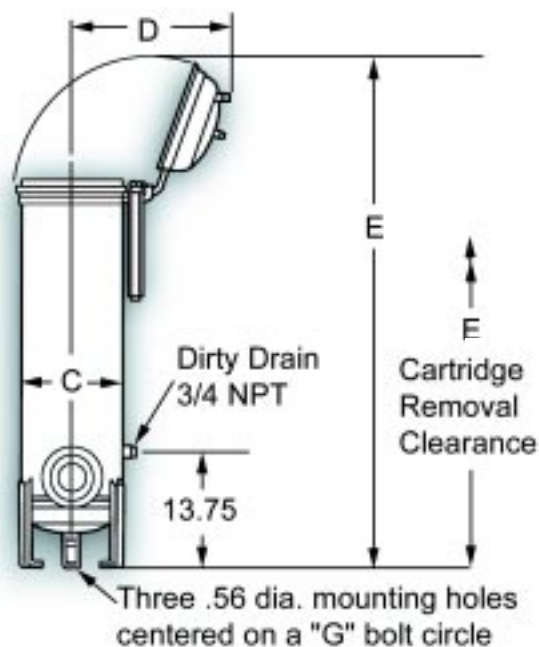
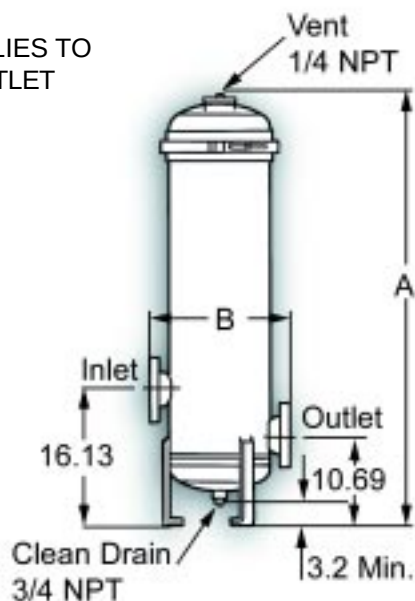
- Hinged cover and V-retainer coupling for fast, easy cartridge changeout.
- V-retainer coupling remains attached to the filter body to minimize loose parts during cartridge change-out.
- Maximum design pressure is 150 psig (10.3 bar) at 250°F (126°C) for use in a wide range of operating conditions.
- 100% stainless steel for corrosion resistance.
- Stainless steel clamp for corrosion free operation.
- Dual purpose cartridge seats for use with Double Open End and 2-222 O-ring cartridges.
- Standard flash electropolish eliminates need for passivation finish.
- 316 Stainless steel cartridge seats and tri-fold guides for long term use.
- Standard Buna-N O-ring with optional Viton® and EPR for wide range of applications.
- Vent, clean drain and dirty drain connections for safe, clean operation.
- Three connection styles to match a variety of piping systems.
- Three types of finishes available for a wide range of applications.

Process Filtration Division



Multi-Cartridge Filter Vessel Series

"B" DIM. APPLIES TO ALL INLET/OUTLET TYPES



Dimensions

Model	Cartridge Qty.	Typical flow+	A	B	C	D	E	F	G	Weight
FH*7D2T*	(7) 20"	98	40.5	12.5	10.0	18	48.9	55	8.24	68
FH*7D2F*	(7) 20"	98	40.5	14.5	10.0	18	48.9	55	8.24	76
FH*7D2C*	(7) 20"	98	40.5	13.0	10.0	18	48.9	55	8.24	68
FH*7T2T*	(7) 30"	147	50.5	12.5	10.0	18	58.9	75	8.24	77
FH*7T2F*	(7) 30"	147	50.5	14.5	10.0	18	58.9	75	8.24	87
FH*7T2C*	(7) 30"	147	50.5	13.0	10.0	18	58.9	75	8.24	77
FH*7Q2T*	(7) 40"	196	60.6	12.5	10.0	18	68.9	95	8.24	86
FH*7Q2F*	(7) 40"	196	60.6	14.5	10.0	18	68.9	95	8.24	98
FH*7Q2C*	(7) 40"	196	60.6	13.0	10.0	18	68.9	95	8.24	86
FH*12T3F*	(12) 30"	252	51.1	16.5	12.0	19	60.9	75	10.24	114
FH*12T3C*	(12) 30"	252	51.1	14.75	12.0	19	60.9	75	10.24	96
FH*12Q3F*	(12) 40"	336	61.2	16.5	12.0	19	70.9	95	10.24	128
FH*12Q3C*	(12) 40"	336	61.2	14.75	12.0	19	70.9	95	10.24	110

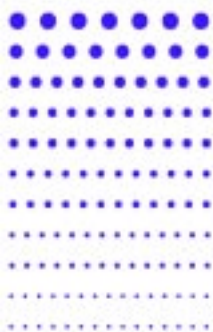
+Actual flow rate is dependent on fluid viscosity, micron rating, contaminant, and media type. Consult media flow charts for each application.

Ordering Information

FH	G	7	T	3	F	E
Design Series	Material of Construction	Number of Columns	Cartridge Length	Inlet/Outlet Size	Inlet/Outlet Type	Finish
	G = 304 SS S = 316/L SS	7 12	D = 20 in T = 30 in Q = 40 in	2 = 2 in 3 = 3 in	F = ANSI 150 lb. Flange T = FNPT C = Sanitary	E = Electro Polish

Process Filtration Division





Fulflo® SF Filter Vessels

- Carbon Steel
- 304 and 316 Stainless Steel

Multi-Cartridge Filter Vessel Series

High Flow Rates With Fulflo® SF ASME Code Vessels

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.

Applications

- Animal Oils
- Concentrated Alkalies
- Dilute Acids & Alkalies
- Mineral Acids
- Organic Acids
- Solvents
- Oxidizing Agents
- Petroleum Oils
- Photo Solutions
- Potable Liquids
- Vegetable Oils
- Water



Features and Benefits

- Designed and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, U or UM stamp.
- Non-code design and construction (parallel to code standards) available.
- 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 and 2-222 O-ring single open end cartridges.
- All SF models feature swing bolts with eyenuts for easier cleaning and servicing.
- O-ring seals provide positive closure.
- Standard Buna-N O-rings with optional Viton* elastomer, neoprene, ethylene propylene rubber and fluoropolymer elastomer O-rings are also available for temperatures up to 500°F (260°C).
- Hydraulic coverlifts optional on SF12 and SF19 models.

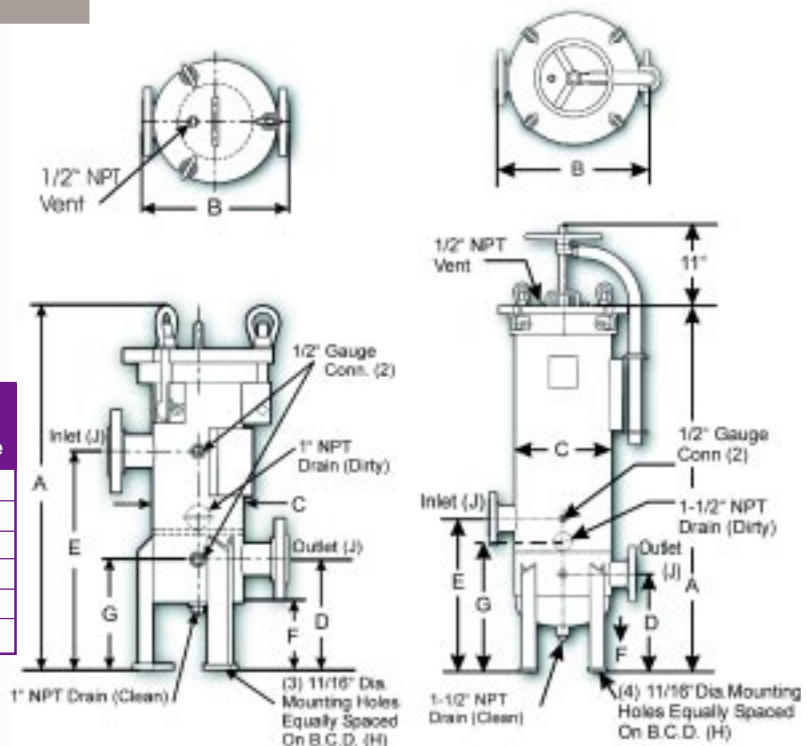
Process Filtration Division



? Maximum Operating Conditions

Material of Construction	Maximum Operating Pressure (psi at 250°F) [†]	Maximum Design Temperature
Carbon Steel	150 psi (10.3 bar)	500°F (260°C)
Carbon Steel	300 psi (20.7 bar)	500°F (260°C)
304 Stainless Steel	150 psi (10.3 bar)	300°F (150°C)
304 Stainless Steel	300 psi (20.7 bar)	300°F (150°C)
316 Stainless Steel	150 psi (10.3 bar)	400°F (204°C)
316 Stainless Steel	300 psi (20.7 bar)	400°F (204°C)

[†] Operating temperature limited by standard gasket material and exterior paint.



■ Design Specifications

Model	No. & Length of Cart. (in)	Max. Flow (gpm)	Dimensions (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 in to this dimension for hydraulic coverlift.

^{††} Inlet and outlet size standard ASA flanges.

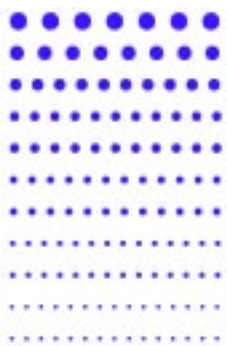
Ordering Information

4	SF	12	2	3F	K1
Material	Design Series	Number of Columns	Cartridge Length (in)	Inlet/Outlet Flange Size	Coverlift Option
No Symbol = Carbon Steel	SF = 304 Stainless Steel	3	1 = 10	2	K1 = Mechanical
4 = 304 Stainless Steel	SF = 316 Stainless Steel	6	2 = 20	3	K2 = Hydraulic
6 = 316 Stainless Steel	HSF = 300 PSI Design	12	3 = 30	4	
	CSF = Non-Code Design	19	4 = 40		

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.





Fulflo® HT Filter Vessels

■ Carbon Steel

Multi-Cartridge Filter Vessel Series

Filter Heat Transfer Oils and Other High Temperature Fluids with Fulflo HT Series ASME Code Vessels

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.

Applications

- Heat Transfer Oils
- High Temperature Oils
- Hot Fluids and gases



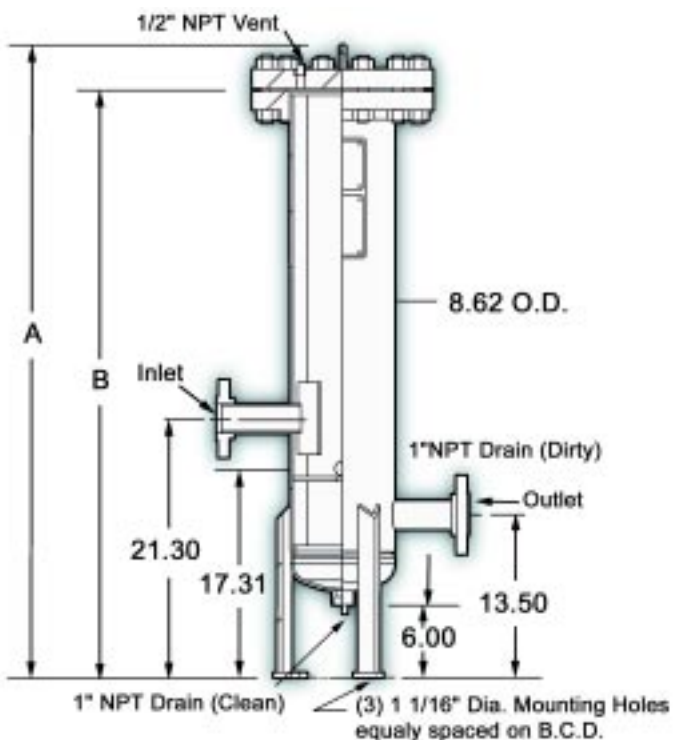
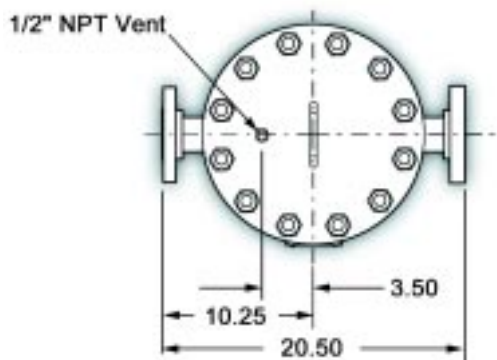
Features and Benefits

- 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.
- 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.
- Extended nameplate so design information is visible after protective insulation is installed.
- Designed for minimum pressure drop.
- Designed and fabricated in accordance with ASME Boiler and Pressure Vessel code, U or UM stamp.
- Design: 123 PSIG at 650°F and 418 PSIG at 650°F.
- Dual purpose cartridge seat for use with double open end and 2-222 O-ring single open end cartridges.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Model	No. & Length of Cart. (in)	Flow (gpm) [†]	Dimensions (in)		Shipping Weight (lbs)	
			A	B	150U, UM	300U, 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

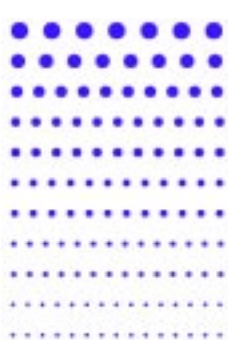
[†] Based on 5 gpm per 10" cartridge

Material of Construction	Maximum Operating Pressure	Maximum Design Temperature
Carbon Steel	123 psi (8.48 bar)	650°F (343°C)
Carbon Steel	418 psi (28.82 bar)	650°F (343°C)

Ordering Information

HT	6	1	2F	UM150
Design Series High Temperature	Number of Columns	Cartridge Length 1 - 10 in 2 - 20 in 3 - 30 in	Inlet/Outlet Flange Size 2 in	Code Stamp UM150 UM300 U150 U300

Process Filtration Division



Fulflo® S Filter Vessels

- Carbon Steel
- 304 and 316 Stainless Steel

Multi-Cartridge Filter Vessel Series

Fulflo® S Series ASME Code Filter Vessels

Fulflo® S Series Multi-Cartridge Filter Vessels meet a broad range of liquid and gas applications for flow rates up to 2,040 gpm (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 and 40 in equivalents.

Applications

- Liquid
- Gas
- Food & Beverage
- Chemical Processes
- Petrochemical
- Paints & Coatings
- Industrial



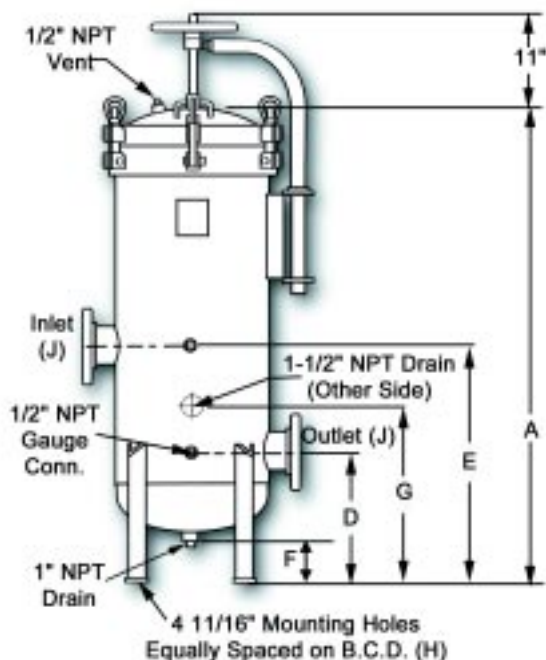
Features and Benefits

- Built in accordance with ASME boiler and pressure vessel code.
- Available in 150 psi (10.3 bar) and 300 psi (20.7 bar) designs.
- Non-code design and construction (parallel to code standards) available.
- 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 double open end and 2-222 O-ring single open end cartridges.
- Buna-N O-ring closure seal provides positive cover sealing.
- Viton* elastomer, neoprene, ethylene propylene rubber and fluoropolymer elastomer O-rings are also available for temperatures up to 500°F (261°C).
- All S models feature swing bolts with closures for quick cleaning and servicing.
- Accepts double-open-end (DOE) or single-open-end (SOE) cartridges.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Maximum Operating Conditions

Material of Construction	Maximum Operating Pressure (psi at 250°F) †	Maximum Design Temperature
Carbon Steel	150 psi (10.3 bar)	500°F (260°C)
Carbon Steel	300 psi (20.7 bar)	500°F (260°C)
304 Stainless Steel	150 psi (10.3 bar)	300°F (150°C)
304 Stainless Steel	300 psi (20.7 bar)	300°F (150°C)
316 Stainless Steel	150 psi (10.3 bar)	400°F (204°C)
316 Stainless Steel	300 psi (20.7 bar)	400°F (204°C)

† Operating temperature limited by standard gasket material and exterior paint.

150 psi (10.3 bar) Design Specifications

Model	No. & Length of Cartridges (in)	Maximum Flow (gpm)	Dimensions (in)										Shipping Weight (lbs)
			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.

Ordering Information

4	S	35	3	4F	K1
Material	Design Series	Number of Columns	Cartridge Length (in)	Inlet/Outlet Flange Size	Coverlift Option
No Symbol = Carbon Steel	S = Dished Head (25-102)	25	3 = 30	4F = 4 in Flange	K1 = Mechanical
4 = 304 Stainless Steel	HS = High Pressure	35	4 = 40	6F = 6 in Flange	K2 = Hydraulic
6 = 316 Stainless Steel	CS = Non-Code	40		8F = 8 in Flange	
		52			
		85			
		102			

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.





Fulflo® MP Filter Vessels

Multi-Cartridge Filter Vessel Series

Fulflo® MP (Membrane Protectors) Filter Vessels Protect Membranes by Prefiltering R.O. Feed Water

MP Filter Vessels are ideal for a wide range of filtration applications including prefiltration 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.

Applications

- Brackish and Sea Water
- Semiconductor Process Water
- Boiler Feed Water
- Reverse Osmosis Prefiltering
- Potable Water
- Electronic Rinse Water
- Deionized Water



Features and Benefits

- Flow rates from 108 gpm to 3520 gpm.
- Pressure ratings from 100 psi (6.9 bars) to 150 psi (10.3 bars).
- 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.

Process Filtration Division



Multi-Cartridge Filter Vessel Series

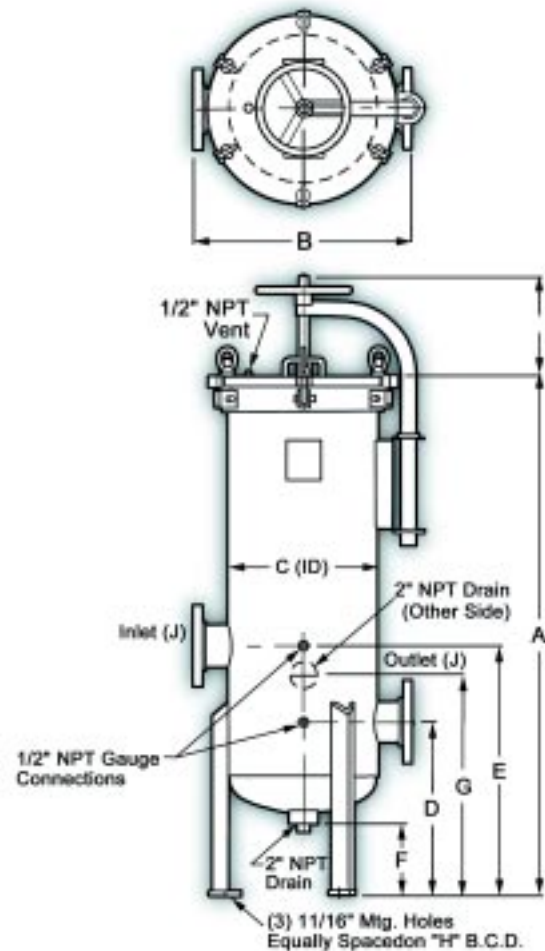
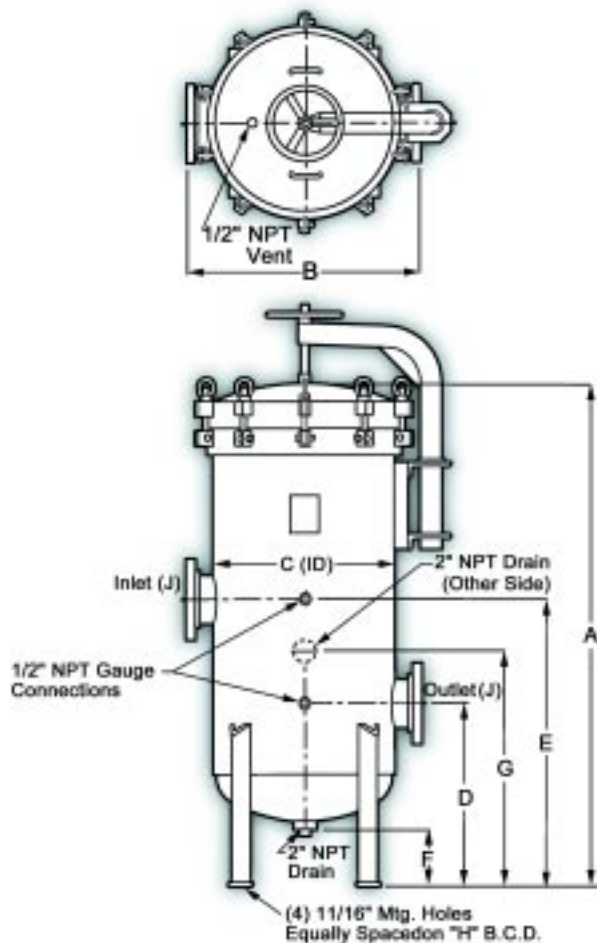
■ Fulflo® MP Filter Vessels Throughput Based on flow of water (in gpm) per 10 in cartridge

10 in Cartridges	Filter Model	At 3 gpm** per 10 in (gpm)* (mgd)*	At 3.5 gpm per 10 in (gpm) (mgd)	At 4 gpm per 10 in (gpm) (mgd)	At 4.5 gpm per 10 in (gpm) (mgd)	At 5 gpm per 10 in (gpm) (mgd)
Vertical Vessels						
36	MP12-3-3FK1	108 0.2	126 0.2	144 0.2	162 0.2	180 0.3
48	MP12-4-4FK1	144 0.2	168 0.2	192 0.3	216 0.3	240 0.3
63	MP21-3-4FK1	189 0.3	221 0.3	252 0.4	284 0.4	315 0.5
84	MP21-4-4FK1	252 0.4	294 0.4	336 0.5	378 0.5	420 0.6
87	MP29-3-4FK1	261 0.4	305 0.4	348 0.5	392 0.6	435 0.6
105	MP35-3-6FK1	315 0.5	368 0.5	420 0.6	473 0.7	525 0.8
116	MP29-4-6FK1	348 0.5	406 0.6	464 0.7	522 0.8	580 0.8
120	MP40-3-6FK1	360 0.5	420 0.6	480 0.7	540 0.8	600 0.9
140	MP35-4-6FK1	420 0.6	490 0.7	560 0.8	630 0.9	700 1.0
156	MP52-3-6FK1	468 0.7	546 0.8	624 0.9	702 1.0	780 1.1
160	MP40-4-6FK1	480 0.7	560 0.8	640 0.9	720 1.0	800 1.2
208	MP52-4-8FK1	624 0.9	728 1.0	832 1.2	936 1.3	1040 1.5
258	MP86-3-8FK1	774 1.1	903 1.3	1032 1.5	1161 1.7	1290 1.9
309	MP103-3-8FK1	927 1.3	1082 1.6	1236 1.8	1391 2.0	1545 2.2
344	MP86-4-10FK1	1032 1.5	1204 1.7	1376 2.0	1548 2.2	1720 2.5
412	MP103-4-10FK1	1236 1.8	1442 2.1	1648 2.4	1854 2.7	2060 3.0
472	MP118-4-12FK1	1416 2.0	1652 2.4	1888 2.7	2124 3.1	2360 3.4
704	MP176-4-14FK1	2112 3.0	2464 3.5	2816 4.1	3168 4.6	3520 5.1
Horizontal Vessels						
120	MP40H-3-6FK1	360 0.5	420 0.6	480 0.7	540 0.8	600 0.9
156	MP52H-3-6FK1	468 0.7	546 0.8	624 0.9	702 1.0	780 1.1
160	MP40H-4-6FK1	480 0.7	560 0.8	640 0.9	720 1.0	800 1.2
208	MP52H-4-8FK1	624 0.9	728 1.0	832 1.2	936 1.3	1040 1.5
258	MP86H-3-8FK1	774 1.1	903 1.3	1032 1.5	1161 1.7	1290 1.9
309	MP103H-3-8FK1	927 1.3	1082 1.6	1236 1.8	1391 2.0	1545 2.2
344	MP86H-4-10FK1	1032 1.5	1204 1.7	1376 2.0	1548 2.2	1720 2.5
412	MP103H-4-10FK1	1236 1.8	1442 2.1	1648 2.4	1854 2.7	2060 3.0
472	MP118H-4-12 FK1	1416 2.0	1652 2.4	1888 2.7	2124 3.1	2360 3.4
704	MP176H-4-14FK1	2112 3.0	2464 3.5	2816 4.1	3168 4.6	3520 5.1

* gpm = gallons per minute

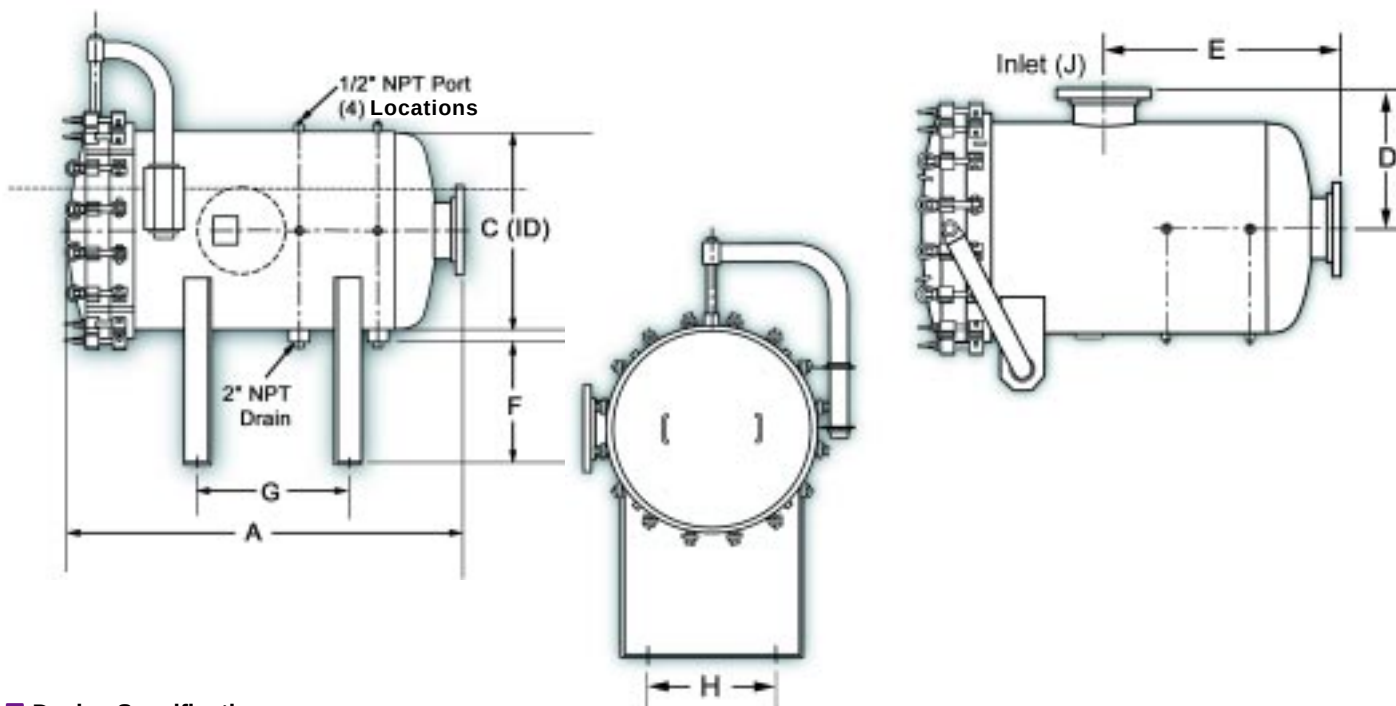
mgd = millions of gallons per day

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



Design Specifications

Model	No. & Length of Cartridges (in)	Dimensions (in)			D	E	F	G	H	J	K	Shipping Weight (lbs)
A	B	C										
MP12-3-3FK1	(12) 30	67.75	20.00	12.813	18.50	27.00	8.00	23.75	12.50	3 NPS	3	390
MP12-4-4FK1	(12) 40	77.75	20.00	12.813	18.50	27.00	8.00	23.75	12.50	4 NPS	3	420
MP21-3-4FK1	(21) 30	68.75	24.00	16.063	19.25	27.75	8.00	24.50	15.75	4 NPS	3	500
MP21-4-4FK1	(21) 40	78.75	24.00	16.063	19.25	27.75	8.00	24.50	15.75	4 NPS	3	530
MP29-3-4FK1	(29) 30	75.25	26.00	18.063	22.00	33.25	8.00	28.25	17.88	4 NPS	3	570
MP29-4-6FK1	(29) 40	85.25	26.00	18.063	22.00	33.25	8.00	28.25	17.88	6 NPS	3	620
MP35-3-6FK1	(35) 30	76.00	28.00	20.063	22.50	34.00	8.00	28.75	19.88	6 NPS	3	650
MP35-4-6FK1	(35) 40	86.00	28.00	20.063	22.50	34.00	8.00	28.75	19.88	6 NPS	3	680
MP40-3-6FK1	(40) 30	77.00	30.00	22.063	23.00	34.25	8.00	29.25	21.88	6 NPS	4	710
MP40-4-6FK1	(40) 40	87.00	30.00	22.063	23.00	34.25	8.00	29.25	21.88	6 NPS	4	750
MP52-3-6FK1	(52) 30	80.75	32.00	24.063	25.50	40.00	8.00	32.75	23.75	6 NPS	4	790
MP52-4-8FK1	(52) 40	90.75	32.00	24.063	25.50	40.00	8.00	32.75	23.75	8 NPS	4	860
MP86-3-8FK2	(86) 30	86.75	40.00	30.063	29.00	46.50	8.00	37.75	30.00	8 NPS	4	1280
MP86-4-10FK2	(86) 40	96.75	40.00	30.063	29.00	46.50	8.00	37.75	30.00	10 NPS	4	1380
MP103-3-8FK2	(103) 30	87.75	42.00	32.063	29.50	47.00	8.00	38.25	32.00	8 NPS	4	1410
MP103-4-10FK2	(103) 40	97.75	42.00	32.063	29.50	47.00	8.00	38.25	32.00	10 NPS	4	1510
MP118-4-12FK2	(118) 40	102.00	46.00	36.063	32.50	52.25	8.00	42.00	35.88	12 NPS	4	1830
MP176-4-14FK2	(176) 40	107.00	54.00	42.063	35.00	57.00	8.00	45.50	42.00	14 NPS	4	2650



Design Specifications

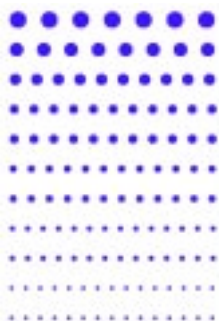
Model	Elements (in)	Dimensions (in)			D	E	F	G	H	J	Shipping Weight (lbs)
		A	B	C							
MP40H-3-6FKI	(40) 30	55.50	62.00	22.063	15.00	32.00	23.00	23.00	12.00	6 NPS	850
MP40H-4-6FKI	(40) 40	65.50	62.00	22.063	15.00	36.00	23.00	32.00	12.00	6 NPS	880
MP52H-3-6FKI	(52) 30	55.25	63.00	24.063	16.00	32.00	22.00	23.00	14.00	6 NPS	920
MP52H-4-8FKI	(52) 40	65.25	63.00	24.063	16.00	36.00	22.00	32.00	14.00	8 NPS	990
MP86H-3-8FKI	(86) 30	60.25	66.00	30.063	20.00	34.00	19.00	24.00	20.00	8 NPS	1490
MP86H-4-10FKI	(86) 40	68.25	66.00	30.063	20.00	38.00	19.00	32.00	20.00	10 NPS	1560
MP103H-3-8FKI	(103) 30	60.75	67.00	32.063	21.00	34.00	18.00	24.00	22.00	8 NPS	1620
MP103H-4-10FKI	(103) 40	68.75	67.00	32.063	21.00	38.00	18.00	32.00	22.00	10 NPS	1700
MP118H-4-12FKI	(118) 40	72.00	69.00	36.063	23.00	40.00	16.00	32.00	26.00	12 NPS	2040
MP176H-4-14FKI	(176) 40	74.75	72.00	42.063	27.00	41.00	13.00	32.00	32.00	14 NPS	2820

Ordering Information

4	MP	40	3	6F	K1
Material	Design Series	Number of Columns	Cartridge Length (x 10 in)	Inlet/Outlet	Coverlift
4L = 304L SS 6L = 316L SS	MP = Vertical Series (12-176 Columns) MPXXH = Horizontal Series (40-176 Columns)			F = Flange	No Symbol = None K1 = Mechanical K2 = Hydraulic

Process Filtration Division





Fulflo® MegaFlow™ Filter Vessels

- Carbon Steel
- 304L and 316L Stainless Steel

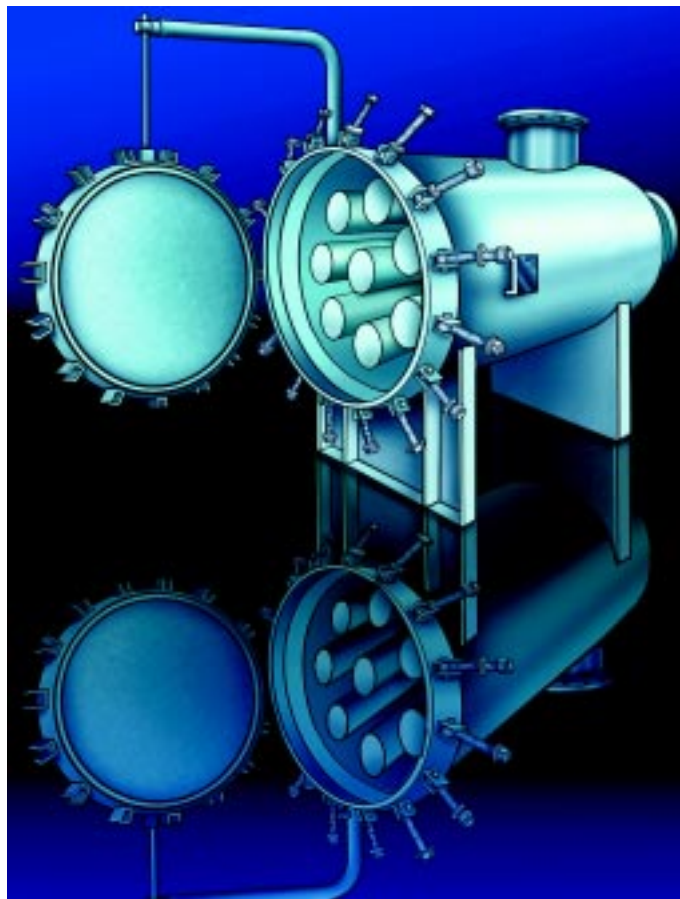
Multi-Cartridge Filter Vessel Series

Vessels for High Flow Capacity MegaFlow Filter Cartridges

MegaFlow™ vessels are designed to accept MegaFlow™ filter cartridges that handle up to 250 gpm (950 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 cartridge change fast and easy. Models are available for flow rates up to 4750 gpm (18,000 lpm).

Applications

- Reverse Osmosis Filtration
- Potable Water
- Process Water
- Edible Oils
- Lubricants
- Coolants
- Cutting Oils
- Solvents
- Chemicals



Features and 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 150 PSI and 300 PSI pressure ratings.

Process Filtration Division

Bulletin C-3076 Effective 08/02

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Page 1 of 2



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

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection for the products and systems and assuring that all performance safety and warning requirements of the application are met.

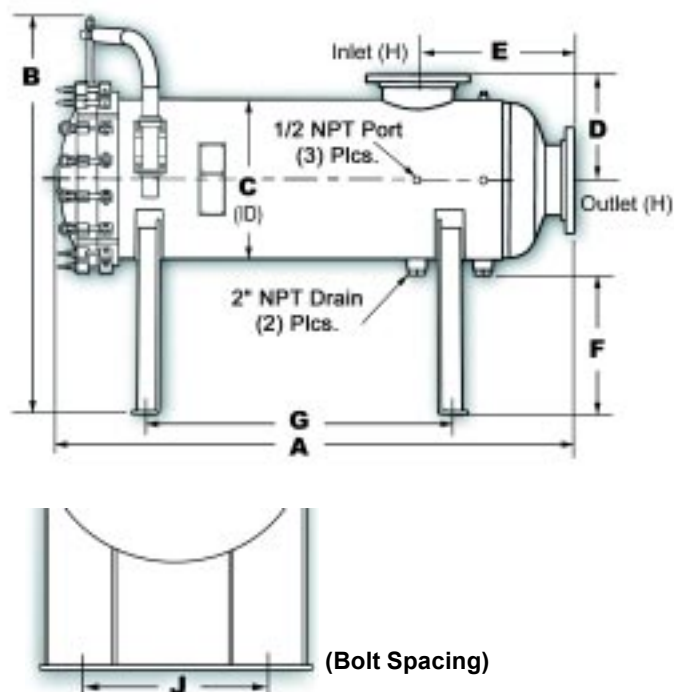
The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.



Design Specifications

Material of Construction	Design Pressure	Maximum Design Temperature*
Carbon Steel	150 psi (10.3 bar)	250°F (121°C)
Carbon Steel	300 psi (20.7 bar)	250°F (121°C)
304L Stainless Steel	150 psi (10.3 bar)	250°F (121°C)
304L Stainless Steel	300 psi (20.7 bar)	250°F (121°C)
316L Stainless Steel	150 psi (10.3 bar)	250°F (121°C)
316L Stainless Steel	300 psi (20.7 bar)	250°F (121°C)

* Operating temperature limited by standard gasket material and exterior paint.



Reference Dimensions

Model	Elements	A	B	C	D	E	F	G	H	J	Flow GPM	Shipping Weight
MF02	2	69.31	57.44	14.063	11.25	20.00	27.09	46.00	6 NPS	8.00	500	615
MF03	3	69.81	58.44	16.063	12.25	21.00	26.09	46.00	6 NPS	8.00	750	715
MF04	4	75.20	58.00	18.063	13.25	22.00	25.09	48.00	8 NPS	10.00	1000	790
MF05	5	75.47	59.00	20.063	14.25	22.00	24.09	48.00	8 NPS	12.00	1250	920
MF07	7	78.73	60.00	22.063	15.25	24.00	23.09	48.00	10 NPS	12.00	1750	1120
MF08	8	79.00	61.00	24.063	16.25	24.00	22.09	48.00	10 NPS	14.00	2000	1245
MF12	12	85.93	64.06	30.063	20.25	28.00	19.03	52.00	12 NPS	20.00	3000	1915
MF15	15	92.95	65.06	32.063	21.50	30.00	18.03	54.00	14 NPS	22.00	3750	2175
MF19	19	95.32	73.31	36.063	23.75	34.00	22.03	56.00	16 NPS	26.00	4750	2870

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

Consult media flow charts for each application.

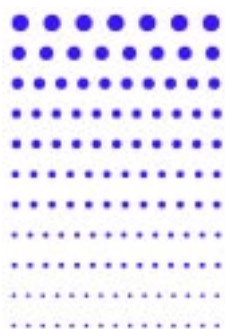
Shipping weights and dimensions are for 150 PSIG nominal design only.

Ordering Information

MF	C	U	03	V	06	F	B
	Material	Design	Cartridge Qty.	Vessel Orientation	Inlet/Outlet Size	Inlet/Outlet Connection Type	Finish
MF - Mega Flow	C = Carbon Steel G = 304L Stainless Steel S = 316L Stainless Steel	N = Non Code U = ASME Code	01 - 1 Cartridge 02 - 2 Cartridges 03 - 3 Cartridges 04 - 4 Cartridges 05 - 5 Cartridges 07 - 7 Cartridges 08 - 8 Cartridges 12 - 12 Cartridges 15 - 15 Cartridges 19 - 19 Cartridges	V - Vertical H - Horizontal	06 = 6" 08 = 8" 10 = 10" 12 = 12" 14 = 14" 16 = 16"	F = ANSI 150 lb. flange H = ANSI 300 lb. flange	C - Painted B - Glass Bead Blast P - Passivated E - Electropolished

Process Filtration Division





Fulflo® FE Filter Vessels

- Carbon Steel
- 304L and 316L Grade Stainless Steel

Multi-Cartridge Filter Vessel Series

FE Model Cartridge Filter Vessels Designed for Economical Filtration of Liquids and Gases

The FE Filter Vessel Series accommodates double-open-end (DOE) and single-open-end (SOE) filter cartridges in 10 in, 20 in and 30 in lengths.

Applications

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

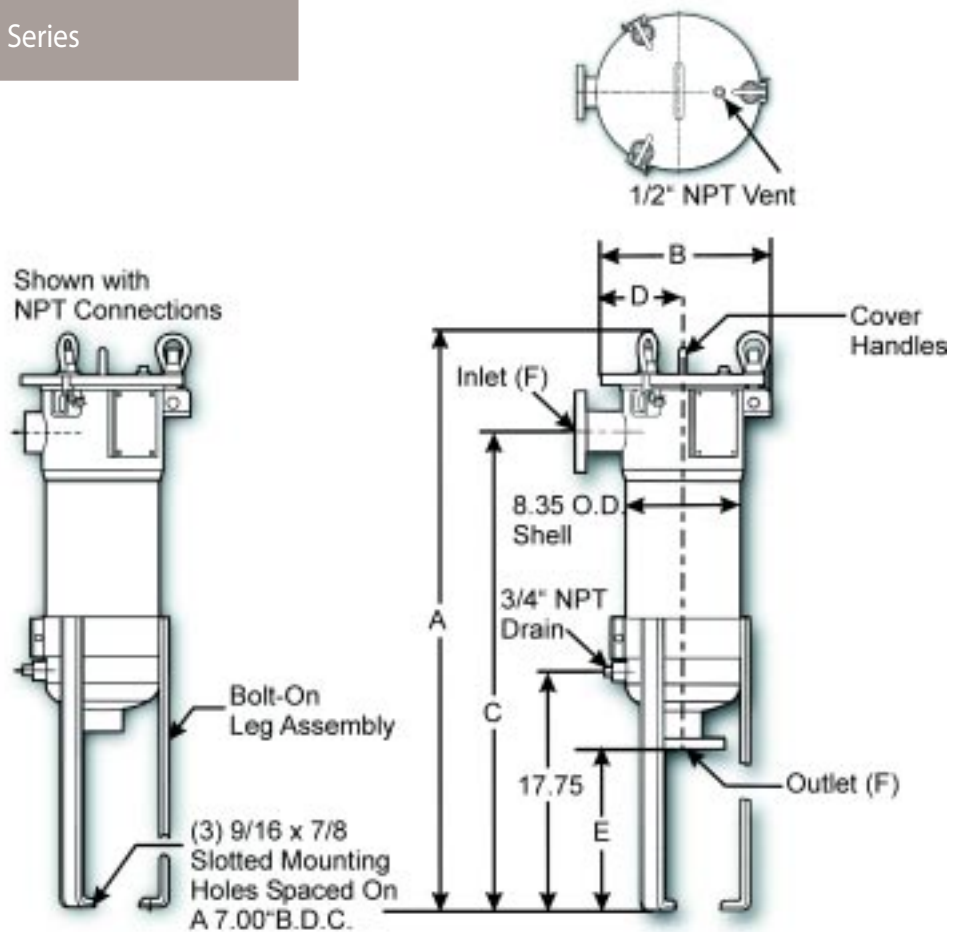


Features and Benefits

- Single O-ring design closure assures quick, positive cover sealing.
- Swing bolts with eyenuts for fast, easy opening and closing of cover.
- Maximum design pressure is 150 psig (10.3 bar) at 450°F* (232°C) and 200 psig at 100°F (38°C) plus full vacuum.
- Buna-N O-ring standard with EPR, Viton** and fluoropolymer available.
- Dual purpose cartridge seats for use with double open end and 2-222 O-ring single open end cartridges.
- 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.

Process Filtration Division





Design Specifications

Model	No. & Length of Cartridges (in)	Typical Aqueous Flow† (gpm)	Dimensions (in) A	B	C	D	E	F	Shipping Weight (lbs)	Volume (gal)
FE6-1-2	(6) 10	30	33.00	12.25	25.56	5.75	13.19	2 NPT	82	3.6
FE6-1-2F	(6) 10	30	33.00	14.50	25.56	8.00	12.00	2 NPS	90	3.6
FE6-2-2	(6) 20	60	43.06	12.25	35.63	5.75	13.19	2 NPT	87	5.4
FE6-2-2F	(6) 20	60	43.06	14.50	35.63	8.00	12.00	2 NPS	95	5.4
FE6-3-2	(6) 30	90	53.13	12.25	45.69	5.75	13.19	2 NPT	92	7.8
FE6-3-2F	(6) 30	90	53.13	14.50	45.69	8.00	12.00	2 NPS	100	7.8
FE6-3-3F	(6) 30	90	53.13	14.50	45.69	8.00	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.

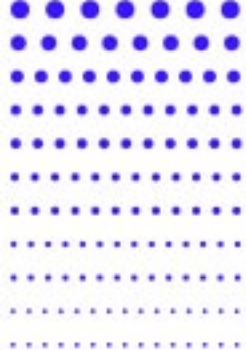
Ordering Information

4L	FE	6	3	2F
Material	Model	Number of Columns	Number of 10 in Cartridges/Column	Inlet/Outlet Flange Size
None = Carbon Steel			1	2
4L = 304L Stainless Steel			2	3
6L = 316L Stainless Steel			3	No F = NPT

Process Filtration Division

* Operating temperature limited to 250°F (121°C) by standard Buna-N O-ring and exterior paint on carbon steel models. Optional O-ring materials are available.

** A trademark of E. I. du Pont de Nemours & Co.



Fulflo® FP Filter Vessels

- Carbon Steel
- 304L Stainless Steel

Multi-Cartridge Filter Vessel Series

Fulflo® FP Model Cartridge Filter Vessels Designed for Economical Liquid Filtration

The FP Filter Vessel Series is designed for use with the Fulflo® Flo-Pac® 718 and 736 Pleated Filter Cartridge Series.

Applications

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



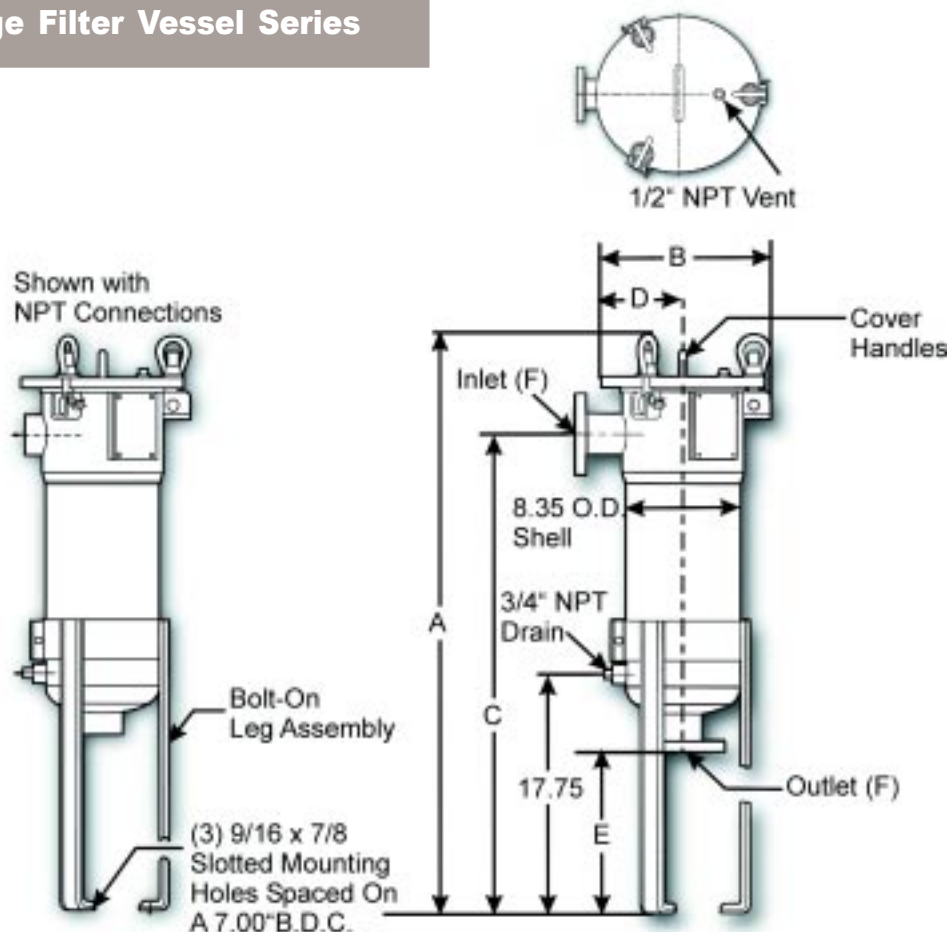
Features and Benefits

- Single O-ring design closure assures quick, positive cover sealing.
- Swing bolts with eyenuts for fast, easy opening and closing of cover.
- Maximum design pressure is 150 psi (10.3 bar) at 450°F* (232°C) and 200 psig at 100°F (38°C) plus full vacuum.
- Buna-N O-ring standard with EPR, Viton** and fluoropolymer available.
- ASME Code UM stamp is standard (U stamp is optional).
- Threaded vent and 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.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Design Specifications

Model	No. & Length of Cartridges (in)	Typical Aqueous Flow † (gpm)	Dimensions (in)		C	D	E	F	Shipping Weight (lbs)	Volume (gal)
			A	B						
FP1-1-2	(1) 18	50	42.56	12.25	35.13	5.75	13.19	2 NPT	112	5.5
FP1-1-2F	(1) 18	50	42.56	14.50	35.13	8.00	12.00	2 NPS	120	5.5
FP1-2-2	(2) 18	100	60.56	12.25	53.13	5.75	13.19	2 NPT	132	9.6
FP1-2-2F	(2) 18	100	60.56	14.50	53.13	8.00	12.00	2 NPS	140	9.6
FP1-2-3F	(2) 18	100	60.56	14.50	53.13	8.00	11.75	2 NPS	150	9.6

(F) NPS - ANSI Class 150# Slip-On Flanges

(F) NPT - ANSI Class 300# Threaded Couplings

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

Ordering Information

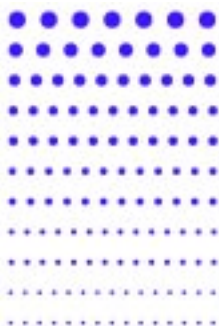
4L	FP	1	2	2F
Material	Model	Number of Columns	Number of 18 in Cartridges/Column	Inlet/Outlet Flange Size
None = Carbon Steel			1	2
4L = 304L Stainless Steel			2	3
				No F = NPT

Process Filtration Division

* Operating temperature limited to 250°F (121°C) by standard Buna-N O-ring and exterior paint on carbon steel models. Optional O-ring materials are available.

** A trademark of E. I. du Pont de Nemours & Co.





Fulflo® FPM Oil Filter Vessels

■ Steel

Single Cartridge Filter Vessel Series

The Light, Compact Oil Filtration Solution

The Fulflo® FPM Vessel Series of Single Cartridge Oil Filters is designed for high efficiency and economical operation in oil reclamation and maintenance applications. The compact, lightweight design makes the FPM vessel series easy to mount on equipment and on the floor to conserve space. A patented* safety-latch design prevents inadvertent separation of the head from the shell in the event of improper venting prior to clamp removal.

The FPM Vessel Series is designed for use with the Fulflo® Flo-Pac® 718 and 736 filter cartridge series and TruBind® 700 Series absorbent cartridges.

Applications

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



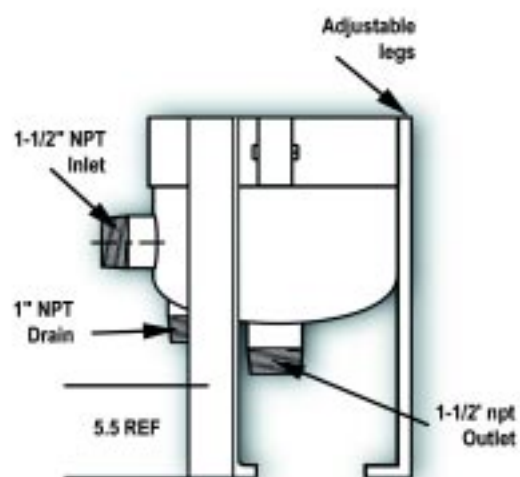
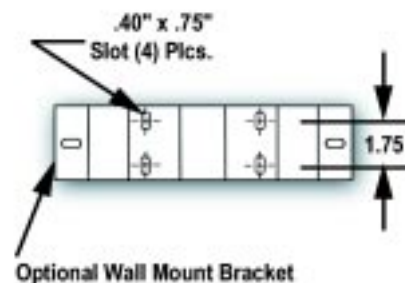
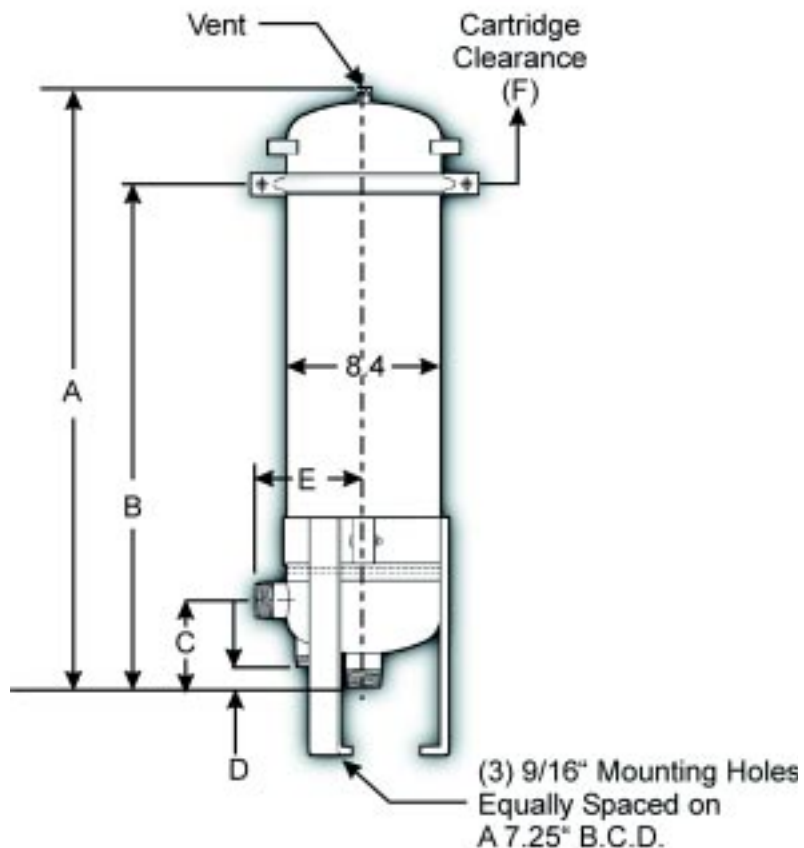
Features and Benefits

- Split-shell construction with V-band clamp permits easy cleaning and cartridge change out.
- Vessel construction designed for 100 psi (6.9 bar) working pressure at temperatures of up to 200°F (94°C).
- Buna-N O-ring seal provides positive sealing.
- Standard Buna-N seal with optimal Viton** elastomer, neoprene, ethylene propylene rubber and fluoropolymer elastomer O-rings.

Process Filtration Division



Multi-Cartridge Filter Vessel Series



Design Specifications for Units With Legs

Model	No. & Length of Cartridges (in)	Dimensions (in)		C	D	E	F	Shipping Weight (lbs)
		A	B					
FPM1-1.5	(1) 18	32.81	27.56	4.75	1.13	5.88	16.00	55
FPM2-1.5	(1) 36	50.81	45.56	4.75	1.13	5.88	16.00	70

Ordering Information

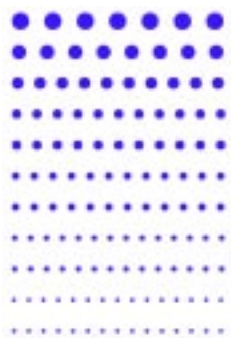
FPM	1	1.5	L
Design Series	Number of Cartridges (in)	Inlet/Outlet	
	1 = 18		L = Legs
	2 = 36		W = Wall Bracket

Process Filtration Division

* U. S. Patent No. 4,660,779

** A trademark of E. I. du Pont de Nemours & Co.





Fulflo® P Filter Vessels

■ Carbon Steel

Multi-Cartridge Filter Vessel Series

High Efficiency and High Flow Rate With Fulflo® P Vessel Series

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. Tru Bind 700 Series absorbent cartridges also fit these vessels.

Applications

- Fuels
- Lubricating Oils
- Solvents
- Coolants
- Refineries
- Hydraulic Oils
- Rolling Mill Oils
- Processing Liquids



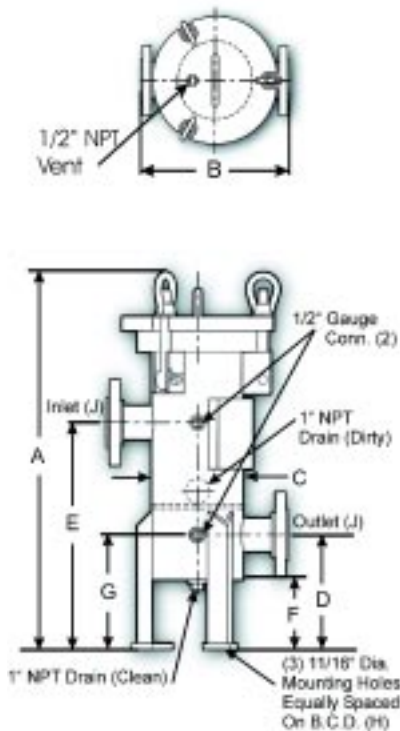
Features and Benefits

- Designed and fabricated in accordance with the ASME Boiler and Pressure Vessel Code, U or UM stamp with 150 psi (10.3 bar) rating at 250°F (121°C).
- Non-code design and construction (parallel to code standards) available.
- Mechanical coverlifts.
- Designed for minimum pressure drop.
- Cartridge capacity from 1 to 36 cartridges.
- All P models feature swing bolts for easier cleaning and servicing.
- O-ring seals provide positive closure sealing.
- Standard Buna-N seal with optional Viton* elastomer, neoprene, ethylene propylene rubber and fluoropolymer elastomer O-rings.
- Optional hydraulic coverlifts.

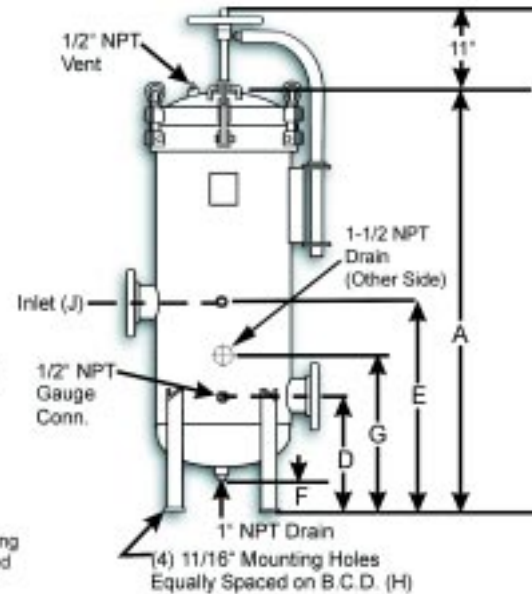
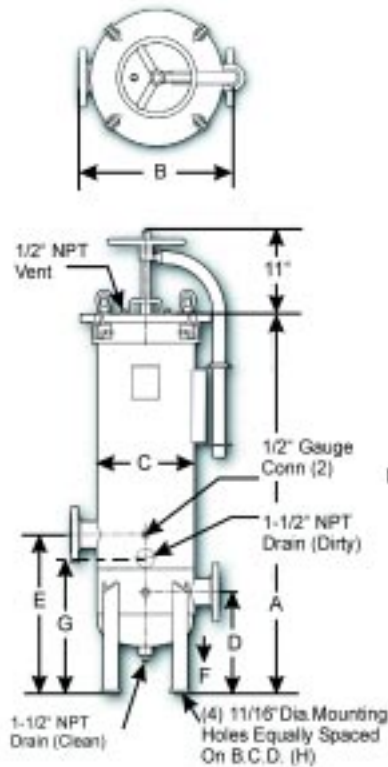
Process Filtration Division



Model P1-1-2F



Model P3-2-3F



Design Specifications

Model	No. & Length of Cartridges (in)	Dimensions (in)									Shipping Weight (lbs)
		A†	B	C	D	E	F	G	H	J	
P1-1-2F	(1) 18	36.13	14.88	8.63	8.19	16.19	5.06	11.31	7.81	2	180
P1-2-2F	(1) 36	54.13	14.88	8.63	8.19	16.19	5.06	11.31	7.81	2	200
P3-1-3F	(3) 18	38.74	22.50	15.06	13.38	21.00	5.00	17.88	14.75	3	405
P3-2-3F	(3) 36	57.31	22.50	15.06	13.38	21.00	5.00	17.88	14.75	3	465
P6-2-6F	(6) 36	65.00	29.25	20.06	16.50	31.00	5.00	22.56	19.75	6	790
P9-2-6F	(9) 36	67.19	33.38	24.06	18.00	31.00	6.00	24.19	23.75	6	985
P18-2-8F	(18) 36	76.06	42.25	32.06	23.63	41.25	6.00	31.69	31.81	8	1570

† Add 5 in to this dimension for hydraulic coverlift.

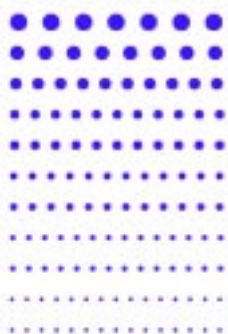
Ordering Information

P	3	2	3F	K1
Design Series	Number of Columns	Number of Cartridges per Column	Inlet / Outlet Flange Size RFSO	Coverlift Option
	1			K1 = Mechanical
	3		2F	K2 = Hydraulic
Non-Code Design =	6	1	3F	
CP	9	2	6F	
	18		8F	

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.





Advantage™ Sanitary Vessels

■ 316L Stainless Steel

Electropolished Filter Vessel Series

Achieve Sterile Filtration of Aqueous Solutions, Air and Gas

Parker's Advantage sanitary electropolished filter vessels for sanitary applications provide the ultimate in vessel performance and durability for the most demanding, high purity liquid filtration requirements.

Applications

- Pharmaceutical
- Veterinary
- Food & Beverage
- Biotechnology
- Medical & Medical Device
- Laboratory



Features and Benefits

- Stainless steel provides lasting durability, thermal, mechanical and chemical compatibility.
- Exteriors are electropolished with a satin finish for fast and easy surface cleaning.
- Interiors are electropolished to a maximum of 25 Ra. for fine, mirror-like finish which minimizes the risk of contamination, improves cleanability and enhances corrosion resistance.
- Sanitary vents and drains facilitate sampling, integrity testing, venting, and safe and easy draining.
- Machined filter cup ensures reduced holdup volume and proper O-ring seal.
- Cast clamp closure offers safe closure for 1 and 3 round vessels.
- Clamp joints with compression O-rings at the head and bowl ensure seal integrity.
- T-Style designs provide easy cartridge replacement without disconnecting lines.
- Sanitary drain valves enable complete drainage of liquids after filtration and simplify filter removal.
- Upstream sanitary vent valve ensures proper venting for complete wetting of the new filter.
- Triclover flange inlets and outlets allow easy dismantling of parts for fast and simple cleaning.

Process Filtration Division



Specifications

Operating Conditions:

- Maximum Flow Rate
 - 1-Round, In-Line
 - 25 gpm (94.5 lpm)
 - 1-Round, T-Style
 - 25 gpm (94.4 lpm)
 - 3-Round, In-Line
 - 75 gpm (283.5 lpm)
 - 3-Round, T-Style
 - 75 gpm (283.5 lpm)
 - 7-Round, T-Style
 - 175 gpm (661.5 lpm)
 - 12-Round, T-Style
 - 300 gpm (1,134 lpm)
 - 21-Round, T-Style
 - 525 gpm (1,984 lpm)

- Design Pressure and Temperature
 - 150 psig (10.3 bar) at 250°F (120°C)
- Hydrostatic Testing Conditions
 - 225 psig (15.5 bar)

Ordering Information

P
Parker
Filtration

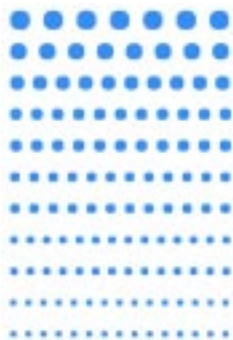
S
S = Sanitary

Abbreviations:
 Frac. = Fractional
 Ferl. = Ferrule
 Strt. = Straight
 AW = Autoweld
 TC = Triclover
 I/O = Inlet/Outlet
 Opp. = Opposite

C	01	N	1	8	T	X	0	0	H	0	S
Finish	No. of Cartridges Around	Code Rating	Bowl Length (in)	Cartridge Code	Configuration	Legs	Drain	Vent	Connection	Jacket	Seal Material
A = 10Ra B = 15Ra C = 25Ra	01 = 1 Rd 03 = 3 Rd 05 = 5 Rd 07 = 7 Rd 12 = 12 Rd 21 = 21 Rd	C = Code N = Non-Code	0 = 5 1 = 10 2 = 20 3 = 30 4 = 40	7 = 226 Fin or Cap 8 = 222 Fin or Cap	T = T-Style I = In Line	W = Welded Legs X = No Legs Y = Threaded Legs Z = Mounting Bracket	0 = 1/4" Sample Valve 2 = Frac. Ferrule Elbow 5 = No Drain 6 = 1/2" Frac. Ferl. Strt. 7 = 1/4" NPTF 8 = 1/2" NPTF	0 = 1/4" Sample Valve 1 = Frac. Ferrule Neck & Skirt 3 = Frac. Ferrule Skirt 5 = No Vent 7 = 1/4" NPTF 8 = 1/2" NPTF	B = 1" AW C = 2" AW D = 3" AW F = 4" AW G = 6" AW H = 1" TC J = 1.5" TC K = 2" TC L = 3" TC M = 4" TC N = 6" TC P = 2" RF Flange Q = 3" RF Flange R = 4" RF Flange S = 6" RF Flange	0 = No Jacket 1 = w/1/2" NPTF I/O Opp. 2 = w/1/2" NPTF I/O Same 3 = w/1/2" Ferl. I/O Opp. 4 = w/1/2" Ferl. I/O Same	E = EPDM S = Silicone, Medical Grade T = PTFE /Viton* V = Viton* W = Silicone, F Grade

Process Filtration Division





Fulflo® SB Filter Vessels

- Carbon Steel
- 304 and 316 Stainless Steel

Bag Filter Vessel Series

High Flow Rates and High Solids Retention Capability With Fulflo® SB Series ASME Code Single and Multiple Bag Vessels

Constructed to handle flow rates of up to 1120 gpm (4239 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.

Applications

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



Features and 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.
- Non-code design and construction (parallel code standards) available.
- Maximum design pressure is 150 psi (10.3 bar) or 300 psi (20.7 bar).
- 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, neoprene, ethylene propylene rubber and fluoropolymer elastomer O-rings also available.
- Positive bag media seal prior to sealing housing.

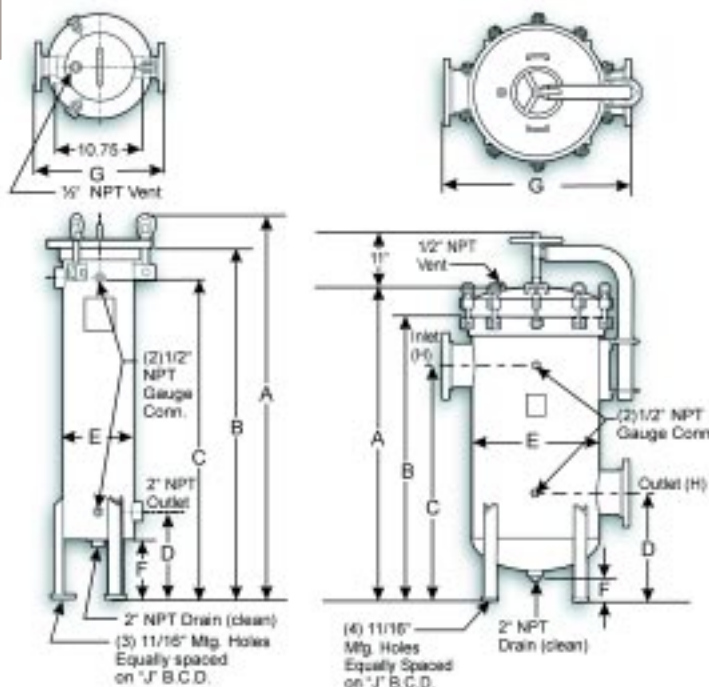
Process Filtration Division



Bag Filter Vessel Series

Material of Construction	Maximum Operating Pressure (psi at 250°F) [†]	Maximum Design Temperature*
Carbon Steel	150 psi (10.3 bar)	500°F (260°C)
Carbon Steel	300 psi (20.7 bar)	500°F (260°C)
304 Stainless Steel	150 psi (10.3 bar)	300°F (150°C)
304 Stainless Steel	300 psi (20.7 bar)	300°F (150°C)
316 Stainless Steel	150 psi (10.3 bar)	400°F (204°C)
316 Stainless Steel	300 psi (20.7 bar)	400°F (204°C)

[†] Operating temperature limited by standard gasket material and exterior paint.



Design Specifications

Model	Maximum Flow [†] (gpm)	Dimensions (in)									Shipping Weight (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	66.75	60.00	50.00	24.00	30.56	6.00	40.00	8.00	29.80	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.

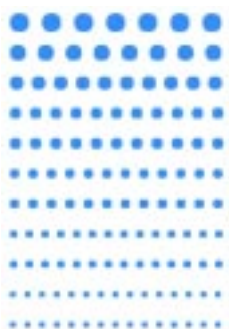
Ordering Information

4 Material	C Design Series	SB Standard Bag Design Series	3 Number of Bags	2 Bag Length	4F Inlet/Outlet Flange Size	K1 Coverlift Option
No Symbol = Carbon Steel 4 = 304 Stainless Steel 6 = 316 Stainless Steel	H = 300 psi C = Non-Code Design No Symbol = Code	SB = 1 Bag or Multiple Bags HSB = High Pressure	1 3 4 5 6 7 8 9	1 = Single 2 = Double	F = Flange No Symbol = NPT 2 = 2 in Flange 3 = 3 in Flange 4 = 4 in Flange 6 = 6 in Flange 8 = 8 in Flange	K1 = Mechanical K2 = Hydraulic No Symbol = None

* A trademark of E. I. du Pont de Nemours & Co.

Process Filtration Division





Fulflo® FCB Filter Vessels

- Carbon Steel
- 304 Stainless Steel

Bag Filter Vessel Series

FCB Model Bag Filter Vessels Designed for Economical Filtration of Liquids

Applications

- Incoming Process Water
- Discharge Water
- Coolants
- Cutting Oils
- Inks
- Lubricants
- Paints
- Resins
- Solvents



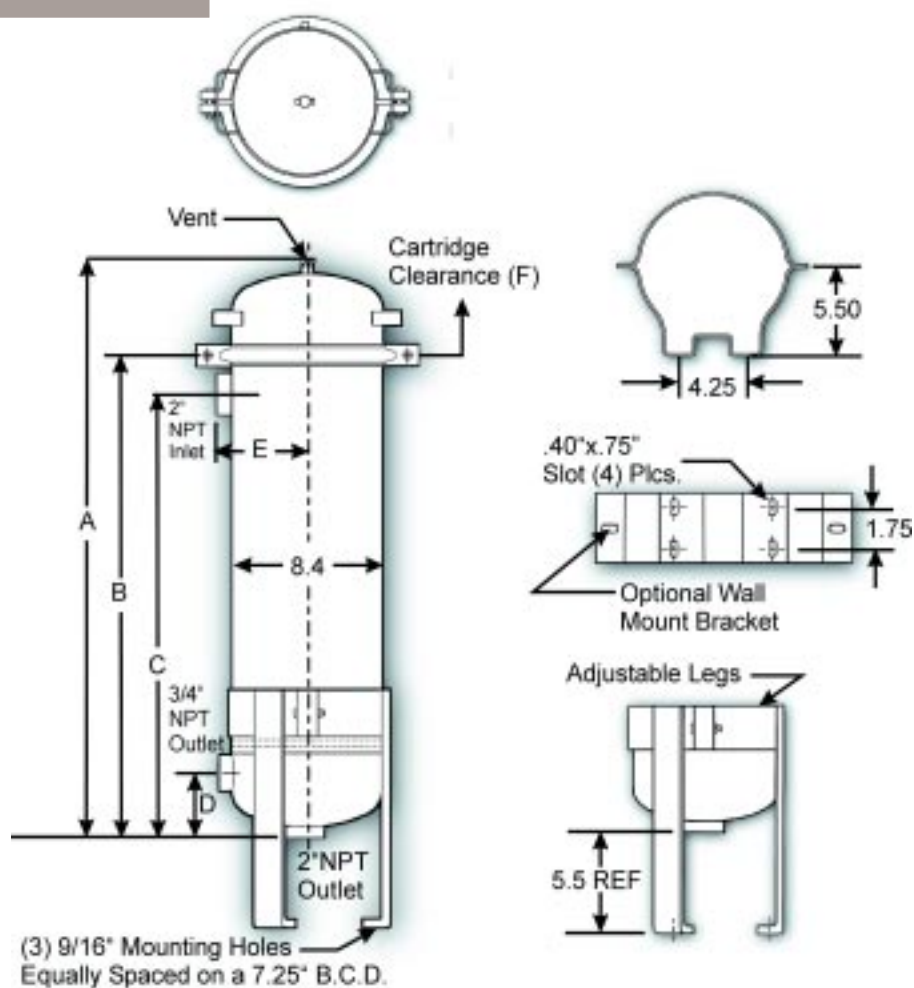
Features and Benefits

- Maximum design pressure is 100 psi (6.9 bar) at 200°F (94°C).
- Patented safety-latch design prevents inadvertent separation of the head from the shell in the event of improper venting prior to clamp removal.
- V-band clamp permits easy opening for bag changeout.
- 2 in NPT female connections.
- Standard features include air vent lock and adjustable leg height.
- Standard "C" style flex band bags available in 1µm thru 800µm.
- Standard Buna-N gasket with EPR, Viton* and fluoropolymer available.
- Stainless basket strainers available in 20, 40, 60, 80 and 100 mesh.
- Wall mounting bracket available.
- Optional hold-down assembly for conversion to "G" style bag media seal available.

Process Filtration Division



Bag Filter Vessel Series



Design Specifications

Model	Material	Typical Aqueous Flow (gpm)	Dimensions (in)						Shipping Weight (lbs)
			A	B	C	D	E	F	
FCB11 [†]	Carbon Steel	80	30.00	24.00	21.38	3.75	4.88	16.00	35
FCB-12 ^{††}	Carbon Steel	100 ^{†††}	41.63	35.75	33.13	3.75	4.88	29.00	44
4FCB-11 [†]	304 SS	80	30.00	24.00	21.38	3.75	4.88	16.00	35
4FCB-12 ^{††}	304 SS	100 ^{†††}	41.63	35.75	33.13	3.75	4.88	29.00	44

[†] Uses "C" style single length bag.

^{††} Uses "C" style double length bag.

^{†††} Maximum recommended flow rate limited by 2 in NPT inlet.

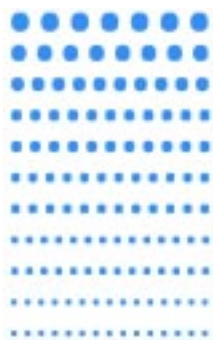
Ordering Information

4	FCB	1	1	2
Material	Design Series	Number of Bags	Bag Length	Inlet/Outlet
4 = 304 Stainless Steel No Symbol = Carbon Steel	FCB = Non-Code Design		1 = Single 2 = Double	Size

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.





Fulflo® FB Filter Vessels

- Carbon Steel
- 304L and 316L Stainless Steel

Bag Filter Vessel Series

FB Model Bag Filter Vessels Designed for Economical Filtration of Liquids and Gases

Applications

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



Features and Benefits

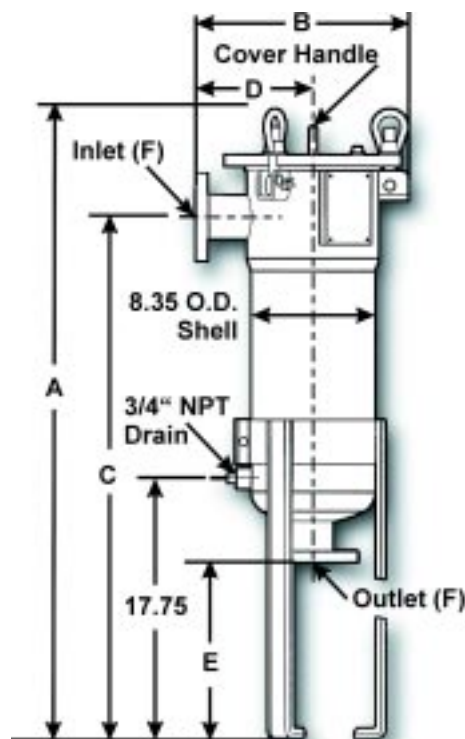
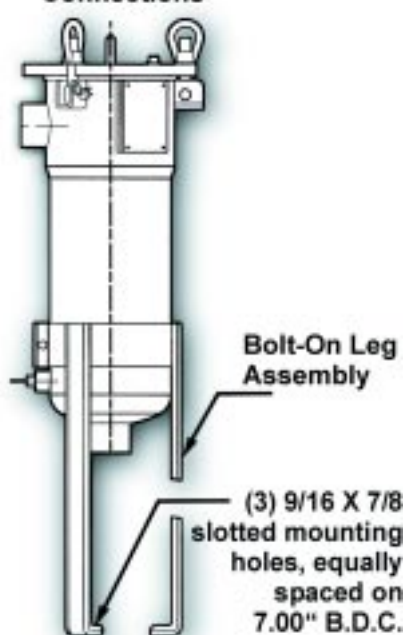
- Single O-ring design closure assures quick, positive cover sealing. (O-rings are not required to seal filter bags.)
- Swing bolts with eyenuts for fast, easy opening and closing of cover.
- Buna-N O-ring standard with EPR, Viton* and fluoropolymer available.
- Maximum design pressure is 150 psi (10.3 bar) 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.

Process Filtration Division



Bag Filter Vessel Series

Shown with NPT Connections



Design Specifications

Model	Bag Style	Typical Aqueous Flow [†] (gpm)	Dimensions (in)						Shipping Weight (lbs)	Volume (gal)
			A	B	C	D	E	F		
FB11-2	Single	80	43.06	12.25	35.63	5.75	13.19	2NPT	90	5.4
FB11-2F	Single	80	43.06	14.50	35.63	8.00	12.00	2NPS	100	5.4
FB12-2	Double	160	53.94	12.25	46.50	5.75	13.19	2NPT	95	7.8
FB12-2F	Double	160	53.94	14.50	46.50	8.00	12.00	2NPS	105	7.8
FB12-3F	Double	160	53.94	14.50	46.50	8.00	11.75	3NPS	115	7.8

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

Ordering Information

4L

FB

11

2F

Material

Model

Media Requirement

Inlet/Outlet Flange Size

No Symbol = Carbon Steel
4L = 304L Stainless Steel
6L = 316L Stainless Steel

11 = One Single Bag
12 = One Double Bag

2
3
No F = NPT

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.

** Operating temperature limited to 250°F (121°C) by standard Buna-N O-ring and exterior paint on carbon steel models. Optional O-ring materials are available.





Fulflo® GB Filter Vessels

- Carbon Steel
- 304L and 316L Stainless Steel

Bag Filter Vessel Series

High Flow Rates and High Solids Retention Capability with Fulflo® GB Series ASME Code Multiple Bag Vessels

Designed to handle flow rates of up to 4200 gpm (15,900 lpm), the Fulflo GB Series 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 GB Vessel Series conform to ASME code.

Applications

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



Features and Benefits

- Designed for use with solid ring and plastic ring "G" style bags for easy bag installation.
- ASME design 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 cover sealing.
- Swing bolt closure for fast, easy opening and closing of cover.
- Standard Buna-n O-ring with optional materials for improved chemical compatibility and higher temperature ratings.
- Cover locating pin for quick and accurate cover alignment.

- O-ring sealed baskets to prevent bypass.
- Floating spring loaded bag compression plate seal to prevent bypass.
- Bags located near the vessel opening for easy access during installation and removal.
- Inline inlet and outlet for uniform piping elevation.
- Bottom inlet for even flow distribution.
- 150 PSI and 300 PSI pressure ratings.

Options

- Custom designs per specification requirements.
- Epoxy coated interior and exterior.
- Mesh lined strainer baskets.
- Special inlet and outlet locations.

Process Filtration Division

Bulletin C-5004 Effective 08/02

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Bag Filter Vessel Series

Design Specifications

Material of Construction	Design Pressure	Maximum Design Temperature*
Carbon Steel	150 psi (10.3 bar)	500°F (261°C)
Carbon Steel	300 psi (20.7 bar)	500°F (261°C)
304L Stainless Steel	150 psi (10.3 bar)	300°F (150°C)
304L Stainless Steel	300 psi (20.7 bar)	300°F (150°C)
316L Stainless Steel	150 psi (10.3 bar)	400°F (206°C)
316L Stainless Steel	300 psi (20.7 bar)	400°F (206°C)

* Operating temperature limited by standard gasket material and exterior paint.

Reference Dimensions (in)

Model	Cartridges	Typical Flow ** GPM	A	B	C	D In/Out	E	F	Shipping Weights
GBXX2D4FBB1X	2	400	16.50	57.75	40.50	4	8	27.31	450
GBXX3D4FBB1X	3	400	18.50	60.56	43.38	4	8	27.50	475
GBXX4D6FBB1X	4	800	22.50	65.19	47.50	6	10	35	570
GBXX6D6FBB1X	6	900	24.50	64.94	47.00	6	10	40	600
GBXX7D8FBB1X	7	1400	28.50	70.88	52.50	8	12	46	760
GBXX8D8FBB1X	8	1600	30.75	71.94	52.63	8	12	46	850
GBXX10D8FBB1X	10	1600	32.75	72.63	53.00	8	12	48	1000
GBXX12D10FBB1X	12	2400	36.75	79.25	58.50	10	14	56	1200
GBXX16D10FBB1X	16	2450	40.88	79.63	58.50	10	14	60	1650
GBXX17D12FBB1X	17	3400	42.88	85.38	63.75	12	16	67	2200
GBXX23D12FBB1X	23	3500	49.00	86.44	63.63	12	16	75	2600
GBXX30D14FBB1X	30	4200	55.00	95.38	70.13	14	18	85	3400

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

Consult media flow charts for each application.

X = Insert appropriate letter from ordering information below.

Shipping weights and dimensions are for 150 PSIG design only.

GBXX10 and larger have closure bolts with hex nuts in lieu of eye nuts.

Ordering Information

GB	S	U	3	D	4	F	B	B	1	B
Design Series	Material	Design	Number of Bags	Inlet/Outlet Size in Inches	Inlet Location	Inlet Location	Coverlift	Finish		
GB=7" Dia. Bag	C=Carbon Steel G=304L Stainless Steel S=316L Stainless Steel	U=ASME Code	2 through 30		B=Bottom S=Side	B=Bottom S=Side	N=None 1=Mechanical Davit	L=Paint B=Bead Blast(SS) P=Passivate(SS)		

Optional inlet/outlet locations



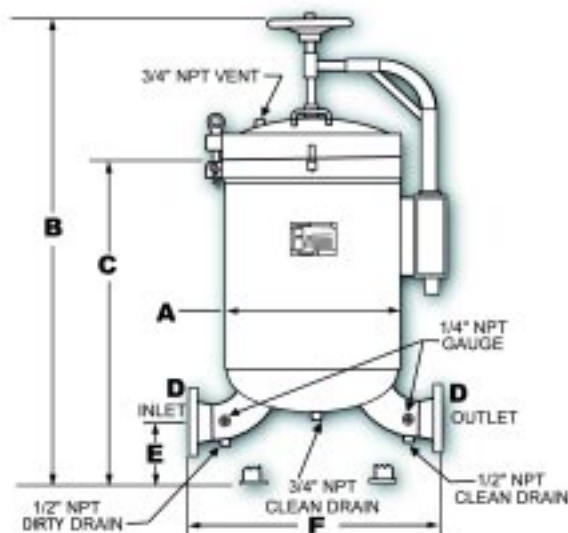
Bag Length

D=Double

Inlet/Outlet Type

F = ANSI 150 lb. flange

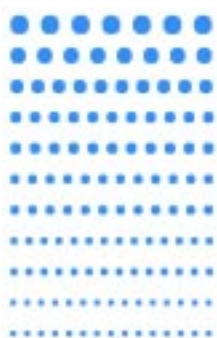
H = ANSI 300 lb. flange



Coverlift true position in rear

Process Filtration Division





Fulflo® CB Filter Vessels

- Carbon Steel
- 304 Stainless Steel

Bag Filter Vessel Series

CB Model Bag Filter Vessels are Designed for Economical Filtration of a Wide Variety of Industrial Liquids

The CB bag filter vessel series is an economical design that features the integrity of a bolted closure. The CB series is available in either carbon steel or 304 stainless steel. Both models have zinc plated closure bolts and zinc plated legs for corrosion resistance. The integral basket support provides a smooth interior for easy cleaning and bag installation. The CB is for use with either single or double length bags with flex type bag bands 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.

Applications

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



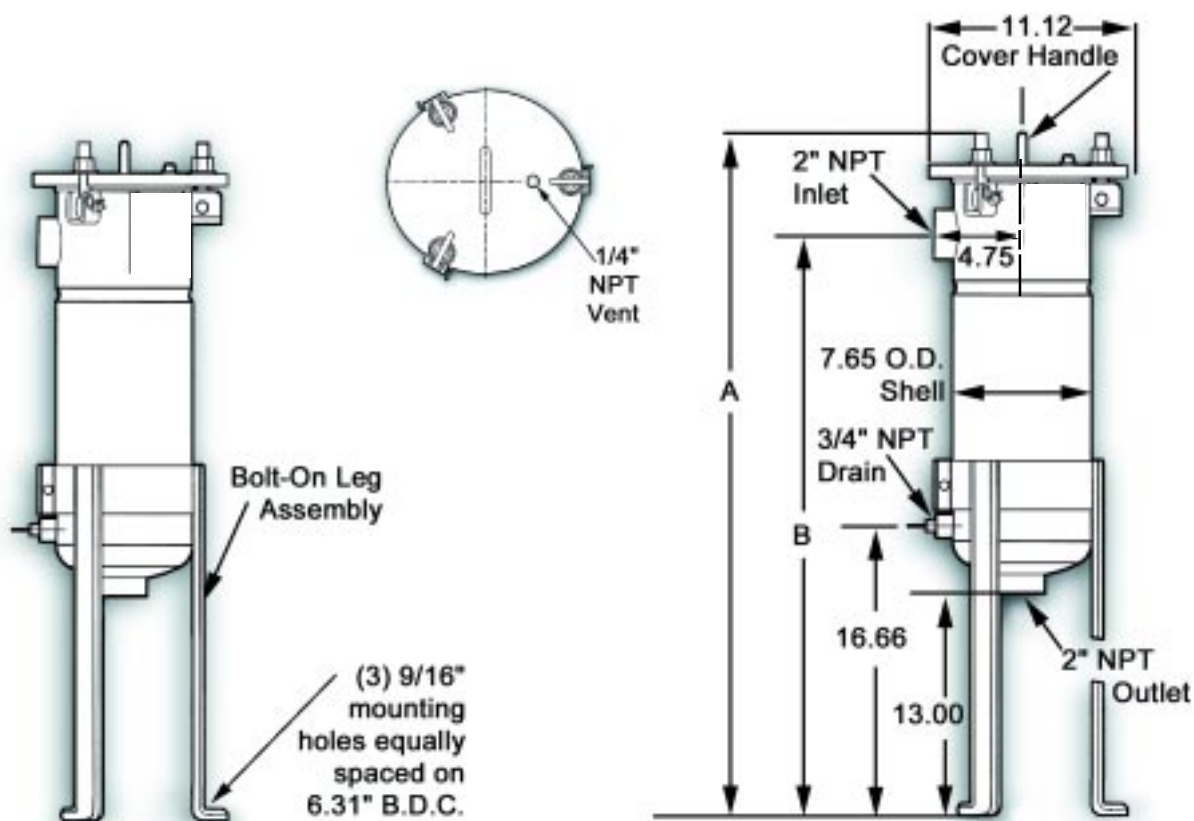
Features and Benefits

- Single o-ring design closure assures quick, positive cover sealing.
- Swing bolts for fast, easy and safe opening and closing of cover.
- Buna-N o-ring standard with optional EPR and Viton*.
- Maximum design pressure is 175 psi (12 bar) at 250°F** (121°C).
- Good manufacturing practice industrial design.
- Threaded vent and drain connections.
- Carbon steel with zinc plated support basket or 304SS with 316SS support basket.
- 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 hold-down assembly for conversion to solid ring ("G" style) and plastic ring ("Q" style) bags.
- Zinc plated closure bolts and legs for corrosion resistance.

Process Filtration Division



Bag Filter Vessel Series



Design Specifications

Model	Bag Style	Typical Aqueous Flow+ (gpm)	Dimensions (in)		Shipping Weight (lbs)	Volume (gallons)
			A	B		
CB11-2	Single	80	40.50	33.25	65	4.3
CB12-2	Double	160	55.50	48.25	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

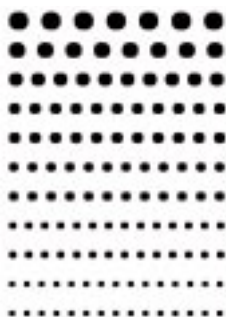
4	CB	11	2
Material	Model	Media Requirement	Inlet/Outlet Size
No Symbol = Carbon Steel 4 = 304 Stainless Steel		11 = One Single Bag 12 = One Double Bag	2" NPT

Process Filtration Division

* A trademark of E. I. du Pont de Nemours & Co.

** Operating temperature limited to 250°F (121°C) by standard Buna-N O-ring and exterior paint on carbon steel models. Optional O-ring materials are available.





Fulflo® Portable Cart, The Dual Purpose Solution for Hydrocarbon and Particulate Removal.

Parker Fulflo® PC Series accepts FloPac and FloPac+ 700 Series Pleated Cartridge for particulate removal or TruBind™ 700 Series Absorbent Cartridge for hydrocarbon removal from aqueous fluids.

Applications

Hydrocarbon Removal

- Coolants
- Plating Baths
- Alkaline Parts Washing
- Surface Water Runoff
- Compressor Condensate
- Industrial Discharge Water
- Leisure/Commercial Shipping Bilge Water

Particulate Removal

- Solvents
- Fuels
- Oils
- Alcohols
- Aliphatic Hydrocarbons
- Aromatic Hydrocarbons
- Ethers
- Esters
- Amines
- Glycols



Features and Benefits

- Cart comes completely ready to use with gear pump, motor, hose/wand assemblies, electrical cord, switch and installed cartridge selection.
- Fulflo® PC Series Carts are Lightweight and portable making it simple for one man operation.
- High temperature option allows its use in a wider variety of applications.
- System set at constant 5 gpm for optimum TruBind™ contact time.
- Utilizes two filter vessels for first stage pump protection and second stage fluid conditioning using FloPac+ 700 Series Pleated Cartridge or TruBind™ 700 Series Absorbent Cartridge.
- Dual Purpose cart can be used for particulate or hydrocarbon removal.

Process Filtration Division



Filtration System Series

Specifications

Dimensions:

- A = Height: 40.5" (1029mm)
- B = Width: 29.5" (648mm)
- C = Depth: 10.0" (488mm)

Power Cord Length:

- 8 feet (2.5 Meters)

Wand Length:

- 37 in (941mm)

Approximate Weight:

- 115 lbs. (47.5 kg)

Maximum Operating Conditions:

- Temperature: Standard Design: 150°F (66°C)
High Temperature Design: 200°F (93°C)
- Viscosity: 3000 SUS (700 cks)
- Flow Rate: 5 gpm (20 lpm)

Electrical Specifications:

Electric Motor:

1/2 hp @ 1725 rpm, O.D.P. (Thermal Overload Protection)

Service Requirements:

115 volts, 10 amps, single phase, 60 Hz

Materials of Construction:

- Cart Frame: Steel
- 1st Stage Filter Vessel (Pump Protector)
 - Head - Aluminum
 - Bowl - Steel
- Hoses:
 - Standard design - PVC
 - High Temperature Design - EPDM
 - Length - 8 Feet (2.5 meters)
- Wands:
 - Standard design - PVC
 - High Temperature Design - Steel Tube
- 2nd Stage Filter Vessel: Steel
- TruBind Support Core: Polyethylene

Vessel Specifications:

- 1st Stage Filter Vessel (Gear Pump Protector)
 - Bypass Valve Setting: 3 psid (.2 bar)
 - Visual 3 band Differential Indicator (clean, change, bypass)
 - Replacement Element: Synthetic 40μ nominal (P/N 932358)
- 2nd Stage Vessel
 - Maximum Pressure Design: 100 psig (6.9 bar)
 - Dial Type Pressure Gauge
 - Accepts Element: FP718 (any micron, refer to table) or TBC718A-DO-N

Ordering Information

PC	5	40SA	FPM	T	TBC
PC Portable Cart Series	1st Stage Filter Vessel	1st Stage Filter Vessel Element	2nd Stage Vessel	T = High Temperature Design Blank = Standard Design	2nd Stage Vessel Cartridge Code (See table)



Cartridge Specification Code		
Installed	Cartridge	Use Cartridge Nomenclature Code to Specify
	FP718-0.5-8	058
	FP718-1-8	18
	FP718-5-8	58
	FP718-10-8	108
	FP718-20-8	208
	FP718-30-8	308
	FPE718-0.5-8A	E058A
	FPE718-1-8A	E18A
	FPE718-5-8A	E58A
	FPE718-10-8A	E108A
	FPE718-20-8A	E208A
	FPE718-30-8A	E308A
	TBC718-DO-N	TBC

TruBind™ 700 Series is coreless and requires a support core prior to cartridge installation in vessel. The polyethylene core gives the cartridge sufficient strength and precludes cartridge collapse at recommended operating conditions. Support core is a reusable part and does not need to be replaced.
Part Number: 4452-5120

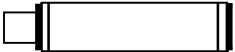
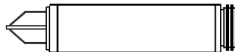


Process Filtration Division

Pleated Cartridge Configurations Guide

Appendix

■ Pleated Cartridge Dimensions

Nominal Cartridge Length	9 (in)	10 (in)	19 (in)	20 (in)	29 (in)	30 (in)	39 (in)	40 (in)
 Double Open End (DO) Gasket to Gasket								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
 Double Open End With Core Extender (DX) Gasket to Gasket								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
Overall	10-7/8	11-1/16	20-7/8	21-3/16	30-1/2	31-5/16	40-1/4	41-1/4
 226 Adapter/Closed End (SC) Shoulder to Shoulder								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
226 Shoulder to Closed End Extremity	9-13/16	10	19-13/16	20-1/8	29-7/16	30-1/4	39-3/16	40-3/16
Overall	10-5/8	10-13/16	20-5/8	20-15/16	30-1/4	31-1/16	40	41
 226 Adapter/Fin End (SF) Shoulder to Shoulder								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
226 Shoulder to Fin End Extremity	11-7/16	11-5/8	21-7/16	21-3/4	31-1/16	31-7/8	40-13/16	41-13/16
Overall	12-1/4	12-7/16	22-1/4	22-9/16	31-7/8	32-11/16	41-5/8	42-5/8
 222 Adapter/Closed End (TC) Shoulder to Shoulder								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
222 Shoulder to Closed End Extremity	9-13/16	10	19-13/16	20-1/8	29-7/16	30-1/4	39-3/16	40-3/16
Overall	10-9/16	10-3/4	20-9/16	20-7/8	30-3/16	31	39-15/16	40-15/16
 222 Adapter/Fin End (TF) Shoulder to Shoulder								
	9-5/8	9-13/16	19-5/8	19-15/16	29-1/4	30-1/16	39	40
222 Shoulder to Fin End Extremity	11-7/16	11-5/8	21-7/16	21-3/4	31-1/16	31-7/8	40-13/16	41-13/16
Overall	12-3/16	12-3/8	22-3/16	22-1/2	31-13/16	32-5/8	41-9/16	42-9/16

Process Filtration Division





Standard Screen Micrometer Conversion Chart

Appendix

US and ASTM Std Sieve Number	Actual Opening (in)	(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

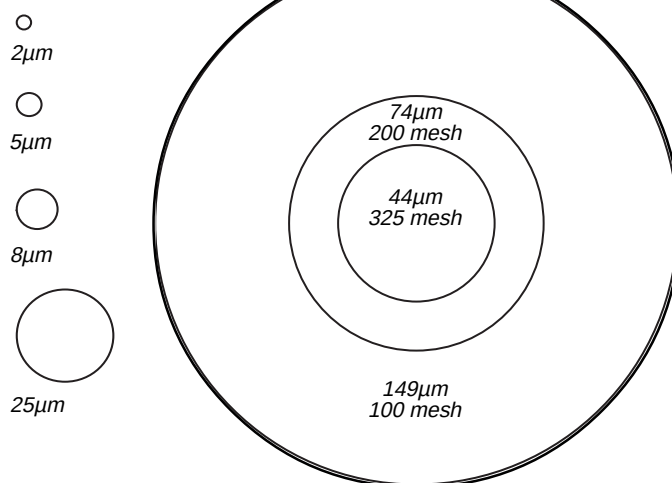
Micrometer Comparisons

Substance	(μm)
Table Salt	100
Human Hair (average dia)	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)—40 μm

Relative Size of Particles

Magnification 500 times



Linear Equivalents

1 in = 25.4 mm = 25,400 μm
 1 mm = 0.0394 in = 1,000 μm
 1 μm = 3.94×10^{-5} in = 0.0000394 in

Formulae:

Velocity (ft per sec) = $\frac{0.4085 \times \text{gpm}}{d^2 \text{ (ID in)}}$

Brake hp = $\frac{(\text{gpm}) \times (\text{total head in ft}) \times (\text{specific gravity})}{(3960) \times (\text{pump efficiency})}$

Conversion Rates

1 cu ft = 7.48 gal
 1 gal = 231 cu in
 1 cu ft water = 62.42 lb
 1 gal water = 8.34 lb
 1 US gal = 0.833 Imp gal
 1 lb/in² = 2.31 ft of water = 2.036 in Hg
 °F = $\frac{9}{5}^\circ\text{C} + 32$
 Cks = $\text{cps} \div \text{spg}$

Metric Conversion Formulae:

mm = inches $\times 25.4$
 m = feet $\times 0.3048$
 cm³ = cu in $\times 16.39$
 m³ = cu ft $\times 0.028$
 kg = pounds $\times 0.454$
 kPa = psi $\times 6.895$
 lpm = gpm $\times 3.785$
 °C = $\frac{5}{9} (^\circ\text{F} - 32)$

Process Filtration Division



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

This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection for the products and systems and assuring that all performance, safety and warning requirements of the application are met. The products described herein, including without limitation, product features, specifications, designs, availability and pricing, are subject to change by Parker Hannifin Corporation and its subsidiaries at any time without notice.





Appendix

Absolute Rating Matrix

Published Ratings (µm)	Advantage™ AP	Abso-Mate® PAB	MegaBond MBP™	Glass-Mate™ PMG	MegaFlow™ MFAC	MegaFlow™ MFAP	Poly-Mate™ PM	Poly-Mate™ PXD	Cellulosic PCC	Flo-Pac® FP	Flo-Pac+® FPE
0.2		X									
0.3	X										
0.45		X		X							
0.6	X										
1		X	X	X		X					
1.2	X										
2		X		X		X					
2.5	X										
3			X	X			PM005	PXD005			
5	X	X	X	X		X	PM010	PXD010			
10	X	X	X	X	X	X			PCG020	FP-0.5	FPE-0.5
15			X		X		PM050	PXD050	PCC3	FP-1	FPE-1
20	X	X	X	X		X					
25					X				PCC10		
30			X				PM100	PXD100		FP-5	FPE-5
40	X	X	X	X		X					
50							PM300	PXD300		FP-10	FPE-10
70	X	X	X			X					
90			X							FP-20	FPE-20
100					X		PM600	PXD600	PCC30	FP-30	FPE-30
120			X								
150					X				PCC60		
200										FP-60	FPE-60

Note: Parker's definition of absolute = 99.98% removal ($\beta=5000$) determined by particle counting methods.

Process Filtration Division



Published Rating Matrix

Published Ratings (µm) Efficiency at	Advantage™ AP 99.99%	Abso-Mate® PAB 99.98%	Glass-Mate™ PMG 99.98%	Poly-Mate™ PM/PXD 99%	MegaFlow™ MFNC	MegaFlow™ MFNP	Cellulosic PCC/PCG 99%	Flo-Pac® FPI/PE 95%	MegaBond+ MBP™ 99.98%	DuraBond™ DBC 90%	EcoBond™ EBC 90%	ProBond™ PRO 90%	Wound XTL™ 90%	Wound HFT 90%	Wound SWC 90%	Filter Bags XLH 90%	Filter Bags Felt 60%
0.2		X															
0.3	X																
0.45		X	X														
0.5				X	X	X		X						X		X	
0.6	X																
1		X	X	X	X	X		X	X	X	X		X	X	X	X	X
1.2	X																
2		X	X				X					X					
2.5	X															X	
3			X				X		X	X			X	X	X		X
5	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
10	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
15									X					X	X		
20	X	X	X					X	X				X	X	X		
25										X	X	X		X	X	X	X
30				X			X	X	X				X	X	X		
40	X	X	X						X					X			
50										X	X	X		X	X		X
60				X			X	X									
70	X	X							X								
75										X		X		X	X		X
90									X								
100										X				X	X		X
120									X								
125												X					
150												X		X			
200																	X



Flow Rate/Dirt Loading Chart

Appendix

Flow Rate/Dirt Loading Chart

Flow Rate (gpm)	Dirt Load (ppm)	% by Weight	Total Dirt Load in 24-Hour Period
25	1	0.0001	4.8 oz
	10	0.0010	3.0 lbs
	100	0.0100	30.0 lbs
	1000	0.1000	300.0 lbs
50	1	0.0001	9.75 oz
	10	0.0010	6.0 lbs
	100	0.0100	60.0 lbs
	1000	0.1000	600.0 lbs
100	1	0.0001	19.5 oz
	10	0.0010	12.0 lbs
	100	0.0100	120.0 lbs
	1000	0.1000	1200.0 lbs
250	1	0.0001	3.0 lbs
	10	0.0010	30.0 lbs
	100	0.0100	300.0 lbs
	1000	0.1000	1.5 tons
500	1	0.0001	6.0 lbs
	10	0.0010	60.0 lbs
	100	0.0100	600.0 lbs
	1000	0.1000	3.0 tons
1000	1	0.0001	12.0 lbs
	10	0.0010	120.0 lbs
	100	0.0100	1200.0 lbs
	1000	0.1000	6.0 tons

Note: Maximum dirt concentration for effective cartridge and bag filter media applications should not exceed 100 ppm.

Process Filtration Division





Vessel Pressure Drop

Appendix

Estimated Filter Vessel Pressure Drop Without Cartridges

Model	Inlet/Outlet Size (in)	Total Flow Through Vessel (gpm)	Pressure Drop 32 SSU (1 cks)
B10, LT10	3/4	5	0.7
B20	3/4	10	1.4
WY3S-10-1 1/2	1-1/2	15	0.2
WY3DS-10-1 1/2	1-1/2	30	0.8
WY3TS-10-1 1/2	1-1/2	45	1.9
WYFS-10-1 1/2	1-1/2	30	0.8
WYFS-10-2	2	30	0.3
WYFDS-10-1 1/2	1-1/2	60	3.3
WYFDS-10-2	2	60	1.2
WYFTS-10-1 1/2	1-1/2	90	6.6
WYFTS-10-2	2	90	2.7
FE6-1-2F, FH510	2	30	0.1
FE6-2-2F, FH520, FPI	2	60	0.3
FE6-3-2F, FH530	2	90	0.7
SF3-1-2F	2	15	0.1
SF6-1-2F	2	30	0.1
SF6-2-2F	2	60	0.3
SF6-3-2F	2	90	0.8
SF12-3-4F	4	180	0.3
SF19-3-4F, P3	4	285	0.6
S25-3-4F	4	315	0.6
S35-3-6F, P6	6	525	0.6
S40-3-6F	6	600	0.6
S52-3-6F, P9	6	780	1.1
S85-3-8F	8	1275	0.8
S102-3-8F, P18	8	1530	1.6

Estimated Filter Vessel Pressure Drop Without Bags

Model	Inlet/Outlet Size (in)	Total Flow Through Vessel (gpm)	Pressure Drop 32 SSU (1 cks)
SB11 / FB11 / FCB11	2	80	0.6
SB12 / FB12 / FCB12	2	160	2.5
	3		0.5
SB31	3	240	1.2
SB32, GBCU3	4	480	1.6
SB41	4	320	0.7
SB42, GBCU4	4	640	2.8
	6	640	0.5
SB72, GBCU6	6	1120	1.7
	8	1120	0.6

Process Filtration Division





Measurement Conversion Tables

Appendix

To Convert	Multiply by	To Obtain
A		
atmospheres	33.9	ft of water (at 4°C)
atmospheres	29.92	in mercury (at 0°C)
B		
barrels (US liquid)	31.5	gallons
barrels (oil)	42	gallons (oil)
bars	0.9869	atmospheres
bars	14.5	pounds/sq in
C		
centimeters	0.03281	feet
centimeters	0.3937	inches
centimeters	0.00001	kilometers
centimeters	0.01	meters
centimeters	0.01094	yards
centimeters	10,000	microns
cubic centimeters	0.00003531	cubic feet
cubic centimeters	0.06102	cubic inches
cubic centimeters	0.000001	cubic meters
cubic centimeters	0.001	liters
cubic centimeters	0.002113	pints (US liquid)
cubic centimeters	0.001057	quarts (US liquid)
cubic feet	28,320	cubic centimeters
cubic feet	1,728	cubic inches
cubic feet	0.02832	cubic meters
cubic feet	0.03704	cubic yards
cubic feet	7.48052	gallons (US liquid)
cubic feet	28.32	liters
cubic feet	59.84	pints (US liquid)
cubic feet	29.92	quarts (US liquid)
cubic feet/min	62.43	pounds water/min
cubic feet/min	1.698	cubic meters/hr
cubic feet/sec	448.831	gallons/min
cubic inches	16.39	cubic centimeters
cubic inches	0.0005787	cubic feet
cubic inches	0.00001639	cubic meters
cubic inches	0.00002143	cubic yards
cubic inches	0.004329	gallons
cubic inches	0.01639	liters
cubic meters	35.31	cubic feet
cubic meters	61,023	cubic inches
cubic meters	264.2	gallons (US liquid)
cubic meters	1000	liters
cubic meters/hour	4.4	gallons (US)/min
cubic meters/hour	0.588	cubic feet/min

To Convert	Multiply by	To Obtain
F		
feet	30.48	centimeters
feet	0.0003048	kilometers
feet	0.3048	meters
feet	304.8	millimeters
feet of water	0.0295	atmospheres
feet of water	0.8826	inches of mercury
feet of water	62.43	pounds/sq ft
feet of water	0.4335	pounds/sq in
feet/minute	0.01667	feet/second
G		
gallons	3,785	cubic centimeters
gallons	0.1337	cubic feet
gallons	231	cubic inches
gallons	3.785	liters
gallons (liq br imp)	1.20095	gallons (US liquid)
gallons (US)	0.83267	gallons (Imp)
gallons of water	8.337	pounds of water
gallons/min	0.002228	cubic feet/sec
gallons/min	0.06308	liters/sec
gallons/min	8.0208	cubic feet/hr
grams	0.001	kilograms
grams	0.002205	pounds
grams/cm	0.0056	pounds/in
grams/sq in	45.71	ounces/sq yd
I		
inches	2.540	centimeters
inches	0.02540	meters
inches	25.4	millimeters
inches of mercury	0.03342	atmospheres
inches of mercury	1.133	feet of water
K		
kilograms	2.2046	pounds
kilograms	0.009842	tons (long)
kilograms	0.001102	tons (short)
kilograms/sq cm	2,048	pounds/sq ft
kilograms/sq cm	14.22	pounds/sq in
kilograms/sq meter	0.00009678	atmospheres
kilograms/sq meter	0.00009807	bars
kilograms/sq meter	0.003281	feet of water
kilograms/sq meter	0.002896	inches of mercury
kilograms/sq meter	0.2048	pounds/sq ft
kilograms/sq meter	0.001422	pounds/sq in

Process Filtration Division



Appendix

To Convert	Multiply by	To Obtain
L		
liters	0.2642	gallons (US liquid)
liters	2.113	pints (US liquid)
liters	1.057	quarts (US liquid)
liters/min	0.0005886	cubic ft/sec
liters/min	0.004403	gallons/sec
liters/hour	0.004403	gallons (US)/min
M		
meters	3.281	feet
meters	39.37	inches
meters	0.001	kilometers
meters/min	3.281	feet/min
meters/min	0.05468	feet/sec
microns	0.000001	meters
mils	0.00254	centimeters
mils	0.000083333	feet
mils	0.001	inches
mils	0.000000254	kilometers
O		
ounces	28.349	grams
ounces	0.0625	pounds
ounces (fluid)	1.805	cubic inches
ounces (fluid)	0.02957	liters
ounces/sq in	0.0625	pounds/sq in
ounces/sq yard	20.83	pounds/3000 sq ft
P		
pints (liquid)	0.125	gallons
pints (liquid)	0.4732	liters
pints (liquid)	0.5	quarts (liquid)
pounds	453.59	grams
pounds	16	ounces
pounds/sq ft	0.0004725	atmospheres
pounds/sq ft	0.01602	feet of water
pounds/sq ft	0.01414	inches of mercury
pounds/sq in	0.06804	atmospheres
pounds/sq in	2.307	feet of water
pounds/sq in	2.036	inches of mercury
pounds/sq in	0.0145	kilo pascals (kPa)
pounds/sq in	27.684	inches water column
pounds/3000 sq in	0.048	ounces/sq yard

To Convert	Multiply by	To Obtain
Q		
quarts (liquid)	0.03342	cubic feet
quarts (liquid)	57.75	cubic inches
quarts (liquid)	0.0009464	cubic meters
quarts (liquid)	0.25	gallons
quarts (liquid)	0.9463	liters
S		
square centimeters	0.001076	square feet
square centimeters	0.1550	square inches
square centimeters	0.0001	square meters
square feet	144	square inches
square feet	0.0929	square meters
square inches	0.006944	square feet
square inches	0.0007716	square yards
square meters	10.76	square feet
square meters	155	square inches
square meters	1.196	square yards
square yards	9	square feet
square yards	1,296	square inches
square yards	0.8361	square meters

Process Filtration Division

Viscosity Conversion Chart

Appendix

Viscosity Measuring Method	CPS*											
	10	20	50	100	200	500	1,000	2,000	5,000	10,000	20,000	50,000
ASTM.07				72	143	357	715	1,430	3,750	7,150	14,300	35,700
ASTM.10					42	104	208	417	1,041	2,080	4,170	10,410
ASTM.15						24	48	95	238	476	953	2,380
ASTM.20						8	16	33	82	164	328	820
ASTM.25							7	14	36	72	143	357
Brookfield	10	20	50	100	200	500	1,000	2,000	5,000	10,000	20,000	50,000
Demmier # 1				32	63	156	312					
Demmier # 10				3	6	15	31					
Engler (DEGREES)				14	27	68	137	274	685	1,370	2,740	6,850
Engler (SEC)				690	1,300	3,460	7,000	14,000	34,800	70,500		
Ford # 3				42	84	208	416	834	2,081	4,160	8,340	20,810
Ford # 4				30	55	135	270	540	1,350	2,700	5,400	13,500
Fisher # 1	20	30										
Fisher # 2		15	24	50								
Gardner-Holdt (UNITS)	A-3	A-2	A	D	H	S	W	Y -Z	Z3	Z5	Z6 - Z7	Z7 - Z8
Gardner-Holdt(SEC)						5	10	20	50	100	200	500
Gardner-Vertical(SEC)						5	10	20	50	100	200	500
Krebs-Stormer(UNITS)	85	105	140			67	85	105	140			
Parlin 7				77	154	385	770	1,540	3,850	7,700	15,400	38,500
Parlin 10				21	42	104	208	416	1,040	2,080	4,160	10,400
Parlin 15					10	25	47	93	232	465	930	2,320
Parlin 20						8	17	33	83	167	333	833
Parlin 25								15	36	72	143	357
Parlin 30									19	38	77	192
Saybolt Furol			24	48	96	238	476	954	2,380	4,760	9,540	23,800
Saybolt Universal(SUS)		96	236	476	954	2,380	4,760	9,540	23,800	47,600	95,400	
Zahn G1		38	60	100	267	667	1,332	2,670	6,670	13,320	26,700	66,700
Zahn G2		16	24	42	82	161	323	645	1,610	3,230	6,450	16,100
Zahn G3					27	58	113	204	510	1,020	2,040	5,100
Zahn G4					19	38	71	160	400	800	1,600	4,000
Zahn G5					13	27	50	97	212	424	848	2,120

* Centistokes (cks) = $\frac{\text{Centipose (cps)}}{\text{Specific Gravity (spg)}}$

Process Filtration Division





Filter Materials Selection Guide

This bulletin serves only as a guide for the selection of engineering materials and filter media. Good judgement must be applied at all times when selecting filters. While Parker Hannifin Process Filtration Division assumes no responsibility for the information provided, this bulletin has been compiled from the latest data secured from reliable sources. As additional information or corrections come to our attention, revisions will be made. Dissimilar metals used in filter assemblies may set up galvanic action and cause corrosion of the parts. These complicating factors are not considered in this bulletin.

Notes

1. The chemical resistance of the filter fibers depends on the chemical concentration of the fluid, the operating temperature and the length of time to exposure. High density wound depth cartridges can tolerate somewhat higher temperatures than low density cartridges.

2. The maximum recommended continuous operating temperatures for the various filter media are as follows:

Rayon	250°F
Cotton	250°F
Phenolic Bonded Acrylic	250°F
Nylon	275°F
Glass Fiber (Wound)	750°F*
Glass Media (Pleated)	275°F
Stainless Steel	1200°F**
Polypropylene	200°F
Pleated Cellulosic	250°F
Polyester	275°F

*Except in atmospheres containing steam

**High temperature use of stainless steel filter cartridges is limited to suitable available gasketing material.

See Note 7 concerning core limitations.

3. Some chemicals have little or no effect on certain filter media at room temperature but data is lacking concerning the effects of these chemicals at elevated temperatures. Approval based on tests should be obtained before recommending the use of such filter media with these

chemicals at accelerated temperatures.

4. Oil-free wound glass fiber filter cartridges have been approved for the filtration of 30% and 90% hydrogen peroxide solutions prior to the immediate use of these fluids.

5. Rayon and cotton are not resistant to attack by microorganisms such as mold, fungi, bacteria, mildew, etc., and by insects. For this reason, polypropylene is preferred for the filtration of water.

6. In general, all filter media are considered to be non-toxic, but because they impart various degrees of taste to filtered fluids, it is recommended that only polypropylene, rayon, polyester, or cotton be used for the filtration of fluids for human consumption. (See note 5)

7. The collapse strength of polypropylene cores is reduced by increased temperatures. Maximum recommended operating temperatures when using plastic cores are as follows:

Polypropylene Heavy Wall	120°F
Polypropylene (Mega Bond)	160°F
Glass Filled Polypropylene	200°F

At the above temperatures the collapse strengths will be approximately 35 psid. Continuous operating pressures should be no higher than 60 psid.

8. All metal core types will meet or exceed temperature limitations of fibers (see Note 2). With high temperature glass use stainless steel.

9. While polypropylene is chemically resistant to organic solvents, acids and alkalis, it should not be used with:

- A. Strong oxidizing agents, i.e., 98% sulfuric acid
fuming nitric acid
bromic acid
- B. Chlorinated hydrocarbons i.e. trichloroethylene
perchloroethylene
carbon tetrachloride
- C. Aromatic solvents, i.e., benzene
toluene
xylene
- D. At temperatures below -4°F (-20°C)

Metric Conversion Formulae

mm = inches x 25.4

°C = 5/9 (°F - 32)

k.Pa = psi x 6.895

2-Ethylhexal Acrylate - Amino Acids

Y = Compatible
N = Not compatible
nk = No data

Code	FDA APPROVED
Y = Compatible	Max. Temperature (F)
N = Not compatible	2-Ethylhexyl Acrylate
Blank = No data	Acetaldehyde
	Acetamide
	Acetic Acid, 5-20%
	Acetic Acid, Glacial
	Acetone
	Acetonitrile
	Acetophenone
	Acetyl Acetone
	Acetyl Chloride
	Acetylene
	Acrylsalicylic Acid
	Acrylic Acid
	Adiponitrile
	Adipic Acid
	Air, Below 200°F
	Allyl Alcohol
	Allyl Chloride
	Alum
	Aluminum Acetate
	Aluminum Ammonium
	Aluminum Chloride
	Aluminum Fluoride
	Aluminum Hydroxide
	Aluminum Nitrate
	Aluminum Potassium Sulfate
	Amino Acids

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Compatibility Guide

Aminoethanoamine - Anhydrous Ammonia

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Aminoethanolamine	Ammonia Gas (Wet)	Ammonia, Gas, Cold	Ammonium Acetate	Ammonium Bicarbonate	Ammonium Bromide	Ammonium Carbonate	Ammonium Chloride, 2N	Ammonium Fluoride, 40%	Ammonium Hydroxide, 3 Molar	Ammonium Hyposulfite	Ammonium Nitrate, 2N	Ammonium Nitrate	Ammonium Oxalate	Ammonium Persulfate 10%	Ammonium Phosphate Solution	Ammonium Phosphate	Ammonium Phosphate, Dibasic	Ammonium Phosphate, Mono-Basic	Ammonium Sulfate, Tribasic	Ammonium Sulfate	Ammonium Sulfide	Amyl Acetate	Amyl Alcohol	Amyl Chloride	Anhydrous Ammonia
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Compatibility Guide

Anhydrous Hydrazine - Borax

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Anhydrous Hydrazine	Aniline	Animal Oil (Lard Oil)	Antimony Hydrogen Fluoride	Aqua Regia (HNO ₃ :HCl)	Arsenic Acid	Askael	Asphalt	Aviation Fuel	Aviation Gasoline	AZ4330 Positive Resist	Banana Oil	Barium Carbonate	Barium Chloride	Barium Hydroxide	Barium Sulfate	Beer	Beet Sugar Liquors	Benzaldehyde	Benzene	Benzoic Acid	Benzyl Alcohol	Bismuth Chloride	Bleach	BOE (NH ₄ F:HF)	Borax
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Pleated Cartridges

AP / PAB / PM / PXD	Y	200	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
PMG	Y	275	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PCC / PCG	N	250	Y							Y	Y		Y					Y	Y	Y	Y						
FloPac	N	250	Y							Y	Y		Y					Y	Y	Y	Y						
FloPac +	N	250	Y		Y	Y		N	N	Y	Y	Y	Y		Y			N	Y	Y	Y	N	Y				

Wound and Depth Cartridges

Cotton	Y	300			Y	Y		N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polypropylene	Y	250	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Rayon	Y	300			Y					Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y				
Glass	N	750	Y				Y	Y		Y	Y							Y	Y	Y							
Nylon	N	275			Y	Y		N	N		Y	Y	Y	Y				Y	Y	Y							
Polyester	Y	300			Y			Y			Y	Y	Y	Y				Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MBP / DBC / EBC	Y	120	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y
PRO	N	250			Y	N		N	Y	Y	Y	Y	Y					Y	Y	Y	Y						Y

Bags

XLH / Polypropylene	Y	250	N	N	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y
Polyester (PE / PEMU)	Y	300	N	N	Y			Y		Y	Y		Y	Y	Y				Y	Y	Y	Y	Y				
Nylon (MNO / MN)	N	275	N	N	Y	Y		N	N		Y	Y	Y	Y				Y	Y	Y							
Nomex	N	425	N	N	Y	Y		N	N		Y	Y	Y	Y				Y	Y	Y							
Rayon	N	300	N	N	Y	Y				Y	Y	Y	Y	Y				Y	Y	Y	Y	Y	Y				
Strainers	Y	500	N	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y				Y		Y				Y	Y		

Membrane Cartridges

AF / AF +	Y	300			Y		Y				Y									Y		Y				Y	
Polyethersulfone (PS)	Y	140			Y		N				N									Y		Y				Y	
PTFE/Poly (PF)	N	140			Y		N			N	N	N	Y							N		Y				Y	

Metallic Cartridges

304 Stainless Steel	Y	750			Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
316 Stainless Steel	Y	750	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Cores and Vessels

Polypropylene	Y	140-200	Y	Y	Y	Y	Y	Y	Y	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y
Carbon Steel / Tin Steel	Y	750			Y	Y		N	N	Y	Y	Y	Y	Y	Y				Y	Y	Y		Y				Y
304 Stainless Steel	Y	750			Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y				Y		Y	Y	Y	Y	Y	Y	Y
316 Stainless Steel	Y	750	Y		Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y				Y		Y				Y	Y	
Polyester	Y	140			Y				Y		Y	Y	Y	Y	Y	Y				Y	Y	Y	Y	Y			

Gaskets and O-rings

Poly Foam (A)	Y	200	Y	Y	Y	Y	Y	Y		N	N	N		Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	
Buna N (N / B)	Y	250	N	N	N	Y		N	Y	Y	Y	Y	N	N	Y	Y	Y		Y	Y	N	N	N	N	N	Y	Y	N	Y
EPR / EPDM (E)	Y	300	Y	Y	Y	Y	N	Y	N	N	N	N	Y	Y	Y	Y	Y		Y	Y	Y	N	N	Y	N		Y	N	Y
Silicone (S)	Y	500	Y		N	Y		N	Y	N	N		N			Y	Y		Y	Y	Y	N	N	Y	N		Y	Y	Y
Fluoroelastomer (V)	Y	400	N	N	Y	Y	Y	N	Y	Y	Y	Y	N	N	Y	Y	Y		Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
FEP Encapsulated Fluoroelastomer (T)	Y	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CR 570 (D)	Y	450	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
KR 4079 (K)	Y	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cork (C)	N	250				Y																							
Vellumoid (A)	N	300				Y	Y					Y	N		Y							Y							
Asbestos Substitute	N	850				Y	Y					Y	Y		Y					Y									



Boric Acid - Carbon Tetrachloride

Blank = No data

on Tetrachloride

[illegible]

Carbonated Water - Cola Syrup

Blank = No data

FDA APPROVED
Max. Temperature (F)
Carbonated Water
Carbonic Acid
Caseln
Castor Oil
Caustic Potash
Cellosic Soda
Cellosolve
Cellosolve Acetate
Chlorosolve, Butyl
Chlorinated Solvents, Dry
Chlorine, Dry
Chlorine, Wet
Chloroacetic Acid
Chlorobenzene
Chloroform, (Mono)
Chloroform (liquid)
Chlorophane (gas)
Chrome Alum
Cider
Citric Acid
Cobalt Carbonate
Coconut Oil
Cod Liver Oil
Coke
Coke Oven Gas
Cola Syrup

[illegible]

Dichloroethylene - Ethyl Chloride

Blank = No data

FDA APPROVED
Max T

Max. Temperature (F)

Dichloroethylene
Diesel Fuel
Dic-

ethylene
Diesel Fuel
Diesel Oil
Diethanol

Diethylamine
Diethyl Ether
Diethyl-

Diethyl Ether
Diglycolic Acid
Diiso-

Diethylene Glycol
Diglycolic Acid
Diisooctyl Phthalate
Dimethyl

Dimethyl Phthalate
Dimethyl Acetamid
Dimethyl Formate

Dimethyl Formam
Dimethyl Phthal
Dimethyl

Dimethyl Phthalate
Diethyl Phthalate
Diisobutyl Phthalate
Diisooctyl Phthalate
Diisopentyl Phthalate
Diisopropyl Phthalate
Diisobutyl Phthalate
Diisooctyl Phthalate
Diisopentyl Phthalate
Diisopropyl Phthalate

Diethyl Phthalate
Dioxane
Diphenyl

exane
Diphenyl Oxides
Dowtherm
Drink:

Dowtherm
 Drinking Water
 EGMEA

Drinking Water
 EGMEA
 Epichlorohydrin
 Ethane

-pichlorohydrin
 Ethane
 Ethanol
 Eth

Ethanol
Ethanol Amino
Ethers

- **Alcohols**
- **Amines**
- **Ethers**
- **Ethyl Acetate**

Ethyl Acetate-Org
Ethyl Acrylate
Ethyl A

Ethyl Acrylate
Ethyl Alcohol
Ethyl Cell

Ethyl Alcohol
Ethyl Cellosolve
Ethyl Cellulose

Ethyl Cellulose
Ethyl Chloride

Chloride

[illegible]

Compatibility Guide

Fuel Oil, #2 - Heptane

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Fuel Oil, #2	Fuel Oil, #3	Fuel Oil, #4	Fuel Oil, #5A	Fuel Oil, #5B	Fuel Oil, #6	Fuming Sulphuric Acid (20/25% Oleum)	Furfural	Gallic Acid	Gas - Natural	Gasoline	Gelatin	Glacial Acetic Acid	Glucose	Glycerine - Glycerol	Glycerol	Glycol Monoethers	Glycols	Grease, Petroleum Base	Green Soap Solution	Green Sulphate Liquor	Gum Arabic	H2S (See Hydrogen Sulfide)	HCl:H2O2	Heavy Water	Helium	Heptane
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Pleated Cartridges

AP / PAB / PM / PXD	Y	200	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PMG	Y	275	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PCC / PCG	N	250								Y	Y	Y		Y	Y		Y	Y									Y	Y
FloPac	N	250								Y	Y	Y		Y	Y												Y	Y
FloPac +	N	250	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y

Wound and Depth Cartridges

Cotton	Y	300	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polypropylene	Y	250	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rayon	Y	300	Y	Y	Y	Y	Y	Y	Y				Y		Y	Y	Y	Y	Y	Y	N	Y				N	Y	Y
Glass	N	750	Y	Y	Y	Y	Y	Y	Y	Y				Y						Y	Y						Y	Y
Nylon	N	275	Y	Y	Y	Y	Y	Y	Y					Y		Y					Y			N			Y	Y
Polyester	Y	300	Y	Y	Y	Y	Y	Y	Y					Y	Y						Y					Y	Y	Y
MBP / DBC / EBC	Y	120	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PRO	N	250	Y	Y	Y	Y	Y	Y	Y		Y		Y	Y		Y	Y	Y	Y	Y	Y	Y				Y	Y	Y

Bags

XLH / Polypropylene	Y	250	Y	Y	Y	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	N	Y
Polyester (PE / PEMU)	Y	300	Y	Y	Y	Y	Y	Y				N		Y	Y			Y				N		Y	N		
Nylon (MNO / MN)	N	275	Y	Y	Y	Y	Y	Y				N	Y	Y				Y		N		N		Y	N		
Nomex	N	425	Y	Y	Y	Y	Y	Y				N	Y	Y				Y		N		N		Y	N		
Rayon	N	300	Y	Y	Y	Y	Y	Y				N		Y	Y	Y	Y	Y	Y	N	Y	N		N	N	Y	
Strainers	Y	500	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	N	Y	

Membrane Cartridges

AF / AF +	Y	300							Y		Y				Y									Y			
Polyethersulfone (PS)	Y	140									Y				Y								Y				
PTFE/Poly (PF)	N	140							Y		N				Y								N				

Metallic Cartridges

304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y		Y	Y	Y	
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	

Cores and Vessels

Polypropylene	Y	140-200	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Carbon Steel / Tin Steel	Y	750	Y	Y	Y	Y	Y	Y		Y		Y	Y	N	Y	Y	Y	Y		Y	Y		N		Y	N	Y	Y
304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y		Y	Y		N	Y	Y	Y	Y	Y
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y		Y	Y		Y	Y	Y	Y	Y	Y
Polyester	Y	140	Y	Y	Y	Y	Y	Y						Y	Y			Y			Y				Y		Y	

Gaskets and O-rings

Poly Foam (A)	Y	200	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
Buna N (N / B)	Y	250	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N		Y	Y	Y	Y
EPR / EPDM (E)	Y	300	N	N	N	N	N	N	N	Y	Y	N	N	Y	Y	Y	Y	Y	Y	N	Y	Y		Y	Y	Y	N
Silicone (S)	Y	500	Y	Y	Y	Y	Y	N	N	N		Y	N	Y	Y	Y	Y	Y	Y	N				Y	N	Y	Y
Fluoroelastomer (V)	Y	400	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y		N	Y	Y	Y	Y
FEP Encapsulated Fluoroelastomer (T)	Y	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y
CR 570 (D)	Y	450	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y
KR 4079 (K)	Y	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y	Y	Y
Cork (C)	N	250																									
Vellumoid (A)	N	300	Y	Y	Y	Y	Y	Y	Y		Y	Y	N	N						N	Y						
Asbestos Substitute	N	850						Y	Y		Y	Y	Y	Y	Y	Y			Y	Y				Y			

Compatibility Guide

Hydroquinone - Lead Acetate

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Hydroquinone	Hypochlorous Acid	Inks	Insulating Oil	Iodine	Isobutyl Alcohol	Isophorone (Ketone)	Isopropanol	Isopropyl Acetate	Isopropyl Alcohol	JP-10	JP-4 (MIL-T-5624)	JP-5 (MIL-T-5624)	Kerosene (Similar to RP-1 and JP-1)	Ketchup	Kodak KMER, FIFR	KOH:IPA	KTI Pad (NH ₄ F:CH ₃ CO ₂ H: H ₂ O: Al Acetate)	KTI R-10 Stripper	Lacquer Solvents	Lacquer Developer	Lactic Acid	Lactic Acid, Cold	Lard, Animal Fat	Latex	Lauric Acid	Lead Acetate
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Pleated Cartridges																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			</
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Wound and Depth Cartridges																													
Cotton	Y	300	Y			Y		Y	Y	Y	Y		Y	Y	Y	Y						Y	Y	Y	Y	Y	Y		
Polypropylene	Y	250	Y	Y	Y		Y	Y		Y	Y	Y	N	N	N	N	Y	Y	Y	Y			N		Y	N	Y	Y	Y
Rayon	Y	300	Y			Y		Y		Y			Y	Y	Y	Y						Y	Y	Y	Y	Y	Y		
Glass	N	750						Y		Y		Y					Y								Y	Y			
Nylon	N	275						Y		Y		Y					Y								Y	Y	Y		Y
Polyester	Y	300	Y					Y		Y		Y		Y	Y	Y	Y								Y	Y	Y		Y
MBP / DBC / EBC	Y	120	Y	Y	Y		Y	Y		Y	Y	Y	N	N	N	N	Y	Y	Y	Y			N		Y	N	Y	Y	Y
PRO	N	250	Y			Y	Y			Y		Y					Y	N					Y	Y	Y	Y	Y	Y	

Bags																															
XLH / Polypropylene	Y	250	Y	Y	Y	Y	Y	Y		Y	Y	Y	N	N	N	N	Y	Y	Y	Y				N		Y	N		Y	Y	Y
Polyester (PE / PEMU)	Y	300	Y			Y		Y		Y		Y		Y	Y	Y	Y									Y	Y	Y			Y
Nylon (MNO / MN)	N	275				Y		Y		Y		Y					Y									Y	Y	Y			Y
Nomex	N	425				Y		Y		Y		Y					Y									Y	Y	Y			Y
Rayon	N	300	Y			Y		Y		Y		Y		Y	Y	Y			Y					Y	Y	Y	Y	Y	Y		
Strainers	Y	500	Y			Y	Y	Y	Y	Y	Y	Y					Y	Y	Y					Y	Y	N	N	Y	Y		Y

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Gaskets and O-rings																															
Poly Foam (A)	Y	200	Y	Y	Y		Y	Y		Y	Y	Y	N	N	N	N	Y	Y	Y	Y		Y		N		Y	N	Y	Y	Y	Y
Buna N (N / B)	Y	250	N	N		Y	Y	Y	N	Y	N	Y	Y	Y	Y	Y	Y			N	Y	Y	N	N	Y	N	Y	Y		Y	
EPR / EPDM (E)	Y	300	N	Y		N	Y	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	Y	N	N	Y	N	N	Y	N	Y		Y	
Silicone (S)	Y	500					Y	N	Y	N	Y	N	N	N	N	N	N		N	Y	N	N	N	N	N	Y	N	Y		N	
Fluoroelastomer (V)	Y	400	Y	Y		Y	Y	Y	N	Y	N	Y	N	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y	Y		N	
FEP Encapsulated Fluoroelastomer (T)	Y	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CR 570 (D)	Y	450	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
KR 4079 (K)	Y	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Cork (C)	N	250				Y																	Y	Y							
Vellumoid (A)	N	300				Y		Y		Y		Y	Y	Y	Y							Y	Y	N	N	Y	Y				
Asbestos Substitute	N	850				Y		Y	Y	Y		Y	Y	Y	Y	Y						Y		Y	Y		Y				



Compatibility Guide

Ligroin (Petroleum Ether or Benzine) - Mercurous Nitrate

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Ligroin/Petroleum Ether or Benzine)	Lime - Sulfur	Linoleic Acid	Linseed Oil	Lithium Bromide	Lithium Carbonate	Lithium Hydroxide	Lubricating Oils, Di-ester	Lubricating Oils, petroleum base	Lubricating Oils, SAE 10	Lubricating Oils, SAE 20	Lubricating Oils, SAE 30	Lubricating Oils, SAE 40	Lubricating Oils, SAE 50	Lubricating Oils, SAE 60	Lubricating Oils, SAE 70	Magnesium Carbonate	Magnesium Chloride	Magnesium Hydroxide	Magnesium Nitrate	Maleic Acid	Malic Acid	Mayonnaise	Melamine Resins	Mercuric Chloride	Mercurous Nitrate
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Compatibility Guide

Mercury - Negative Resist

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Mercury	Mercury Vapors	Methane	Methanol	Methyl Acetate	Methyl Acrylate	Methyl Alcohol	Methyl Cellosolve	Methyl Chloride	Methyl Ethyl Ketone (MEK)	Methyl Formate	Methyl Isobutyl Carbinol	Methyl Isobutyl Ketone (MIBK)	Methyl Salicylate	Methyl Sulfuric Acid	Milk	Methylene Chloride	Mineral Oils	Mineral Spirits	Mixed Acid Etch (HNO ₃ :HF:CH ₃ CO ₂ H)	Molasses	Mono Ethanolamine	Monochlorobenz	Mustard	N-Methyl-2-Pyrrolidone	Naphthalene	Naptha	Natural Gas	Negative Resist
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Pleated Cartridges

AP / PAB / PM / PXD	Y	200	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PMG	Y	275	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PCC / PCG	N	250			Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FloPac	N	250			Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
FloPac +	N	250	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Wound and Depth Cartridges

Cotton	Y	300	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polypropylene	Y	250	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rayon	Y	300	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Glass	N	750	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Nylon	N	275	Y			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polyester	Y	300	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
MBP / DBC / EBC	Y	120	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
PRO	N	250	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Bags

XLH / Polypropylene	Y	250	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polyester (PE / PEMU)	Y	300	Y		Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Nylon (MNO / MN)	N	275	Y			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Nomex	N	425	Y			Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Rayon	N	300	Y	Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Strainers	Y	500	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Membrane Cartridges

AF / AF +	Y	300				Y	Y				Y	Y	Y		Y		Y	Y					Y								Y
Polyethersulfone (PS)	Y	140				Y	N				Y	N		N		N		N					N								Y
PTFE/Poly (PF)	N	140				Y	Y				Y	Y		Y		Y	Y					Y									Y

Metallic Cartridges

304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

Cores and Vessels

Polypropylene	Y	140-200	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Carbon Steel / Tin Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Polyester	Y	140	Y		Y	Y		Y	Y		Y	Y		Y		Y		Y				Y				Y					

Gaskets and O-rings

Poly Foam (A)	Y	200	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Buna N (N / B)	Y	250	Y	Y	Y	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
EPR / EPDM (E)	Y	300	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Silicone (S)	Y	500	Y	Y	N	Y	N	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
Fluoroelastomer (V)	Y	400	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
FEP Encapsulated Fluoroelastomer (T)	Y	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
CR 570 (D)	Y	450	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
KR 4079 (K)	Y	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Cork (C)	N	250																													
Vellumoid (A)	N	300	Y			N		N	N		Y	Y		Y		N	Y	Y	Y		Y					Y					
Asbestos Substitute	N	850			Y	Y		Y	Y		Y			Y	Y	Y	Y	Y	Y	Y						Y					

Compatibility Guide

Nickel Acetate - Phenol

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Nickel Acetate	Nickel Chloride	Nitric Sulfate	Nitric Acid 3 Molar to 158°F(4)	Nitric Acid Concentrated Room Temp.(4)	Nitrobenzene	Nitrogen	Nitrous Oxide	Octyl Alcohol	Oleic Acid	Oleum (Fuming Sulfuric Acid)	Olive Oil	Oxalic Acid	Oxygen, Cold	Ozone	P-Etch (HNO3:HF:H2O)	Paint	Palm Oil	Palmitic Acid	PBS	Peanut Oil	Pentane	Perchloroethylene	Petroleum Ether	Petroleum Oil, Above 250°F	Petroleum Oil, Below 250°F	Phenol
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Compatibility Guide

Phenol, 70%/30% H2O - Potassium Sulfite

Code

Y = Compatible

N = Not compatible

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Compatibility Guide

Potassium Thiocyanate - Sodium Chlorate

Code

Y = Compatible

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FDA APPROVED	Max. Temperature (F)	Potassium Thiocyanate	Propene	Propionic Acid	Propyl Alcohol	Propylene Glycol	Pyridine Oxide	Quench Oil	RCA Clean (NH ₄ OH:H ₂ O2:H ₂ O)	RCA Etch (H ₃ PO ₄ :CH ₃ CO ₂ H:HNO ₃ :H ₂ O)	Resins	Rhodium Acid	Salicylic Acid	Sea (Salt) Water	Shellac	Shipley (AZ - 111, 340, 1350)	Shipley S 1800 Series Positive Resist	Silicone Greases	Silicone Oils	Silver Nitrate	Soap Solutions	Soda Ash	Sodium Acetate	Sodium Benzoate	Sodium Bicarbonate	Sodium Bisulfate (Baking Soda)	Sodium Borate	Sodium Carbonate (Soda Ash)	Sodium Chlorate
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Sodium Chlorate - Stearates

Blank = No data

Clearates
400°F

[illegible]

Compatibility Guide

Stearic Acid - Tung Oil (China Wood Oil)

Code

Y = Compatible

N = Not compatible

Blank = No data

FDA APPROVED	Max. Temperature (F)	Stearic Acid	Stoddard Solvent	Styrene (Monomer)	Sucrose Solutions	Sulfur Chloride	Sulfur Dioxide	Sulfur Dioxide, Dry	Sulfur Dioxide, Wet	Sulfur Liquors	Sulfur Trioxide	Sulfuric Acid, Dry	Sulfuric Acid, 3 Molar to 158°F	Sulfuric Acid, Concentrated to 158°F	Sulfurous Acid	Tannic Acid	Tartaric Acid (10%)	Tetrachloroethylene	Tetrahydrofuran	TMAH, >5%	Toluene	Toluene Diisocyanate	Transformer Oil	Trichloroacetic Acid	Trichloroethane	Trichloroethylene	Triethanolamine	Trisodium Phosphate	Tung Oil (China Wood Oil)
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Pleated Cartridges																														
AP / PAB / PM / PXD	Y	200	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	N	Y	Y	N	N	Y	Y	Y
PMG	Y	275	Y	Y	Y	Y	Y	Y	Y	Y	N	N	N	N	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y	Y
PCC / PCG	N	250	Y	Y											Y											Y				
FloPac	N	250	Y	Y											Y											Y				
FloPac +	N	250	N	Y	Y	Y	N	N		N	N	N	N	N	Y	N	Y	Y	Y		Y	Y	Y		Y	Y		Y	Y	

Wound and Depth Cartridges																														
Cotton	Y	300	Y	Y	Y	Y		N		N	N	N	N	N	Y	Y	Y	Y	Y		Y	Y	Y		Y	Y		Y	Y	
Polypropylene	Y	250	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y		N	Y	Y	N	N	N	Y	Y	Y	
Rayon	Y	300	Y	Y		Y		N		N	N	N	N	N	Y	Y		Y	Y	Y		Y	Y	Y		Y	Y		Y	Y
Glass	N	750	Y			N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y		Y	Y					
Nylon	N	275	N	Y				N		N	N	N	N	N	Y		Y	Y	Y		Y				Y			Y		
Polyester	Y	300	Y	Y	Y			Y		Y	N	N	N	Y		Y		Y						Y	Y		Y	Y		
MBP / DBC / EBC	Y	120	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y		N	Y	Y	N	N	N	Y	Y	Y	
PRO	N	250	Y	Y				Y		Y	Y	Y	N	N	Y	Y	Y	Y	Y	N	Y	Y		Y	Y		Y	Y	Y	

Bags																														
XLH / Polypropylene	Y	250	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y		N		Y	Y	N	N	N	Y	Y	Y	
Polyester (PE / PEMU)	Y	300	Y	Y	Y			Y			Y	N	N	Y		Y		Y		Y		Y	Y	Y	Y	Y	Y	Y	Y	
Nylon (MNO / MN)	N	275	N	Y				N		N	N	N	N	N	Y		Y	Y	Y		Y			Y		Y		Y		
Nomex	N	425	N	Y				N		N	N	N	N	N	Y		Y	Y	Y		Y			Y		Y		Y		
Rayon	N	300	Y	Y		Y		N		N	N	N	N	N	Y		Y	Y	Y		Y	Y	Y		Y	Y		Y	Y	
Strainers	Y	500	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y		Y	Y	Y		Y	Y		Y	Y	Y

Membrane Cartridges																														
AF / AF +	Y	300				Y	Y					Y	Y				Y	Y	Y				Y	Y	Y					
Polyethersulfone (PS)	Y	140				Y	N					N	N				N	Y					N	Y						
PTFE/Poly (PF)	N	140				Y	Y					Y	Y		N		Y	Y	N				Y	N	Y					

Metallic Cartridges																														
304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y			Y	Y	Y		Y		Y	Y	Y	Y	
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y		Y		Y	Y	Y	Y	

Cores and Vessels																														
Polypropylene	Y	140-200	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y		N		Y	Y	N	N	N	Y	Y	Y	
Carbon Steel / Tin Steel	Y	750	N	Y	Y			Y		N	Y	N	N	N	N	Y	Y	Y	Y		Y		Y	Y	Y	Y	Y	Y	Y	
304 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	N	Y	N	Y	Y	N	Y	Y	Y	Y		Y	Y	Y		Y	Y	Y	Y	Y	
316 Stainless Steel	Y	750	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y		Y	Y	Y		Y	Y	Y	Y	Y	
Polyester	Y	140	Y	Y	Y			Y		Y	N	N		Y			Y				Y			Y	Y		Y	Y		

Gaskets and O-rings																														
Poly Foam (A)	Y	200	Y	Y		Y	Y	Y	Y	Y		Y	Y	Y	Y	N	Y	Y		N		Y	Y	N	N	N	Y	Y	Y	
Buna N (N / B)	Y	250	Y	Y	N	Y	N	N	N	Y	N	Y	N	Y	Y	N	N	N	N	N	N	Y	Y	N	N	N	N		Y	Y
EPR / EPDM (E)	Y	300	Y	N	N	Y	N	Y	Y	Y	Y	N	N	Y	Y	N	N	Y	Y	N	Y	N	Y	N	N	N	N	Y	Y	N
Silicone (S)	Y	500	Y	N	N	Y	N	Y	Y	Y	Y	N	N	Y	Y	N		N	Y	N	N	Y		N	N	N		Y		N
Fluoroelastomer (V)	Y	400	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	
FEP Encapsulated Fluoroelastomer (T)	Y	400	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
CR 570 (D)	Y	450	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
KR 4079 (K)	Y	600	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	
Cork (C)	N	250																												
Vellumoid (A)	N	300						N		N	N	N	N	N	N	N	N	Y			Y			Y	Y		Y	Y		
Asbestos Substitute	N	850	Y	Y				Y		Y	Y	Y	Y	Y	Y	Y	Y	Y			Y		Y		Y	Y		Y	Y	



Turpentine - Zinc Sulfate

Blank = No data

FDA APPROVED	
Max. Temperature (F)	
	Turpentine
	Urea-Formaldehyde Resins
	Vanilla Extract
	Varnish
	Vegetable Oil
	Vinegar
	Vinyl Acetate
	Vinyl Chloride
	Viscous Oils
	Water
	Waxes
	Waycoat 59
	Whiskey and Wines
	Xylene
	Xylol
	Zinc Bromide
	Zinc Chloride
	Zinc Cyanide
	Zinc Fluoborate
	Zinc Nitrate
	Zinc Oxide
	Zinc Sulfate

[illegible]



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 2.5 gpm per 10-in length.

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.

■ Beta Ratio and 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

Bridging:

Condition of filter loading where contaminants span the open space between adjacent sections of a filter medium, thus blocking a portion of the useful filtration area.

Bubble Point:

Pressure drop in inches of water required to expel the first steady (continuous) stream of bubbles (fizz point) from a horizontal disc of wetted filter medium or a filter cartridge immersed in a liquid (usually alcohol). Parker Process Filtration Division uses alcohol in its test.

Bubble Point Test:

A common, nondestructive method used to test the integrity of cartridge construction to compare relative porosities of filter media or to monitor product consistency as a quality control method.

Bypass:

Fluid flowing through a passage other than the filter medium and/or leakage around filter media seals.

“C” Style Bag:

Parker Process Filtration Division style bag which incorporates a spring band bag seal configuration. Designed to fit Parker Process Filtration Division style housings only.

Cartridge/Bag Design Flow Rate:

Flow rate at which cartridge/bag published performance was generated in laboratory tests. Flow rates above those listed below will adversely affect the efficiency and dirt-holding capacity of cartridge or bag.

Cartridge/Bag Design Flow

Wound	3.5 gpm/10 in long
Pleated	2.5 gpm/10 in long
ProBond™	3.5 gpm/10 in long
Mega Bond Plus	2.5 gpm/10 in long
Standard Bag	80 gpm/single length
XLH Bag	8 gpm/double length

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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.

Flux:

A relationship of flow to surface area; expressed as gallons per minute per square foot.

“G” Style Bag:

Filter bag provided by Parker Process Filtration Division to fit many competitive vessels (FSI, AF&F, GAF, ISP, etc.), which is referred to as a snap ring seal configuration.

Gauge Pressure:

Pressure greater than atmospheric pressure.

Gels:

Compressible or semisolid materials that can pass through filter media at an undefined and inconsistent degree. Best removed by depth medium.

Graded Density:

Variation in a cartridge that results in the filter medium being more dense toward the core and less dense toward the outside surface. This is useful where a wide range of particle sizes exists because it allows larger particles to be trapped toward the surface and smaller particles toward the core.

Gravimetric Efficiency:

Amount of contaminant removed by weight as determined by suspended solids analysis (ppm, mg/l).

Hydrophilic:

The tendency of a surface to wet with water (water loving).

Hydrophobic:

The tendency of a surface not to wet with water (water hating).

Immiscible:

Incapable of blending or mixing into a single homogeneous phase.

Impingement:

Direct impact of particle or liquid upon the filter media.

Influent:

Fluid entering the inlet of a filter.

Laminar Flow:

Flow rate at which liquid is in a nonturbulent state (10 ft/sec) and should not be exceeded to maintain filtration integrity and consistency.

Mean Filtration Rating:

Average size of the pores of the filter medium.

Media (Medium):

Material in a filter element that separates solids from fluid.

Media Migration:

Contamination of the effluent by fibers or other material of which the filter is constructed.

Micron:

A unit of length. Correct term is micrometer (μm), which is .000039 inch. Human eye can see a 40-micrometer diameter particle.

Multipass Process:

A process or system in which fluid is circulated indefinitely through a filter medium, e.g., engines, compressors, hydraulic equipment.

Nominal Rating:

Micron size removed at a given efficiency under a manufacturer's defined test condition. An arbitrary term assigned by a manufacturer. Varies from 50%-98% depending on manufacturer and product.

Particle Removal Efficiency:

Removal of particles as a function of size as determined by counting individual particles.

Permeability:

The property of a filter medium that permits a fluid to pass through under a pressure differential (such as gpm/psi).

Porosity:

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

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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Filter Application Specification Sheet

Appendix

Complete and Submit for Application Assistance or With Formal Inquiry

Distributor Name

Location

Contact

Customer Information

Customer

Location

Contact

Title

Telephone Number

Fax Number

Process Data

Fluid

pH

Concentration

%

Viscosity

☐ CP

☐ CKS

☐ Other

Specific Gravity

Density

lb/ft³

kg/m³

Process Service

Hrs/Day

Days/Week

Weeks/Year

Flow Rate

☐ USGPM

☐ L/Min

☐ M³/Hr

Operating Pressure

(psig)

Operating Temperature

☐ °F

☐ °C

Maximum Differential Clean

psid

Maximum Differential Dirty

psid

Description of Contaminant

Particle Size Distribution

Total Solids (ppm)

Micrometer Rating

Removal Efficiency

Beta Ratio

Spent Media Disposal

☐ Nonhazardous

☐ Hazardous

☐ Other

Is fluid currently being filtered? ☐ Yes

☐ No

If yes, what type of filter

Media

Pleated

- ☐ Polypropylene
- ☐ Microfiberglass
- ☐ Cellulosic

Filter Bag/

Media Strainer

- ☐ Standard Bag
- ☐ High Efficiency Bag
- ☐ Mesh Strainer 316 SS

Wound

- ☐ Cotton
- ☐ Glass
- ☐ Polyester
- ☐ Nylon
- ☐ Polypropylene

Melt Blown Depth

- ☐ Polypropylene

Cartridge Dimensions (in)

Length

ID

OD

Qty. Required

Comments:

Core Material

- ☐ Polypropylene
- ☐ Glass filled polypro
- ☐ Tinned steel
- ☐ 304 stainless steel
- ☐ 316 stainless steel

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Housing Design Description

Model							
Customer Equipment Number							
Filter Media	Qty	☐ Cartridges	☐ Bags	☐ Part Number or Length			
Design Pressure	☐ PSIG	☐ BARG	☐ kg/cm	☐ mPa			
Design Temperature	☐ °F	☐ °C					
Corrosion Allowance	☐ 1/16 in	☐ 1/8 in	☐ Other				
Radiography	☐ Spot	☐ 100%	☐ Other				
Design Standard	ASME Code Section VIII With		☐ U	☐ UM	☐ Non-Code		
Body Material	☐ Carbon Steel	☐ 304SS	☐ 304L SS	☐ 316	☐ 316L SS	☐ Other	
Closure Gasket	☐ O-Ring	☐ Flat Type	☐ Other	☐ Gasket Material			
Closure Bolts	☐ Carbon Steel	☐ Stainless Steel	☐ Swing Bolt	☐ Through Bolt			
Cartridge Seal Type	☐ Knife Edge	☐ O-Ring	☐ Standpipe	☐ Other			
Coverlift	☐ Mechanical	☐ Hydraulic	☐ Carbon Steel	☐ Stainless Steel			
Inlet/Outlet	(2)	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other
Clean Drain	(1)	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other
Dirty Drain	(1)	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other
Vent	(1)	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other
Gauge Connections	(2)	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other
Other	()	in	lb	☐ NPT Coupling	☐ RFSO	☐ RFWN	☐ Other

Other Requirements

☐ Sand/Glassbead Blast	☐ Paint	☐ Standard	☐ Special
☐ Customer Inspection	☐ Approval Required		
☐ Customer Specs**	☐ Proposal Drawing		

Special Requirements

☐ Duplex Assembly	☐ Full Penetration Welds
☐ Seal Weld External Attachments	☐ Ground Lugs
☐ Lift Lugs	☐ Special Documents Required
☐ Stamp Nameplate With	☐ P.O. # ☐ Equipment #
☐ Customer Supplied Components	☐ Nameplate ☐ Valves ☐ Other

**Design Specifications

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Filter Application Specification Sheet Addendum

Appendix

Complete and Submit With Inquiry and Specifications

Distributor Name _____ Location _____
Contact _____

Customer Information

Customer	Location
Contact	Title
Telephone Number	Fax Number
Design Specifications (list)	
Model	

Information to Be Added to Drawings

☐ Drawings to include	☐ P.O. #	☐ Equipment #	☐ Other
☐ MAWP			
☐ Cartridge information ()			
☐ Special features			

Design Details

Comments

☐ ()-in Minimum shell thickness including/excluding corrosion allowance			
☐ Minimum nozzle schedule including/excluding corrosion allowance			
☐ Corrosion allowance for shell and heads , nozzles			
☐ Corrosion allowance to be added to both sides of internal parts			
☐ Nozzles cannot limit MAWP			
☐ Nozzle reinforcement limitations per (spec. paragraph)			
☐ Minimum nozzle projection			
☐ MAWP to be calculated and stamped on nameplate			
☐ Full penetration weld nozzle to shell			
☐ Full penetration weld bottom head to shell			
☐ Seal weld external attachments			
☐ Seal weld internal attachments			
☐ Weld process restrictions per (spec. paragraph)			
☐ Post weld heat treat			
☐ Attachments required:	☐ Lifting Lugs	☐ Ground Lugs	☐ Insulation Support Ring
☐ Restricted vendors:	☐ USA	☐ Specific List Per	

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Design Description (continued)

Model _____

Inspection

☐ Owner inspection required. Contact _____

Telephone Number _____

Fax Number _____

☐ () days prior to start of

- ☐ fabrication
- ☐ hydrotest
- ☐ final inspection prior to ship
- ☐ see customer inspection plan attached

Nondestructive examinations:

- ☐ Hardness tests of production welds per (spec. or paragraph)
- ☐ Dye penetrant tests per (spec. or paragraph)
- ☐ Radiograph per (spec. or paragraph) ☐ Spot radiograph "T" joint plus ☐ Full radiograph
- ☐ Ultrasound test per (spec. or paragraph)
- ☐ Positive material identification required
- ☐ Ferrite testing required
- ☐ Hydrotest per ☐ UG99B ☐ UG99C
 - ☐ water ☐ Oil
 - ☐ time period
 - ☐ chart required

Special Marking and Packaging

Marking: Stencil 1 in black letters on filter body with:

- ☐ P.O. # ☐ Item # ☐ Other _____
- ☐ "Post weld heat treated. No welding permitted"
- ☐ North "N" location per drawing

Packaging: ☐ Filter media to be installed prior to shipment

- ☐ Flange faces to be covered with:
 - ☐ Standard plastic inserts ☐ _____ in thick wood covers with four nuts and bolts
 - ☐ _____ in thick metal covers with four nuts and bolts
 - ☐ _____ in thick neoprene gaskets required under flange covers
- ☐ Special cleaning required per specification
- ☐ _____ Desiccant bags to be installed
- ☐ Fill with dry nitrogen to _____ PSIG
- ☐ Overwrap with plastic
- ☐ Export crating required by outside vendor

Tagging:

- ☐ SS Tag 4010-5542 to be stamped with ☐ P.O. # ☐ Item # ☐ Other _____ and to be wired to housing with SS wire.
- ☐ SS Tag 4010-5542 to be stamped with ☐ P.O. # ☐ Item # ☐ Other _____ and to be wired to parts not installed in housing.

Shipping: ☐ All cartons for bags, cartridges and spare O-rings to be marked with customer P.O. # and item #.

- ☐ () days advance shipping notice required per instruction on order.
- ☐ Partial shipments **NOT** allowed.

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2. Payment: Payment shall be made by Buyer net 30 days from the date of delivery of the items purchased hereunder. Amounts not timely paid shall bear interest at the maximum rate permitted by law for each month or portion thereof that the buyer is late in making payment. Any claims by Buyer for omissions or shortages in a shipment shall be waived unless Seller receives notice thereof within 30 days after Buyer's receipt of the shipment.

3. Delivery: Unless otherwise provided on the face hereof, delivery shall be made F.O.B. Seller's plant. Regardless of the method of delivery, however, risk of loss shall pass to Buyer upon Seller's delivery to a carrier. Any delivery dates shown are approximate only and Seller shall have no liability for any delays in delivery.

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6. Changes, Reschedules and Cancellations: Buyer may request to modify the designs or specifications for the items sold hereunder as well as the quantities and delivery dates thereof, or may request to cancel all or part of this order, however, no such requested modification or cancellation shall become part of the contract between Buyer and Seller unless accepted by Seller in a written amendment to this Agreement. Acceptance of any such requested modification or cancellation shall be at Seller's discretion, and shall be upon such terms and conditions as Seller may require.

7. Special Tooling: A tooling charge may be imposed for any special tooling, including without limitation, dies, fixtures, molds and patterns, acquired to manufacture items sold pursuant to this contract. Such special tooling shall be and remain Seller's property notwithstanding payment of any charges by Buyer. In no event will Buyer acquire any interest in apparatus belonging to Seller which is utilized in the manufacture of the items sold hereunder, even if such apparatus has been specially converted or adapted for such manufacture and notwithstanding any charges paid by Buyer. Unless otherwise agreed, Seller shall have the right to alter, discard or otherwise dispose of any special tooling or other property in its sole discretion at any time.

8. Buyer's Property: Any designs, tools, patterns, materials, drawings, confidential information or equipment furnished by Buyer or any other items which become Buyer's property, may be considered obsolete and may be destroyed by Seller after two (2) consecutive years have elapsed without Buyer placing an order for the items which are manufactured using such property. Seller shall not be responsible for any loss or damage to such property while it is in Seller's possession or control.

9. Taxes: Unless otherwise indicated on the face hereof, all prices and charges are exclusive of excise, sales, use, property, occupational or like taxes which may be imposed by any taxing authority upon the manufacture, sale or delivery of the items sold hereunder. If any such taxes must be paid by Seller or if Seller is liable for the collection of such tax, the amount thereof shall be in addition to the amounts for the items sold. Buyer agrees to pay all such taxes or to reimburse Seller therefore upon receipt of its invoice. If Buyer claims exemption from any sales, use or other tax imposed by any taxing authority, Buyer shall save Seller harmless from and against any such tax, together with any interest or penalties thereon which may be assessed if the items are held to be taxable.

10. Indemnity for Infringement of Intellectual Property Rights: Seller shall have no liability for infringement of any patents, trademarks, copyrights, trade dress, trade secrets or similar rights except as provided in this Part 10. Seller will defend and indemnify buyer against allegations of infringement of U.S. patents, U.S. trademarks, copyrights, trade dress and trade secrets (hereinafter "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 an item sold pursuant to this contract infringes the Intellectual Property Rights of a third party. Seller's obligation to defend an indemnify Buyer is contingent on the 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 compromises. If an item sold hereunder 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 said item, replace or modify said item so as to make it noninfringing, or offer to accept return of said item and return the purchase price less a reasonable allowance for depreciation. Notwithstanding the foregoing, Seller shall have no liability for claims of infringement based on information provided by Buyer, or directed to items 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 item sold hereunder. The foregoing provisions of this Part 10 shall constitute Seller's sole and exclusive liability and Buyer's sole and exclusive remedy for infringement of Intellectual Property Rights.

If a claim is based on information provided by Buyer or if the design for an item delivered hereunder is specified in whole or in part by Buyer, Buyer shall defend and indemnify Seller for all costs, expenses or judgments resulting from any claim that such item infringes any patent, trademark, copyright, trade dress, trade secret or any similar right.

11. Force Majeure: Seller does not assume the risk of and shall not be liable for delay or failure to perform any of Seller's obligations by reason of circumstances beyond the reasonable control of Seller (hereinafter "Events of Force Majeure"). Events of Force Majeure shall include without limitation, accidents, acts of God, strikes or labor disputes, acts, laws, rules or regulations of any government or government agency, fires, floods, delays or failures in delivery of carriers or suppliers, shortages of materials and any other cause beyond Seller's control.

12. Entire Agreement/Governing Law: The terms and conditions set forth herein, together with any amendments, modifications and any different terms or conditions expressly accepted by Seller in writing, shall constitute the entire Agreement concerning the items sold, and there are no oral or other representations or agreements which pertain thereto. This Agreement shall be governed in all respects by the law of the State of Ohio. No actions arising out of the sales of the items sold hereunder or this Agreement may be brought by either party more than two (2) years after the cause of action accrues.

Process Filtration Division

Parker Hannifin Corporation

About Parker Hannifin Corporation

Parker Hannifin is a leading global motion-control company dedicated to delivering premier customer service. A Fortune 200 Corporation, we are listed on the New York Stock Exchange with PH as our symbol. Our components and systems comprise over 1,000 product lines that control motion in a wide spectrum of essential uses in some 1,200 industrial and aerospace markets. Our Company has the largest distribution network in its field, with over 6,000 distributors serving more than 300,000 customers worldwide.

Parker's Charter

To be a leading worldwide manufacturer of components and systems for the builders and users of durable goods. We will achieve profitable growth through premier customer service.

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