



FLUID DYNAMICS®

SYSTEMS

# OVER 2000 SYSTEMS WORLDWIDE

Since Fluid Dynamics introduced our first Continuous Polymer Filter (CPF®) System in 1971, we have consistently met the challenging needs of the synthetic fiber, film and resin industries with the most advanced technology in porous metal filtration. Today, there are over 2,000 Fluid Dynamics filter systems in operation, including the largest complete polymer system ever produced.

**Acrylics**  
**Aramids**  
**Cellulosics**  
**Fluoropolymers**  
**Polyacrylonitrile**  
**Polyamides**  
**Polycarbonate**  
**Polyester**  
**Polyethylene**  
**Polypropylene**  
**Polystyrene**  
**Polysulfone**  
**Urethanes**

**Specialists** At Fluid Dynamics, we design and manufacture all critical components of our filtration systems – from the heat exchangers, filter housings, valves and elements, to the microscopic fibers used in our DYNALLOY® sintered metal fiber filter media.

As the only company in the world with this degree of vertical

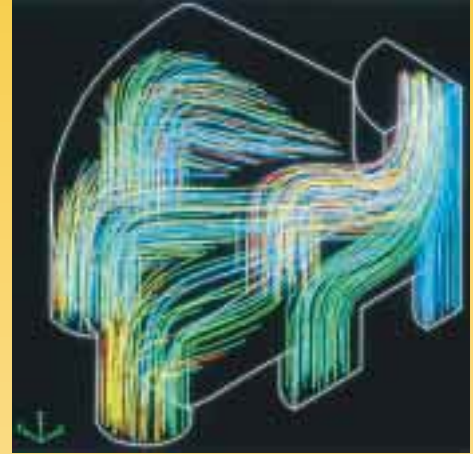
**From Top To Bottom** integration in porous metal filter systems, we have unique insight into the ever-changing and increasing demands on the industry. And, by designing every component in-house, we have the ability to adapt quickly and customize products to meet new requirements.

For more than 35 years, Fluid Dynamics has been the undisputed leader in polymer filtration, providing products that perform under the most stringent requirements in the industry. Today, we strive to continue that tradition on a daily basis, designing and building to ISO 9001/QS 9000 standards in our modern 275,000 ft<sup>2</sup> manufacturing facility.

## Bottom Line Results

**Reduced fiber breaks**  
**Increased spin pack life**  
**Reduced film tears and inclusions**  
**Improved end product quality**  
**Increased throughput**  
**Increased process reliability**  
**Reduced down time and maintenance**  
**Protection of critical line components**

Fluid Dynamics offers a complete line of filter system designs for critical applications including high performance and thin-gauge films, micro denier and high-tenacity fiber, and engineered thermoplastics. From in-line units to fully-automated duplex systems for continuous processes, Fluid Dynamics' proven system technologies provide unequalled benefits to your product and bottom line.



With the most technologically advanced flow modeling capabilities in the industry, Fluid Dynamics' engineers can analyze the flow properties of key components in a filter system. By identifying the most subtle design enhancements, we can optimize the performance of new and existing systems.



**Call Fluid Dynamics for a comprehensive economic analysis of your filtration systems, with recommendations on how to increase process efficiency and product quality.**

# The CPF Process Reduces Downtime

All Fluid Dynamics CPF Systems, both Model 100 and 200 series, operate using parallel filter circuits that permit continuous, uninterrupted process filtration.

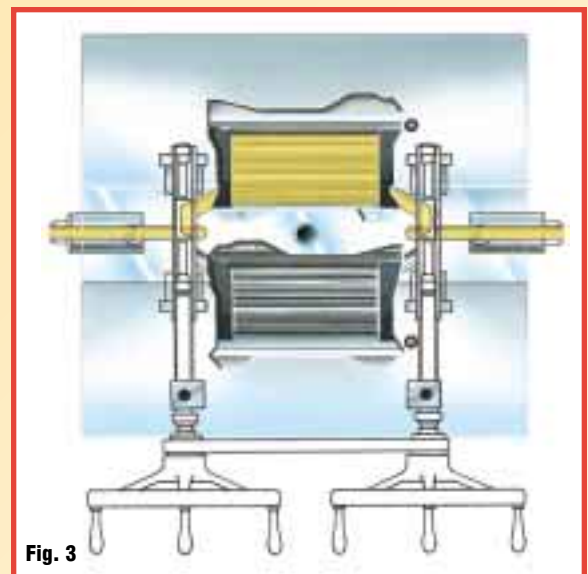
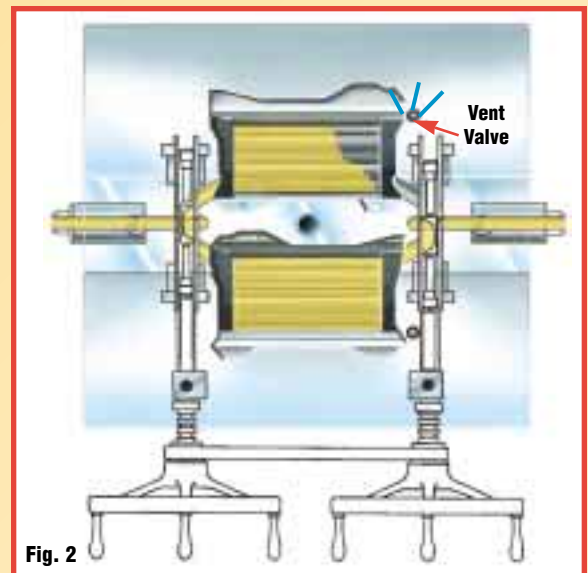
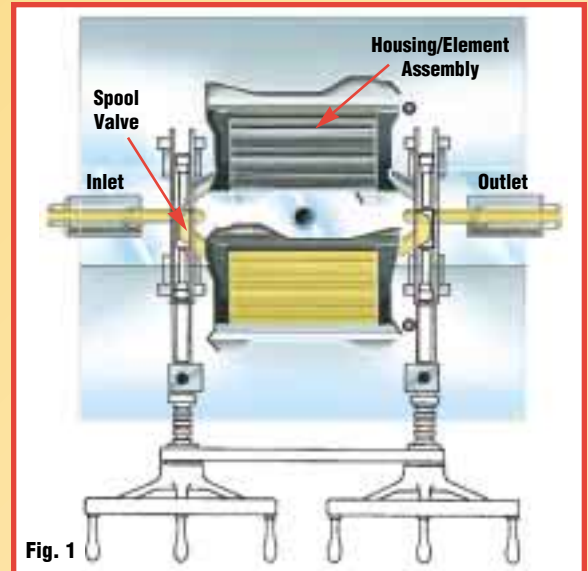
In operation, one filter housing/element assembly is on-stream until a predetermined differential pressure is reached (**Fig. 1**). Then, by operating the two handwheels, the spool valves are repositioned, in proper sequence, to progressively close off flow to the housing containing the “dirty” filter elements, and divert flow to the off-stream housing containing the clean filter elements (**Fig. 2**). Vent valves are incorporated to purge the air during the filling of the off-stream housing to maintain balanced system pressure and prevent entrainment of air in the process stream. Upon completion of the changeover sequence (**Fig. 3**), the “dirty” housing/element assembly is removed and replaced with a clean assembly.

## The CPF Advantage Simple and Field-Serviceable

Our CPF systems are designed for ease of operation and maintenance, and they eliminate the need for breaking heating connections and disassembling interconnecting piping during filter housing changes. As a result, CPF housing changes can be completed in less than 30 minutes. Furthermore, all components in our CPF systems are field serviceable by trained technicians.

Custom systems may be designed for specific applications requiring enhanced flow properties.

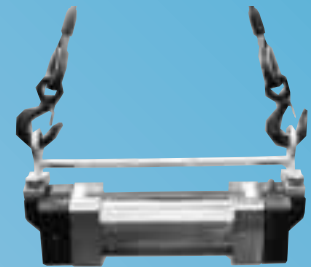
All CPF systems are designed to offer safe, dependable and uniform heating.



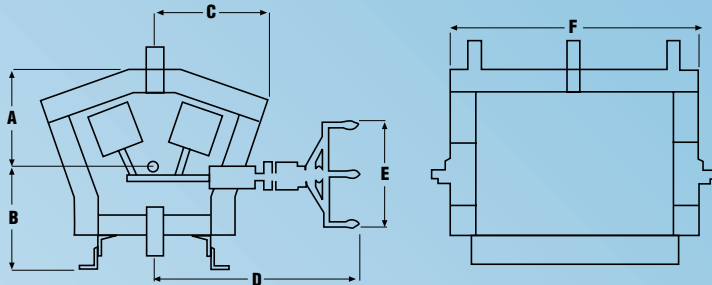
# Model 100 Series CPF Systems



Our CPF Model 100 series are standard horizontal systems with a compact design, ideal for applications with low flow rates and/or limited space. The valves are operated manually and can provide a smooth, “bumpless” changeover, with no disruption to the down-stream process.



Nearly all Model 100 CPF systems involve only two (2) bolts in the housing removal and installation process.



## MODEL 100 DIMENSIONS (mm)

	110	120	130	135	140
<b>A</b>	324	334	324	324	508
<b>B</b>	339	345	355	355	424
<b>C</b>	362	381	381	381	546
<b>D</b>	635	762	762	762	775
<b>E</b>	356	356	356	356	356
<b>F</b>	610	826	826	1207	1092

## DESIGN CRITERIA

System Pressure: to 345 bar  
 System Temperature: to 330° C  
 Differential Pressure: to 210 bar depending on element configuration  
 Heating: liquid, vapor or electric

## CONNECTIONS

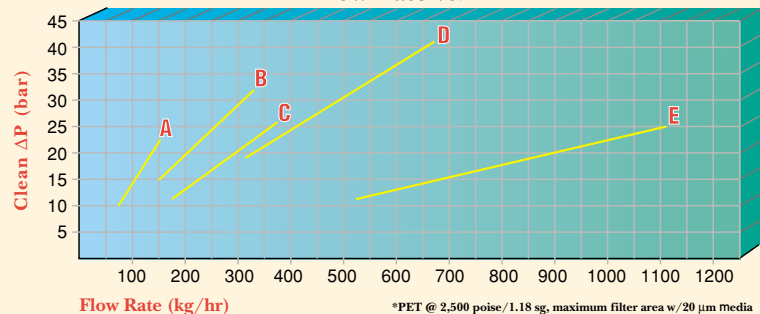
Process: Butt weld standard.  
 Clamp or flange style available.  
 Heating: Butt weld standard.  
 Flange style available.

## MATERIALS OF CONSTRUCTION

Valve Bodies: Type 304 stainless steel  
 Filter Housings: Type 17-4 PH stainless steel  
 Seats & Gaskets: Aluminum  
 Packings: RYTON® standard (others available)  
 Heat Exchanger: Carbon steel, double wall construction (liquid or vapor) Aluminum (electric)  
 Insulation: High temperature fiberglass blanket with non-stick outer covering standard (stainless steel cover available)

## Model 100 PERFORMANCE DATA\*

Flow Rate vs.  $\Delta P$



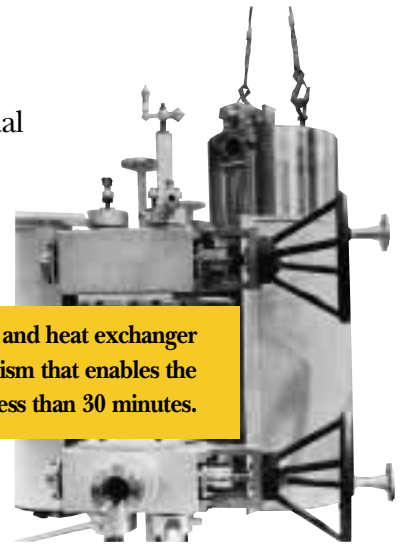
\*PET @ 2,500 poise/1.18 sg, maximum filter area w/20 μm media

## Model 100 CPFs

System	Filter Area	Valve Bore
<b>A</b>	0.5 m <sup>2</sup>	27 mm
<b>B</b>	1.1 m <sup>2</sup>	27 mm
<b>C</b>	1.1 m <sup>2</sup>	38 mm
<b>D</b>	2.2 m <sup>2</sup>	38 mm
<b>E</b>	3.5 m <sup>2</sup>	58 mm

# Model 200 Series CPF Systems

Our CPF Model 200 series are large, vertical systems designed for applications with special requirements and/or high flow rates. They are available configured for manual operation, or in fully automated, computer-controlled designs. With the complete computer-controlled valve package, the Model 200 ensures consistently smooth, “bumpless” changeovers, and significantly reduces operator error and safety risks.



In Model 200 CPF systems, the filter housing and heat exchanger together form a simple, self-aligning mechanism that enables the removal and installation of the filter housing in less than 30 minutes.

## DESIGN CRITERIA

System Pressure: to 345 bar  
 System Temperature: to 330°C  
 Differential Pressure: to 210 bar depending on element configuration  
 Heating: liquid, vapor or electric

## CONNECTIONS

Process: Butt weld standard  
 Clamp or flange style available

Heating: Butt weld standard  
 Flange style available  
 Complete heating manifolds available

## MATERIALS OF CONSTRUCTION

Valve Bodies: Type 17-4 or 304 stainless steel

Filter Housings: Type 17-4 or 304 stainless steel

Seats: Aluminum

Housing Seals: Stainless steel o-ring

Packings: Ryton standard (Others available)

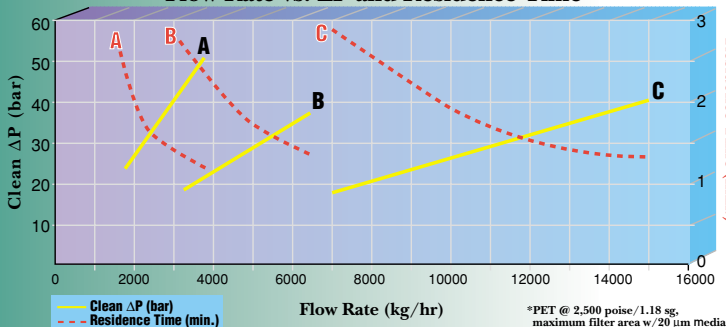
Heat Exchanger: Carbon steel, double wall construction (liquid or vapor)  
 aluminum (electric)

Insulation: High temperature fiberglass blanket with non-stick outer covering  
 stainless steel cover available



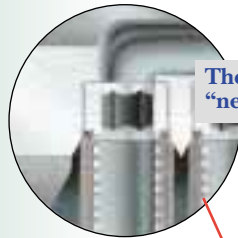
THE HEAT EXCHANGER AND FILTER HOUSINGS ARE DESIGNED TO ASME CODE AND MAY BE “U” STAMPED UPON REQUEST.

**Model 200 PERFORMANCE DATA\***  
 Flow Rate vs.  $\Delta P$  and Residence Time



## Model 200 CPFs

	System	Filter Area	Valve Bore
<b>A</b>	230 - 10940	11.5 m <sup>2</sup>	58 mm
<b>B</b>	240 - 13250	20.0 m <sup>2</sup>	80 mm
<b>C</b>	250 - 18756	45.0 m <sup>2</sup>	103 mm



The mounting plate may be counterbored on the element side, to completely “nest” the element adapter and eliminate low flow areas at the interface.

Outlet housing and mounting plate engineered to form discrete flow channels, reducing residence time and eliminating low flow areas (option)

Element tube bundle is computer modeled to ensure optimal flow distribution, minimum pressure drop and maximum on-stream life

Asbestos-free glass fiber insulation custom fitted to prevent system heat loss (option)

Jack screw assembly ensures positive seating of housing port to inlet diverter valve

Jacketed, flush mounted, ram type vent and drain valves feature reliable metal-to-metal sealing

Electrically actuated, fully automated (option), spool type diverter valves offer unparalleled performance and safety

Custom fitted, all stainless steel cover protects insulation and facilitates cleaning (option)

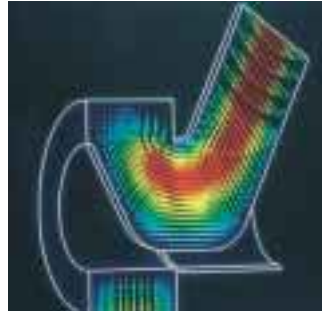
Liquid/vapor heating connections manifolded (option) for ease of installation and maintenance

U-bolt assembly secures positive seal between outlet housing port and outlet diverter valve



# Spool-Type Diverter Valves For Smooth, Bumpless Changeovers

Fluid Dynamics' CPF systems incorporate specially designed spool type diverter valves, known for their exceptional dependability and reliability. The pressure balanced spool design operates smoothly and consistently with minimal force.



## Contoured Spool Valves

Our latest development in valve design is our contoured spool valve. Developed with state-of-the-art computer modeling technology, the contoured spool valve is designed for applications in which optimal flow properties are critical. The unique spool contour creates a distinct flow pattern resulting in optimum residence time distribution and no low flow areas.



# In-Line Filters For Batch Processes

Fluid Dynamics' in-line filter systems incorporate a single filter housing for batch processes in which continuous operation is not required.

The systems are custom designed for specific application pressure, flow, and temperature requirements. The filter housing is designed for optimal flow properties and is available in vertical (Model 200 type), horizontal (Model 100 type), and straight-through designs.



# Filter Elements

## Reusable, Cleanable & Dependable

At Fluid Dynamics, we offer a complete line of filter elements that incorporate our own specially formulated Dynalloy sintered metal fiber media and Dynamesh, precision woven wire cloth. Available in removal ratings from 1  $\mu\text{m}$  to over 400  $\mu\text{m}$ , our elements are engineered for optimum performance and specially designed for the demanding needs of the polymer industry.

## Training & Service

## Support You Can Count On

Fluid Dynamics will be there to support you to ensure that your system performs to your exacting standards. Our trained service team is available to assist you with system installation and start-up. We will also provide comprehensive training for your production personnel. And, should you need additional help, we offer an affordable range of maintenance and service contracts, providing 24-hour field service and technical assistance through our many worldwide locations.



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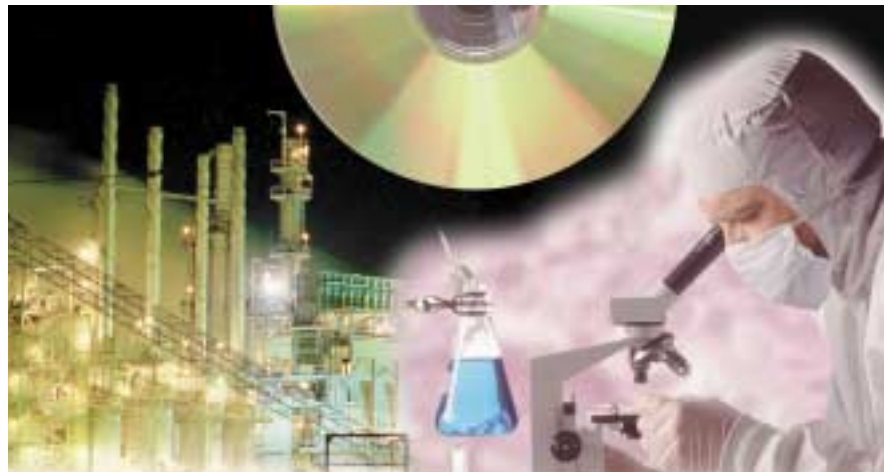
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Fluid Dynamics specializes in cleanable, porous metal filtration products for demanding processes with high temperature and high pressure requirements. **From the microscopically-fine fiber used in its Dynalloy metal fiber media to complete filtration systems, Fluid Dynamics is the world leader in porous metal filtration technology.**



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