

PF2 High Pressure In-Line Filter

Featuring Hy-Pro G8 Dualglass Filter element technology

APPLICATIONS

- Hy-Pro PF2 pressure filters are ideal for protecting control valves and other sensitive components.
- Mobile applications such as waste haulers, cement mixers/pumpers, fire trucks, cranes, man lifts, etc.
- Power unit builders for pressure line.
- General industrial machine tools.
- Paper mill and sawmill.
- Primary metals.
- Power generation applications for speed control circuit.
- Automotive manufacturing machine tools.

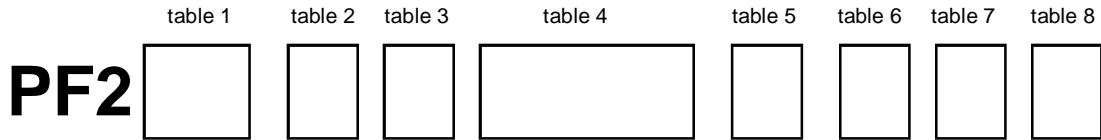
FEATURES, BENEFITS, ADVANTAGES

DFE rated elements	G8 Dualglass and PE glass elements are DFE rated to assure performance even when exposed to the toughest hydraulic systems (See DFE literature for details)
Circumferential o-ring bowl seal	Circumferential seal on the bowl eliminates leading. (No Drips)
Low housing pressure drop	Unique internal flow paths provide low resistance to flow. (Low pressure drop)
HF2 compatible	Port to port dimension, mounting pattern, and element design meet HF2 automotive specification. (Automotive standard)
Drain plug standard	Bowl with drain plug comes standard. (No price adder)

PRODUCT SPECIFICATIONS

Pressure ratings	4000 psi (207 bar) max operating 12000 psi (638 bar) burst
Flow rate	20 gpm (75 lpm) max
Design safety factor	3:1
Element collapse	code 0: 290 psid (10 bar) code 1: 3000 psid (212 bar)
Housing material	Aluminum grade T6061
Fluid compatibility (ISO 2948)	Compatible with all petroleum, based oils, HWBF, water glycol, oil/water emulsion, and specified synthetic fluids with Viton or EPR seals (call factory)
Flow fatigue rating	2000 psi (178 bar)
Differential pressure indicator trigger	50 psid (3.5 bar) standard
Bypass valve crack	60 psid (4.2 bar) standard
Weight (w/element)	~4" bowl 3.8lb (1.7kg) ~8" bowl 5.0lb (2.3kg)
Temperature rating	Buna = -40f(-40c) to 225f (107c) Viton = -15f(-26c) to 275f(135c)

PF2 FILTER ASSEMBLY PART NUMBER GUIDE



PF2 FILTER ELEMENT PART NUMBER GUIDE

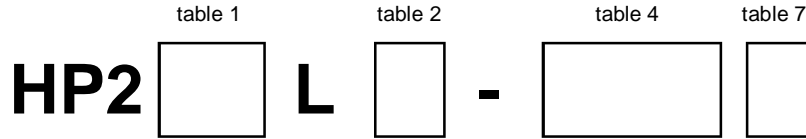


table 1 code	element collapse
0	290 psid (20 bar)
1	3000 psid (200 bar)

table 2 code	element length
4	~ 4"/100mm
8	~ 8"/200mm

table 3 code	port type
S	SAE-12 threaded
M	Manifold top mount

table 4 code	filtration rating	media type	series
1M	$\beta_{2.5[c]} = 1000$ ($\beta_1 = 200$)	G8 Dualglass	20
2M	$\beta_{5[c]} = 1000$ ($\beta_3 = 200$)	G8 Dualglass	21
3M	$\beta_{5[c]} = 1000$ ($\beta_3 = 200$)	G8 Dualglass	20
3SF	$\beta_{5[c]} = 1000$ ($\beta_3 = 200$)	Dynafuzz	20, 21
6M	$\beta_{7[c]} = 1000$ ($\beta_6 = 200$)	G8 Dualglass	20,21
10SF	$\beta_{12[c]} = 1000$ ($\beta_{12} = 200$)	Dynafuzz	20,21
12M	$\beta_{12[c]} = 1000$ ($\beta_{12} = 200$)	G8 Dualglass	20
15M	$\beta_{17[c]} = 1000$ ($\beta_{15} = 200$)	G8 Dualglass	21
25M	$\beta_{22[c]} = 1000$ ($\beta_{25} = 200$)	G8 Dualglass	20,21
25W	25 μ nominal	Stainless mesh	20,21
40W	40 μ nominal	Stainless mesh	20,21
74W	74 μ nominal	Stainless mesh	20,21
149W	149 μ nominal	Stainless mesh	20,21
300W	300 μ nominal	Stainless mesh	20,21

table 5 code	bypass valve
5*	60 psid (4.2 bar)
7*	90 psid (6.42 bar)
X**	No bypass

* 20 Series Only
** 21 Series Only

table 6 code	indicator
M	Visual, mechanical
E	Electrical
Z	Port plugged

table 7 code	Seal
B	Buna -40f(-40c) to 225f(107c)
V	Viton -15f(-26c) to 275f(135c)

table 8 code	Special options
V	Vent plug (S port type option only)

PF2 FILTER ASSEMBLY SELECTION AND SIZING GUIDELINES

Effective filter sizing requires consideration of flow rate, viscosity (operating and cold start), fluid type, and degree of filtration. When properly sized bypass, during cold start can be avoided/minimized and optimum element efficiency and life achieved. The filter assembly differential pressure values provided for sizing differ for each media code assume 150 SSU (32cSt) viscosity and 0.86 fluid specific gravity. Use the following steps to identify the correct high pressure filter assembly.

1. Calculate Δp coefficient at both operating and cold start viscosity:

$$\Delta p \text{ Coefficient} = \frac{\text{Actual Operating Viscosity (SSU)}}{150} \times \frac{\text{Actual S.G.}}{0.86}$$

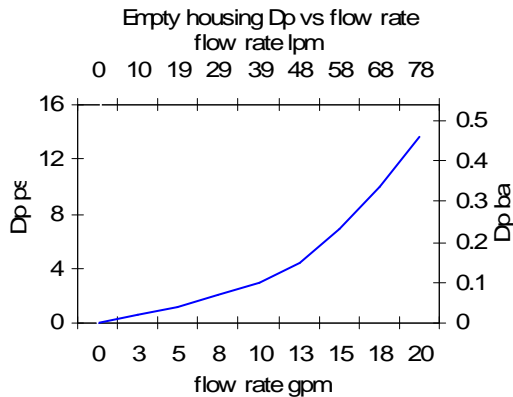
2. Calculate actual clean filter assembly Δp at both operating and cold start viscosity:

$$\text{Actual assembly clean } \Delta p = \text{Flow rate} \times \Delta p \text{ Coefficient} \times \text{Assembly } \Delta p \text{ factor (from sizing table)}$$

3. Sizing Recommendations to optimize performance and permit future flexibility:

- To avoid or minimize bypass during cold start actual assembly clean Δp calculation should be repeated for start-up conditions.
- Actual assembly clean Δp should not exceed 5 psid at normal operating viscosity.
- If suitable assembly size is approaching the upper limit of the recommended flow rate at the desired degree of filtration consider increasing the assembly to the next larger size if a finer degree of filtration might be preferred in the future. This practice allows the future flexibility to enhance fluid cleanliness without compromising clean Δp or filter element life.
- Consider increasing the assembly to the next larger size to optimize filter element life and avoid bypass during cold start.
- When using water glycol or other specified synthetics we recommend increasing the filter assembly by 1-2 sizes.

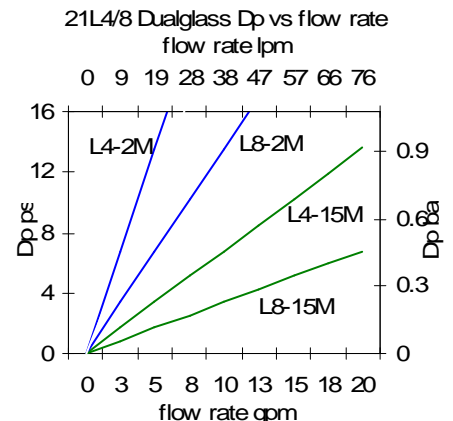
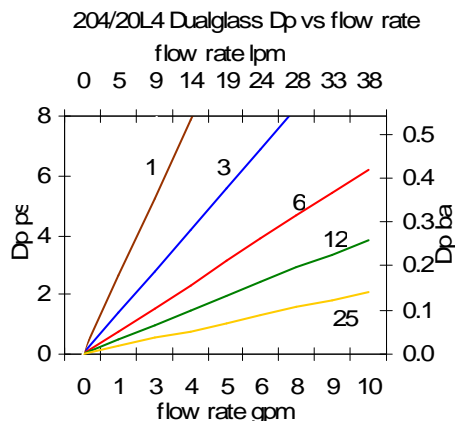
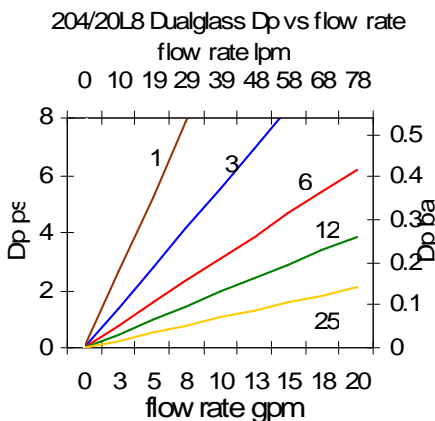
HOUSING and FILTER ELEMENT FLOW vs PRESSURE DROP and EFFICIENCY DATA



Pressure Drop Calculation

Pressure drop curves based on oil viscosity of 150 SSU, and specific gravity = 0.9. Dp across element is proportionally related to viscosity and specific gravity. For new DP use the following conversion formula:

$$\text{DP element} = \text{DP curve} \times \text{Viscosity}/150 \times \text{SG}/0.86$$



HIGH PERFORMANCE FILTER ELEMENTS - THE HEART OF A FILTER

Dynamic Filter Efficiency (DFE) Testing

Revolutionary test methods assure that DFE rated elements perform true to rating even under demanding variable flow and vibration conditions. Today's industrial and mobile hydraulic circuits require elements that deliver specified cleanliness under ALL circumstances. Wire mesh supports the media to ensure against cyclical flow fatigue, temperature, and chemical resistance failures possible in filter elements with synthetic support mesh. Contact your distributor or Hy-Pro for more information and published articles on DFE testing.

Media Options

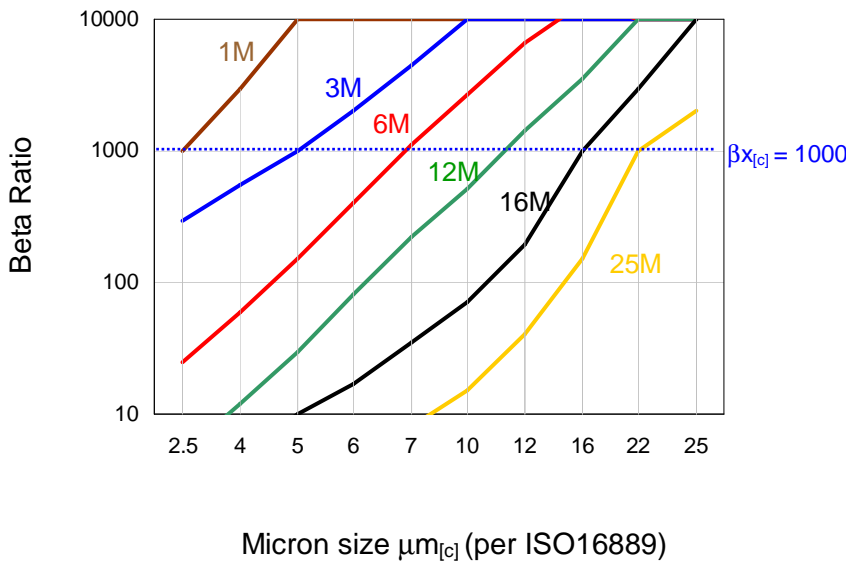
Through extensive testing we have developed media choices to handle any application. Options include G8 Dualglass, Dynafuzz (stainless fiber), and Wire mesh (stainless).

Fluid Compatibility

Petroleum based fluids, water glycol, polyol ester, phosphate ester, high water based fluids and many other synthetics. Contact us for seal material selection assistance.

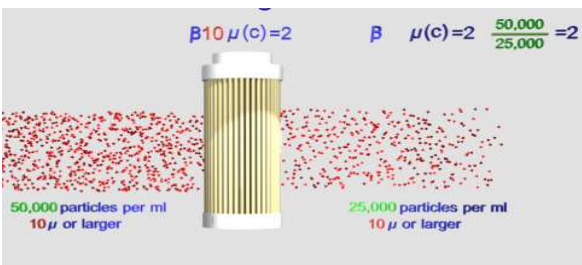
FILTER MEDIA SPECIFICATIONS

Glass Media Code Filtration Efficiency (Beta Ratio) vs Micron

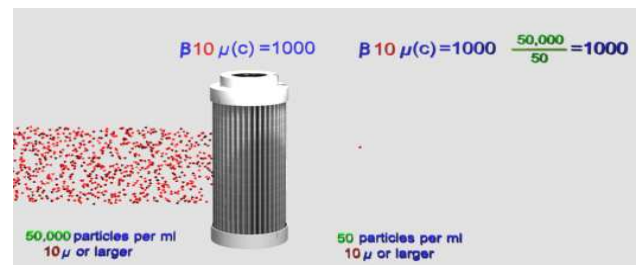


media code	media description
A	G8 Dualglass high performance media combined with water removal scrim. $\beta_{x[c]} = 1000$ ($\beta_x = 200$)
M	G8 Dualglass our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x[c]} = 1000$ ($\beta_x = 200$)
W	Stainless steel wire mesh media $\beta_{x[c]} = 2$ ($\beta_x = 2$) nominally rated

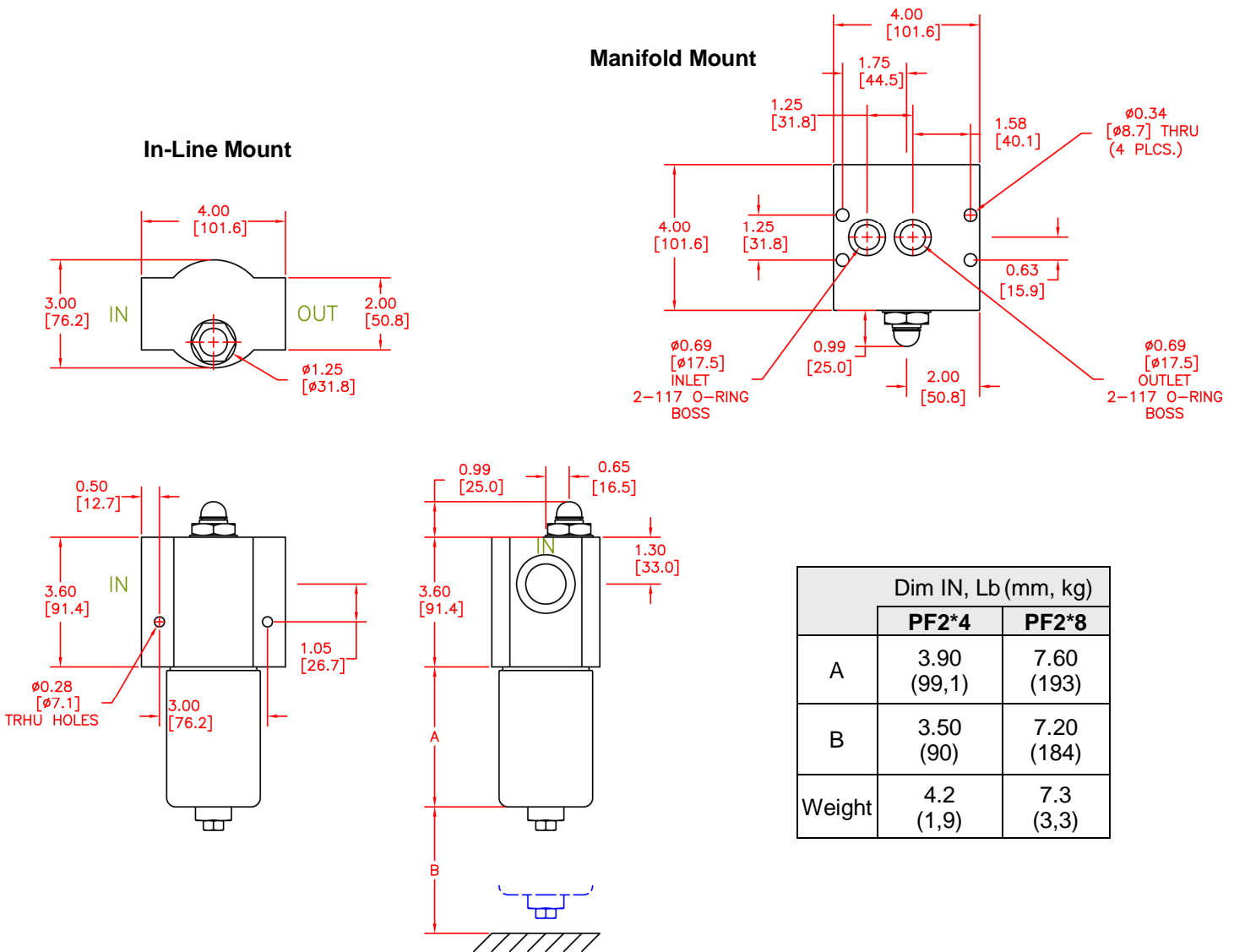
Typical cellulose media performance



Hy-Pro G8 Dualglass media performance



INSTALLATION DRAWING



SPARE PARTS LIST

1	Head	P/N	5	Drain plug	P/N			
	In-line w/bypass valve, w/indicator port			Buna o-ring		PF2DPB		
	In-line w/bypass valve No indicator port			Viton o-ring		PF2DPV		
	In-line No bypass valve, w/indicator port			EPR o-ring		PF2DPE		
	In-line No bypass valve, No indicator port			6		Indicator	PFIVB	
	Top Manifold w/bypass valve, w/indicator port					Visual, Buna o-ring		PFIVV
	Top Manifold w/bypass valve, No indicator port					Visual, Viton o-ring		PFIVE
	Top Manifold No bypass valve, w/indicator port					Visual, EPR o-ring		PFIEB
Top Manifold No bypass valve, No indicator port	Electrical, Buna o-ring	PFIEV						
	Electrical, Viton o-ring	PFIEE						
	Electrical, EPR o-ring	7	Manifold mount kit (includes 2 o-rings)	PF2SKMB				
2	Element (see Element part number guide)		Buna o-ring		PF2SKMV			
3	Bowl seal kit (includes teflon back up ring)	P/N	Viton o-ring	PF2SKME				
			Nitrile Buna					
			Viton Fluorocarbon					
4	Bowl	P/N	EPR					
			~ 4"/100mm length w/drain port	PF2B1				
	~ 8"/200mm	PF2B2						

