

PFHB

High Pressure Full Flow Bi-Directional Filter Assemblies

Hy-Pro's PFHB high pressure filter assemblies are designed for applications where flow direction changes and fluid must be filtered with full flow in both directions. Protect both components and clean fluid that typically does not return to the reservoir.

Ideal for steel mills, board plants, scrap yards, and concrete mixers.

Max Operating Pressure: 7252 psi (500 bar)



hyprofiltration.com/PFHB



Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities to combat the dynamic flow changes in all hydraulic applications. With media options down to $\beta_{2.5_{(Q)}} \geq 1000$, + water absorption, you get the perfect element for your application, every time.



Two directions, one result.

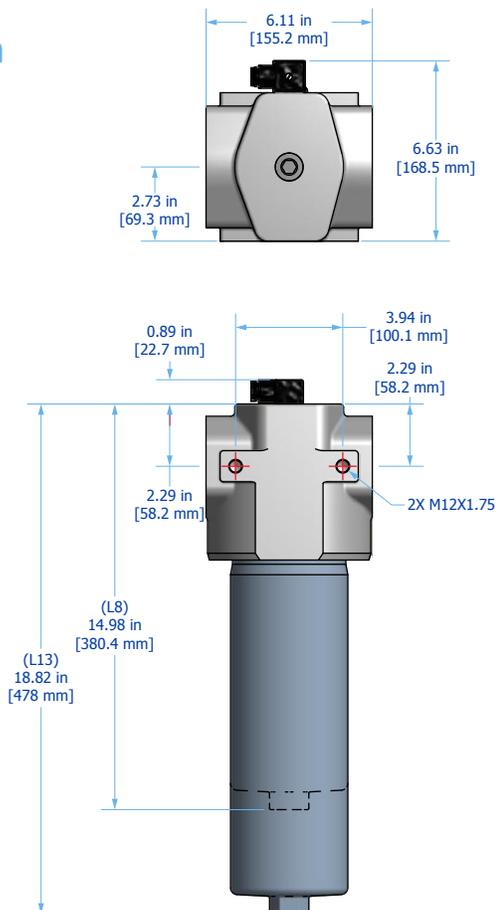
With unique flow paths and internal check valves, PFHB assemblies allow hydraulic fluids to travel in both directions while maintaining the highest of filter efficiencies. Whether installed at the end of a remotely located cylinder or small cylinders where used fluid is not able to return to the tank for standard filtration, the PFHB captures contaminants in both flow directions where others can't.

Always ready.

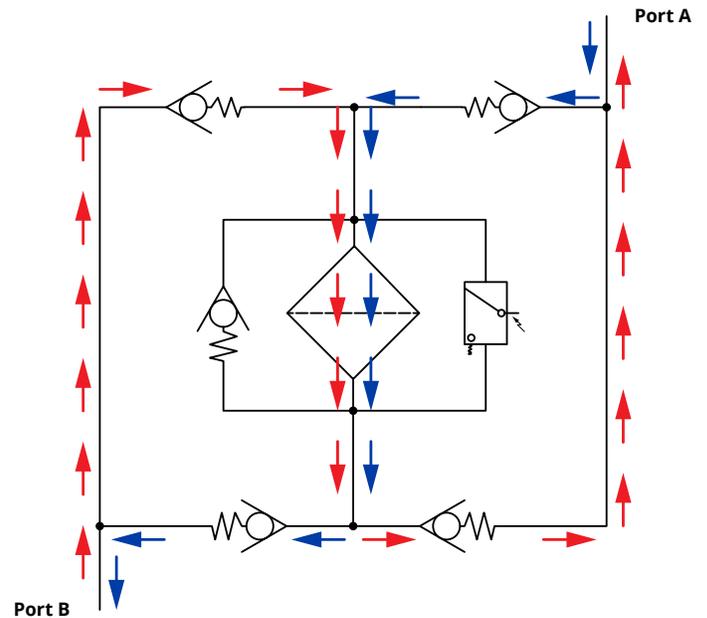
Perfect for use in hydrostatic loop circuits and any system where flow can change direction, the PFHB is ready for capturing particles in both directions with absolute efficiency - automatically.



PFHB Installation Drawing



Bi-Directional Schematic



PFHB Specifications

Operating Temperature	Fluid Temperature 30°F to 225°F (0°C to 105°C)	Ambient Temperature -4°F to 140°F (-20C to 60C)
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Operating Pressure	7252 psid (500 bar)
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ΔP Indicator Trigger	73 psid (5 bard)
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Element Collapse Rating	HP419NL 450 psid (31.0 bard) max	HP419HL 3000 psid (206.8 bard) max	HP419CL 250 psid (17.2 bard) max
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Materials of Construction	Head Cast steel	Bowl¹ Extruded steel	Interior Coating Phosphate	Exterior Coating Industrial powder coating
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Media Description	M G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x_{[c]}} \geq 1000$ ($\beta_x \geq 200$)	A G8 Dualglass high performance media combined with water removal scrim. $\beta_{x_{[c]}} \geq 1000$ ($\beta_x \geq 200$)	W Stainless steel wire mesh media $\beta_{x_{[c]}} \geq 2$ ($\beta_x \geq 2$)
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Replacement Elements	To determine replacement elements, use the selected codes from the following page below: Filter Element Part Number HP419[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]		Example HP419NL13-25MB
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Fluid Compatibility	Biodegradable and mineral based fluids. For high water based or specified synthetics, consult factory.
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Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See below for viscosity correction formula. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

Step 1: Calculate ΔP coefficient for actual viscosity

Using Saybolt Universal Seconds (SUS)

$$\Delta P \text{ Coefficient} = \frac{\text{Actual Operating Viscosity}^1 \text{ (SUS)}}{150} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Using Centistokes (cSt)

$$\Delta P \text{ Coefficient} = \frac{\text{Actual Operating Viscosity}^1 \text{ (cSt)}}{32} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Step 2: Calculate actual clean filter assembly ΔP at both operating and cold start viscosity

$$\text{Actual Assembly Clean } \Delta P = \text{Flow Rate} \times \Delta P \text{ Coefficient (from Step 1)} \times \text{Assembly } \Delta P \text{ Factor (from sizing table)}$$

ΔP Factors ²	Length	Units	Media						**W
			1M	3M	6M	10M	16M	25M	
L8		psid/gpm	0.3415	0.2882	0.2234	0.2003	0.1960	0.1888	0.0340
		bard/lpm	0.0062	0.0052	0.0041	0.0036	0.0036	0.0034	0.0006
L13		psid/gpm	0.2364	0.1995	0.1546	0.1387	0.1357	0.1307	0.0235
		bard/lpm	0.0043	0.0036	0.0028	0.0025	0.0025	0.0024	0.0004

¹Bowl comes standard with drain plug.

²Max flow rates and ΔP factors assume u = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula.

PFHB Part Number Builder



Connection	Port Option	Max Flow Rate
	C20 1¼" Code 62 flange	95 gpm (360 lpm) ¹
	C24 1½" Code 62 flange	95 gpm (360 lpm) ¹

Collapse	Port Option	Max Flow Rate
	C 250 psid (17.2 bard) – Coreless element with integral bypass (includes post assembly for element support) ¹	
	H 3000 psid (206.8 bard) – High collapse element with no housing bypass	
	N 450 psid (31.2 bard) – Core-in element with housing bypass	

Element Length	Port Option	Max Flow Rate
	8 8" (20 cm) nominal length filter element and housing	
	13 13" (33 cm) nominal length filter element and housing	

Bypass	Port Option	Max Flow Rate
	7 102 psid (7 bard) bypass	
	X No bypass	

ΔP Indicator	Port Option	Max Flow Rate
	DX Electrical switch only (DIN connection)	
	L Visual with electric switch (DIN connection) + LED indicator	
	V Visual/Mechanical	
	X No indicator (port plugged)	

Media Selection	G8 Dualglass	G8 Dualglass + water removal	Stainless wire mesh
	1M $\beta_{2.5, [C]} \geq 1000, \beta_1 \geq 200$	3A $\beta_{5, [C]} \geq 1000, \beta_3 \geq 200$	25W 25μ nominal
	3M $\beta_{5, [C]} \geq 1000, \beta_3 \geq 200$	6A $\beta_{7, [C]} \geq 1000, \beta_6 \geq 200$	40W 40μ nominal
	6M $\beta_{7, [C]} \geq 1000, \beta_6 \geq 200$	10A $\beta_{12, [C]} \geq 1000, \beta_{12} \geq 200$	74W 74μ nominal
	10M $\beta_{12, [C]} \geq 1000, \beta_{12} \geq 200$	25A $\beta_{22, [C]} \geq 1000, \beta_{25} \geq 200$	149W 149μ nominal
	16M $\beta_{17, [C]} \geq 1000, \beta_{17} \geq 200$		
	25M $\beta_{22, [C]} \geq 1000, \beta_{25} \geq 200$		

Seals	Port Option	Max Flow Rate
	B Nitrile (Buna)	
	V Fluorocarbon	
	E-WS EPR seals + stainless steel support mesh	

¹Maximum recommended flow rate based on velocity through port and internal flow path. Consult sizing guidelines or consult factory for sizing based on flow rate, viscosity, temperature, filter media selection.

Want to find out more? Get in touch.
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