PF2

High Pressure In-line Filter Assembly

Ideal for a variety of applications including mobile applications, paper and saw mills, power generation, general industrial machine tools, and automotive manufacturing. With HF2 compatible port-to-port dimension, mounting pattern, and element design to meet the automotive manufacturing standard.

Max Operating Pressure: 4000 psi (275 bar)

HY-PRO

hyprofiltration.com/PF2

Filtration starts with the filter.

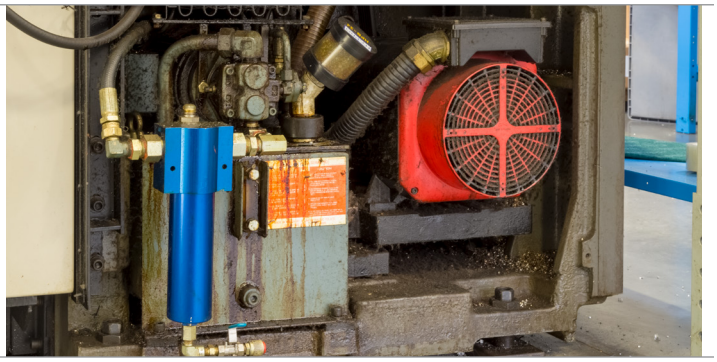
G8 Dualglass and PE glass elements are DFE rated to assure performance even when exposed to the toughest hydraulic systems and provide unmatched particulate capture and retention to remove contamination from your hydraulic and lube oils, for good.

Small size, huge results.

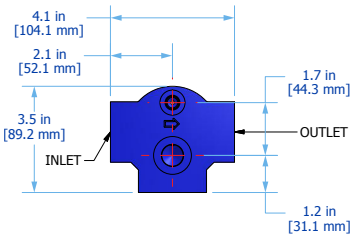
The compact size of PF2 filter assemblies make them the perfect addition directly upstream of your control valves and other sensitive components even in the tightest of spaces. And with two different mounting options to choose from, the incredible versatility of the PF2 makes it ideal for all of your high pressure filter applications.

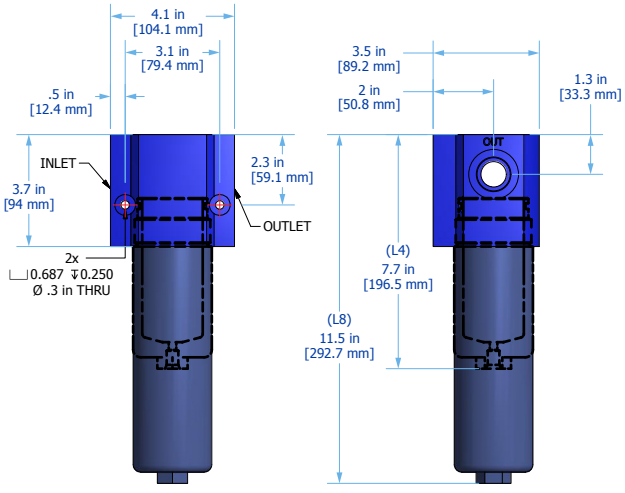
Works under pressure.

Applications for the PF2 include mobile, general industrial machine tools, paper mills, sawmills, and speed control circuits for power generation systems. So whether you're operating waste haulers, cement mixers, fire trucks, cranes, or CNC routers, you can be sure the PF2 will protect your critical components even when the pressure is on.

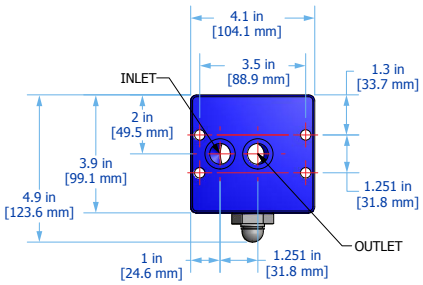


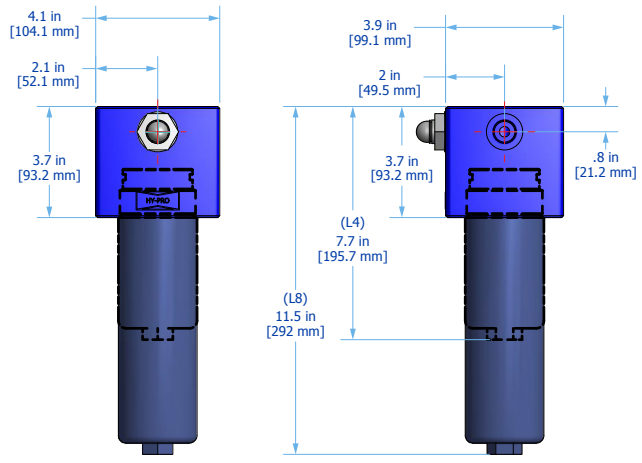
In-Line Mount Installation Drawing





Manifold Mount Installation Drawing





Filter Assembly Sizing

Filter Assembly 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, and assume 32 cSt (150 SUS) viscosity and 0.86 fluid specific gravity. Use the following steps to calculate clean element assembly pressure drop.

Calculate ΔP coefficient for actual viscosity

Using Saybolt Universal Seconds (SUS)

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

Using Centistokes (cSt)

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

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

$$\text{Actual Assembly Clean ΔP} = \text{Flow Rate} \times \text{ΔP Coefficient (from calculation above)} \times \text{Assembly ΔP Factor (from sizing table)}$$

Sizing recommendations to optimize performance and permit future flexibility

- To avoid or minimize bypass during cold start the actual assembly clean ΔP calculation should be repeated for start-up conditions if cold starts are frequent.
- Actual assembly clean ΔP should not exceed 10% of bypass ΔP gauge/indicator set point 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.
- Once a suitable filter assembly size is determined 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.

PF2 Specifications

Dimensions	See Installation Drawings on page 193 for model specific dimensions.			
Operating Temperature	**Fluid Temperature** 30°F to 225°F (0°C to 105°C)		**Ambient Temperature** -4°F to 140°F (-20C to 60C)	
Operating Pressure	4000 psi (275 bar) max			
Flow Fatigue Rating	2000 psi (137 bar)			
Burst Pressure	12,000 psi (827 bar) max			
ΔP Indicator Trigger	50 psid (3.4 bard) for bypass. 102 psid (7 bard) for non-bypass. Thermal lockout indicator functions at or above 68°F (20°C), manual reset on visual indicators with exception to "V" option (auto reset standard).			
Element Collapse Rating	**Normal Collapse** 290 psid (20 bard)		**High Collapse** 3000 psid (206 bard)	
Integral Bypass Setting	60 psid (4.1 bard)			
Materials of Construction	**Head** Anodized aluminum (grade T6061)	**Bowl** Anodized aluminum (grade T6061) Bowl drain #4 SAE standard	**Element Bypass Valve** Nickel plated/Stainless steel	**Element End Caps** Zinc or Tin coated carbon steel
Media Description	**M** G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[C]} = 1000$ ($\beta x = 200$)	**A** G8 Dualglass high performance media combined with water removal scrim. $\beta x_{[C]} = 1000$ ($\beta x = 200$)	**SF** Dynafuzz stainless steel fiber media $\beta x_{[C]} = 1000$ ($\beta x = 200$)	**W** Stainless steel wire mesh media $\beta x_{[C]} = 2$ ($\beta x = 2$)
Replacement Elements	To determine replacement elements, use corresponding codes from your assembly part number: **Filter Element Part Number** HP2[Collapse Rating Code]L[Length Code] – [Media Selection Code] [Seal Code]		**Example** HP20L4-12MV	
Fluid Compatibility	Petroleum and mineral based fluids (standard). For polyol ester, phosphate ester, and other specified synthetic fluids use fluorocarbon seal option or contact factory.			
Filter Sizing[1]	Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See previous page for filter assembly sizing guidelines. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.			

ΔP Factors[1]

Collapse	Length	Units	Media 1M	2M	3M	6M	12M	15M	16M	25M	**W
20	L4	psid/gpm	2.145	N/A	1.810	1.403	1.258	N/A	1.231	1.185	0.213
		bard/lpm	0.039	N/A	0.033	0.026	0.023	N/A	0.022	0.022	0.004
	L8	psid/gpm	1.118	N/A	0.944	0.731	0.656	N/A	0.642	0.618	0.111
		bard/lpm	0.020	N/A	0.017	0.013	0.012	N/A	0.012	0.011	0.002
21	L4	psid/gpm	2.287	1.930	N/A	1.496	N/A	1.341	1.312	1.264	0.228
		bard/lpm	0.042	0.035	N/A	0.027	N/A	0.024	0.024	0.023	0.004
	L8	psid/gpm	1.188	1.003	N/A	0.777	N/A	0.672	0.657	0.647	0.116
		bard/lpm	0.022	0.018	N/A	0.014	N/A	0.012	0.012	0.012	0.002

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula for viscosity change.

PF2 Part Number Builder

PF2 [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

Connection | Collapse | Length | Bypass | Indicator | Media | Seal

Connection

Port Option		Max Flow Rate
G12[1]	¾" G thread (BSPP)	20 gpm (76 lpm)[2]
M12	¾" Manifold top mount	20 gpm (76 lpm)[2]
S12[1]	¾" SAE	20 gpm (76 lpm)[2]

Collapse Rating

0[3]	290 psid (20 bard) normal collapse element
1	3000 psid (206 bard) high collapse element

Element Length

4	4" (10 cm) nominal length filter element and housing
8	8" (20 cm) nominal length filter element and housing

Bypass

4	60 psid (4.1 bard) bypass
X	No bypass

ΔP Indicator

DX	Electrical switch only (DIN connection)
T	Visual/mechanical with thermal lockout
V	Visual/mechanical
X	No indicator (port plugged)

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} = 1000$, $\beta 1 = 200$
2M[4]	$\beta 5_{[C]} = 1000$, $\beta 3 = 200$
3M[5]	$\beta 5_{[C]} = 1000$, $\beta 3 = 200$
6M	$\beta 7_{[C]} = 1000$, $\beta 6 = 200$
12M[5]	$\beta 12_{[C]} = 1000$, $\beta 12 = 200$
15M[4]	$\beta 12_{[C]} = 1000$, $\beta 12 = 200$
16M	$\beta 17_{[C]} = 1000$, $\beta 17 = 200$
25M	$\beta 22_{[C]} = 1000$, $\beta 25 = 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} = 1000$, $\beta 3 = 200$
6A	$\beta 7_{[C]} = 1000$, $\beta 6 = 200$
12A	$\beta 12_{[C]} = 1000$, $\beta 12 = 200$
25A	$\beta 22_{[C]} = 1000$, $\beta 25 = 200$

Dynafuzz stainless fiber

3SF	$\beta 5_{[C]} = 1000$, $\beta 3 = 200$
10SF	$\beta 12_{[C]} = 1000$, $\beta 12 = 200$

Stainless wire mesh

25W	25µ nominal
40W	40µ nominal
74W	74µ nominal
149W	149µ nominal

Seals

B	Nitrile (Buna)
V	Fluorocarbon
E-WS	EPR seals + stainless steel support mesh

[1]Vent connection standard on G12 and S12 models - #4 SAE.
[2]Maximum 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.
[3]When chosen, must be paired with Bypass option "4"
[4]Compatible only with High Collapse Rating option "1."
[5]Not available on High Collapse Rating option "1."

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