TF4

In-Tank Filter Assembly

Ideal for installation on the return line to remove contaminant ingested or generated by the system.

Max Operating Pressure: 100 psi (6.9 bar)

HY-PRO

hyprofiltration.com/TF4

Elements that go beyond industry standard.

Hy-Pro's DFE rated G8 dualglass elements are rated to assure performance even when exposed to the toughest conditions that hydraulic systems can generate. Designed to provide the best filtration and ease of use, the HP4C coreless element gives you more options for disposal, meaning you improve your environmental impact ***and*** your bottom line.

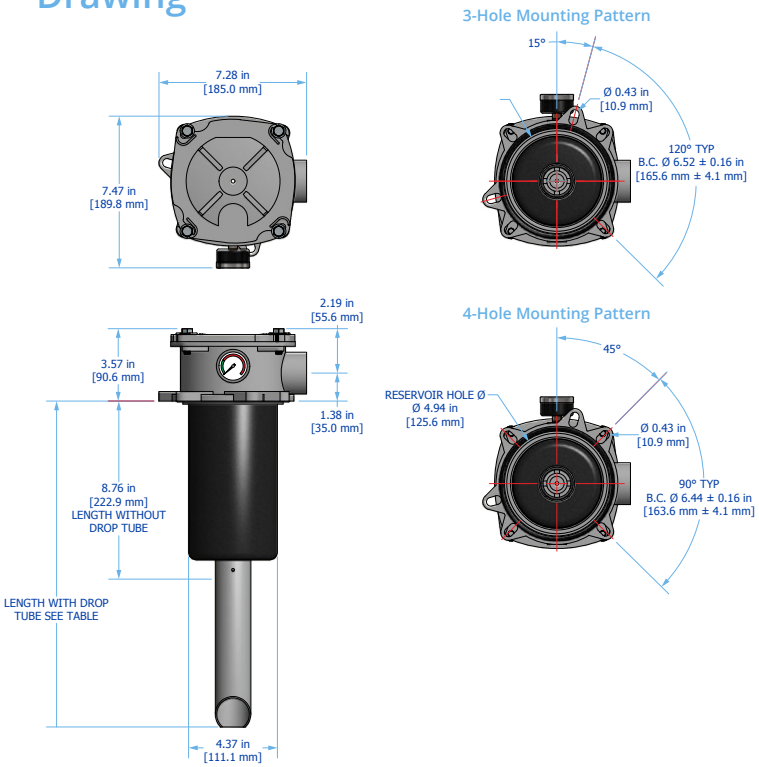
Works with your system.

Available with one or two inlet ports (180° orientation) for maximum flexibility of installation, you'll be amazed at how easily the TF4 integrates into your system. For applications requiring AIAG HF4 automotive standards compliance, the H4 special option incorporates the HPK filter element to ensure you meet compatibility requirements and exceed efficiency expectations.

Minimize the mess.

With most of the assembly inside the reservoir, the top loading housing on the TF4 provides easy and clean access when servicing or changing the element. To top it off, keyways on the twist open cover require only loosening of the bolts to access the element so lost parts during service becomes a thing of the past.

TF4 Installation Drawing



The perfect fit.

Coming in at just over 7" (185 mm) in diameter, the TF4 is the perfect compact solution for keeping your mobile equipment or power units operating at peak performance. And with mounting patterns to fit both North American and European formats, you'll get clean oil and increased efficiency no matter where you are.

Drop Tube Option	Length including Drop Tube
4" Nominal Extension	14.3" (363 mm)
6" Nominal Extension	16.3" (414 mm)
8" Nominal Extension	18.3" (465 mm)
9" Nominal Extension	19.3" (490 mm)
10" Nominal Extension	20.3" (516 mm)
12" Nominal Extension	22.3" (566 mm)

TF4 Specifications

Dimensions

See Installation Drawings on page 157 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

100 psi (6.9 bar) maximum

Pressure Switch Trigger

22 psi (1.5 bar)

Element Collapse Rating

HP4CL9
150 psid (10.3 bard)

HPKL9
290 psid (20 bard)

Integral Bypass Setting

25 psid (1.7 bard)

Materials of Construction

Head
Cast aluminum

Bowl
Polyammide

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Configuration	Filter Element Part Number	Example
Standard Filter Element	HP4CL9 – [Media Selection Code] [Seal Code]	HP4CL9–10AV
Special Option H4	HPKL9 – [Media Selection Code] [Seal Code]	HPKL9–6MB

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Units	Media 1M	3M	6M	10M	16M	25M	**W
psid/gpm	0.2370	0.2000	0.1550	0.1390	0.1360	0.1310	0.0240
bard/lpm	0.0043	0.0036	0.0028	0.0025	0.0025	0.0024	0.0004

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

TF4 Part Number Builder

TF4 [ ] [ ] [ ] - [ ] - [ ] [ ]

Connection | Bypass | Indicator | Special Options | Media | Seal

Connection

	Port Option	Max Flow Rate
B20	1.25" BSPT	40 gpm (151 lpm)[1]
N20	1.25" NPT	40 gpm (151 lpm)[1]
S20	1.25" SAE	40 gpm (151 lpm)[1]

Bypass

2	Integrated bypass - 25 psid (1.7 bard)

Pressure Indicator

DX	Electric pressure switch (DIN connection)
E	Electric switch with flying leads (3-wire connection)
G	Visual pressure gauge
X	No indicator (port plugged)

Special Options

D2[2]	Dual inlet ports, 180° orientation
H4[3]	HPK series element for automotive standards compatibility
4	4" (10 cm) nominal drop tube extension
6	6" (15 cm) nominal drop tube extension
8	8" (20 cm) nominal drop tube extension
9	9" (23 cm) nominal drop tube extension
10	10" (25 cm) nominal drop tube extension
12	12" (30 cm) nominal drop tube extension

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000, \beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10M[3]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000, \beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10A[3]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

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]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.
[2]Available with S4 port only.
[3]Replaces standard HP4C series element with HPKL9. Use 12M or 12A for respective media code in place of 10M or 10A.

TFR

In-Tank Filter Assemblies

Hy-Pro TFR in-tank filter assemblies are ideal for particulate contamination removal in hydraulic power unit return line and mobile hydraulic OEM installations.

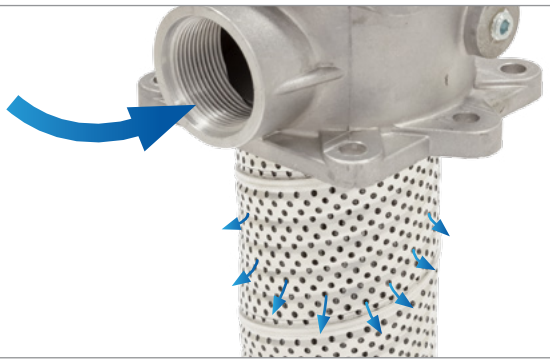
Max Operating Pressure: 150 psi (10 bar)

HY-PRO

hyprofiltration.com/TFR

Filtration starts with the filter.

Advanced DFE rated filter elements deliver lower operating ISO Codes with high efficiency particulate removal and retention efficiency. With a range of media options down to $\beta 2.5_{[c]} > 1000$ + water absorbing options, you get the perfect element for your application, every time.



Inside to out flow.

The dirtiest fluid in you system can be found before the filter element in the filter housing. Here, contaminants collect in the filter media and unless disposed of properly, can wreak havoc on your system after element service. That's why when you service the TFR element, which utilizes inside-to-outside flow, you remove all the dirt and contaminated fluid with the element.

Integral element bypass.

TFR elements include an integral, zero-leak bypass valve. Every time an element is changed a new bypass is installed eliminating bypass valve fatigue and leakage over time.

Minimize the mess.

With most of the assembly inside the reservoir, the top loading TFR housing provides easy and clean access during element service, no slippery spin-ons to handle. With the keyway cover and bolt arrangement lost parts during element service become a thing of the past.

Compact and sized for your system.

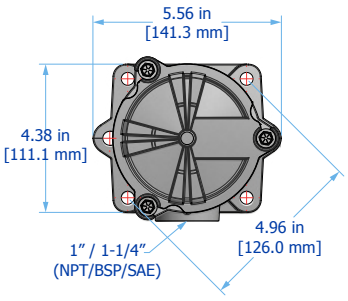
With three head sizes, multiple connection sizes, filter element lengths and diffuser options to choose from, TFR assemblies smoothly deliver clean fluids back to tank with a design that keeps things compact.

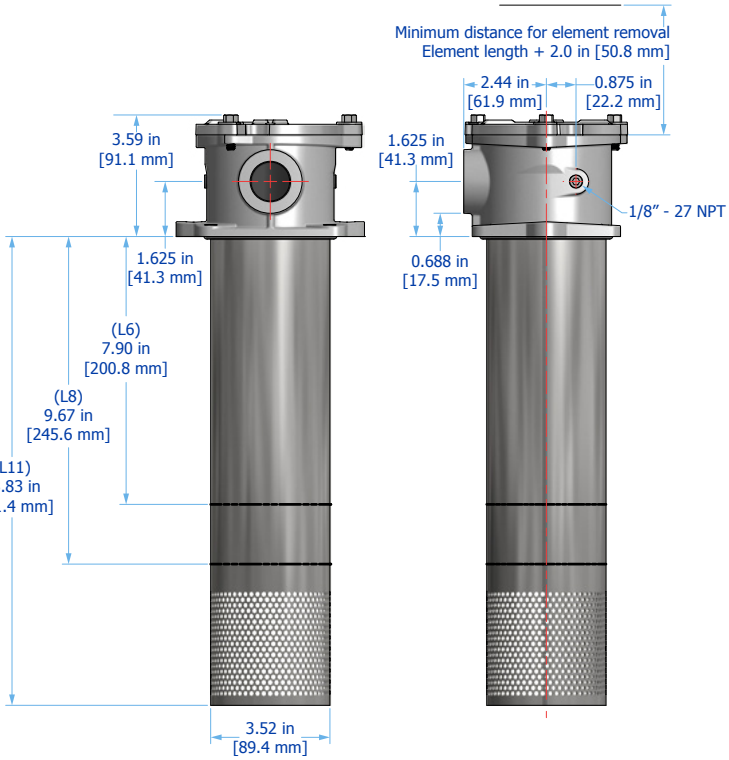
Eliminate aeration.

Smaller reservoirs with higher turnover and less settling time typically lead to aeration as fluids are churned and recirculated. The unique TFR element design minimizes turbulence and integral diffuser tube prevents aeration in compact hydraulic and high velocity return line applications by maintaining a column of fluid outside the filter element and above the fluid line to ensure your fluids are returned clean and without aeration.

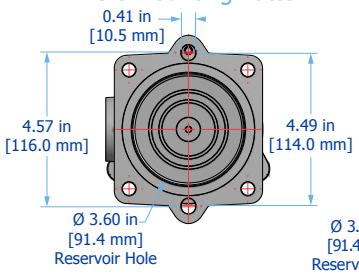
TFR Installation Drawings

TFR1 Installation Drawing

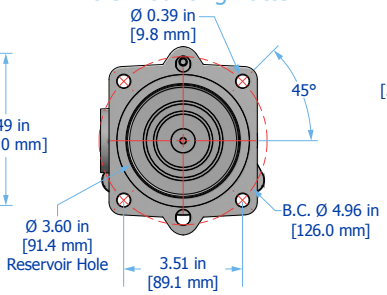




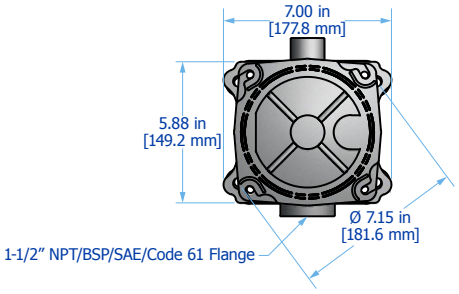
2-Hole Mounting Pattern

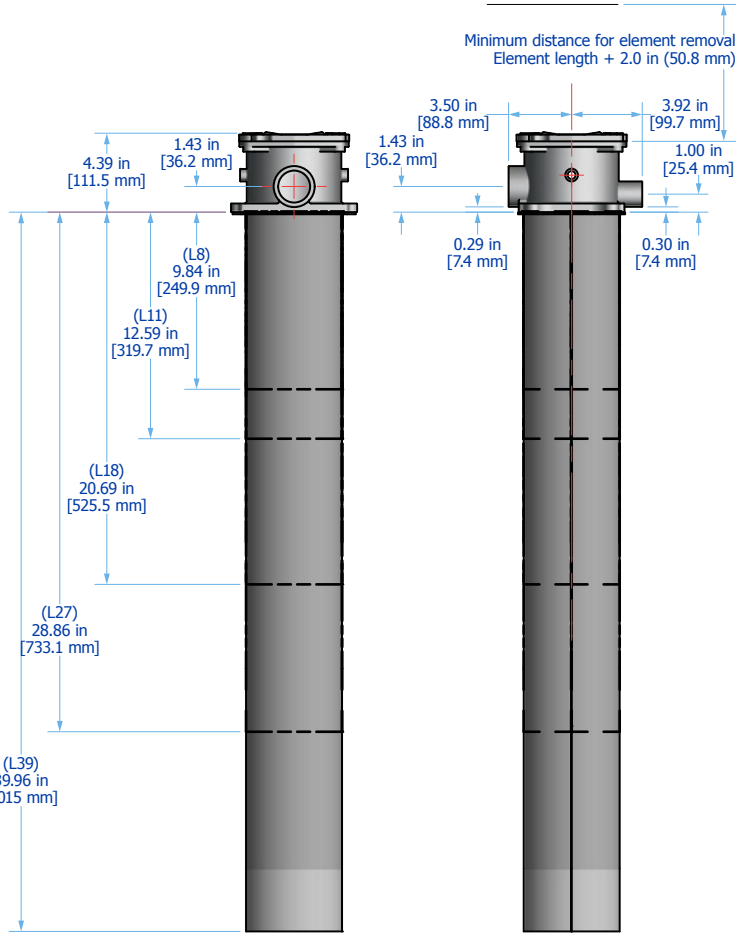


4-Hole Mounting Pattern

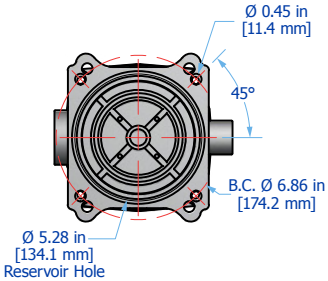


TFR2 Installation Drawing

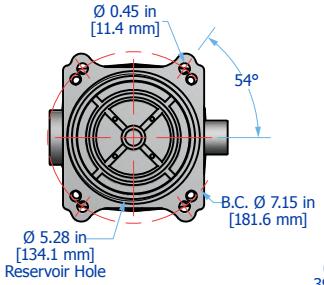




4-Hole Mounting Pattern



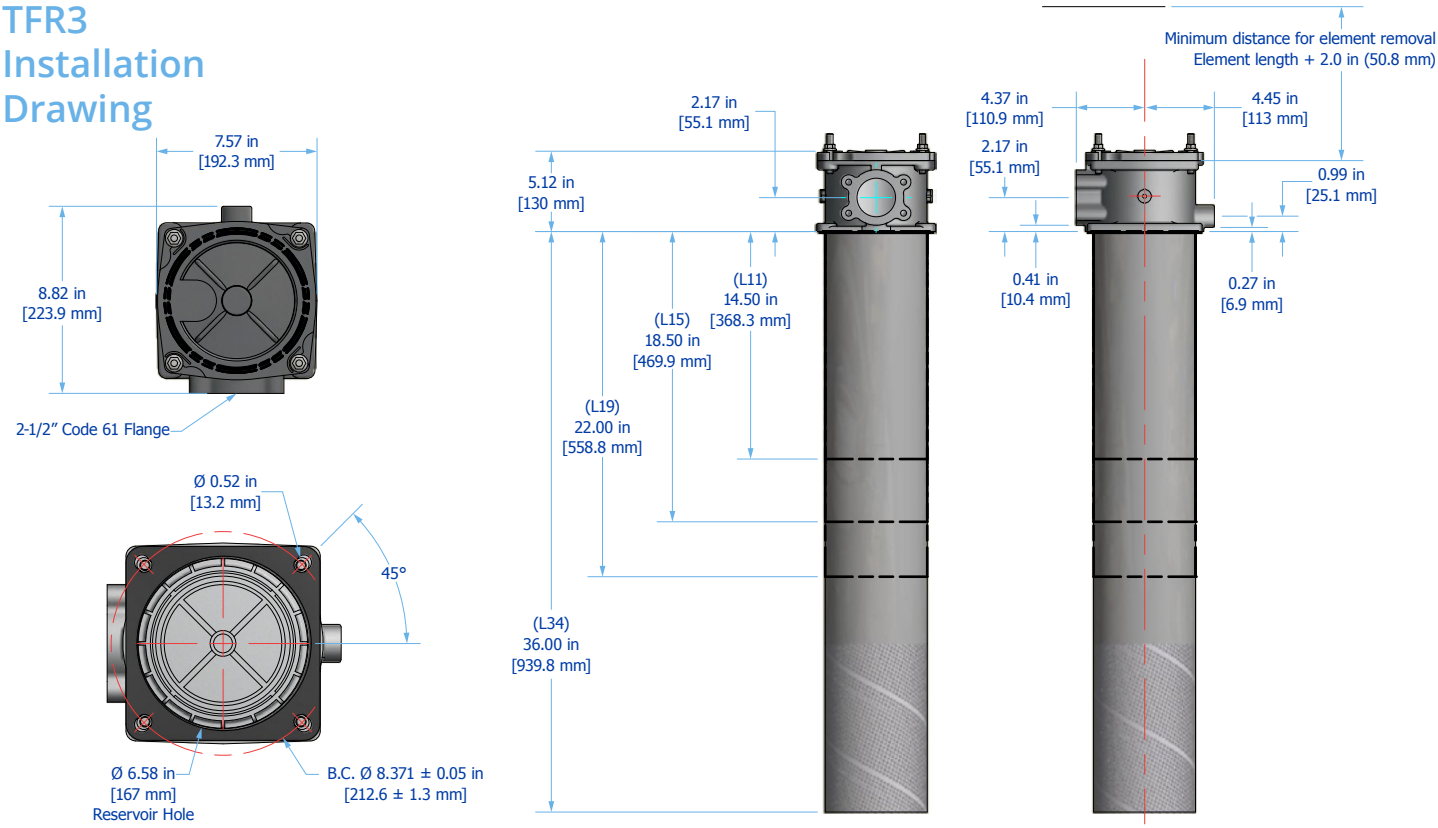
2-Hole Mounting Pattern



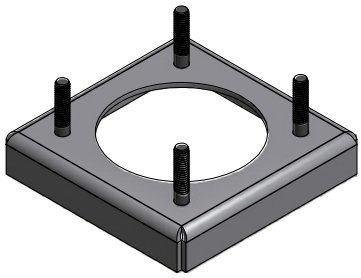
HY-PRO

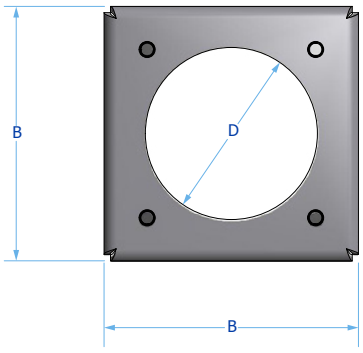
TFR Installation Drawings

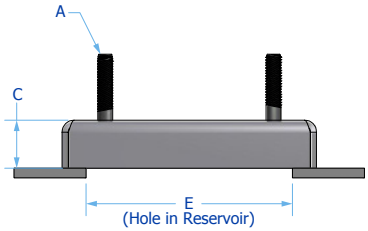
TFR3 Installation Drawing



TFR Weld Flange Installation Drawing







Series	TFR1	TFR2	TFR3
A	5/16" - 18 UNC-2A	3/8" - 16 UNC-2A	3/8" - 16 UNC-2A
B	5.33" (135.4 mm)	7.18" (18.2 mm)	21.2 (21.2 mm)
C	1.00" (25.4 mm)	1.00" (25.4 mm)	1.00" (25.4 mm)
D	3.59" (91.2 mm)	5.30" (134.6 mm)	6.67" (169.4 mm)
E	3.8-4.5" (96.5-114.3 mm)	5.5-6.25" (139.7-158.75 mm)	6.75-7.25" (171.5-184.2 mm)

TFR Specifications

Dimensions
See Installation Drawings on page 162-163 for model specific dimensions.

Operating Temperature

Fluid Temperature	Ambient Temperature
30°F to 225°F (0°C to 105°C)	-4°F to 140°F (-20C to 60C)

Operating Pressure
150 psi (10 bar) maximum

Pressure Switch Trigger
22 psi (1.5 bar)
45 psi (3.1 bar)

Visual Gauge
0-22 psi (0-1.5 bar), green to red
0-45 psi (0-3.1 bar), green to red

Element Collapse Rating
100 psid (6.9 bard)

Integral Bypass Setting
25 psid (1.7 bard) standard. For 50 psid (3.4 bard) option, select Bypass Option "3" in Assembly Part Number Builder and add "-50" to the end of Replacement Element part number.

Materials of Construction

Head	Diffuser	Element Bypass Valve
Cast aluminum	Powder coated or plated steel	Plated steel

Media Description

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

Replacement Elements
To determine replacement elements, use corresponding codes from your assembly part number:

Series Code	Bypass Code	Filter Element Part Number	Example
1	2	HPTFR1L[Element Length Code] – [Media Selection Code][Seal Code]	HPTFR1L6–6MV
	3	HPTFR1L[Element Length Code] – [Media Selection Code][Seal Code] – 50	HPTFR1L6–6MV–50
2	2	HPTFR2L[Element Length Code] – [Media Selection Code][Seal Code]	HPTFR2L27–10AB
	3	HPTFR2L[Element Length Code] – [Media Selection Code][Seal Code] – 50	HPTFR2L27–10AB–50
3	2	HPTFR3L[Element Length Code] – [Media Selection Code][Seal Code]	HPTFRL19–3ME-WS
	3	HPTFR3L[Element Length Code] – [Media Selection Code][Seal Code] – 50	HPTFRL19–3ME-WS–50

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Model	Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
TFR1	L6	psid/gpm	0.5640	0.4759	0.3688	0.3308	0.3236	0.3117	0.0571
		bard/lpm	0.0103	0.0087	0.0067	0.0060	0.0059	0.0057	0.0010
	L8	psid/gpm	0.4846	0.4090	0.3170	0.2842	0.2781	0.2679	0.0491
		bard/lpm	0.0088	0.0074	0.0058	0.0052	0.0051	0.0049	0.0009
	L11	psid/gpm	0.3379	0.2852	0.2210	0.1982	0.1939	0.1868	0.0342
		bard/lpm	0.0062	0.0052	0.0040	0.0036	0.0035	0.0034	0.0006
TFR2	L8	psid/gpm	0.2370	0.2000	0.1550	0.1390	0.1360	0.1310	0.0240
		bard/lpm	0.0043	0.0036	0.0028	0.0025	0.0025	0.0024	0.0004
	L11	psid/gpm	0.1774	0.1497	0.1160	0.1041	0.1018	0.0981	0.0180
		bard/lpm	0.0032	0.0027	0.0021	0.0019	0.0019	0.0018	0.0003
	L18	psid/gpm	0.1009	0.0852	0.0660	0.0592	0.0579	0.0558	0.0102
		bard/lpm	0.0018	0.0016	0.0012	0.0011	0.0011	0.0010	0.0002
TFR3	L11	psid/gpm	0.1102	0.0930	0.0721	0.0646	0.0632	0.0609	0.0112
		bard/lpm	0.0020	0.0017	0.0013	0.0012	0.0012	0.0011	0.0002
	L15	psid/gpm	0.0834	0.0704	0.0545	0.0489	0.0479	0.0461	0.0084
		bard/lpm	0.0015	0.0013	0.0010	0.0009	0.0009	0.0008	0.0002
	L19	psid/gpm	0.0688	0.0580	0.0450	0.0403	0.0395	0.0380	0.0070
		bard/lpm	0.0013	0.0011	0.0008	0.0007	0.0007	0.0007	0.0001
	L34	psid/gpm	0.0398	0.0336	0.0260	0.0234	0.0228	0.0220	0.0040
		bard/lpm	0.0007	0.0006	0.0005	0.0004	0.0004	0.0004	0.0001

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

TFR Part Number Builder

TFR [ ] [ ] [ ] [ ] [ ] - [ ] - [ ] [ ]

Series | Connection | Length | Bypass | Indicator | Special Options | Media | Seal

Series

Series

1	1.25" maximum inlet
2	1.5" maximum inlet
3	2.5" maximum inlet

Max Flow Rate

40 gpm (151 lpm)[1]
60 gpm (227 lpm)[1]
150 gpm (568 lpm)[1]

Connection

TFR1

B16	1" BSPT (tapered)
B20	1.25" BSPT (tapered)
N16	1" NPT
S16	1" SAE
S20	1.25" SAE

TFR2

B24	1.5" BSPT (tapered)
F24	1.5" Code 61 flange
N24	1.5" NPT
S24	1.5" SAE

TFR3

F40	2.5" Code 61 flange

Element Length[2]

TFR1

6	6" (15 cm) nominal
8	8" (20 cm) nominal
11	11" (28 cm) nominal

TFR2

8	8" (20 cm) nominal
11	11" (28 cm) nominal
18	18" (46 cm) nominal
27	27" (69 cm) nominal
39	39" (99 cm) nominal

TFR3

11	11" (28 cm) nominal
15	15" (38 cm) nominal
19	19" (48 cm) nominal)
34	34" (86 cm) nominal

Bypass

2[3]	Integrated bypass - 25 psid (1.7 bar)
3[4]	Integrated bypass - 50 psid (3.4 bar)

Pressure Indicator

DX	Electric pressure switch (DIN connection)
E	Electric switch with flying leads (3-wire connection)
G	Visual pressure gauge
X	No indicator (port plugged)

Special Options

R[5]	Exclude diffuser tube
W	Reservoir weld flange

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000, \beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10M	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000, \beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10A	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

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]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.
[2]Improper length selection could result in reservoir foaming. Consider diffuser and element length and anticipated reservoir fluid level when sizing. To protect against foaming, using longer lengths is recommended.
[3]Standard Bypass Rating. Consult Hy-Pro for alternate valve setting.
[4]When selected, add "-50" to end of replacement element part number.
[5]Excluding diffuser tube can result in reservoir foaming in high flow density applications.

LF(M)

High Viscosity Filter Assemblies

Low pressure filter assemblies optimized for high flow hydraulic, high viscosity lube and heavily contaminated fuel applications.

Max Operating Pressure: 150 psi (10 bar)
Available options up to 1000 psi (68.9 bar)

HY-PRO

hyprofiltration.com/LF

Filtration starts with the filter.

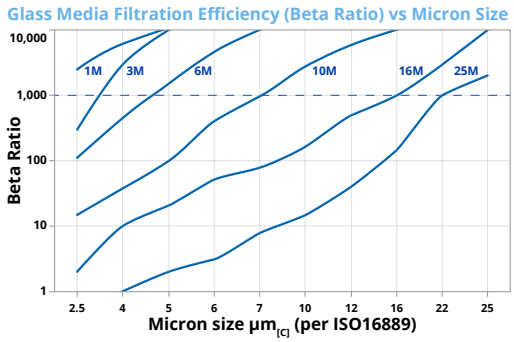
The oversized coreless filter element in every LF delivers lower ISO Codes over a long element lifespan to ensure low disposal impact, simultaneously reducing your environmental footprint and your bottom line. To top it off, select elements come standard with an integral zero-leak bypass so with every filter change you get a new bypass along with peace of mind.

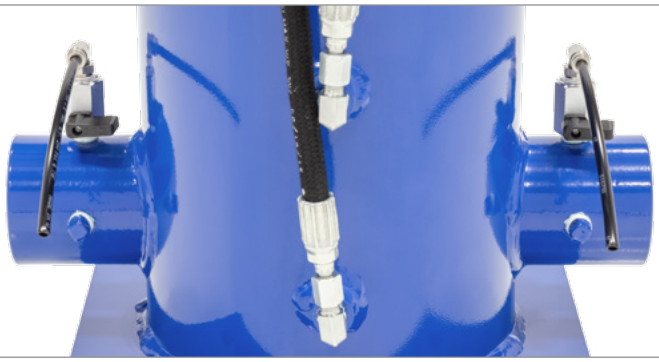
Built for industrial use.

Constructed from heavy duty carbon steel (standard) or the optional 304 or 316 stainless steel, the LF filter housings are designed to excel in even the toughest industrial conditions. Multiround units go even further to provide increased capacity whether you're operating with incredibly high viscosity oils, extreme flow rates or need extended service intervals.

Element configuration & media options.

With media options down to $\beta 0.9_{[C]} > 1000$, insoluble varnish removal and water absorbing options, you get the perfect element for your application, every time. Element configurations include Hy-Pro HP106 and HP107 coreless style elements with integral, zero-leak bypass valves. For those plants using 8314 style industry standard elements, the HP8314 offers an improved bypass valve design.



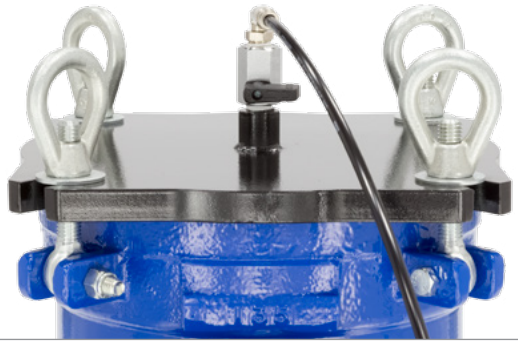


Setting the new standard.

Sampling and condition monitoring are no longer optional, they're a necessity. That's why every LF comes standard with sample ports and green to red true ΔP gages that indicate exact element condition at all times. With access to accurate system cleanliness conditions, you'll know exactly how well your filtration is performing.

Minimize the mess.

Top loading filter housings minimize the mess from element services and changes. And with the easy open swing bolt lid design, you'll be back to filtering your fluids without having to search for all those lost parts.

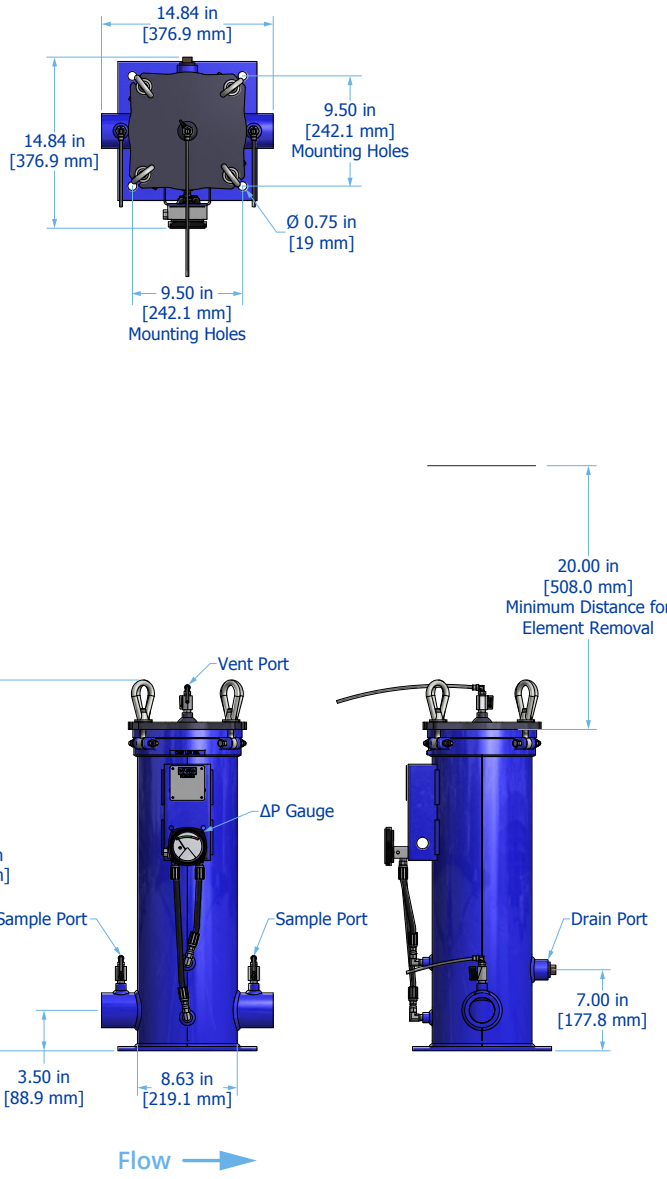


Seamlessly integrated into your systems.

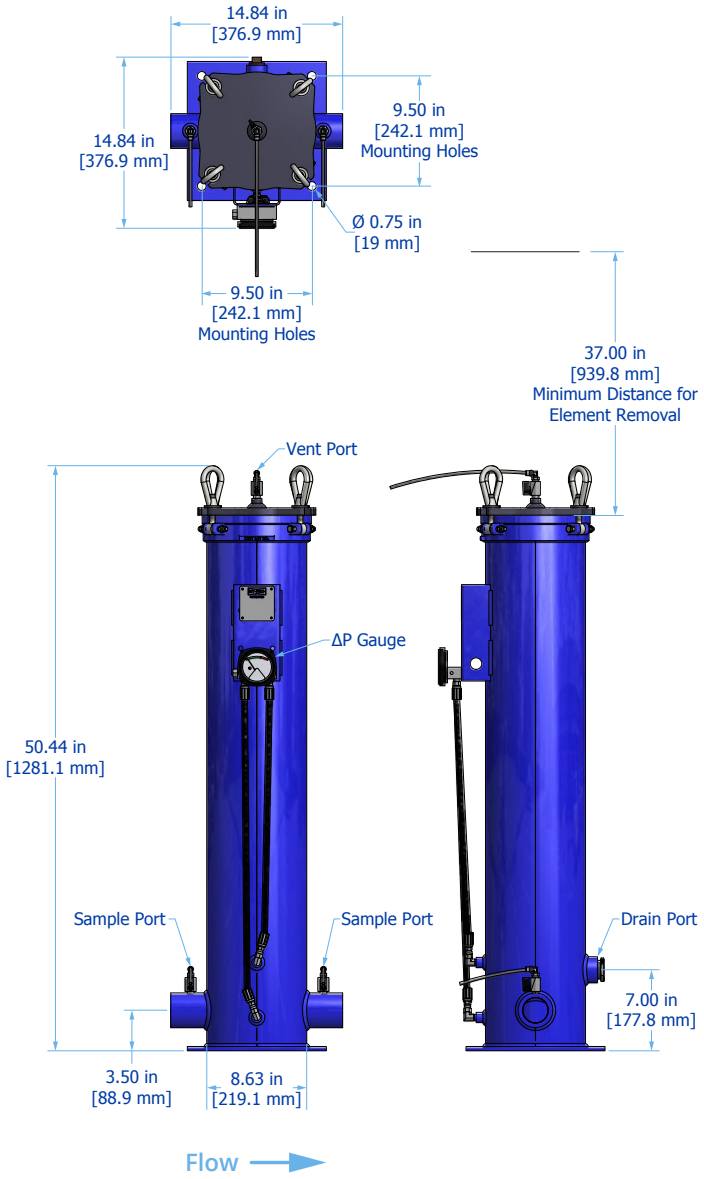
Multiple connection options and port customization provide the flexibility to integrate LF directly into existing re-circulating or auxiliary side loop and dispensing lines to improve fluid cleanliness and optimize existing assets. Get filtration exactly where you need it without extra expense of installing new plumbing and electrical.

LF Installation Drawings

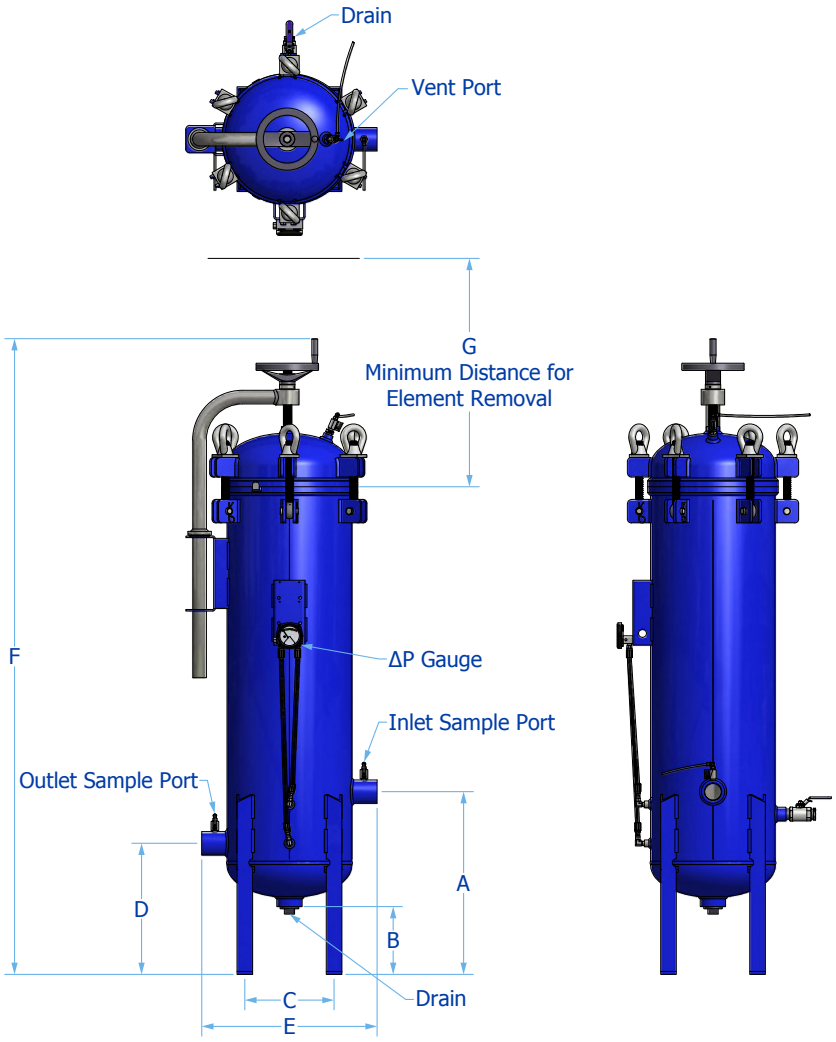
LF (L18) Installation Drawing



LF (L36) Installation Drawing



LFM Installation Drawings



Series	Number of Elements	Port Size	Vessel Diameter	A	B	C	D	E	F	G	Weight
LFM	3	2	16.0 in 40.6 cm	27.1 in 68.8 cm	13.0 in 33.0 cm	14.1 in 35.8 cm	16.8 in 42.7 cm	26.0 in 66.0 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	465.0 lb 210.9 kg
		3	16.0 in 40.6 cm	27.1 in 68.8 cm	13.0 in 33.0 cm	14.1 in 35.8 cm	16.8 in 42.7 cm	26.0 in 66.0 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	465.0 lb 210.9 kg
		4	16.0 in 40.6 cm	27.1 in 68.8 cm	13.0 in 33.0 cm	14.1 in 35.8 cm	16.8 in 42.7 cm	26.0 in 66.0 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	65.0 lb 29.5 kg
	4	2	18.0 in 45.7 cm	29.8 in 75.7 cm	13.0 in 33.0 cm	16.1 in 40.9 cm	17.5 in 44.5 cm	26.0 in 66.0 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	550.0 lb 249.5 kg
		3	18.0 in 45.7 cm	29.8 in 75.7 cm	13.0 in 33.0 cm	16.1 in 40.9 cm	17.5 in 44.5 cm	26.0 in 66.0 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	550.0 lb 249.5 kg
		4	18.0 in 45.7 cm	29.8 in 75.7 cm	13.0 in 33.0 cm	16.1 in 40.9 cm	17.5 in 44.5 cm	26.0 in 66.0 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	550.0 lb 249.5 kg
	9	3	24.0 in 61.0 cm	32.3 in 82.0 cm	13.0 in 33.0 cm	23.5 in 59.7 cm	23.7 in 60.2 cm	37.3 in 94.7 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	645.0 lb 292.6 kg
		4	24.0 in 61.0 cm	32.3 in 82.0 cm	13.0 in 33.0 cm	23.5 in 59.7 cm	23.7 in 60.2 cm	37.3 in 94.7 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	645.0 lb 292.6 kg
		6	24.0 in 61.0 cm	32.3 in 82.0 cm	13.0 in 33.0 cm	23.5 in 59.7 cm	23.7 in 60.2 cm	37.3 in 94.7 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	645.0 lb 292.6 kg

[1]Dimensions are approximations taken from base model and will vary according to options chosen and customer sizing requirements.

LF(M) Specifications

Dimensions

See Installation Drawings on page 168-169 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

150 psi (10 bar) standard, see Special Options for additional pressure ratings.

Element Collapse Rating

HP105	HP106	HP107	HP8314 (All Codes)
150 psi (10.3 bar)	150 psi (10.3 bar)	150 psi (10.3 bar)	150 psi (10.3 bar)

Integral Bypass Setting

HP106 – integral element bypass	HP107 – Integral element bypass	HP8314 (Code 82) – Integral housing bypass	HP8314 (Code 83) – Integral housing bypass
25 psid (1.7 bard)	50 psid (3.4 bard)	25 psid (1.7 bard)	50 psid (3.4 bard)

Materials of Construction

Housing
Carbon steel with industrial coating
Optional 304/316 stainless steel

Media Description

M	A	W	VTM
G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)	G8 Dualglass high performance media combined with water removal scrim. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)	Stainless steel wire mesh media $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)	$\beta 0.9_{[C]} \geq 1000$ particulate, insoluble oxidation by-product and water removal media

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Element Type Code	Filter Element Part Number	Example
5	HP105L[Length Code] – [Media Selection Code][Seal Code]	HP105L36–6AB
6	HP106L[Length Code] – [Media Selection Code][Seal Code]	HP106L18–10MV
7	HP107L[Length Code] – [Media Selection Code][Seal Code]	HP107L36–VTM710V
8X	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–25WV
82	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L16–12MB
85	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–16ME–WS

Fluid Compatibility

Petroleum and mineral based fluids, #2 diesel fuels (standard). For specified synthetics contact factory for compatibility with fluorocarbon seal option. For phosphate ester (P9) or skydrol fluid (S9) compatibility select fluid compatibility from special options.

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Model	Length	Units	Media VTM	05M	1M	3M	6M	10M	16M	25M	**W
LF	16/18	psid/gpm	0.0628	0.0473	0.0463	0.0391	0.0303	0.0271	0.0266	0.0256	0.0046
		bard/lpm	0.0011	0.0009	0.0008	0.0007	0.0006	0.0005	0.0005	0.0005	0.0001
	36/39	psid/gpm	0.0440	0.0331	0.0324	0.0273	0.0212	0.0190	0.0186	0.0179	0.0032
		bard/lpm	0.0008	0.0006	0.0006	0.0005	0.0004	0.0003	0.0003	0.0003	0.0001
LFM3	36/39	psid/gpm	0.0122	0.0092	0.0081	0.0055	0.0051	0.0045	0.0041	0.0035	0.0029
		bard/lpm	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LFM4	36/39	psid/gpm	0.0091	0.0069	0.0067	0.0048	0.0044	0.004	0.0037	0.0032	0.0025
		bard/lpm	0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.00005

Model	Length	Units	Media 1A	3A	6A	10A	16A	25A
LF	16/18	psid/gpm	0.0514	0.0434	0.0336	0.0302	0.0295	0.0284
		bard/lpm	0.0009	0.0008	0.0006	0.0005	0.0005	0.0005
	36/39	psid/gpm	0.0360	0.0304	0.0235	0.0211	0.0207	0.0199
		bard/lpm	0.0007	0.0006	0.0004	0.0004	0.0004	0.0004
LFM3	36/39	psid/gpm	0.0073	0.0049	0.0046	0.0040	0.0037	0.0031
		bard/lpm	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LFM4	36/39	psid/gpm	0.0060	0.0043	0.0040	0.0036	0.0033	0.0029
		bard/lpm	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

LF(M) Part Number Builder

LF [ ] [ ] [ ] [ ] [ ] - [ ] - [ ] [ ]

Series | Connection | Element Type | Element Length | ΔP Indicator | Special Options | Media | Seal

Series

	Number of Elements	Max Flow Rate
omit	1 element	200 gpm (757 lpm)[1]
M3	3 elements	600 gpm (2271 lpm)[1]
M4	4 elements	800 gpm (3028 lpm)[1]
M9	9 elements	1800 gpm (6814 lpm)[1]
M14	14 elements	2800 gpm (10,600 lpm)[1]
M22	22 elements	4400 gpm (16,656 lpm)[1]
M38	38 elements	7600 gpm (28,769 lpm)[1]

Connection

A2	2" ANSI flange – 150# standard	**D8**	DN200 DIN flange – PN16 standard
A3	3" ANSI flange – 150# standard	**D10**	DN250 DIN flange – PN16 standard
A4	4" ANSI flange – 150# standard	**F2**[1]	2" Code 61 flange
A6	6" ANSI flange – 150# standard	**F3**[1]	3" Code 61 flange
A8	8" ANSI flange – 150# standard	**G2**	2" G thread (BSPP)
A10	10" ANSI flange – 150# standard	**G3**	3" G thread (BSPP)
D2	DN50 DIN flange – PN16 standard	**N2**	2" NPT
D3	DN80 DIN flange – PN16 standard	**N3**	3" NPT
D4	DN100 DIN flange – PN16 standard	**N4**	4" NPT
D6	DN150 DIN flange – PN16 standard	**S2**[2]	2" SAE threaded O-ring boss

Element Type

5	HP105 – no bypass	**8X**	HP8314 – no bypass
6	HP106 – 25 psid (1.7 bard) integral element bypass	**82**	HP8314 – 25 psid (1.7 bard) integral housing bypass
7	HP107 – 50 psid (3.4 bard) integral element bypass	**85**	HP8314 – 50 psid (3.4 bard) integral housing bypass

Element Length

18[3]	L18 single length filter housing and coreless element	**16**[3]	L16 single length filter housing and coreless element
36[3]	L36 single length filter housing and coreless element	**39**[3]	L39 single length filter housing and coreless element

ΔP Indicator

D	22 psid visual gauge + electric switch	**H**	65 psid visual gauge + electric switch
E	22 psid visual gauge	**J**	65 psid visual gauge (elements 5 or 8* only)
F	45 psid visual gauge + electric switch	**P**	2 pressure gages (industrial liquid filled)
G	45 psid visual gauge	**X**	None (ports plugged)

Special Options

omit	150 psi (10.3 bar) max operating pressure, carbon steel	**S4**[5]	1000 psi (68.9 bar) max oper. pressure, 304 stainless steel
F	Filter element ΔP gauge with tattle tale follower needle	**S9**[6]	Skydrol fluid compatibility modification
G	Spill retention pan with fork guides (industrial coated steel)	**U1**	U Code (ASME U code certified)
P9[4]	Phosphate ester fluid compatibility modification	**W**	Automatic air bleed valve
S1[5]	150 psi (10.3 bar) max oper. pressure, 304 stainless steel	**X**	250 psi (17.2 bar) max oper. pressure, carbon steel
S2[5]	250 psi (17.2 bar) max oper. pressure, 304 stainless steel	**Y**	450 psi (31.0 bar) max oper. pressure, carbon steel
S3[5]	450 psi (31.0 bar) max oper. pressure, 304 stainless steel	**Z**	1000 psi (68.9 bar) max oper. pressure, carbon steel

Media Selection

G8 Dualglass

05M	$\beta 0.9_{[C]} \geq 1000$, $\beta 1 \geq 200$
1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10M[7]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

G8 Dualglass + water removal

1A	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3A	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10A[7]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

Stainless wire mesh

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

VTM

VTM710[8] $\beta 0.9_{[C]} \geq 1000$ particulate, insoluble oxidation by-product and water removal media

Seals

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

[1] 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.
[2] Code 61 flange and SAE connection options include all other ports with SAE connections. When selected, no NPT connections are present in the assembly.
[3] Compatibility will be based on Element Type selection. For elements HP105, HP106, and HP107, use Length Code 18 or 36. Length Codes 16 and 39 only compatible with HP8314 element.
[4] When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[5] Lid closure hardware is plated carbon steel.
[6] When selected, must be paired with Seal option "E-WS." Contact factory for more information or assistance in fluid compatibility.
[7] For elements HP8314, use 12M or 12A for respective media code in place of 10M or 10A.
[8] Only available on HP107 series elements. Max recommended flow rate 16 gpm (60 lpm) for HP107L36-VTM710* elements and 8 gpm (30 lpm) for HP107L18-VTM710* elements.

LFW

Wall Mounted Filter Assemblies

A compact, dedicated off-line contamination solution ideal for small reservoirs, gearboxes and diesel engine crankcase conditioning. Coming in at a whopping 0 ft² of floor space, the LFW is designed to get your filtration off the ground and positioned conveniently for you, whether you're polishing off that high viscosity gearbox oil or just want to add a little more protection for your critical components from heavy contaminants. And with Hy-Pro filter elements inside, the possibilities are endless for what you can do with the LFW.

Max Operating Pressure: 150 psi (10 bar)
Available options up to 250 psi (17.2 bar)

Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities so your equipment operates unimpeded by contamination. With media options down to $\beta 0.9_{[C]} > 1000$ + water absorption and integral element bypass valves, you get the perfect element for your application, every time.

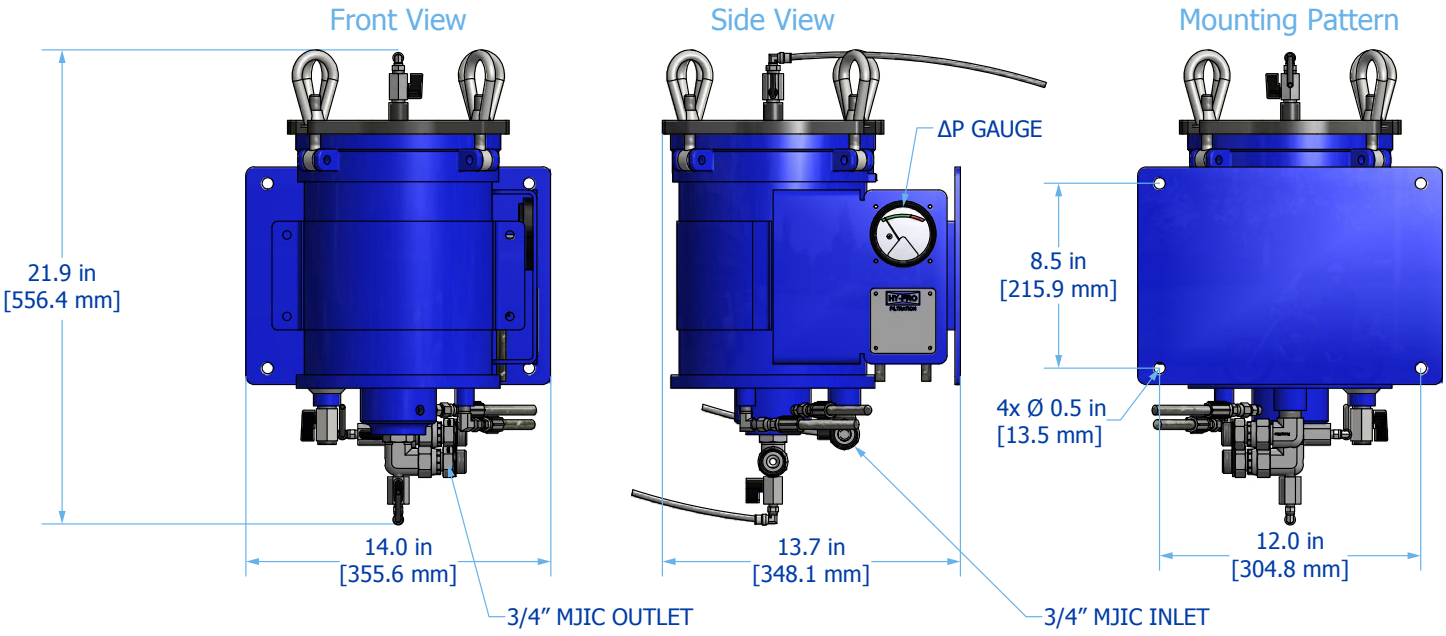
User friendly on a whole new scale.

With everything you need together in one tiny little package, LFW service and operation couldn't be easier. From the top loading housing to the sample ports, the LFW is built to match powerful filtration with your convenience. And with the easy-open swing bolt enclosure, worrying about lost parts during service becomes a thing of the past.

On board fuel filter upgrade.

New diesel engine fuel cleanliness requirements for high pressure injectors call for higher efficiency filters, rendering your existing on-board filters too small. The LFW element is sized just right and with available water absorbing media options, you'll get clean, dry fuel and the knowledge that your diesel engines are running more efficiently than ever.

LFW Installation Drawing



LFW Specifications

Dimensions

See Installation Drawings on page 173 for model specific dimensions.

Operating Pressure

150 psi (10 bar) maximum standard. For 250 psi (17.2 bar) select Special option "X."

Operating Temperature

Fluid Temperature
30°F to 225°F
(0°C to 105°C)

Ambient Temperature
-4°F to 140°F
(-20C to 60C)

Materials of Construction

Vessel
Carbon steel with industrial coating

Element Bypass Valve
Nickel plated steel

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. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

VTM
$\beta 0.9_{[C]} \geq 1000$ particulate, insoluble oxidation by-product and water removal media

W
Stainless steel wire mesh media $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Element Type Code	Filter Element Part Number	Example
6	HP106L10 – [Media Selection Code] [Seal Code]	HP106L10-10AB
7	HP107L10 – [Media Selection Code] [Seal Code]	HP107L10-3MV

Fluid Compatibility

Petroleum and mineral based fluids, #2 diesel fuels (standard). For specified synthetics contact factory for compatibility with fluorocarbon seal option. For phosphate ester (P9) or skydrol fluid (S9) compatibility select fluid compatibility from special options.

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Units	Media							
	VTM	**1M**	**3M**	**6M**	**10M**	**16M**	**25M**	****W**
psid/gpm	0.1700	0.1670	0.0980	0.0600	0.0390	0.0250	0.0200	0.0160
bard/lpm	0.0031	0.0030	0.0018	0.0011	0.0007	0.0005	0.0004	0.0003

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

LFW Part Number Builder

LFW [ ] [ ] [ ] - [ ] - [ ] [ ]

Connection | Element Type | Indicator | Special Options | Media | Seal

Connection

Port Option		Max Flow Rate
G12	¾" G thread (BSPP)	25 gpm (95 lpm)[1]
J12	¾" male JIC with 37° flare	25 gpm (95 lpm)[1]
N12	¾" FNPT	25 gpm (95 lpm)[1]

Element Type

6	HP106 coreless element, 25 psid (1.7 bard) integral element bypass
7	HP107 coreless element, 50 psid (3.4 bard) integral element bypass

ΔP Indicator

D	22 psid visual gauge + electric switch
E	22 psid visual gauge
F	45 psid visual gauge + electric switch
G	45 psid visual gauge
P	2 pressure gages (industrial liquid filled)

Special Options

F	Filter element ΔP gauge with tattle tale follower needle
P9[2]	Phosphate ester fluid compatibility modification
S2	51" (130 cm) Mounting stand – ships fully assembled
S9[3]	Skydrol fluid compatibility modification
W	Automatic air bleed valve
X	250 psi (17.2 bar) max oper. pressure

Media Selection

G8 Dualglass

05M	$\beta 0.9_{[C]} \geq 1000$, $\beta 1 \geq 200$
1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10M	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10A	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

VTM

VTM710[4]	$\beta 0.9_{[C]} \geq 1000$ particulate, insoluble oxidation by-product and water removal media

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]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.
[2]When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[3]When selected, must be paired with Seal option "E-WS." Contact factory for more information or assistance in fluid compatibility.
[4]Only available on HP107 series elements. Max recommended flow rate 4 gpm (15 lpm) for HP107L10-VTM710* elements.

F8

Low Pressure, High Flow Filter Assembly

Ideal for high viscosity lubricating fluids, high flow hydraulic, and heavily contaminated fuel applications. Drop-in mounting interchange for common pulp and paper industry 8300/8310/8314 filter assemblies.

Max Operating Pressure: 500 psi (34.5 bar)

HY-PRO

hyprofiltration.com/F8

Filtration starts with the filter.

Advanced DFE rated filter elements deliver lower operating ISO Codes with high efficiency particulate removal and retention efficiency. With a range of media options down to $\beta 2.5_{[c]} > 1000$ + water absorbing options, you get the perfect element for your application, every time.

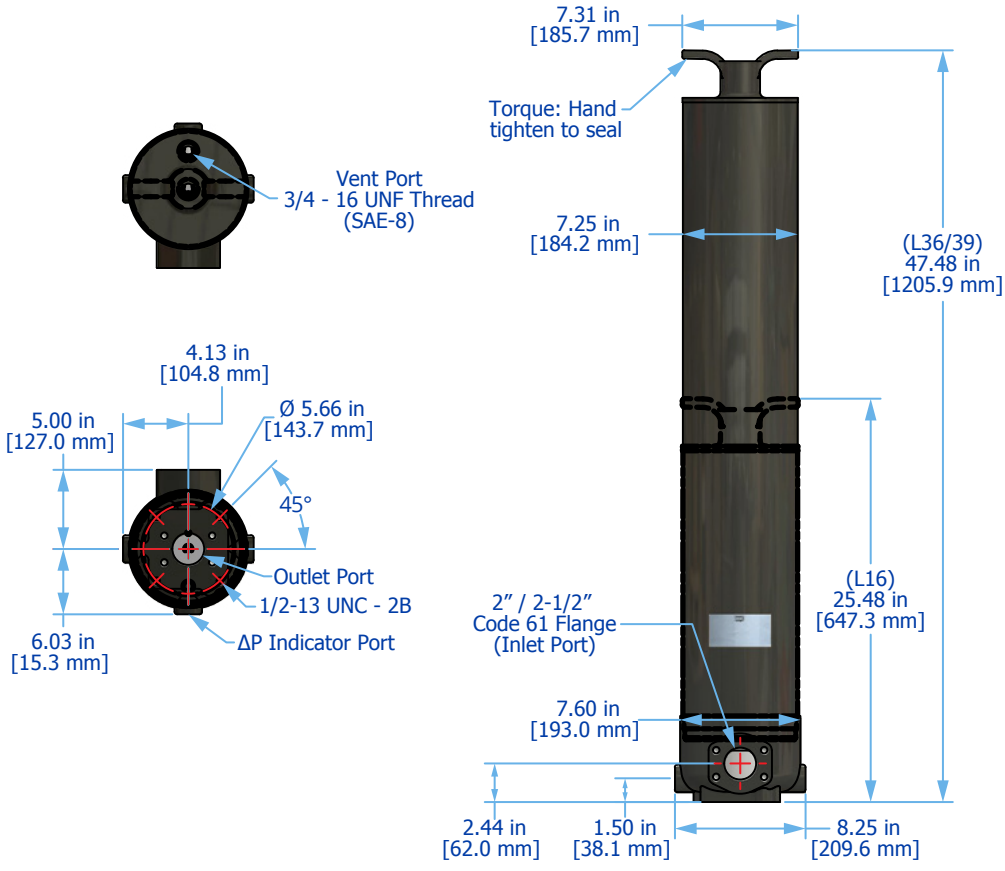
Minimize the mess.

The top loading housing on F8 filter assemblies provide easy and clean access when servicing or changing the element. Accessing the element is as simple as removing the housing cover, meaning you have no heavy bowl to lift and can get back in operation more quickly than ever.

Setting the new (industry) standard.

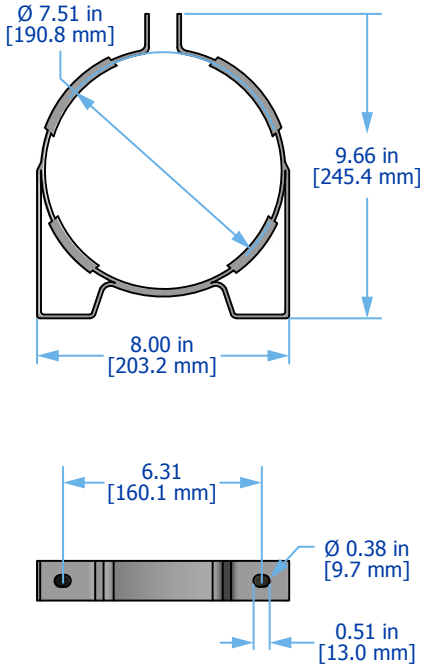
Designed as a drop-in replacement for industry standard 8300 series filter housings, only the F8 from Hy-Pro gives you the flexibility to choose from numerous DFE rated filter arrangements. Even upgrade your existing 83** series filter elements with the HP107 series to get a new integral bypass valve with every filter.

F8 Installation Drawing



F8 Mounting Bracket

(Not to scale)



HY-PRO

F8 Specifications

Dimensions

See Installation Drawings on page 177 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

500 psi (34.5 bar) max

ΔP Indicator Trigger

15 psi (1 bar): 25 psid bypass
35 psi (2.4 bar): 50 psid bypass + non bypass

Materials of Construction

Head/Lid
Cast aluminum (anodized)

Bowl
Industrial coated steel

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

VTM
$\beta 0.9_{[C]} \geq 1000$ particulate, insoluble oxidation by-product and water removal media

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Element Type Code	Filter Element Part Number	Example
5	HP105L[Length Code] – [Media Selection Code][Seal Code]	HP105L36–6AB
6	HP106L[Length Code] – [Media Selection Code][Seal Code]	HP106L16–10MV
7	HP107L[Length Code] – [Media Selection Code][Seal Code]	HP107L36–1MV
32	HP8310L[Length Code] – [Media Selection Code][Seal Code]	HP8310L16–25AV
35	HP8310L[Length Code] – [Media Selection Code][Seal Code]	HP8310L39–3MB
8X	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–25WV
82	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L16–12MB
85	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–16ME–WS

Fluid Compatibility

Petroleum and mineral based fluids, #2 diesel fuels (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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Length	Units	Media						
		1M	3M	6M	10M	16M	25M	**W
16	psid/gpm	0.0463	0.0391	0.0303	0.0271	0.0266	0.0256	0.0046
	bard/lpm	0.0008	0.0007	0.0006	0.0005	0.0005	0.0005	0.0001
36/39	psid/gpm	0.0324	0.0273	0.0212	0.0190	0.0186	0.0179	0.0032
	bard/lpm	0.0006	0.0005	0.0004	0.0003	0.0003	0.0003	0.0001

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

F8 Part Number Builder

F8 [ ] [ ] [ ] [ ] - [ ] - [ ] [ ]

Connection | Element Type | Element Length | Indicator | Special Options | Media | Seal

Connection

	Port Option	Max Flow Rate
F32	2" Code 61 flange	300 gpm (1,136 lpm)[1]
F40	2.5" Code 61 flange	300 gpm (1,136 lpm)[1]

Element Type

5	HP105 – no bypass
6	HP106 – 25 psid (1.7 bard) integral element bypass
7	HP107 – 50 psid (3.4 bard) integral element bypass
32	HP8310 – 25 psid (1.7 bard) integral housing bypass
35	HP8310 – 50 psid (3.4 bard) integral housing bypass
8X	HP8314 – no bypass
82	HP8314 – 25 psid (1.7 bard) integral housing bypass
85	HP8314 – 50 psid (3.4 bard) integral housing bypass

Element Length

16	L16 single length filter housing and coreless element
36[2]	L36 single length filter housing and coreless element
39[2]	L39 single length filter housing and coreless element

ΔP Indicator

D	Visual with electric switch (DIN connection)
V	Visual/Mechanical
X	No indicator (port plugged)

Special Options

M1	Mounting stand for base mount applications

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**[3]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**74W**	74µ nominal
10M[3]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**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

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

[1]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.
[2]Compatibility will be based on Element Type selection. For elements HP105, HP106, and HP107, use Length Code 36. Length Code 39 only compatible with HP8310 and HP8314.
[3]For elements HP8310 and HP8314, use 12M or 12A for respective media code in place of 10M or 10A.

S75-76

Low Pressure Spin-On Filter Assemblies

Hy-Pro low pressure S series filters are designed for installation on the return line to remove contaminant ingested or generated by the system. Functions include off-line filtration (kidney loop or filter cart) and some suction applications.

Ideal for automotive manufacturing and assembly machine tools, mobile applications such as waste haulers and transit, filter carts and filter panels, and power unit return line/suction.

Max Operating Pressure: 200 psi (13.8 bar)

HY-PRO

hyprofiltration.com/S75

Media matters.

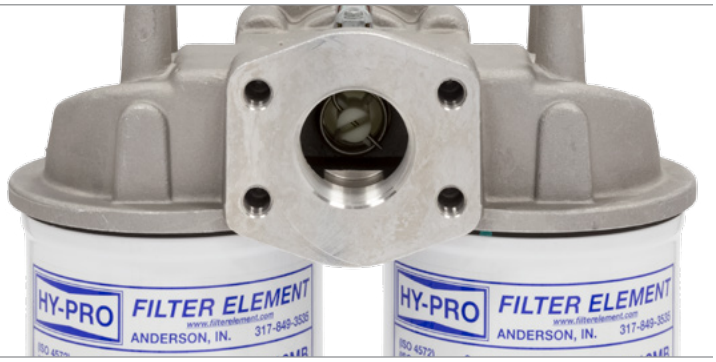
DFE rated filter elements stay true to efficiency ratings and ensure the highest level of particulate capture and retention capabilities. And with media options down to $\beta 2.5_{[C]} \geq 1000$ or $\beta 5_{[C]} \geq 1000$ + water removal, you can be sure contamination stays exactly where you want it: out of your fluid.

Multiple configurations.

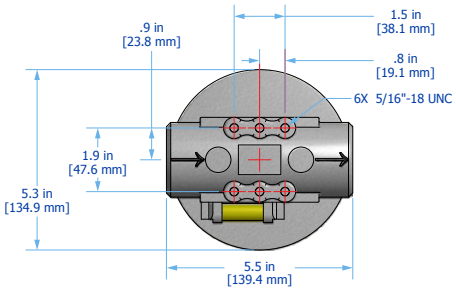
With a variety of connection types and sizes, mounting options, pressure indicators, media options and sample ports, there is a Spin-On assembly to meet the needs for almost any application.

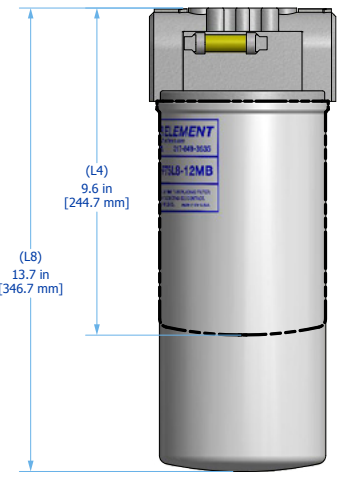
Double duty.

S75D assemblies pack double the punch using two Hy-Pro Spin-Ons in a parallel flow arrangement. Ideal for high flow or high viscosity applications, these assemblies offer unmatched filtration surface area in a compact size.

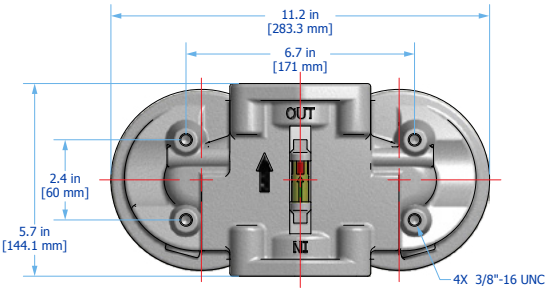


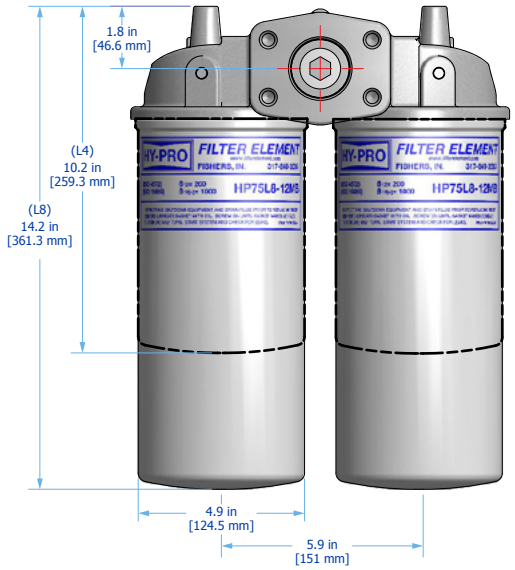
S75 Installation Drawing



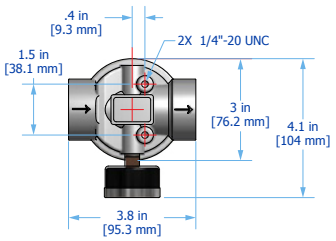


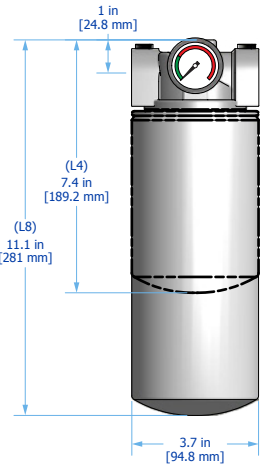
S75D Installation Drawing





S76 Installation Drawing





S75-76 Specifications

Dimensions

See Installation Drawings on page 181 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

200 psi (13.8 bar) max

ΔP Indicator Trigger

22 psi (1.5 bar) or 44 psi (3.0 bar)

Element Collapse

100 psid (6.9 bard) max

Materials of Construction

Head
Cast aluminum

Can
Stamped steel

Element Bypass Valve
Nylon

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. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Series	Filter Element Part Number	Example
S75	HP75L[Length Code] – [Media Selection Code] [Seal Code]	HP75L4-25MV
S75D	HP75L[Length Code] – [Media Selection Code] [Seal Code]	HP75L8-12AB
S76	HP76L[Length Code] – [Media Selection Code] [Seal Code]	HP76L8-3MB

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Series	Length	Units	Media 1M	3M	6M	12M	16M	25M	**W
S75	L4	psid/gpm	0.332	0.280	0.217	0.195	0.190	0.183	0.033
		bard/lpm	0.006	0.005	0.004	0.004	0.003	0.003	0.001
	L8	psid/gpm	0.183	0.155	0.120	0.107	0.105	0.101	0.018
		bard/lpm	0.003	0.003	0.002	0.002	0.002	0.002	0.000
S75D	L4	psid/gpm	0.166	0.140	0.108	0.097	0.095	0.092	0.017
		bard/lpm	0.003	0.003	0.002	0.002	0.002	0.002	0.000
	L8	psid/gpm	0.092	0.077	0.060	0.054	0.053	0.051	0.009
		bard/lpm	0.002	0.001	0.001	0.001	0.001	0.001	0.000
S76	L4	psid/gpm	0.573	0.484	0.375	0.336	0.329	0.317	0.057
		bard/lpm	0.010	0.009	0.007	0.006	0.006	0.006	0.001
	L8	psid/gpm	0.310	0.261	0.203	0.182	0.178	0.171	0.031
		bard/lpm	0.006	0.005	0.004	0.003	0.003	0.003	0.001

Series	Length	Units	Media 3A	6A	12A	25A	3C	10C	25C
S75	L4	psid/gpm	0.311	0.241	0.216	0.204	0.448	0.292	0.284
		bard/lpm	0.006	0.004	0.004	0.004	0.008	0.005	0.005
	L8	psid/gpm	0.172	0.133	0.119	0.113	0.247	0.161	0.157
		bard/lpm	0.003	0.002	0.002	0.002	0.005	0.003	0.003
S75D	L4	psid/gpm	0.156	0.121	0.108	0.102	0.224	0.146	0.142
		bard/lpm	0.003	0.002	0.002	0.002	0.004	0.003	0.003
	L8	psid/gpm	0.086	0.067	0.060	0.056	0.124	0.081	0.078
		bard/lpm	0.002	0.001	0.001	0.001	0.002	0.001	0.001
S76	L4	psid/gpm	0.533	0.413	0.370	0.349	0.774	0.505	0.491
		bard/lpm	0.010	0.008	0.007	0.006	0.014	0.009	0.009
	L8	psid/gpm	0.288	0.223	0.200	0.188	0.418	0.273	0.265
		bard/lpm	0.005	0.004	0.004	0.003	0.008	0.005	0.005

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

S75-76 Part Number Builder

S [ ] [ ] [ ] [ ] [ ] - [ ] - [ ] [ ]

Series | Connection | Element Length | Bypass | ΔP Indicator | Special Options | Media | Seal

Series

Series

75	HP75 Series Filter Element, single head
75D	HP75 Series Filter Elements, double head
76	HP76 Series Filter Element, single head

Max Flow Rate

50 gpm (189 lpm)[1]
100 gpm (379 lpm)[1]
30 gpm (111 lpm)[1]

Connection

S75

B20	1¼" BSP
N20	1¼" NPT
S20	1¼" SAE, 1⅝" - 12

S75D

F32	2" Code 61 flange
N24	1½" NPT
S24	1½" SAE, 1⅞" - 12

S76

B12	¾" BSP
N12	¾" NPT
N16	1" NPT
S8	½" SAE, ¾" - 16
S12	¾" SAE, 1 1/16" - 12

Element Length

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

Bypass

02	3 psid (0.2 bard)
03	5 psid (0.3 bard)
1	15 psid (1.0 bard)
2	25 psid (1.7 bard)
3	50 psid (3.4 bard)
X	No bypass

ΔP Indicator

DX	Electrical pressure switch (DIN Connector)
E	Electrical pressure switch 3-Wire
G	Visual pressure gauge
V[2]	Visual ΔP indicator (sliding green to red)
X	No indicator (port plugged)

Special Options

S	Oil sampling port on filter head

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
12M	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$
40M	$\beta 35_{[C]} \geq 1000$, $\beta 40 \geq 200$

G8 Dualglass+water removal

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

Cellulose

3C	$\beta 5_{[C]} \geq 5$, $\beta 3 \geq 5$
10C	$\beta 12_{[C]} \geq 5$, $\beta 12 \geq 5$
25C	$\beta 25_{[C]} \geq 5$, $\beta 25 \geq 5$

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V	Fluorocarbon
E-WS[3]	EPR seals + stainless steel support mesh

[1] 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.
[2] Only available with S75/S75D, Bypass Option "2" - 25 psid (1.7 bard).
[3] Only available with filter element HP75L8-3M

S409

Medium Pressure Spin-On Filter Assemblies

Hy-Pro medium pressure S series filters are designed for installation on the return line to remove contaminant ingested or generated by the system. Functions include off-line filtration (kidney loop or filter cart) and some suction applications.

Ideal for automotive manufacturing and assembly machine tools, mobile applications such as waste haulers and transit, filter carts and filter panels, and power unit return line/suction.

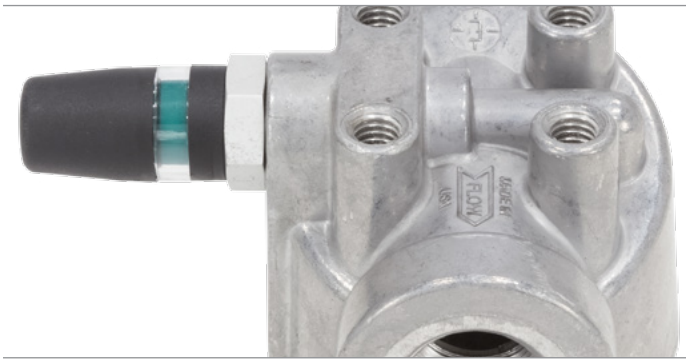
Max Operating Pressure: 500 psi (35 bar)

HY-PRO

hyprofiltration.com/S409

Media matters.

Only Hy-Pro S409 Spin-On assemblies come with DFE rated filter elements to ensure maximum particulate capture and retention. And with media options down to $\beta 2.5_{[c]} \geq 1000$, you can be sure contamination stays exactly where you want it: out of your fluid.



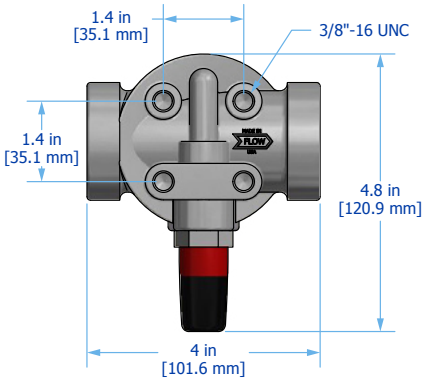
Easily configured.

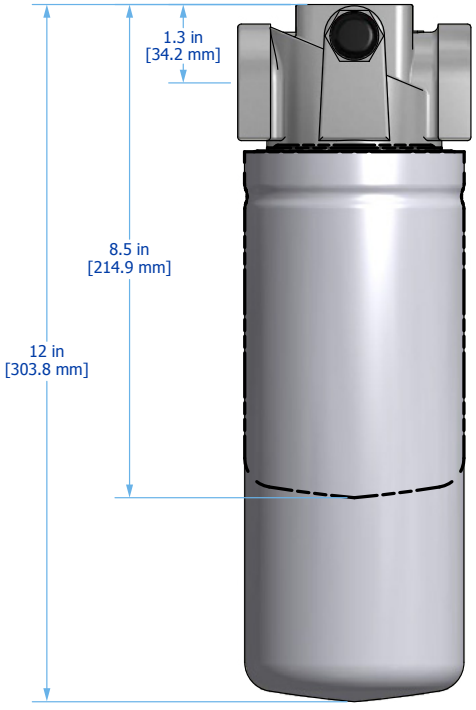
With a variety of connection types and sizes, indicator options, and included mounting provisions all in a compact package, the S409 is ready to go to work in mobile equipment, return line, hydrostatic and other applications.

Fits in all the right places.

With flow rates up to 35 gpm (132 lpm), temperature resistance to 200°F (93°C), a 2:1 safety factor, high fluid compatibility and a tight footprint, the S409 delivers the best filtration everywhere you need it. Even combine two S409 assemblies in series for incredibly low ISO Codes and water removal in a single pass.

S409 Installation Drawing





S409 Specifications

Dimensions[1]

See Installation Drawings on page 185 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

500 psi (34.5 bar) max

ΔP Indicator Trigger

22 psi (1.5 bar) or 44 psi (3.0 bar)

Element Collapse Rating

100 psid (6.9 bard) max

Materials of Construction

Head
Cast aluminum

Can
Stamped steel

Element Bypass Valve
Nylon

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. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Filter Element Part Number
HP409L9 – [Media Selection Code] [Seal Code]

Example
HP409L9-10MB

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Length	Units	Media 1M	3M	6M	10M	25M	25A	**W
L9	psid/gpm	0.2961	0.2499	0.1937	0.1737	0.1699	0.1869	0.0306
	bard/lpm	0.0054	0.0046	0.0035	0.0032	0.0031	0.0034	0.0006

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

S409 Part Number Builder

S409 [ ] [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

Connection | Element Length | Bypass | ΔP Indicator | ΔP Indicator Location | ΔP Indicator Setting | Media | Seal

Connection

Port Option		Max Flow Rate
N12	3/4" NPT	25 gpm (95 lpm)[1]
N16	1" NPT	35 gpm (132 lpm)[1]
S12	3/4" SAE-12, 1 1/16" - 12	25 gpm (95 lpm)[1]
S16	1" SAE-16, 1 5/16" - 12	35 gpm (132 lpm)[1]

Element Length

9	9" (23 cm) nominal length filter element
X	No element

Bypass

2	25 psid (1.7 bard) bypass
3	50 psid (3.4 bard) bypass
X	No bypass

ΔP Indicator

C	dc electrical signal wire (no DIN or visual indication)
D	Visual with electric switch (DIN Connection)
V	Visual, Mechanical
X	No indicator (port plugged)

ΔP Indicator Location

L	Left side
R	Right side
T	Top mount
X	No indicator (port plugged)

ΔP Indicator Setting

2	ΔP 22 psi (1.5 bar) indicator setting
3	ΔP 44 psi (3.0 bar) indicator setting
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**	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$	**74W**	74µ nominal
6M	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$	**10A**	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**149W**	149µ nominal
10M	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**25A**	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$		
16M	$\beta 17_{[C]} \geq 1000, \beta 17 \geq 200$				
25M	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$				

Seals

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

[1]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.

MF3

Medium Pressure Filter Assemblies

Ideal for mobile equipment return line applications as an alternative to spin-ons, on-board fuel and dispensing and hydrostatic charge circuits.

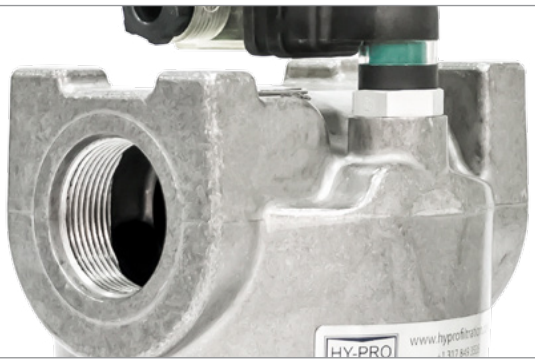
Max Operating Pressure: 1,200 psi (83 bar)

HY-PRO

hyprofiltration.com/MF3

Filtration starts with the filter.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities so your equipment operates unimpeded by contamination. With media options down to $\beta 2.5_{[C]} \geq 1000$, + water absorption, you get the perfect element for your application, every time.



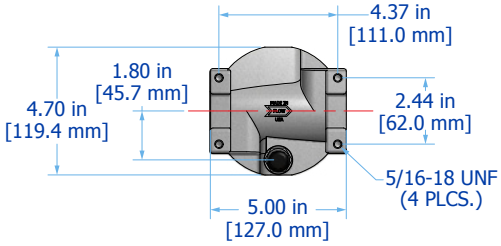
HF3 Compatible Design.

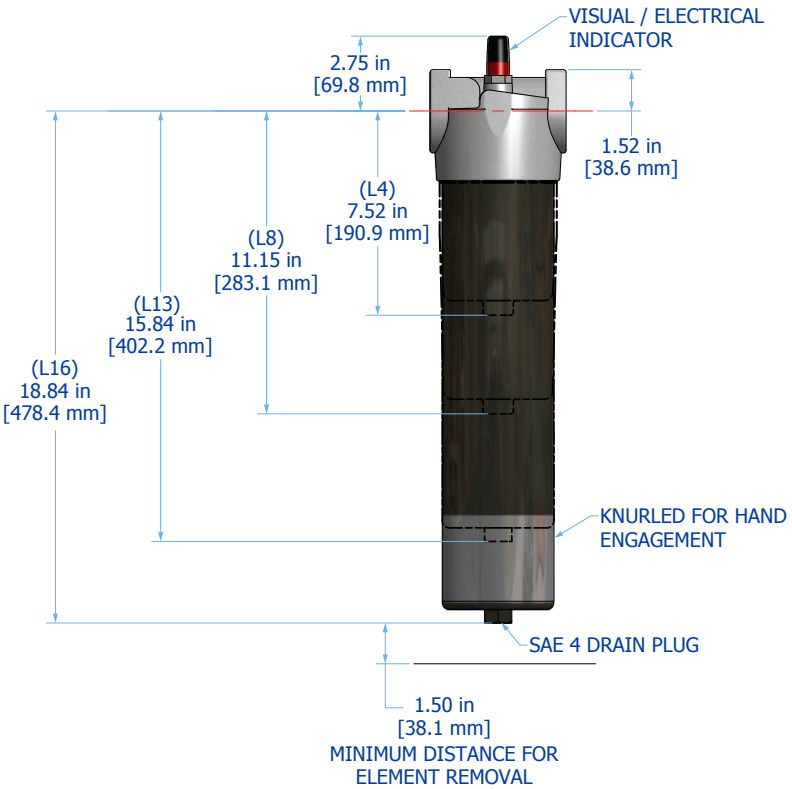
Port to port dimension, mounting pattern, and element design meet HF3 automotive specification. And with standard SAE drain ports, lightweight aluminum bowls, and knurled texture on the bowls provide ease for element servicing, you get all of the convenience you want with the compatibility you need.

Inherently versatile.

Unique internal flow paths providing a low clean pressure drop and element sizes from 4-16", the MF3 can be used in a variety of applications including Hydrostatic charge circuit for mobile equipment, CAT 5-Star service center, and return line alternative to spin-on assembles.

MF3 Installation Drawing





MF3 Specifications

Dimensions

See Installation Drawings on page 189 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

1200 psi (83 bar) max

Burst Pressure

3000 psi (206.8 bar) max

ΔP Indicator Trigger

22 psid (1.52 bard) for 25 psid bypass
45 psid (3.10 bard) for 50 psid bypass and non bypass

Element Collapse Rating

290 psid (20 bard)

Materials of Construction

Head
Cast aluminum

Bowl
L4/L8: Cast aluminum
L13/L16: Anodized impact extruded aluminum

Element Bypass Valve
Nylon

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. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Filter Element Part Number
HP60L[Length Code] – [Media Selection Code] [Seal Code]

Example
HP60L16-6MB

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Length	Units	Media 1M	3M	6M	12M	16M	25M	**W
L4	psid/gpm	0.459	0.357	0.268	0.186	0.171	0.149	0.027
	bard/lpm	0.008	0.007	0.005	0.003	0.003	0.003	0.000
L8	psid/gpm	0.324	0.252	0.206	0.156	0.151	0.143	0.026
	bard/lpm	0.006	0.005	0.004	0.003	0.003	0.003	0.000
L13	psid/gpm	0.237	0.200	0.155	0.139	0.136	0.131	0.024
	bard/lpm	0.004	0.004	0.003	0.003	0.002	0.002	0.000
L16	psid/gpm	0.203	0.174	0.148	0.134	0.131	0.129	0.023
	bard/lpm	0.004	0.003	0.003	0.002	0.002	0.002	0.000

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

MF3 Part Number Builder

MF3 [ ] [ ] [ ] [ ] - [ ] [ ]

Connection | Element Length | Bypass | ΔP Indicator | Media | Seal

Connection

	Port Option	Max Flow Rate
G20	1.25" G thread (BSPP)	75 gpm (284 lpm)[1]
N20	1.25" NPT	75 gpm (284 lpm)[1]
N24	1.5" NPT	100 gpm (379 lpm)[1]
S20	1.25" SAE	75 gpm (284 lpm)[1]
S24	1.5" SAE	100 gpm (379 lpm)[1]

Element Length

4	4" (10 cm) nominal length filter element and housing
8	8" (20 cm) nominal length filter element and housing
13	13" (33 cm) nominal length filter element and housing
16	16" (41 cm) nominal length filter element and housing

Bypass

1	25 psid (1.7 bard) bypass
3	50 psid (3.4 bard) bypass
X	No bypass

ΔP Indicator

D	Visual with electric switch (DIN Connection)
V	Visual/Mechanical
X	No indicator (port plugged)

Media Selection

G8 Dualglass

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

G8 Dualglass + water removal

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

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V	Fluorocarbon
E-WS[2]	EPR seals + stainless steel support mesh

[1]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.
[2]Only available with ΔP Indicator option "X" selected.

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.

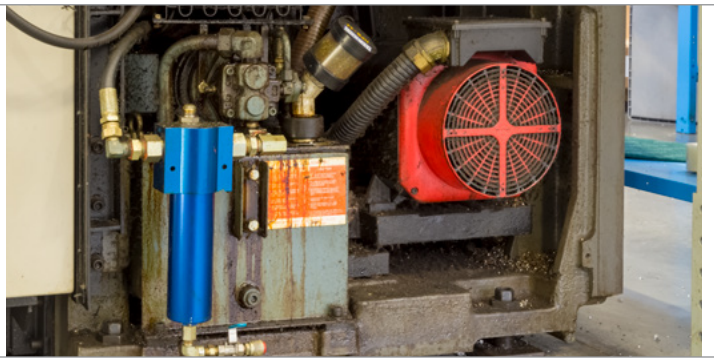
G8 Dualglass and PE glass elements are DFE rated to assure performance even when exposed to the toughest hydraulic systems and provide unmatched particulate capture and retention to remove contamination from your hydraulic and lube oils, for good.

Small size, huge results.

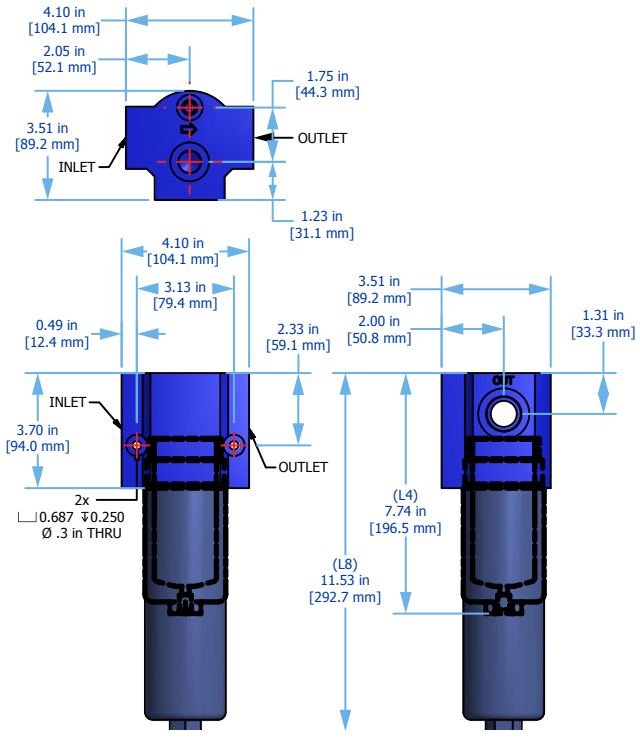
The compact size of PF2 filter assemblies make them the perfect addition directly upstream of your control valves and other sensitive components even in the tightest of spaces. And with two different mounting options to choose from, the incredible versatility of the PF2 makes it ideal for all of your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

Works under pressure.

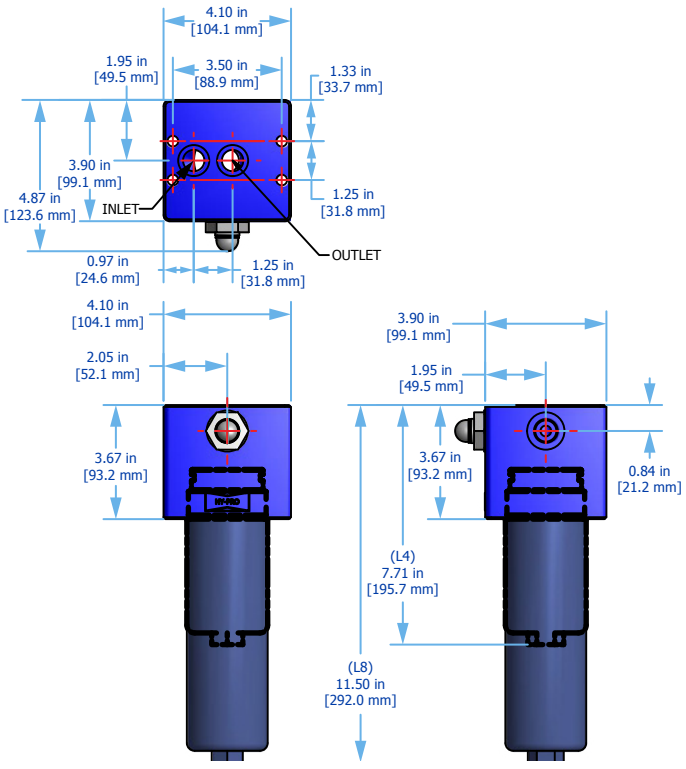
Applications for the PF2 include mobile, general industrial machine tools, paper mills, sawmills, and speed control circuits for power generation systems. So whether you're operating waste haulers, cement mixers, fire trucks, cranes, or CNC routers, you can be sure the PF2 will protect your critical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



In-Line Mount Installation Drawing



Manifold Mount Installation Drawing



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. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

A
G8 Dualglass high performance media combined with water removal scrim.
$\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

SF
Dynafuzz stainless steel fiber media $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

W
Stainless steel wire mesh media $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

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 page 22 for filter assembly sizing guidelines & examples. 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 on page 22 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	$\beta 2.5_{[C]} \geq 1000, \beta 1 \geq 200$
2M[4]	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
3M[5]	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
12M[5]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
15M[4]	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000, \beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

G8 Dualglass + water removal

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

Dynafuzz stainless fiber

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

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."

PF4

High Pressure Base Mounted Filter Assemblies

Hy-Pro PF4 pressure filters are designed for protecting sensitive components in hydraulic circuits. Install the series upstream of specific components or directly after the pressure pump to minimize risk of failure and costly system downtime.

Ideal for components that are sensitive to particulate contamination, such as the servo valve, and require clean pressurized fluid for reliable operation.

HY-PRO

hyprofiltration.com/PF4

Filtration starts with the filter.

G8 Dualglass elements are DFE rated to assure performance even when exposed to the toughest hydraulic systems and provide unmatched particulate capture and retention to protect servo valves and ensure you're operating at maximum efficiency.

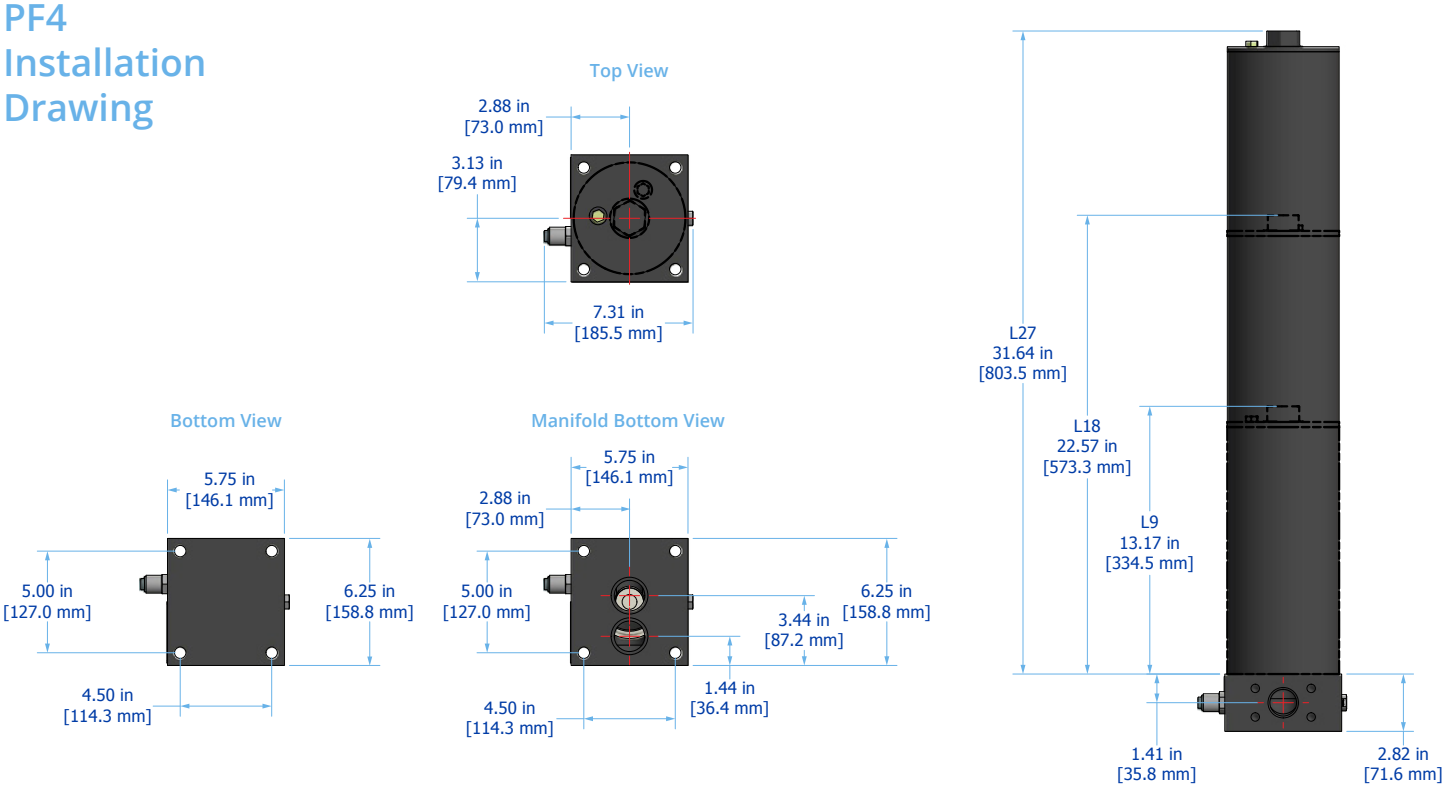
Minimize the mess.

The top loading housing on PF4 filter assemblies provide easy and clean access when servicing or changing the element. Accessing the element is as simple as removing the housing cover, meaning you have no heavy bowl to lift and can get back in operation quicker than ever.

HF4 Compatible Design.

The PF4 series is engineered to meet mill and plant target cleanliness codes and required ISO4406:1999 cleanliness standards to meet hydraulic component manufacturers warranties. Available with HF4 compatible port to port dimension, mounting pattern, and element design to meet the automotive manufacturing standard.

PF4 Installation Drawing



PF4 Specifications

Dimensions

See Installation Drawings on page 197 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

5,000 psi (310 bar) max

Flow Fatigue Rating

3,500 psi (238 bar)

Burst Pressure

13,500 psi (931 bar)

ΔP Indicator Trigger

35 psid (2.4 bard) bypass or 100 psid (6.9 bard) non-bypass
All indicators revert to original state when ΔP is removed (auto-reset).

Element Collapse Rating

HPK	HPK3	HPK5	HPKC
290 psid (20.0 bard)	3000 psid (206.8 bard)	5000 psid (344.7 bard)	150 psid (10.3 bard)

Integral Bypass Setting

50 psid (3.4 bard)

Materials of Construction

Head/Lid
Ductile iron

Bowl
Seamless steel tubing

Element Bypass Valve
Nylon

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 $\beta x_{[c]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Filter Element Part Number
HP[Collapse Rating Code]L[Length Code] – [Media Selection Code] [Seal Code]

Example
HPKL18–16MV

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 page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Collapse	Length	Units	Media 1M	3M	6M	12M	16M	25M	**W
PF4K**, PF4K1**, PF4KC**	L9	psid/gpm	0.2374	0.2003	0.1553	0.1392	0.1362	0.1312	0.0236
		bard/lpm	0.0043	0.0036	0.0028	0.0025	0.0025	0.0024	0.0004
	L18	psid/gpm	0.1167	0.0985	0.0764	0.0685	0.0670	0.0645	0.0116
		bard/lpm	0.0021	0.0018	0.0014	0.0012	0.0012	0.0012	0.0002
	L27	psid/gpm	0.0775	0.0654	0.0507	0.0454	0.0444	0.0428	0.0077
		bard/lpm	0.0014	0.0012	0.0009	0.0008	0.0008	0.0008	0.0001
PF4K3** (non-bypass housing)	L9	psid/gpm	0.3376	0.2849	0.2208	0.1980	0.1937	0.1866	0.0336
		bard/lpm	0.0061	0.0052	0.0040	0.0036	0.0035	0.0034	0.0006
	L18	psid/gpm	0.1651	0.1393	0.1080	0.0968	0.0947	0.0912	0.0164
		bard/lpm	0.0030	0.0025	0.0020	0.0018	0.0017	0.0017	0.0003
	L27	psid/gpm	0.1094	0.0924	0.0716	0.0642	0.0628	0.0605	0.0109
		bard/lpm	0.0020	0.0017	0.0013	0.0012	0.0011	0.0011	0.0002

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

PF4 Part Number Builder

PF4 [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

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

Connection

	Port Option	Max Flow Rate
C24	1.5" Code 62 flange	115 gpm (435 lpm)[1]
F24	1.5" Code 61 flange	115 gpm (435 lpm)[1]
M24	Manifold mount (see installation detail)	115 gpm (435 lpm)[1]
S24	1.5" SAE	115 gpm (435 lpm)[1]

Collapse Rating

K	290 psid (20.0 bard), HF4 element configuration
K3	3000 psid (206.8 bard), HF4 element configuration
K5	5000 psid (344.7 bard), HF4 element configuration
KC	150 psid (10.3 bard), Coreless with o-ring seals

Element Length

9	9" (23 cm) nominal length filter element and housing
18	18" (46 cm) nominal length filter element and housing
27	27" (69 cm) nominal length filter element and housing

Bypass

3	50 psid (3.4 bard) bypass
X	No bypass

ΔP Indicator

D	Visual with electric switch (DIN connection)
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	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$	**12A**	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**74W**	74µ nominal
12M	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$	**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

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

[1] 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.

PFH

High Pressure In-Line Filter Assemblies

Hy-Pro's PFH pressure filters are designed to protect sensitive components in hydraulic circuits. Install the series upstream of specific components or directly after the pressure pump in smaller systems to minimize risk of failure and costly system downtime.

Ideal for use on a power unit pump discharge filter or pilot filter directly in front of valves and actuators.

Max Operating Pressure: 9137 psi (630 bar)

HY-PRO

hyprofiltration.com/PFH

Dynamic Filter Efficiency

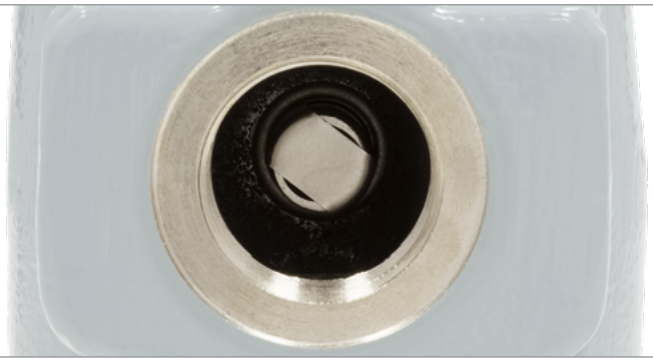
Hydraulic applications see dynamic flow changes on a regular basis. Dynamic Filter Efficiency testing takes the ISO 4409 Multi-Pass testing even further with variable flow shifts to ensure your filter elements stand up to real world conditions and maintain the highest capture and retention rates in the industry.

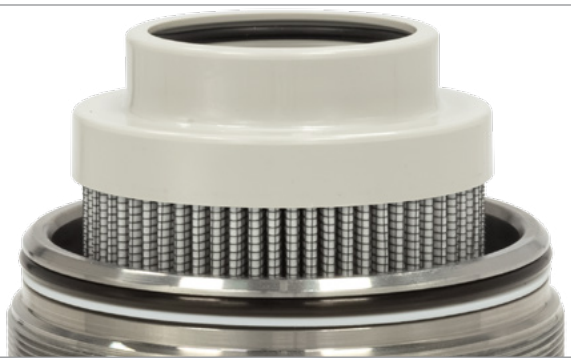
Industrial duty.

Standard mounting holes for optional brackets, stainless steel ID tags, a variety of indicator options, and standard drain ports make the PFH the ideal choice for heavy duty hydraulic filtration.

Unique applications.

With available nickel plating of internal components and coarse wire mesh media options, the PFH series is perfect for applications like drill rig mud pump and gearbox applications where water contamination wrecks traditional filtration. Even include Hy-Pro's G8 Dualglass media with Water Removal to take out dirt and water and leave your equipment operating more efficiently than ever.



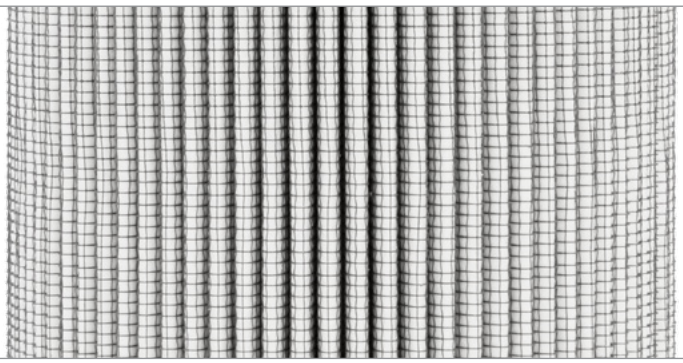


Minimize the mess.

The PFH series is available with Hy-Pro's coreless filter elements that can be readily disposed of through crushing or incineration. The circumferential o-ring bowl seal eliminates leaking and weeping. For easy cleaning and service, PFH bowls comes standard with drain plugs.

Extend the life of your element.

Unique internal flow paths provide low resistance to flow, resulting in a low housing pressure drop. Hy-Pro's advanced filter media delivers lower operating ISO Codes to eliminate internally generated contamination meaning your filter will have an incredibly long service life to protect your sensitive components better than ever.

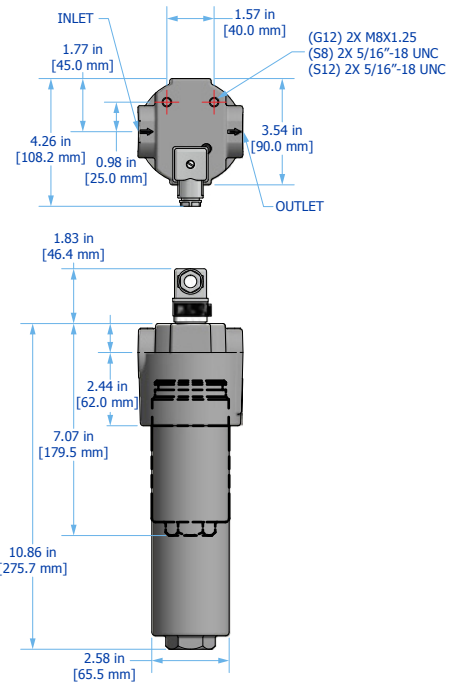


The ideal choice for hydraulics.

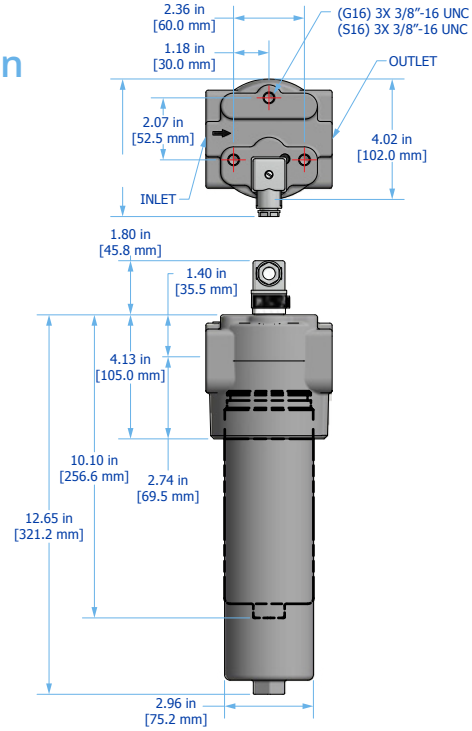
Use the PFH as the main high pressure filter(s) in a hydraulic system or upstream of sensitive components as a pilot filter to protect your valves and actuators. The PFH series are engineered to provide lower operating ISO Codes than what is required for compliance with hydraulic component manufacturers warranties.

PFH Installation Drawings

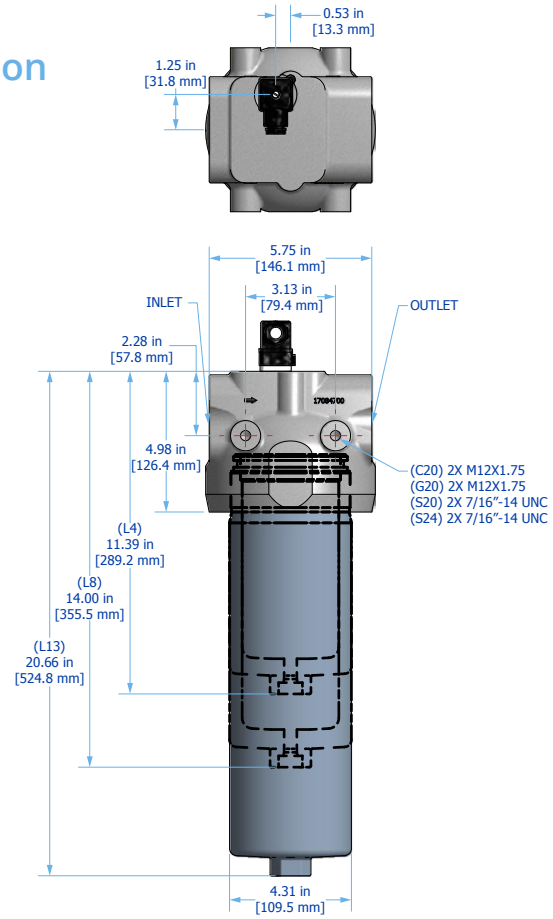
PFH131 Installation Drawing



PFH152 Installation Drawing

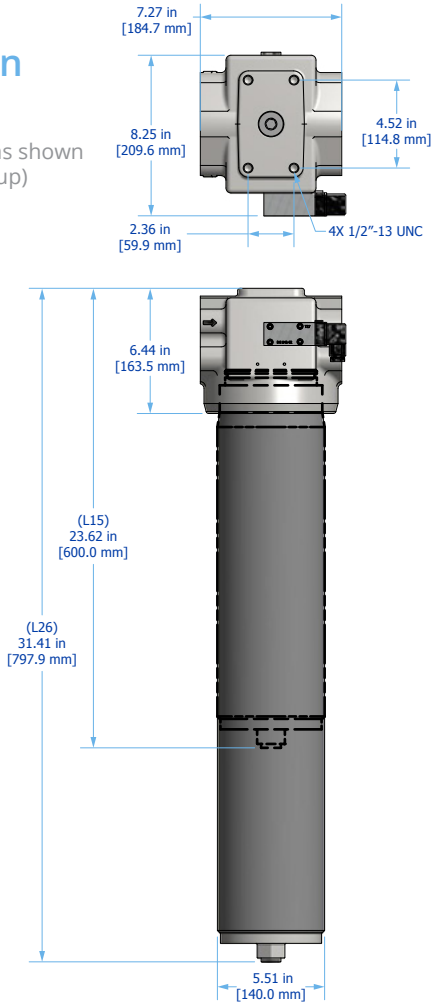


PFH419 Installation Drawing



PFH840 Installation Drawing

Can be mounted as shown or inverted (bowl-up)



PFH Sizing Guide

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Series	Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
PFH131	L4	psid/gpm	2.4121	2.0355	1.5775	1.4147	1.3842	1.3333	0.2400
		bard/lpm	0.0439	0.0371	0.0287	0.0258	0.0252	0.0243	0.0044
	L8	psid/gpm	1.1674	0.9852	0.7635	0.6847	0.6699	0.6453	0.1162
		bard/lpm	0.0213	0.0179	0.0139	0.0125	0.0122	0.0118	0.0021
PFH152	L4	psid/gpm	0.9438	0.7964	0.6172	0.5535	0.5416	0.5217	0.0939
		bard/lpm	0.0172	0.0145	0.0112	0.0101	0.0099	0.0095	0.0017
	L8	psid/gpm	0.6769	0.5712	0.4427	0.3970	0.3884	0.3742	0.0673
		bard/lpm	0.0123	0.0104	0.0081	0.0072	0.0071	0.0068	0.0012
PFH419	L4	psid/gpm	0.4735	0.3996	0.3097	0.2777	0.2717	0.2617	0.0471
		bard/lpm	0.0086	0.0073	0.0056	0.0051	0.0049	0.0048	0.0009
	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
PFH840	L15	psid/gpm	0.1613	0.1361	0.1055	0.0946	0.0926	0.0892	0.0160
		bard/lpm	0.0029	0.0025	0.0019	0.0017	0.0017	0.0016	0.0003
	L26	psid/gpm	0.1054	0.0889	0.0689	0.0618	0.0605	0.0582	0.0105
		bard/lpm	0.0019	0.0016	0.0013	0.0011	0.0011	0.0011	0.0002

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

PFH Specifications

Dimensions

See Installation Drawings on page 202 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

PFH131
5800 psi (400 bar)
min. 2 x 10^6 pressure cycles
Nominal pressure
according to DIN 24550

PFH152
5800 psi (400 bar)
min. 2 x 10^6 pressure cycles
Nominal pressure
according to DIN 24550

PFH419[1]
5220 psi (360 bar)
min. 2 x 10^6 pressure cycles
Nominal pressure
according to DIN 24550

PFH840
5800 psi (400 bar)
min. 2 x 10^6 pressure cycles
Nominal pressure
according to DIN 24550

Flow Fatigue Rating

PFH131
9137 (630 bar)
min. 2 x 10^4 pressure cycles
Quasi-static operating
pressure

PFH152
9137 (630 bar)
min. 2 x 10^4 pressure cycles
Quasi-static operating pressure

PFH419
9137 (630 bar)
min. 2 x 10^4 pressure cycles
Quasi-static operating
pressure

PFH840
9137 (630 bar)
min. 2 x 10^4 pressure cycles
Quasi-static operating
pressure

ΔP Indicator Trigger

73 psid (5 bard)

Element Collapse Rating

HP*N**
450 psid (31.0 bard) max

HP*H**
3000 psid (206.8 bard) max

HP*C**
250 psid (17.2 bard) max

Integral Bypass Setting

PFH131
102 psid (7 bard)

PFH152
102 psid (7 bard)

PFH419
102 psid (7 bard)

PFH840
87 psid (6.0 bard) – Integral
element bypass

Materials of Construction

Head
Cast steel

Bowl with Drain Plug
PFH131-419: Cold forged steel
PFH840: DOM tubing

Interior Coating
Phosphate

Exterior Coating
Industrial powder coating

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use the selected codes from the following page below:

Series Code	Filter Element Part Number	Example
131	HP131[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP131HL4-10MB
152	HP152[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP152NL8-16MV
419	HP419[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP419CL13-3AB
840	HP840[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP840NL15-25MB

Fluid Compatibility

Biodegradable and mineral based fluids. For high water based or specified synthetics consult factory.

[1]PFH419 C20 Connection Option rated for 6000 psi (414 bar) max operating pressure. M20 Connection Option rated for 7520 psi (518 bar) max operating pressure.

PFH Part Number Builder

PFH [Series] [Connection] [Collapse] [Length] [Bypass] [ΔP Indicator] - [Special Options] - [Media] [Seal]

Series

131	Nominal flow rate up to 15 gpm (57 lpm)[1]
152	Nominal flow rate up to 35 gpm (132 lpm)[1]
419	Nominal flow rate up to 95 gpm (360 lpm)[1]
840	Nominal flow rate up to 150 gpm (568 lpm)[1]

Connection

PFH131

G12	¾" G thread (BSPP)
S8	½" SAE
S12	¾" SAE

PFH152

G16	1" G thread (BSPP)
S16	1" SAE

PFH419

C20	1¼" Code 62 flange (6000 psi)
G20	1¼" G thread (BSPP)
M20	1.22" Manifold mount
S20	1¼" SAE
S24	1½" SAE

PFH840

C32	2" Code 62 flange (6000 psi)

Collapse Rating

C[2]	250 psid (17.2 bard) – Coreless element with integral bypass (includes post assembly for element support)
H	3000 psid (206.8 bard) – High collapse element with no housing bypass
N[3]	450 psid (31.2 bard) – Core-in element with housing bypass

Length

PFH131

4	4" (10 cm) nominal
8	8" (20 cm) nominal

PFH152

4	4" (10 cm) nominal
8	8" (20 cm) nominal

PFH419

4	4" (10 cm) nominal
8	8" (20 cm) nominal
13	13" (33 cm) nominal

PFH840

15	15" (38 cm) nominal
26	26" (66 cm) nominal

Bypass

7[4]	102 psid (7 bard) bypass
X[5]	No bypass

ΔP Indicator

DX	Electrical switch only (DIN connection)
L	Visual with electric switch (DIN connection) + LED indicator
V	Visual/Mechanical
X	No indicator (port plugged)

Special Options

N[6]	Nickel plated internal components for high water applications

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000, \beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10M	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000, \beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} \geq 1000, \beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000, \beta 6 \geq 200$
10A	$\beta 12_{[C]} \geq 1000, \beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000, \beta 25 \geq 200$

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V[7]	Fluorocarbon
E-WS[7]	EPR seals + stainless steel support mesh

[1]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.
[2]Available on PFH419 and PFH840 only.
[3]PFH840 includes integral element bypass and does not include a bypass in the housing.
[4]PFH840 bypass setting is 87 psid (6.0 bard).
[5]Only available when paired with "H" high collapse element.
[6]When selected, automatically adds nickel plating to filter element. For replacement elements, add"-N" to end of filter element part number. Not available on PFH840 series.
[7]Not available with PFH840 series housings.

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.

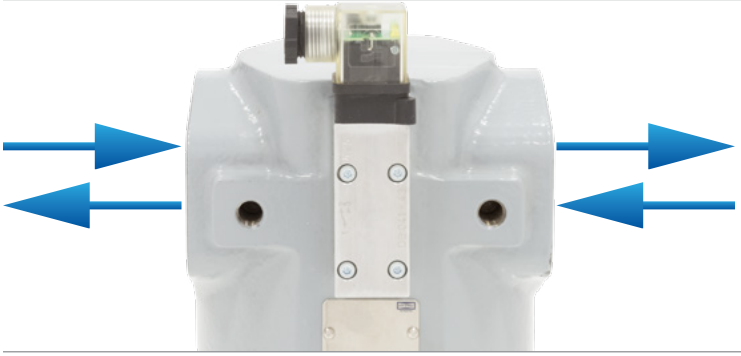
Max Operating Pressure: 7252 psi (500 bar)

HY-PRO

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 $\beta 2.5_{[C]} \geq 1000$, + water absorption, you get the perfect element for your application, every time.



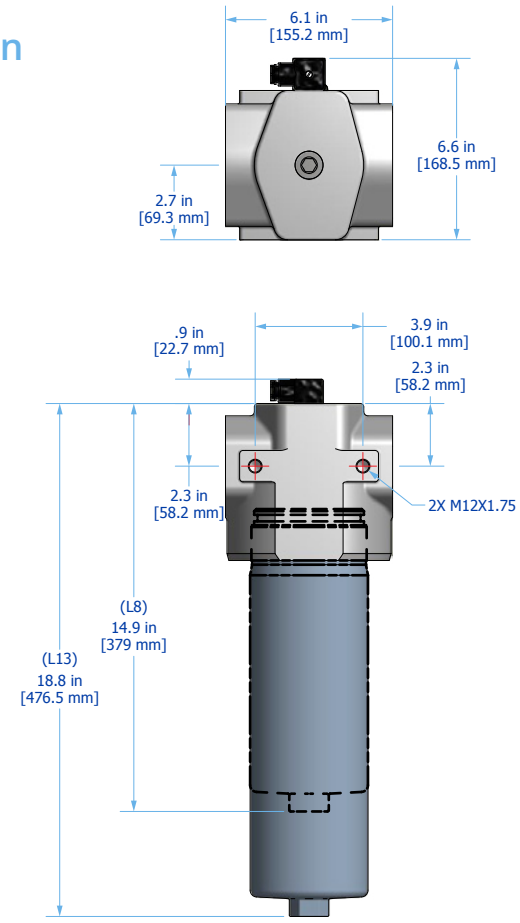
Two directions, one result.

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.

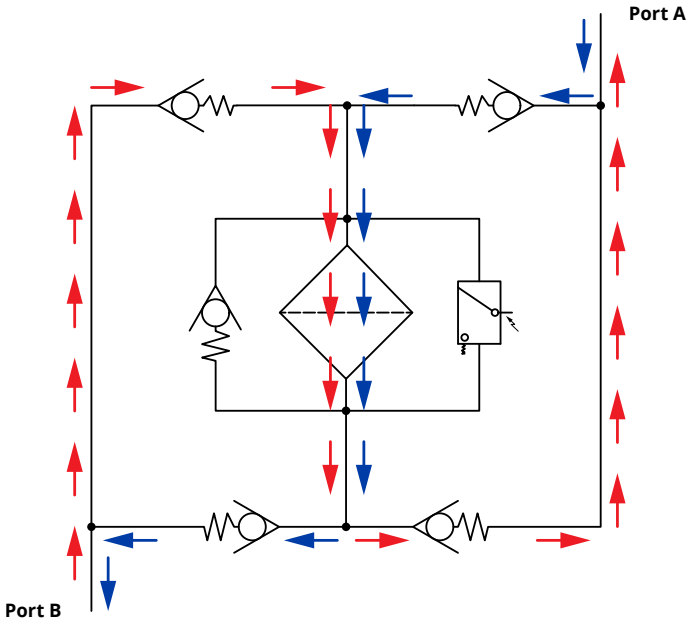
Always ready.

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



HY-PRO

PFHB Specifications

Dimensions[1]

See Installation Drawing on page 207 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

7252 psi (500 bar)

ΔP Indicator Trigger

73 psid (5 bard)

Element Collapse Rating

HP419NL
450 psid (31.0 bard) max

HP419HL
3000 psid (206.8 bard) max

HP419CL
250 psid (17.2 bard) max

Materials of Construction

Head
Cast steel

Bowl[1]
Extruded steel

Interior Coating
Phosphate

Exterior Coating
Industrial powder coating

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

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

Fluid Compatibility

Biodegradable and mineral based fluids. For high water based or specified synthetics, consult factory.

Filter Sizing[2]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[2]

Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
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

[1]Bowl comes standard with drain plug.
[2]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

PFHB Part Number Builder

PFHB [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

Connection Collapse Length Bypass Indicator Media Seal

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

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

8	8" (20 cm) nominal length filter element and housing
13	13" (33 cm) nominal length filter element and housing

Bypass

7	102 psid (7 bard) bypass
X	No bypass

ΔP Indicator

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

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

[1]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.

DLF(M)

Low Pressure High Flow Duplex Filter Assembly

Designed to maintain continuous filtration, even throughout element servicing, the DLF series filter assemblies provide two high efficiency, high capacity filter housings coupled by a user-friendly 6-way, 3 position valve that completely seals the system from the atmosphere. Use the DLF(M) to remove particulate and water from a variety of fluids and maximize your uptime.

Ideal for systems where filters must be serviced without system interruption such as hydraulic, gearbox, pulp and paper, rolling mill oil, bulk oil handling, and high flow return-line filtration.

Max Operating Pressure: 150 psi (10 bar)
Available options up to 450 psi (31 bar)

HY-PRO

hyprofiltration.com/DLF

One assembly, twice the filtration.

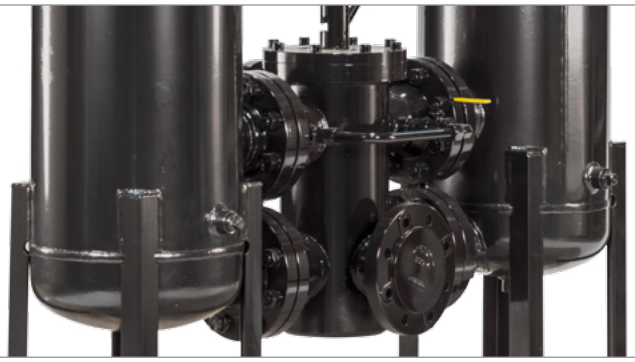
DLF assemblies combine two powerful LF housings to deliver lower ISO Codes faster than ever. With a turn of the lever, you'll introduce a new element to your fluid while simultaneously valving the used element out of service to easily change and replace, all while your system continues operating at full capacity.

Built for industrial use.

Constructed from heavy duty carbon steel (standard) or the optional 304 or 316 stainless steel, the DLF filter housings are designed to excel in even the toughest industrial conditions. Multiround units go even further to provide increased capacity whether you're operating with incredibly high viscosity oils or extreme flow rates.

Filtration starts with the filter.

The oversized coreless filter element in every DLF delivers lower ISO Codes over a long element lifespan to ensure low disposal impact, simultaneously reducing your environmental footprint and your bottom line. To top it off, select elements come standard with an integral zero-leak bypass so with every filter change you get a new bypass along with peace of mind.

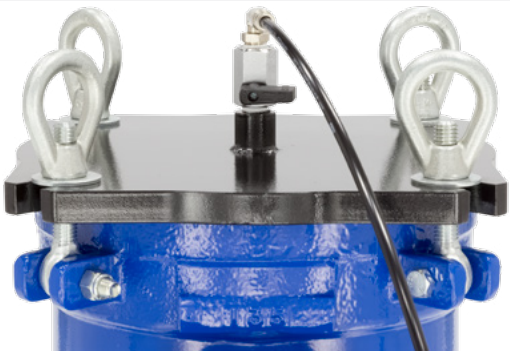


Seamlessly integrated into your systems.

Multiple connection options provide you with the ability to integrate the DLF directly in-line on your systems and get the most impact from your filtration directly where you need it.

Inherently safe.

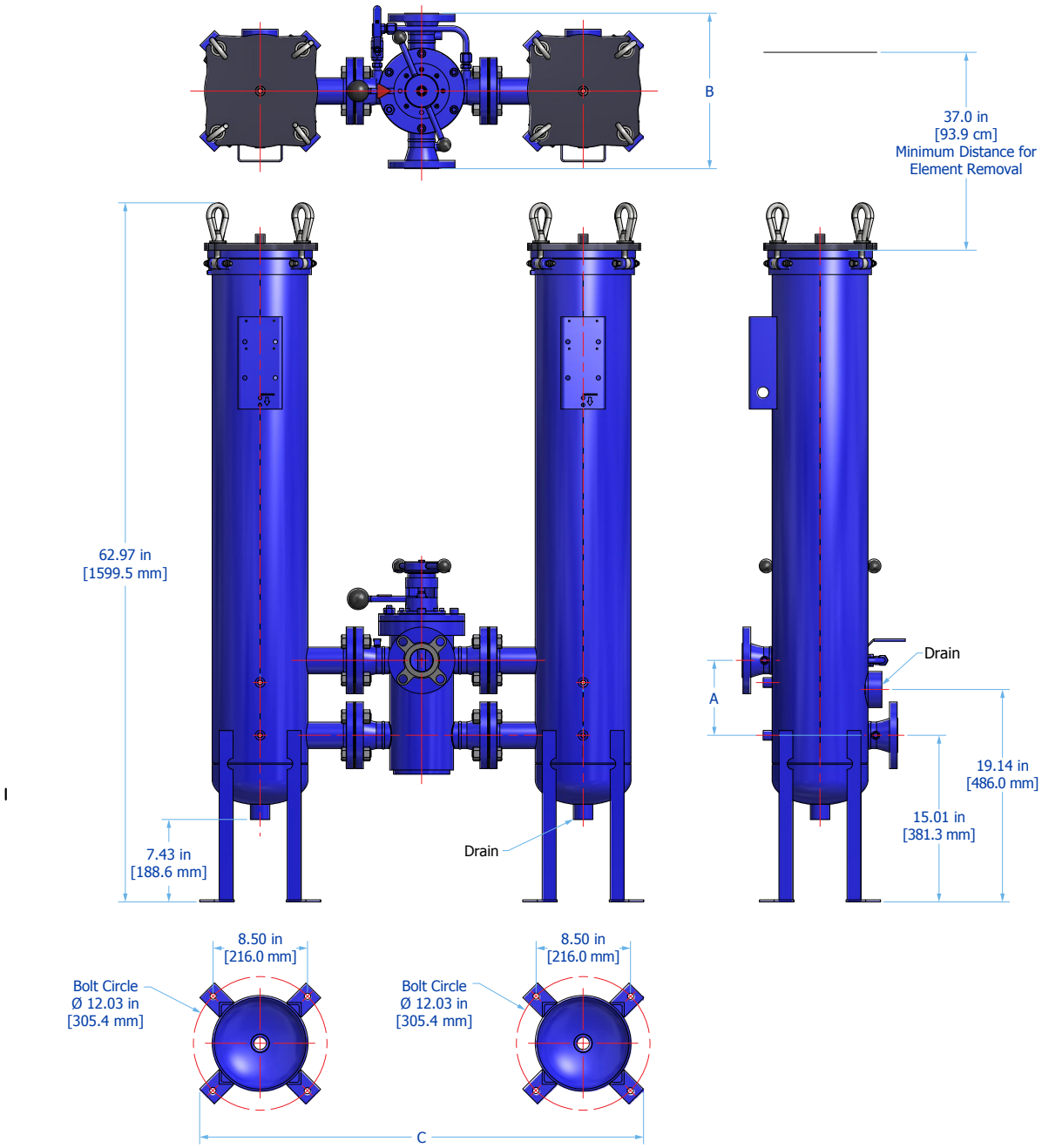
The true 6-way valve with internal pressure equalization and fill line allows for seamless transition of flow from one housing to the other. As the valve is repositioned, oil from the in-service housing is redistributed to the out-of-service housing to purge air before it can move downstream – meaning you maintain fluid levels, preserve system control and prevent cavitation of your components, all while ensuring your fluid stays remarkably clean.



Clean oil has never been easier.

Designed to combine incredible capacity and low maintenance, the oversized housing with secure swivel bolts allow for effortless element changes with all the parts kept right where they need to be. The top loading housing and post/nipple system provide incredible ease of use and make element installation and maintenance easier than ever.

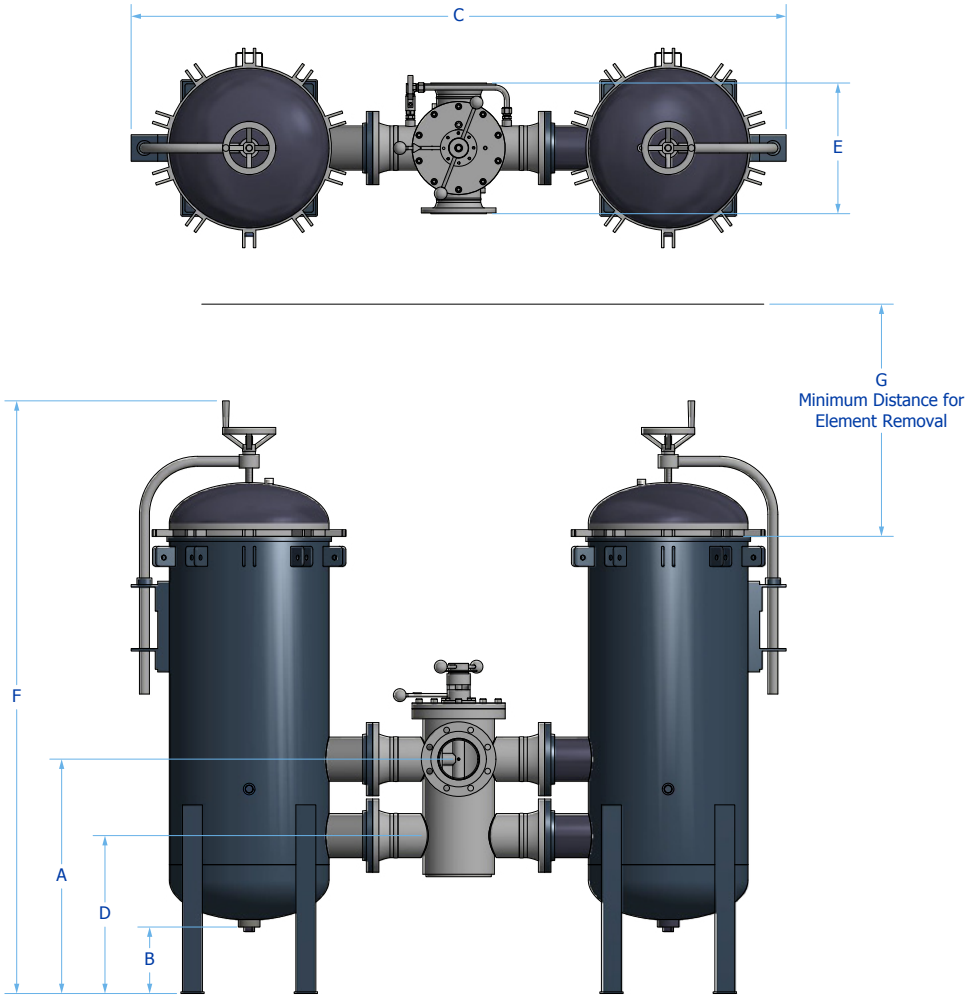
DLF Installation Drawing



Series	Port Size	Vessel Diameter	A	B	C	Weight
DLF	2	8.0 in 20.3 cm	11.7 in 29.7 cm	14.0 in 35.6 cm	41.4 in 105.2 cm	389.0 lb 176.4 kg
	3	8.0 in 20.3 cm	11.7 in 29.7 cm	14.0 in 35.6 cm	43.4 in 110.2 cm	451.0 lb 204.6 kg
	4	8.0 in 20.3 cm	15.2 in 38.6 cm	17.0 in 43.2 cm	50.7 in 128.8 cm	544.0 lb 246.8 kg

[1]Dimensions are approximations taken from base model and will vary according to options chosen and customer sizing requirements.

DLFM Installation Drawing



Series	Number of Elements	Port Size	Vessel Diameter	A	B	C	D	E	F	G	Weight
DLFM	3	2	16.0 in 40.6 cm	28.7 in 72.9 cm	13.0 in 33.0 cm	60.0 in 152.4 cm	17.0 in 43.2 cm	14.0 in 35.6 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	1190.0 lb 539.8 kg
		3	16.0 in 40.6 cm	29.7 in 75.4 cm	13.0 in 33.0 cm	63.0 in 160.0 cm	17.0 in 43.2 cm	14.0 in 35.6 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	1251.0 lb 567.4 kg
		4	16.0 in 40.6 cm	32.2 in 81.8 cm	13.0 in 33.0 cm	70.0 in 177.8 cm	17.0 in 43.2 cm	17.0 in 43.2 cm	78.5 in 199.4 cm	37.0 in 94.0 cm	1344.0 lb 609.6 kg
	4	2	18.0 in 45.7 cm	29.1 in 73.9 cm	13.0 in 33.0 cm	66.0 in 167.6 cm	17.5 in 44.5 cm	14.0 in 35.6 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	1360.0 lb 616.9 kg
		3	18.0 in 45.7 cm	30.7 in 78.0 cm	13.0 in 33.0 cm	68.0 in 172.7 cm	17.5 in 44.5 cm	14.0 in 35.6 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	1421.0 lb 644.6 kg
		4	18.0 in 45.7 cm	27.6 in 70.1 cm	13.0 in 33.0 cm	75.0 in 190.5 cm	17.5 in 44.5 cm	17.0 in 43.2 cm	83.0 in 210.8 cm	37.0 in 94.0 cm	1514.0 lb 686.7 kg
	9	3	24.0 in 61.0 cm	31.6 in 80.3 cm	13.0 in 33.0 cm	87.0 in 221.0 cm	17.5 in 44.5 cm	14.0 in 35.6 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	1811.0 lb 821.5 kg
		4	24.0 in 61.0 cm	34.1 in 86.6 cm	13.0 in 33.0 cm	94.0 in 238.8 cm	17.5 in 44.5 cm	17.0 in 43.2 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	1904.0 lb 863.6 kg
		6	24.0 in 61.0 cm	35.3 in 89.7 cm	13.0 in 33.0 cm	99.0 in 251.5 cm	17.5 in 44.5 cm	20.0 in 50.8 cm	89.0 in 226.1 cm	37.0 in 94.0 cm	2081.0 lb 943.9 kg

[1]Dimensions are approximations taken from base model and will vary according to options chosen and customer sizing requirements. Contact factory to request model specific drawings or for any models not listed above.

DLF(M) Specifications

Dimensions

See Installation Drawing on pages 212-213 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

150 psi (10.3 bar) standard. See special options for additional pressure ratings.

Element Collapse Rating

HP105	HP106	HP107	HP8314 (All Codes)
150 psi (10.3 bar)	150 psi (10.3 bar)	150 psi (10.3 bar)	150 psi (10.3 bar)

Integral Element Bypass Setting

HP106	HP107	HP8314 (Code 82)	HP8314 (Code 83)
25 psid (1.7 bard)	50 psid (3.4 bard)	25 psid (1.7 bard)	50 psid (3.4 bard)

Materials of Construction

Housing
Industrial coated carbon steel

Media Description

M
G8 Dualglass, our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta x_{[C]} \geq 1000$ ($\beta x \geq 200$)

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Element Type Code	Filter Element Part Number	Example
5	HP105L[Length Code] – [Media Selection Code][Seal Code]	HP105L36–6AB
6	HP106L[Length Code] – [Media Selection Code][Seal Code]	HP106L18–10MV
7	HP107L[Length Code] – [Media Selection Code][Seal Code]	HP107L36–25MB
8X	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–25WV
82	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L16–12MB
85	HP8314L[Length Code] – [Media Selection Code][Seal Code]	HP8314L39–16ME–WS

Fluid Compatibility

Petroleum and mineral based fluids, #2 diesel fuels (standard). For specified synthetics contact factory for compatibility with fluorocarbon seal option. For phosphate ester or skydrol fluid compatibility select fluid compatibility from special options.

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Model	Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
DLF	L36/L39	psid/gpm	0.0324	0.0273	0.0212	0.0190	0.0186	0.0179	0.0032
		bard/lpm	0.0009	0.0008	0.0007	0.0007	0.0007	0.0007	0.0006
DLFM3	L36/L39	psid/gpm	0.0081	0.0055	0.0051	0.0045	0.0041	0.0035	0.0029
		bard/lpm	0.00015	0.0001	0.00009	0.00008	0.00007	0.00006	0.00005
DLFM4	L36/L39	psid/gpm	0.0067	0.0048	0.0044	0.004	0.0037	0.0032	0.0025
		bard/lpm	0.00012	0.00009	0.00008	0.00007	0.00007	0.00006	0.00005
DLFM9	L36/L39	psid/gpm	0.0034	0.0025	0.0022	0.002	0.0019	0.0016	0.0013
		bard/lpm	0.00006	0.00005	0.00004	0.00004	0.00003	0.00003	0.00002

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

DLF(M) Part Number Builder

DLF [ ] [ ] [ ] [ ] [ ] - [ ] - [ ] [ ]

Series | Port Configuration | Connection | Element Type | ΔP Indicator | Special Options | Media | Seal

Series

	Number of Elements	Max Flow Rate
omit	1 element	200 gpm (757 lpm)[1]
M3	3 elements	600 gpm (2271 lpm)[1]
M4	4 elements	800 gpm (3028 lpm)[1]
M9	9 elements	1800 gpm (6814 lpm)[1]
M14	14 elements	2800 gpm (10,600 lpm)[1]
M22	22 elements	4400 gpm (16,656 lpm)[1]

Port Configuration

K	Opposite side porting (180°), same center line
O	Opposite side porting (180°), in-line (different center line)
S	Same side porting (standard)

Connections

A15	1.5" ANSI flange
A2	2" ANSI flange
A3	3" ANSI flange
A4	4" ANSI flange
A6	6" ANSI flange
A8	8" ANSI flange
D15	DN40 DIN flange
D2	DN50 DIN flange
D3	DN80 DIN flange
D4	DN100 DIN flange
D6	DN150 DIN flange
D8	DN200 DIN flange
F15	1.5" Code 61 flange
F2	2" Code 61 flange
F3	3" Code 61 flange

Element Type

5	HP105 – no bypass
6	HP106 – 25 psid (1.7 bard) integral element bypass
7	HP107 – 50 psid (3.4 bard) integral element bypass
8X	HP8314 – no bypass
82	HP8314 – 25 psid (1.7 bard) integral housing bypass
85	HP8314 – 50 psid (3.4 bard) integral housing bypass

ΔP Indicator

D	22 psid visual gauge + electric switch
E	22 psid visual gauge
F	45 psid visual gauge + electric switch
G	45 psid visual gauge
H	65 psid visual gauge + electric switch
J	65 psid visual gauge (elements 5 or 8* only)
P	2 pressure gages (industrial liquid filled)
X	None (ports plugged)

Special Options

omit	150 psi (10.3 bar) max operating pressure, carbon steel
F	Filter element ΔP gauge with tattle tale follower needle
G	Spill retention pan with fork guides (industrial coated steel)
P9[2]	Phosphate ester fluid compatibility modification
S1[3]	150 psi (10.3 bar) max oper. pressure, 304 stainless steel
S2[3]	250 psi (17.2 bar) max oper. pressure, 304 stainless steel
S3[3]	450 psi (31.0 bar) max oper. pressure, 304 stainless steel
S9[4]	Skydrol fluid compatibility modification
U1	U Code (ASME U code certified)
W	Automatic air bleed valve
X	250 psi (17.2 bar) max oper. pressure, carbon steel
Y	450 psi (31.0 bar) max oper. pressure, carbon steel

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10M[5]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

G8 Dualglass + water removal

3A	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6A	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10A[5]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
25A	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V	Fluorocarbon

[1] 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.
[2] When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[3] Lid closure hardware is plated carbon steel.
[4] When selected, must be paired with Seal option "E-WS." Contact factory for more information or assistance in fluid compatibility.
[5] For elements HP8314, use 12M or 12A for respective media code in place of 10M or 10A.

DFN

Low Pressure Duplex Filter Assembly

Designed to maintain continuous filtration, even throughout element servicing, the DFN series filter assemblies provide a compact and user-friendly 4-way, 2 position housing completely sealed from the atmosphere. Remove particulate and water from a variety of fluids including hydrogen seal, oil, turbine lube oil, bearing lube oil, and FD-ID-PA fan lube.

Ideal for systems where filters must be serviced without system interruption such as hydraulic, gearbox, wind turbine, boiler feed pump, mechanical/ electro hydraulic control, and servo systems.

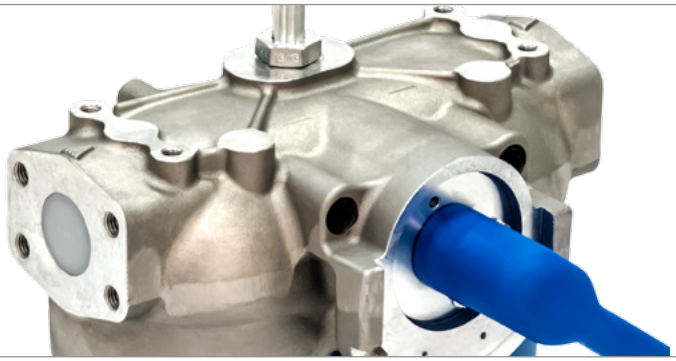
Max Operating Pressure: 888 psi (61.2 bar)

HY-PRO

hyprofiltration.com/DFN

Two positions, one result.

DFN housings provide unmatched in-line filtration with incredible ease of use. With a squeeze of the trigger and turn of the wrist, you'll introduce a new element to your fluid while simultaneously valving the used element out of service to easily change and replace, all while your system continues operating at full capacity.



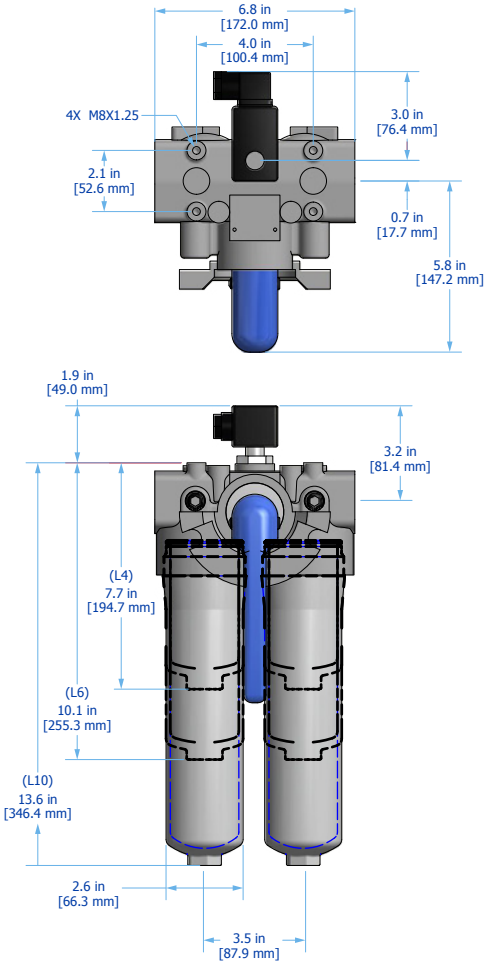
All duplexes are not created equal.

Air in any lube system can quickly cause failure and force you to take your system down for maintenance. DFN assemblies utilize internal equalization and external vent ports to automatically push oil into and purge air out from the unused housing without any added effort.

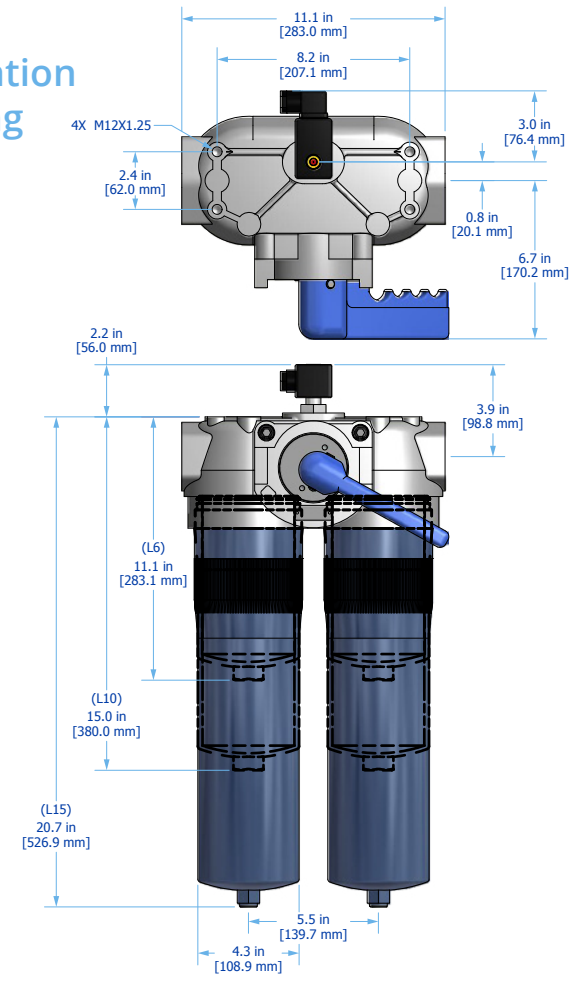
Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities so your equipment operates unimpeded by contamination. With media options down to $\beta 2.5_{[C]} \geq 1000$ + water absorption, you get the perfect element for your application, every time.

DFN19 Installation Drawing



DFN39 Installation Drawing



DFN Specifications

Dimensions

See Installation Drawing on page 217 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

DFN19
888 psi (61.2 bar) max

DFN39
350 psi (24.1 bar) max

ΔP Indicator Trigger

32 psid (2.21 bard)

Element Collapse Rating

Normal Collapse (Collapse Option N)
450 psid (31.0 bard)

High Collapse (Collapse Option H)
3000 psid (206.8 bard)

Materials of Construction

Head
Aluminum

Bowl
Aluminum

Interior Coating
Anodized

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Series Code	Filter Element Part Number	Example
19	HP19[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP19HL6-10MB
39	HP39[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP39NL6-6AV

Fluid Compatibility

Biodegradable and mineral based fluids. For high water based of specified synthetics, consult factory.

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Model	Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
DFN19N	L4	psid/gpm	3.4021	2.8710	1.9270	1.3030	0.9198	0.8860	0.4700
		bard/lpm	0.0620	0.0523	0.0351	0.0237	0.0168	0.0161	0.0086
	L6	psid/gpm	2.0986	1.7710	1.1980	1.0420	0.8658	0.8340	0.4170
		bard/lpm	0.0382	0.0323	0.0218	0.0190	0.0158	0.0152	0.0076
	L10	psid/gpm	1.4943	1.2610	1.0420	0.7820	0.6489	0.6250	0.3130
		bard/lpm	0.0272	0.0230	0.0190	0.0142	0.0118	0.0114	0.0057
DFN39N	L6	psid/gpm	0.6541	0.5520	0.4170	0.3440	0.2710	0.2610	0.1550
		bard/lpm	0.0119	0.0101	0.0076	0.0063	0.0049	0.0048	0.0028
	L10	psid/gpm	0.5190	0.4380	0.3230	0.2870	0.2429	0.2340	0.1350
		bard/lpm	0.0095	0.0080	0.0059	0.0052	0.0044	0.0043	0.0025
	L15	psid/gpm	0.4633	0.3910	0.3010	0.2660	0.2180	0.2100	0.1170
		bard/lpm	0.0084	0.0071	0.0055	0.0048	0.0040	0.0038	0.0021

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

DFN Part Number Builder

DFN [ ] [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

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

Series

19	25 gpm (95 lpm) max flow rate[1]
39	70 gpm (265 lpm) max flow rate[1]

Connection

DFN19

F16[2]	1" Code 61 flange
G16	1" G thread (BSPP)

DFN39

F24[2]	1½" Code 61 flange
G24	1½" G thread (BSPP)

Collapse Rating

H	3000 psid (206.8 bard)
N	450 psid (31.0 bard)

Element Length

DFN19

4	4" (10 cm) nominal length filter element and housing
6	6" (15 cm) nominal length filter element and housing
10	10" (25 cm) nominal length filter element and housing

DFN39

6	6" (15 cm) nominal length filter element and housing
10	10" (25 cm) nominal length filter element and housing
15	15" (38 cm) nominal length filter element and housing

Bypass

3	Integrated bypass – 50 psid (3.4 bard)
X	No bypass

ΔP Indicator

D	Visual with electric switch (DIN connection)
V	Visual/Mechanical
X	No indicator (port plugged)

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10M	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

G8 Dualglass + water removal

3A[3]	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6A[3]	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10A[3]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
25A[3]	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V	Fluorocarbon

[1]When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[2]Metric threads for flange connection bolts. See Appendix for exact connection sizes and specifications.
[3]Water Removal Media available only with Collapse option "N."

DFH

High Pressure Duplex Filter Assembly

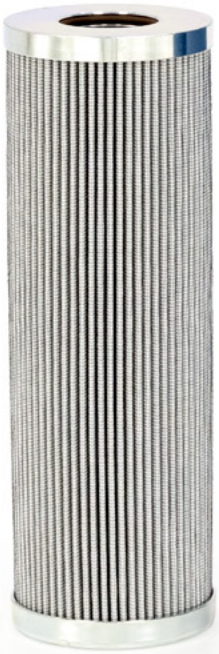
The DFH series is designed to remove particulate and water from a variety of fluids including hydrogen seal oil, turbine lube oil, bearing lube oil, and FD-ID-PA fan lube. Applicable for wind turbine, boiler feed pump, mechanical/electro hydraulic control, and fuel handling systems.

Ideal for systems where filters must be serviced while continuous operation is not interrupted such as hydraulic, gearbox, and servo systems.

Max Operating Pressure: 3600 psi (248 bar)

HY-PRO

hyprofiltration.com/DFH



Elements that go beyond industry standard.

DFE rated advanced media technologies provide the highest level of particulate capture and retention capabilities so your equipment operates unimpeded by contamination. With media options down to $\beta 2.5_{[C]} \geq 1000$, + water absorption, you get the perfect element for your application, every time.

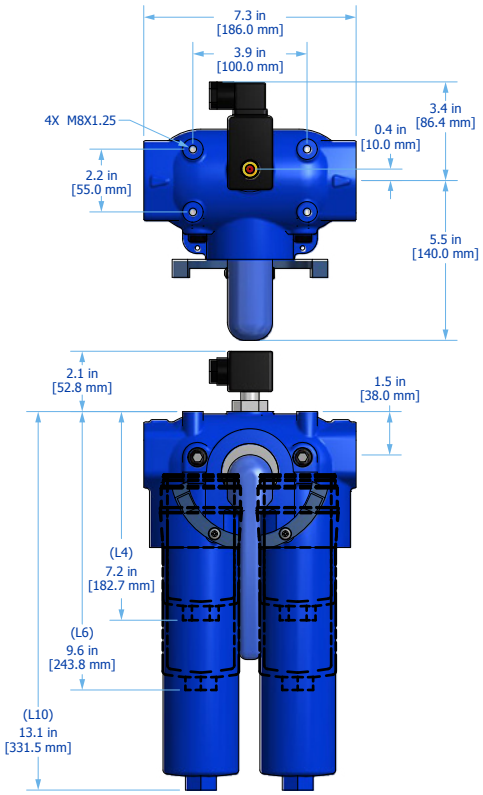
Two positions, one result.

DFH housings provide unmatched in-line filtration with incredible ease of use. With a squeeze of the trigger and turn of the wrist, you'll introduce a new element to your fluid while simultaneously valving the used element out of service to easily change and replace, all while your system continues operating at full capacity.

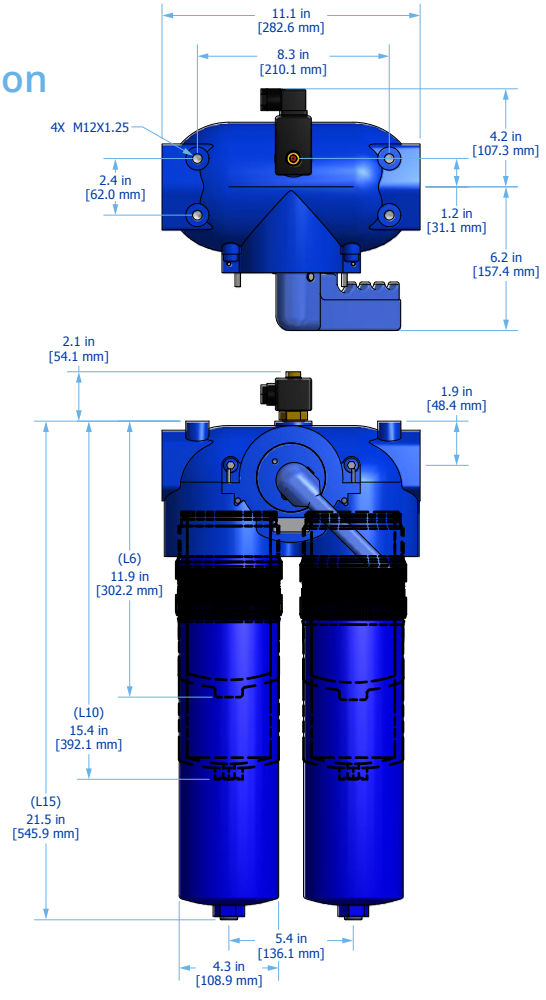
All duplexes are not created equal.

Air in any lube system can quickly cause failure and force you to take your system down for maintenance. DFN assemblies utilize internal equalization and external vent ports to automatically push oil into and purge air out from the unused housing without any added effort.

DFH19 Installation Drawing



DFH39 Installation Drawing



DFH Specifications

Dimensions

See Installation Drawing on page 221 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

DFH19
3600 psi (248.2 bar) max

DFH39
3000 psi (206.8 bar) max

ΔP Indicator Trigger

73 psid (5 bard)

Element Collapse Rating

450 psid (31.0 bard)

Materials of Construction

Head
Cast steel

Bowl
Cast steel

Housing Bypass Valve
Steel

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 $\beta x_{[C]} \geq 2$ ($\beta x \geq 2$)

Replacement Elements

To determine replacement elements, use corresponding codes from your assembly part number:

Series Code	Filter Element Part Number	Example
19	HP19[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP19HL6-10MB
39	HP39[Collapse Code] L [Length Code] – [Media Selection Code][Seal Code]	HP39NL6-6AV

Fluid Compatibility

Biodegradable and mineral based fluids. For high water based of specified synthetics, consult factory.

Filter Sizing[1]

Filter assembly clean element ΔP after actual viscosity correction should not exceed 10% of filter assembly bypass setting. See page 22 for filter assembly sizing guidelines & examples. For applications with extreme cold start condition contact Hy-Pro for sizing recommendations.

ΔP Factors[1]

Model	Length	Units	Media 1M	3M	6M	10M	16M	25M	**W
DFH19	L4	psid/gpm	3.402	2.871	1.927	1.303	0.920	0.886	0.470
		bard/lpm	0.0620	0.0523	0.0351	0.0237	0.0168	0.0161	0.0086
	L6	psid/gpm	2.099	1.771	1.198	1.042	0.866	0.834	0.417
		bard/lpm	0.0382	0.0323	0.0218	0.0190	0.0158	0.0152	0.0076
	L10	psid/gpm	1.494	1.261	1.042	0.782	0.649	0.625	0.313
		bard/lpm	0.0272	0.0230	0.0190	0.0142	0.0118	0.0114	0.0057
DFH39	L6	psid/gpm	0.654	0.552	0.417	0.344	0.271	0.261	0.155
		bard/lpm	0.0119	0.0101	0.0076	0.0063	0.0049	0.0048	0.0028
	L10	psid/gpm	0.519	0.438	0.323	0.287	0.243	0.234	0.135
		bard/lpm	0.0095	0.0080	0.0059	0.0052	0.0044	0.0043	0.0025
	L15	psid/gpm	0.463	0.391	0.301	0.266	0.218	0.210	0.117
		bard/lpm	0.0084	0.0071	0.0055	0.0048	0.0040	0.0038	0.0021

[1]Max flow rates and ΔP factors assume υ = 150 SUS, 32 cSt. See filter assembly sizing guideline for viscosity conversion formula on page 22 for viscosity change.

DFH Part Number Builder

DFH [ ] [ ] [ ] [ ] [ ] [ ] - [ ] [ ]

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

Series

19	25 gpm (95 lpm) max flow rate[1]
39	70 gpm (265 lpm) max flow rate[1]

Connection

DFH19

F16[2]	1" Code 61 flange
G16	1" G thread (BSPP)

DFH39

F24[2]	1½" Code 61 flange
G24	1½" G thread (BSPP)

Collapse

H	3000 psid (206.8 bard)
N	450 psid (31.0 bard)

Element Length

DFH19

4	4" (10 cm) nominal length filter element and housing
6	6" (15 cm) nominal length filter element and housing
10	10" (25 cm) nominal length filter element and housing

DFH39

6	6" (15 cm) nominal length filter element and housing
10	10" (25 cm) nominal length filter element and housing
15	15" (38 cm) nominal length filter element and housing

Bypass

7	102 psid (7 bard) bypass
X	No bypass

ΔP Indicator

D	Visual with electric switch (DIN connection)
V	Visual/Mechanical
X	No indicator (port plugged)

Media Selection

G8 Dualglass

1M	$\beta 2.5_{[C]} \geq 1000$, $\beta 1 \geq 200$
3M	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6M	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10M	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
16M	$\beta 17_{[C]} \geq 1000$, $\beta 17 \geq 200$
25M	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

G8 Dualglass + water removal

3A[3]	$\beta 5_{[C]} \geq 1000$, $\beta 3 \geq 200$
6A[3]	$\beta 7_{[C]} \geq 1000$, $\beta 6 \geq 200$
10A[3]	$\beta 12_{[C]} \geq 1000$, $\beta 12 \geq 200$
25A[3]	$\beta 22_{[C]} \geq 1000$, $\beta 25 \geq 200$

Stainless wire mesh

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

Seals

B	Nitrile (Buna)
V	Fluorocarbon

[1]When selected, must be paired with Seal option "V." Contact factory for more information or assistance in fluid compatibility.
[2]Metric threads for flange connection bolts. See Appendix for exact connection sizes and specifications.
[3]Water Removal Media available only with Collapse option "N."