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.

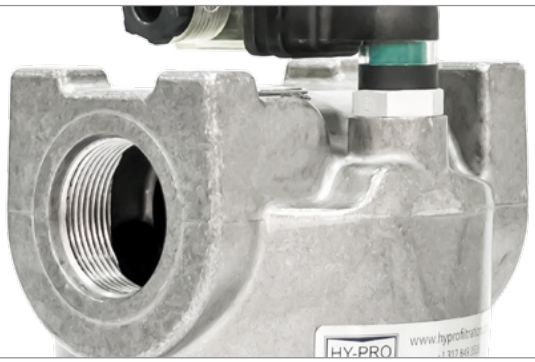
Max Operating Pressure: 1,200 psi (83 bar)

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



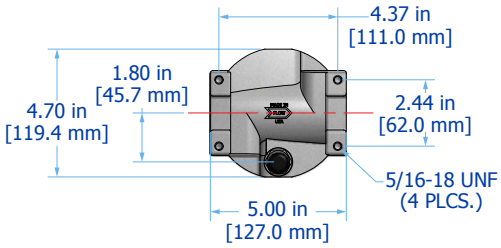
HF3 Compatible Design.

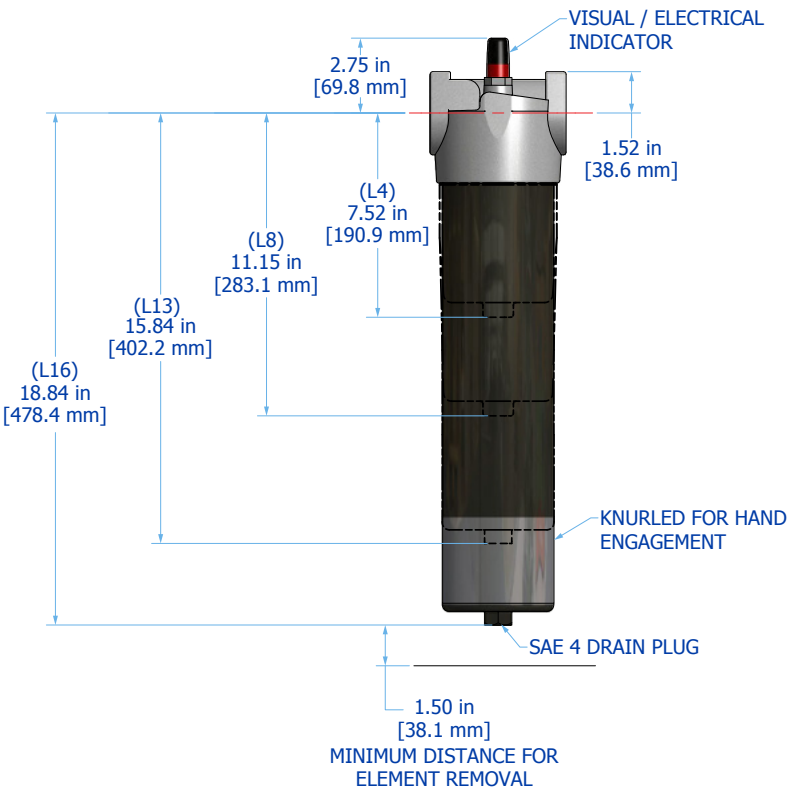
Port to port dimension, mounting pattern, and element design meet HF3 automotive specification. And with standard SAE drain ports, lightweight aluminum bowls, and knurled texture on the bowls provide ease for element servicing, you get all of the convenience you want with the compatibility you need.

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





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Filter Assembly Sizing

Filter Assembly Sizing Guidelines

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

Calculate ΔP coefficient for actual viscosity

Using Saybolt Universal Seconds (SUS)

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

Using Centistokes (cSt)

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

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

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

Sizing recommendations to optimize performance and permit future flexibility

- To avoid or minimize bypass during cold start the actual assembly clean ΔP calculation should be repeated for start-up conditions if cold starts are frequent.
- Actual assembly clean ΔP should not exceed 10% of bypass ΔP gauge/indicator set point at normal operating viscosity.
- If suitable assembly size is approaching the upper limit of the recommended flow rate at the desired degree of filtration consider increasing the assembly to the next larger size if a finer degree of filtration might be preferred in the future. This practice allows the future flexibility to enhance fluid cleanliness without compromising clean ΔP or filter element life.
- Once a suitable filter assembly size is determined consider increasing the assembly to the next larger size to optimize filter element life and avoid bypass during cold start.
- When using water glycol or other specified synthetics we recommend increasing the filter assembly by 1~2 sizes.

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

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

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

Replacement Elements

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

Filter Element Part Number
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 previous page for filter assembly sizing guidelines. 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.

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

G8 Dualglass + water removal

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

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.