

MF3 Medium Pressure In-Line Filter

Featuring Hy-Pro G8 Dualglass Filter element technology



APPLICATIONS

- Hydrostatic charge circuit for Mobile Equipment
- Hy-Pro 5 Star CAT service center applications
- Return-line alternative to spin-on assemblies

FEATURES, BENEFITS, ADVANTAGES

DFE rated elements	G8 Dualglass and PE glass elements are DFE rated to assure performance even when exposed to the toughest hydraulic systems (See DFE literature for details)
Circumferential o-ring bowl seal	Circumferential seal on the bowl eliminates leaking. (No Drips)
Low housing pressure drop	Unique internal flow paths provide low resistance to flow. (Low pressure drop)
HF3 compatible	Port to port dimension, mounting pattern, and element design meet HF3 automotive specification. (Automotive standard)
Drain plug standard	Bowl with drain plug comes standard. (No price adder) SAE-4

PRODUCT SPECIFICATIONS

Pressure ratings	1200 psi (83 bar) max operating 3000 psi (206 bar) burst
Flow rate	50 gpm (187 lpm) max
Design safety factor	3:1
Fluid compatibility (ISO 2948)	Petroleum base fluid and specified Synthetics (contact factory)
Element collapse	250 psid (17 bar)
Housing materials	Head: Cast aluminum Bowl: Cast aluminum Bypass: Nylon Elements: Zinc or Tin coated Carbon steel
Filter media	G8 Dualglass or wire mesh
Differential pressure indicator trigger	45 psid (3.1 bar) standard
Bypass valve crack	50 psid (3.4 bar) standard
Weight (w/element)	MF34 length bowl 6.6 Lb (3 Kg) MF38 length bowl 8.8 Lb (4 Kg)
Temperature rating	Buna: -40°F(-40°C) ~ 225°F (107°C) Viton: -15°F(-26°C) ~ 275°F (135°C)



FILTRATION

HIGH PERFORMANCE FILTER ELEMENTS - THE HEART OF A FILTER

Dynamic Filter Efficiency (DFE) Testing

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

Media Options

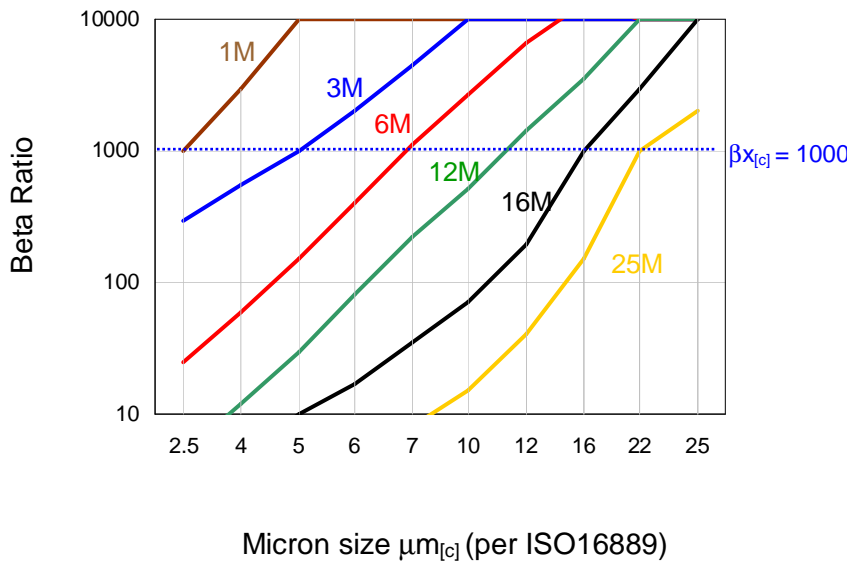
Through extensive testing we have developed media choices to handle any application. Options include G8 Dualglass, Dynafuzz (stainless fiber), and Wire mesh (stainless).

Fluid Compatibility

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

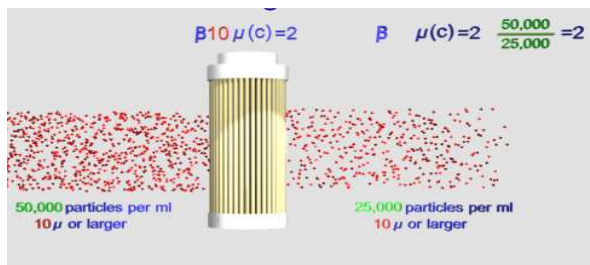
FILTER MEDIA SPECIFICATIONS

Glass Media Code Filtration Efficiency (Beta Ratio) vs Micron

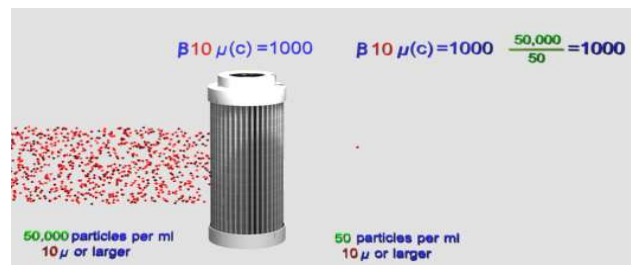


media code	media description
A	G8 Dualglass high performance media combined with water removal scrim. $\beta_{x[c]} = 1000$ ($\beta_x = 200$)
M	G8 Dualglass our latest generation of DFE rated, high performance glass media for all hydraulic & lubrication fluids. $\beta_{x[c]} = 1000$ ($\beta_x = 200$)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

Typical cellulose media performance



Hy-Pro G8 Dualglass media performance



MF3 FILTER ASSEMBLY SELECTION AND SIZING GUIDELINES

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

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

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

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

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

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

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

MF3 FILTER ASSEMBLY SIZING & OPERATING PRESSURE GUIDELINES

MF34* Media code	Max flow rate* gpm (lpm)	Port size	Assembly Δp factor* psid / gpm	Assembly Δp factor* bar / lpm	Max operating Pressure, fatigue rating
1M	15 (55)	1 1/4" SAE-20	0.94	0.018	1000 psi, 68 bar 10 ⁶ pressure cycles
3M	20 (76)		0.69	0.013	
6M	28 (107)		0.49	0.009	
12M	31 (120)		0.44	0.008	
25M	38 (146)		0.36	0.006	
**W	60 (228)		0.23	0.004	

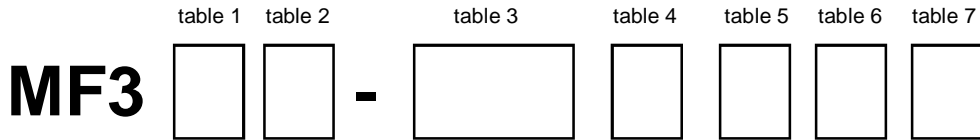
*Recommended Max flow rate and Δp factor assumes $\nu = 150$ sus, 32 Centistokes. See Δp viscosity conversion formula for viscosity

MF38* Media code	Max flow rate* gpm (lpm)	Port size	Assembly Δp factor* psid / gpm	Assembly Δp factor* bar / lpm	Max operating Pressure, fatigue rating
1M	20 (75)	1 1/4" SAE-20	0.63	0.012	1000 psi, 68 bar 10 ⁶ pressure cycles
3M	32 (120)		0.46	0.009	
6M	38 (144)		0.38	0.007	
12M	52 (197)		0.35	0.006	
25M	71 (267)		0.29	0.005	
**W	90 (340)		0.21	0.004	

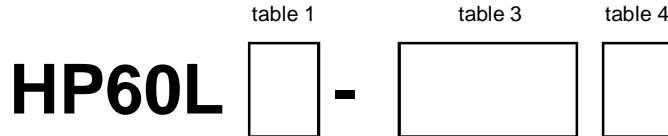
*Recommended Max flow rate and Δp factor assumes $\nu = 150$ sus, 32 Centistokes. See Δp viscosity conversion formula for viscosity



MF3 FILTER ASSEMBLY PART NUMBER GUIDE



MF3 FILTER ELEMENT PART NUMBER GUIDE



**BOLD text denotes standard options that are available for quick shipment.
Non-standard options are subject to longer lead times.**

table 1	
code	element length
4	4" (100 mm) nominal
8	8" (200 mm) nominal

table 2	
code	port type
G4	G4 1 1/4 BSPP thread (call for availability)
N4	NPTF 1 1/4"
N5	NPTF 1 1/2"
S4	SAE-20 (1 5/8"-12UN)
S5	SAE-24 (1 7/8"-12UN)

table 3	
code	Media selection
1M	$\beta_{2.5[c]} > 1000$
3M	$\beta_{5[c]} > 1000$
6M	$\beta_{7[c]} > 1000$
12A	$\beta_{12[c]} > 1000$ + water removal
12M	$\beta_{12[c]} > 1000$
25A	$\beta_{22[c]} > 1000$ + water removal
25M	$\beta_{22[c]} > 1000$
25W	25u nominal mesh media
40W	40u nominal mesh media
74W	74u nominal mesh media
149W	149u nominal mesh media

table 4	
code	Seal
B	Buna -40f(-40c) to 225f(107c)
V	Viton -15f(-26c) to 275f(135c)

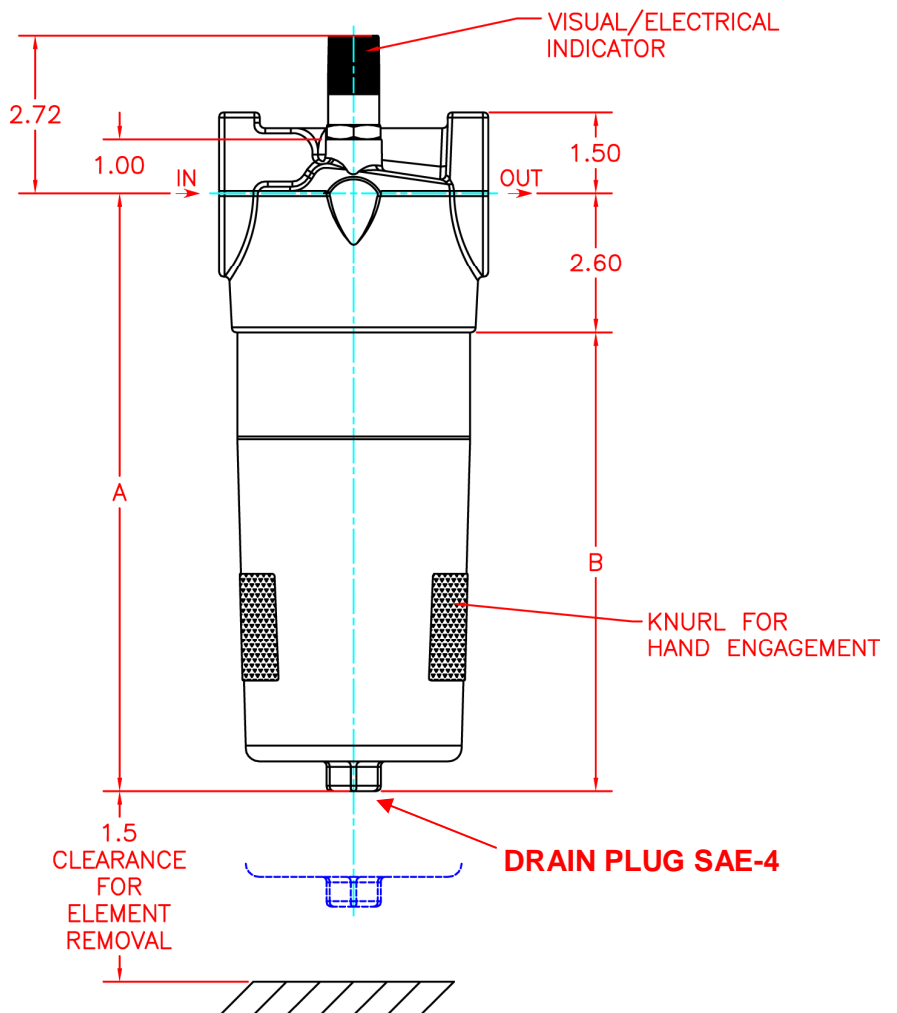
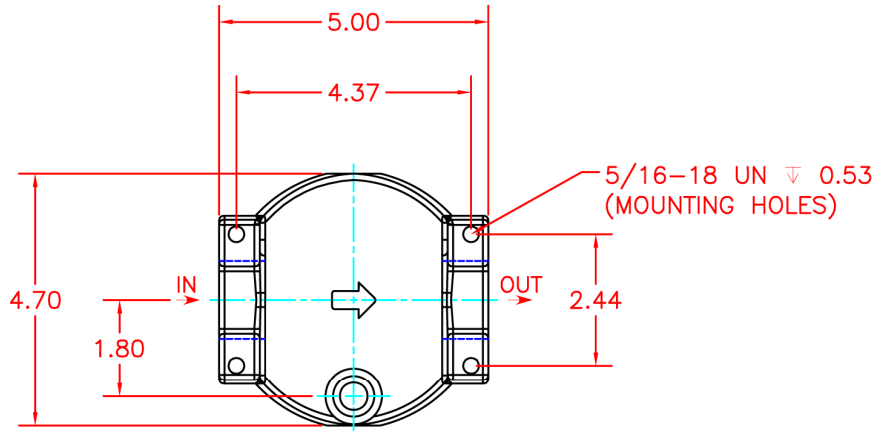
table 5	
code	bypass valve
5	50 psid (3.4 bar)
X	No bypass

table 6	
code	indicator
M	Visual - mechanical
E	Visual + Electrical (DIN connector)
X	No indicator

table 7	
code	Special options

INSTALLATION DRAWING

	Dim IN, Lb (mm, kg)	
	MF34	MF38
A	7.50" (190,5)	11.1" (281,9)
B	4.9" (124,5)	8.5" (215,9)
Weight	6.6 Lb (3 Kg)	8.8 Lb (4 Kg)



SPARE PARTS LIST

Seal Kits	P/N
Nitrile NBR	MF3SKB
Fluorocarbon	MF3SKV
Replacement Bowl Kits	
Single length code 4	MF3B4
Double length code 8	MF3B8
ΔP Indicators	
Visual, Buna seals	MF3IVB
Visual, Viton seals	MF3IVV
Electrical, Buna seals	MF3IEB
Electrical, Viton seals	MF3IEV
Drain Plugs	
SAE-4 plug, Buna	MF3DPB
SAE-4 plug, Viton	MF3DPV