

LOW PRESSURE FILTERS

MF, MFD, MFDS Series

Spin-On Filters
250 PSI • up to 120 GPM



Features

- MF Filters are manufactured with an aluminum head.
- Choice of NPT, SAE straight thread O-ring boss, and SAE 4-bolt flange porting to allow easy installation without costly adapters.
- Quick easy element changeouts.
- MF Filters are designed to be used with hydrocarbon based fluids only – (not suitable for use with high water based fluids or phosphate esters)
- MF Filters are available in static and differential pressure sensing configurations.
- MF Filters are available in static and differential pressure sensing configurations.
- Static Indication for Mobile/Return Applications - Sizes 40/80/85/160/180
- Differential Indication for Inline Applications - Sizes 90/95/190/195

Applications



Agricultural



Automotive



Construction



Gearboxes



Industrial

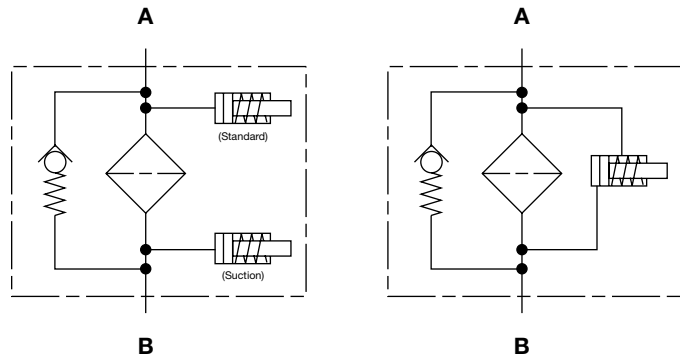


Pulp & Paper



Steel / Heavy Industry

Hydraulic Symbol
MF 80/85/160/180 MF 90/95/190/195

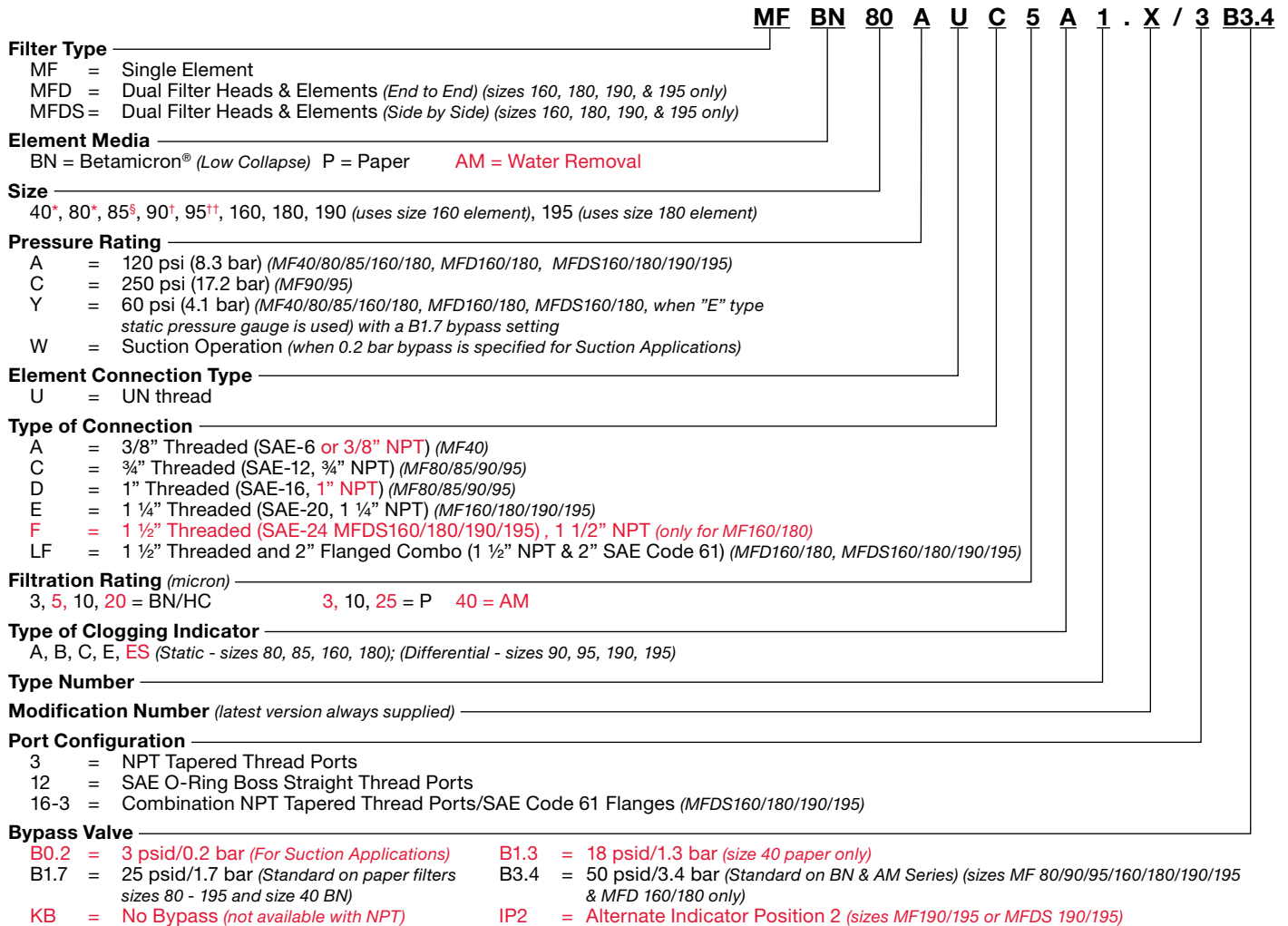


Technical Specifications

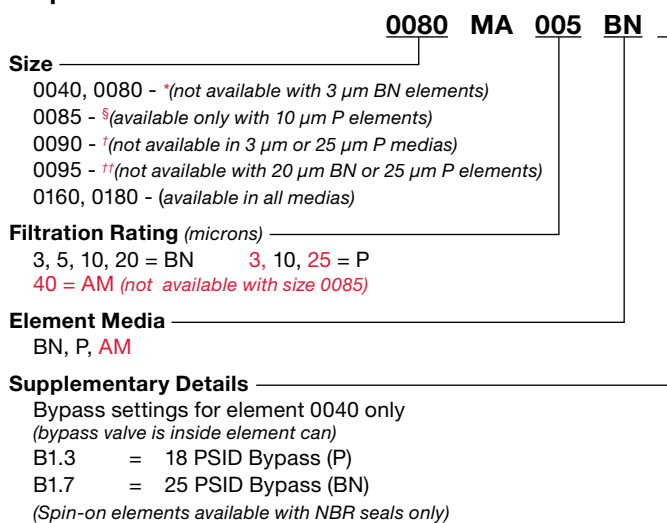
Mounting Method	
MF40/80/85	2 mounting holes
MF90/95	3 mounting holes
MF160/180	2 or 4 mounting holes
MF190/195	2 or 3 mounting holes
MFD	2 mounting holes
MFDS	4 mounting holes
Port Connection	
MF40	SAE-6
MF80/85	3/4" NPT, SAE-12, 1" NPT, SAE-16
MF90/95	3/4" NPT, SAE-12, 1" NPT, SAE-16
MF160/180/190/195	1 1/4" NPT, SAE-20, 1 1/2" NPT, SAE-24
MFD160/180	1 1/2" NPT, SAE-24
MFDS160/180*	2" SAE Flange Code 61, 1 1/2" NPT Comb. Port
MFDS190/195*	2" SAE Flange Code 61, 1 1/2" NPT Comb. Port
*Note: Max. allowable torque for flanged ports is 26 ft-lbs (1/2" - 13 UNC bolts)	
Flow Direction	
Inlet:	Side
Outlet:	Side
Construc. Materials	
Head:	Aluminum
Can:	Steel
Flow Capacity	
40	7 gpm (26 lpm)
80	15 gpm (57 lpm)
85	25 gpm (95 lpm)
90	15 gpm (57 lpm)
95	25 gpm (95 lpm)
160,190	30 gpm (114 lpm) per can
180,195	60 gpm (227 lpm) per can
Housing Pressure Rating	
MF40/80/85/160/180/190/195	MF90/95
Max. Allowable	
Working Pressure**	120 psi (8 bar) 250 psi (17 bar)
Fatigue Pressure	Contact HYDAC
Burst Pressure	Contact HYDAC
Element Collapse Pressure Rating	
BN, P, AM	80 psid (5.5 bar)
Fluid Temp. Range	
14°F to 212°F (-10°C to 100°C)	
Consult HYDAC for applications operating below 14°F (-10°C)	
Fluid Compatibility	
Compatible with all petroleum oils and synthetic fluids rated for use with Nitrile rubber (NBR) seals and aluminum and steel metals	
Indicator Trip Pressure	
20 psid (1.4 bar) -10%	ΔP 14.5 psid (1 bar) - 10%
25 psid (1.7 bar) -10%	ΔP 22 psid (1.5 bar) - 10%
40 psid (2.7 bar) (B3.4 Bypass)	ΔP 44 psid (3 bar) - 10%
Vacuum = 2 psid (0.1 bar) (Suction)	
Bypass Valve Cracking Pressure	
ΔP = 3 psid (0.2 bar) +10% (for suction applications)	
ΔP = 25 psid (1.7 bar) +10% (standard for nominal/surface type filters)	
ΔP = 50 psid (3.4 bar) +10% (standard for absolute/depth filters)	
(standard for absolute/depth type BN filters, MF 80/90/95/160/180/190/195, MFD 160/180, MFDS 160/180)	

**Note: All MF, MFD, MFDS MAWP reduce to 60 psi (4 bar) when using the following "VMF" indicators: B, BM, E, ES, GC, LE, LZ.

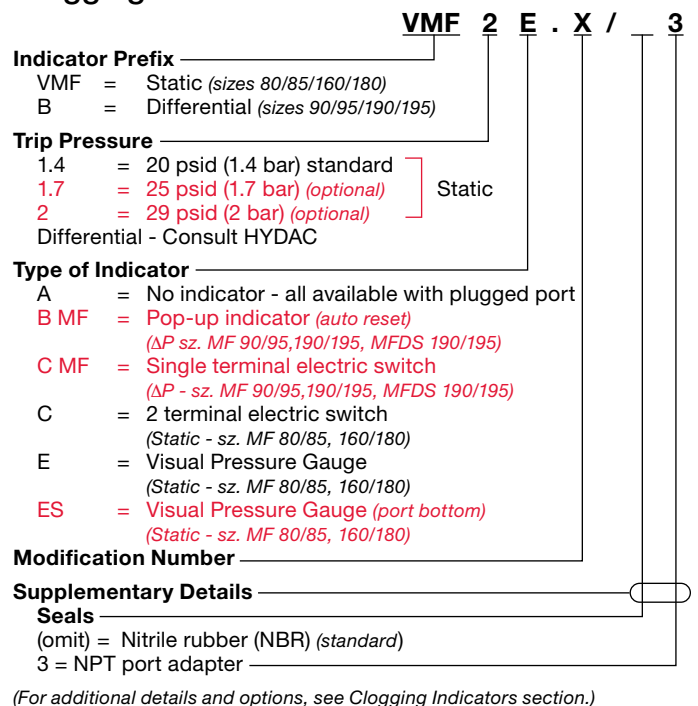
Model Code



Replacement Element Model Code



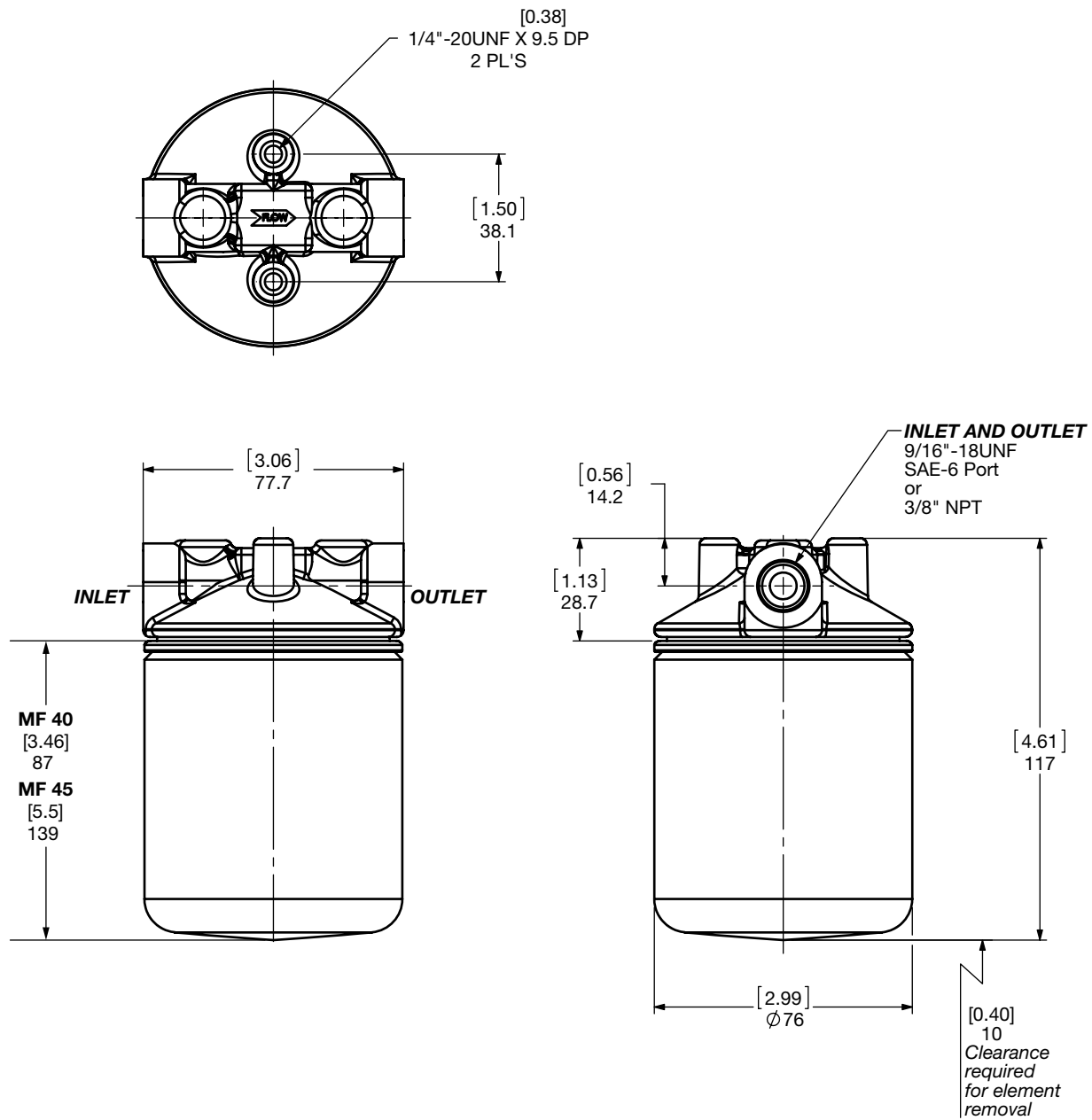
Clogging Indicator Model Code



Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

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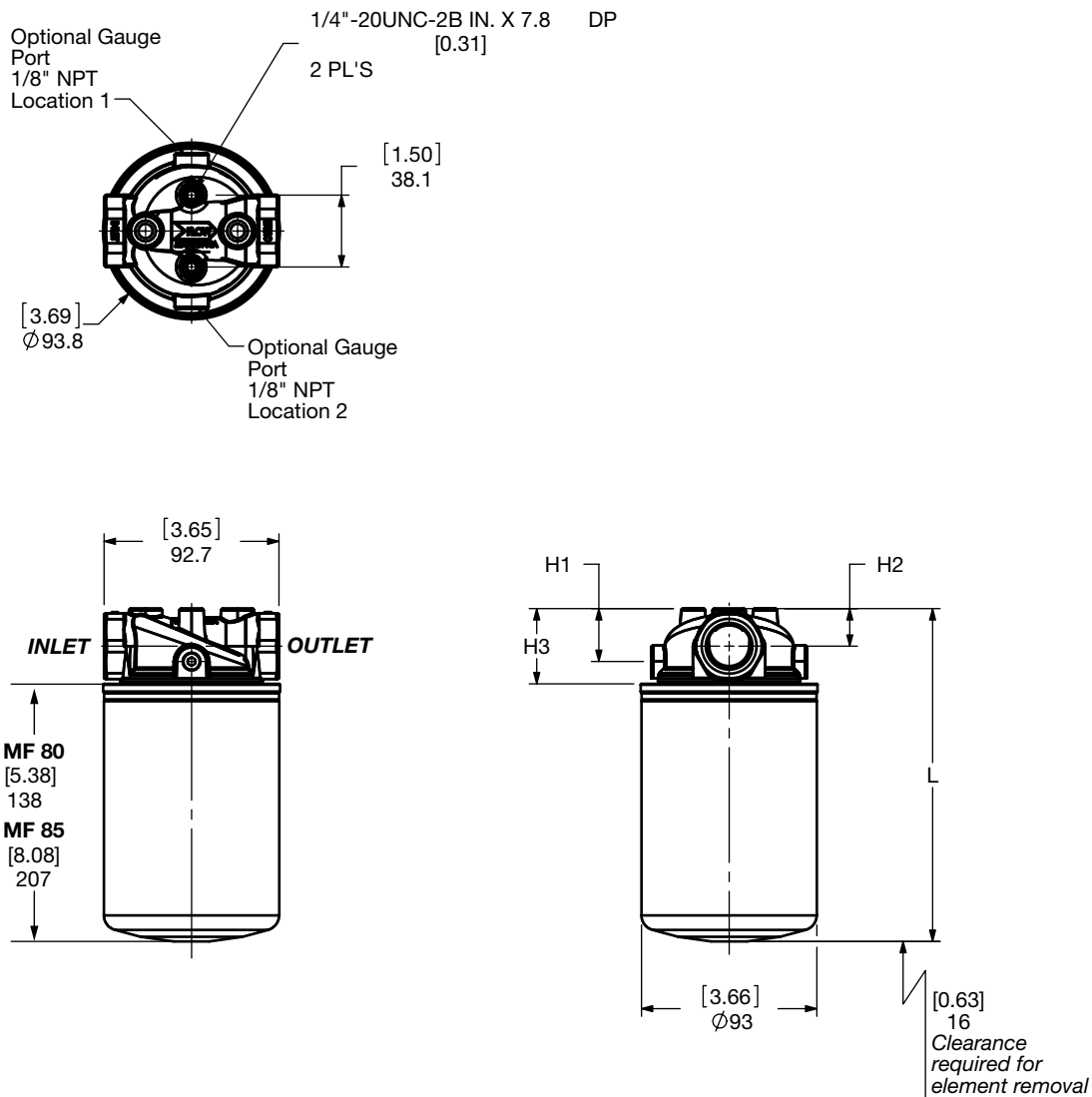
Dimensions
MF 40 / 45



Size	40	45
Weight (lbs.)	1	1.5

Dimensions shown are [inches] millimeters for general information and overall envelope size only. Weights listed include element.
For complete dimensions please contact HYDAC to request a certified print.

Dimensions MF 80 / 85



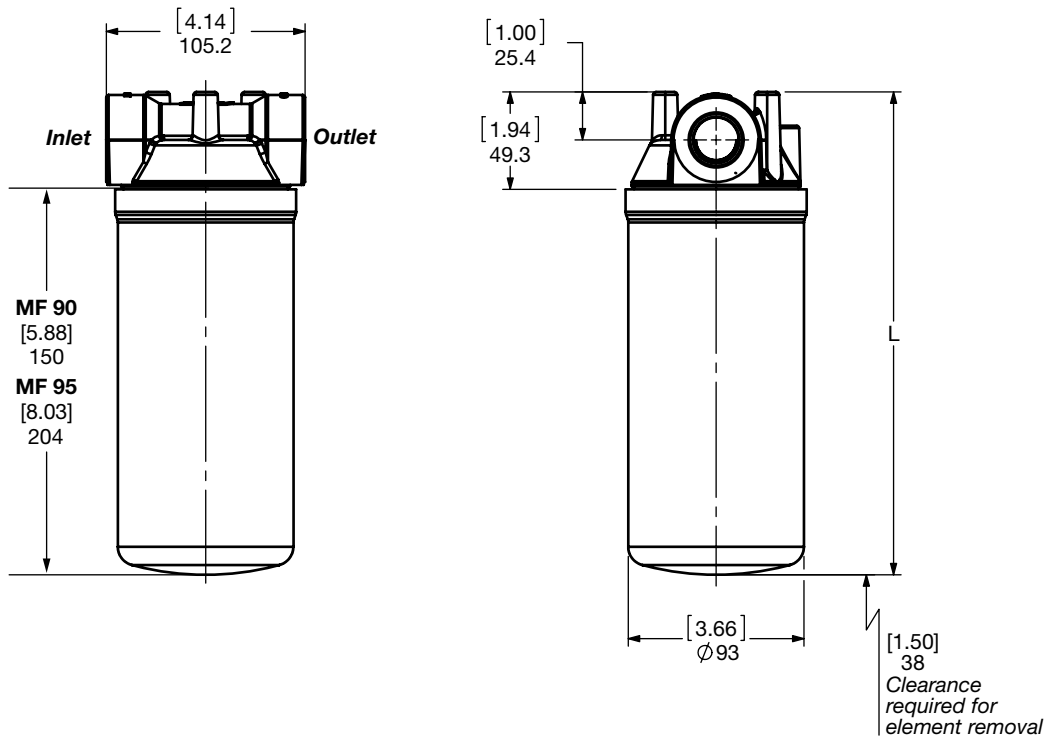
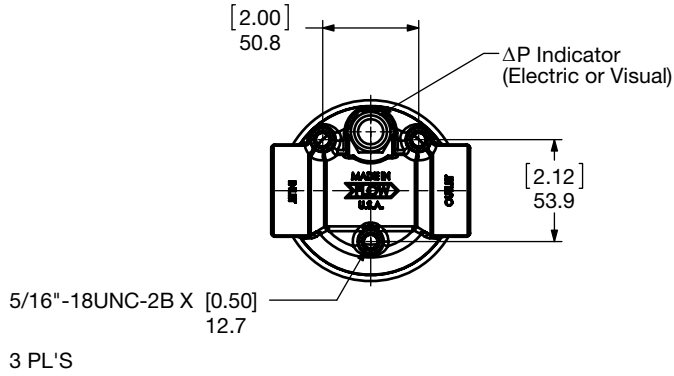
SIZE	PORT SIZE (INLET & OUTLET)	H1	H2	H3	L
MF80	3/4" NPT	[1.12] 28.4	[0.79] 20.1	[1.52] 38.6	[6.89] 175
	SAE-12				
	1" NPT	[1.42] 36.1	[1.91] 23.1	[1.83] 46.5	[7.20] 182.9
	SAE-16				
MF85	3/4" NPT	[1.12] 28.4	[0.79] 20.1	[1.52] 38.6	[9.61] 244.1
	SAE-12				
	1" NPT	[1.42] 36.1	[0.91] 23.1	[1.83] 46.5	[9.92] 252
	SAE-16				

Size	80	85
Weight (lbs.)	1.8	2.2

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Dimensions MF 90 / 95



SIZE	PORT SIZE (INLET & OUTLET)	L
MF90	3/4" NPT	[5.88] 150
	SAE-12	
	1" NPT	
	SAE-16	
MF95	3/4" NPT	[8.03] 204
	SAE-12	
	1" NPT	
	SAE-16	

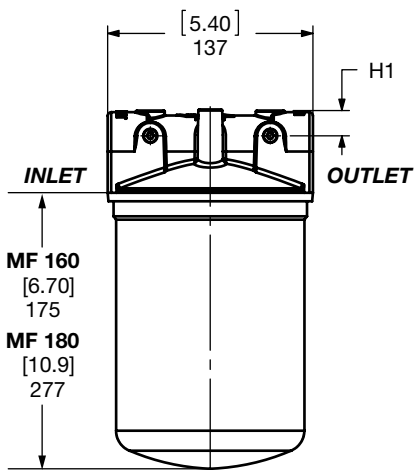
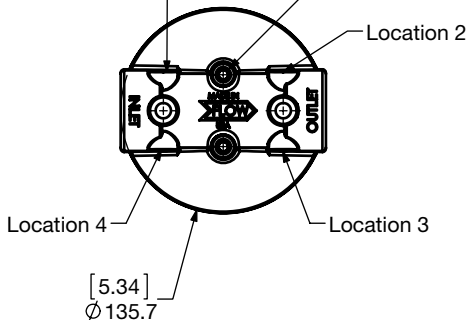
Size	90	95
Weight (lbs.)	2.7	3.2

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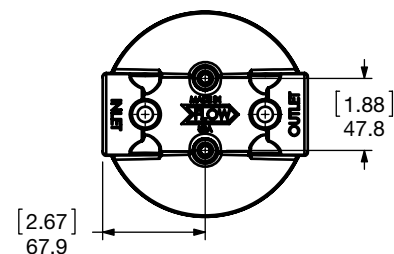
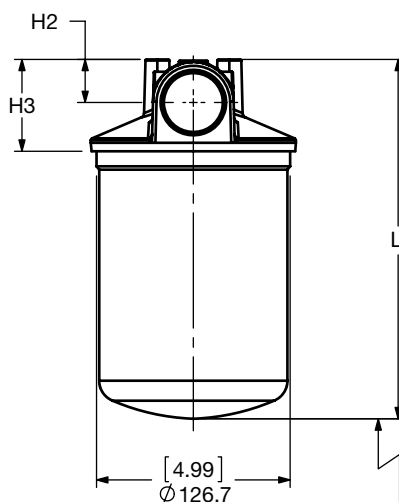
Dimensions MF 160 / 180

Gauge port options (1/8" NPTF)
Location 1
(Locations 1 thru 4)

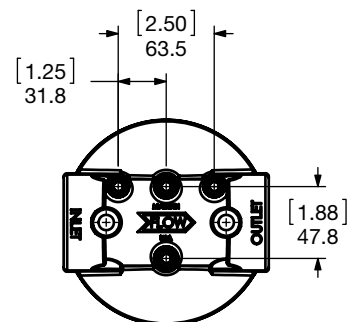
5/16"-18UNC-2B X 14.2 DP
[0.78]
(M10 X 1.5 X 20 DP for BSPP ports)
2 PL'S



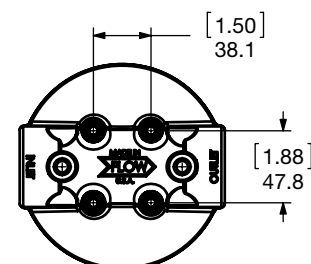
MF 180
[10.9]
277



SAE-20
(2 Bolt Mounting)



1 1/2" NPTF
SAE-24
(3 Bolt Mounting)
(Special Order)



1 1/4" NPTF
SAE-20
(4 Bolt Mounting)

[1.50]
38
Clearance
required
for element
removal

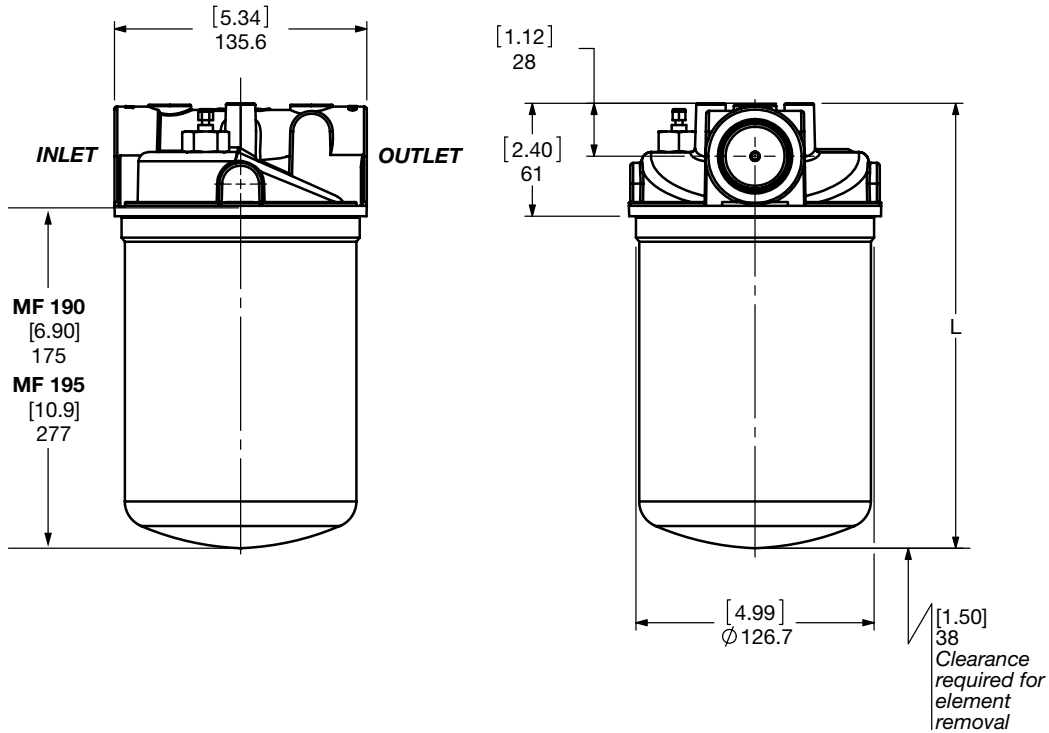
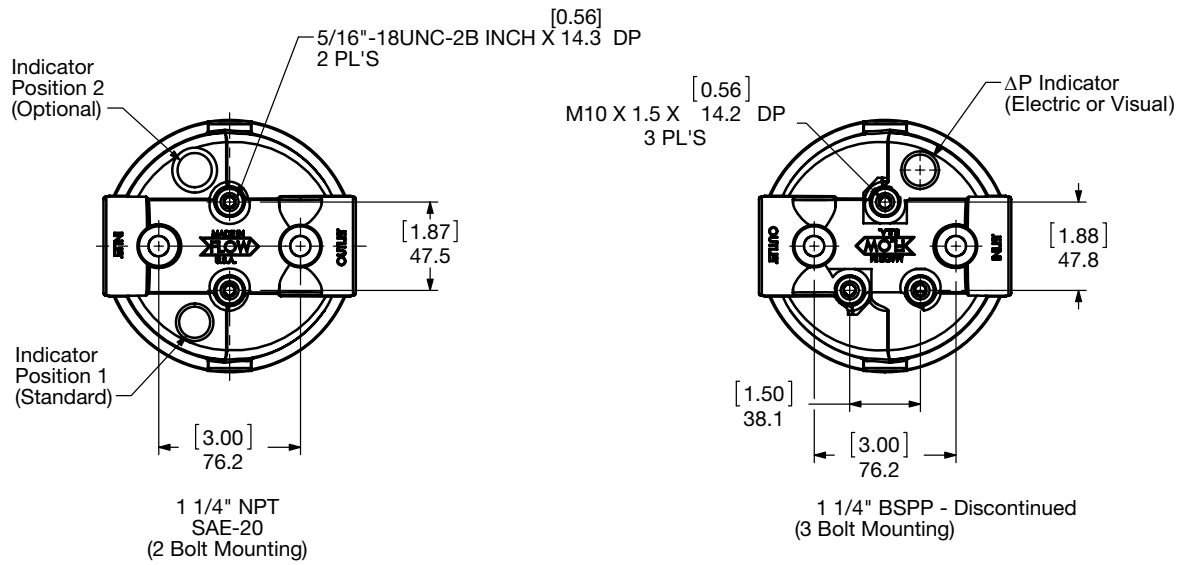
SIZE	PORT SIZE (INLET & OUTLET)	H1	H2	H3	L
MF160	1 1/4" NPT	[0.79] 20.1	[1.08] 27.4	[2.35] 59.7	[9.35] 237.5
	SAE-20				
	1 1/2" NPT	[1.10] 27.9	[1.30] 33	[2.80] 71.1	[9.80] 248.9
	SAE-24				
MF180	1 1/4" NPT	[0.79] 20.1	[1.08] 27.4	[2.35] 59.7	[13.35] 339.1
	SAE-20				
	1 1/2" NPT	[1.10] 27.9	[1.30] 33	[2.80] 71.1	[13.80] 350.5
	SAE-24				

Size	160	180
Weight (lbs.)	5.1	7.3

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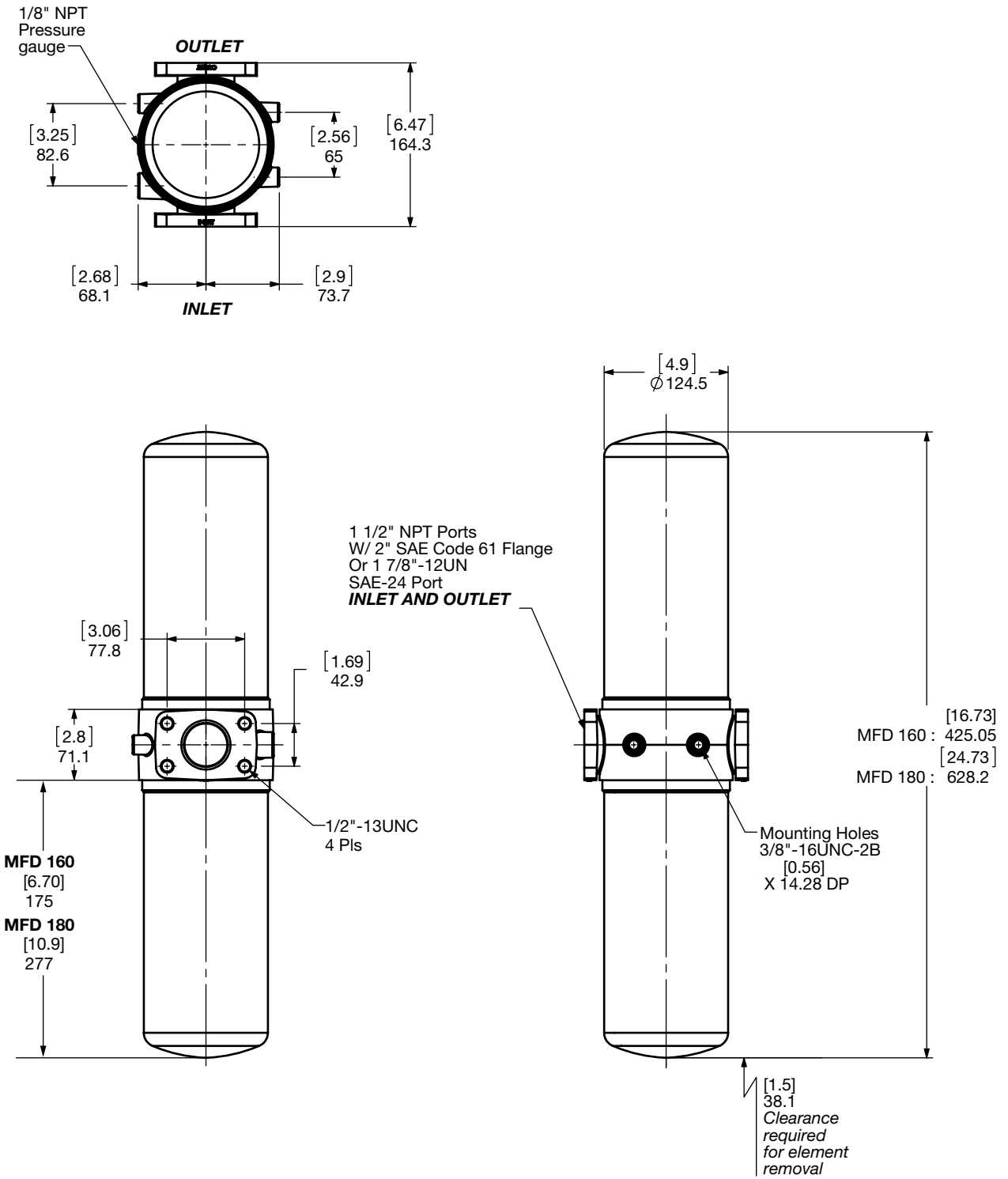
Dimensions MF 190 / 195



Size	190	195
Weight (lbs.)	4.3	5.4

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Dimensions MFD 160 / 180



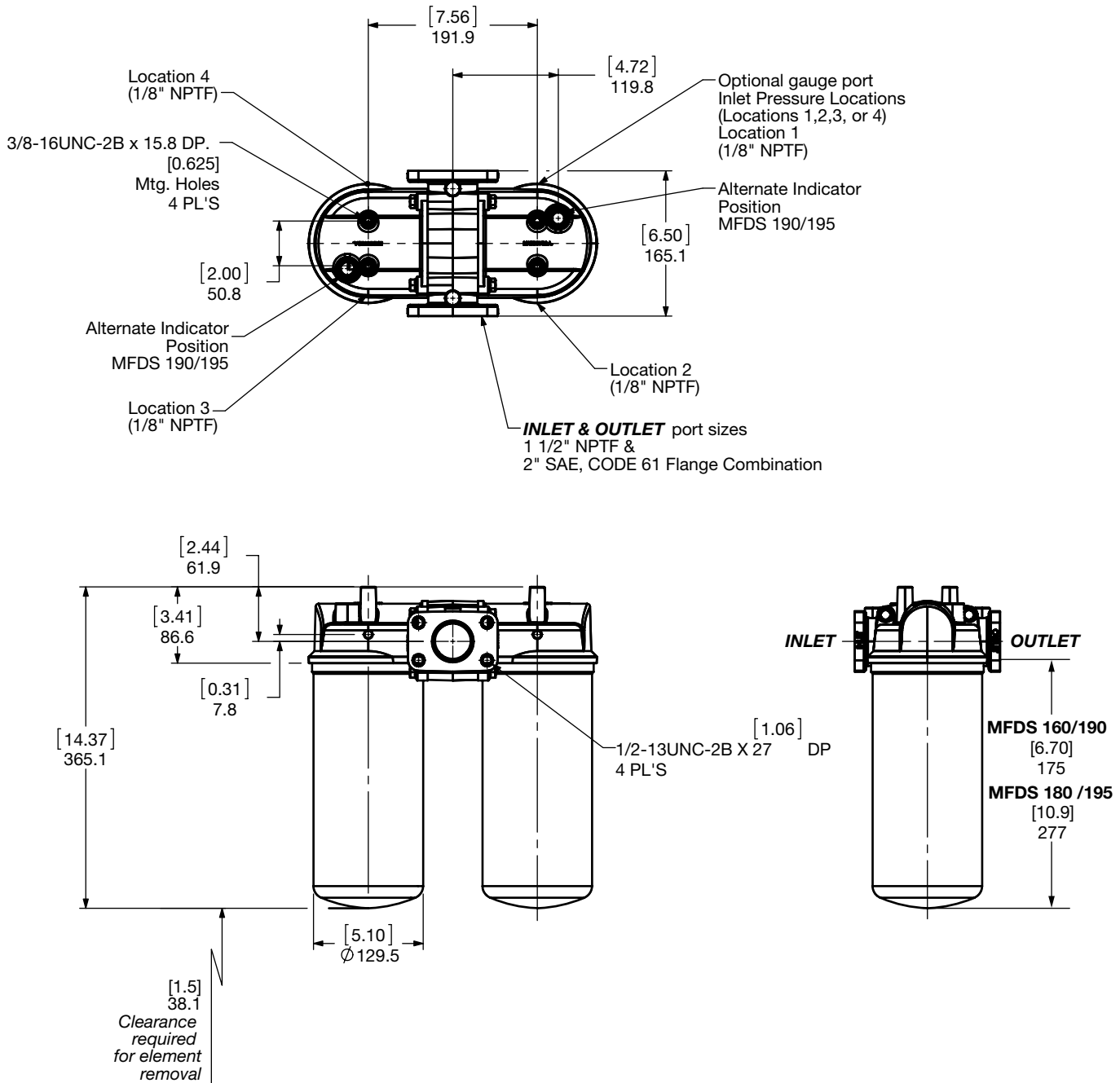
Size	160	180
Weight (lbs.)	8.8	11

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Dimensions

MFDS 160 / 180 / 190 / 195



Size - MFD	160	180	190	195
Weight (lbs.)	11.6	13.8	8.8	11

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Sizing Information

Total pressure loss through the filter is as follows:

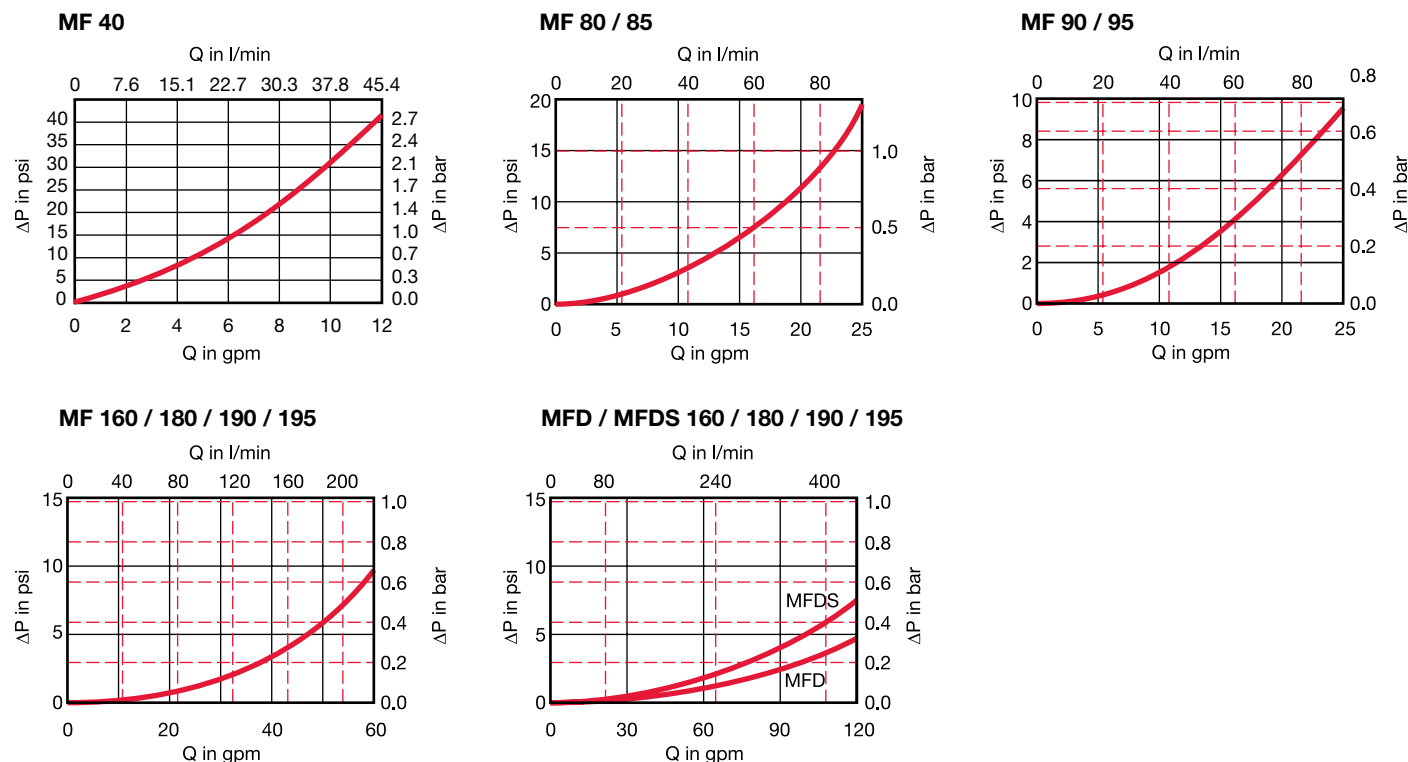
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

Housing Curve:

Pressure loss through housing is as follows:

$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see "Sizing HYDAC Filter Assemblies" in Section B - Overview)



Aquamicon Water Removal Element Capacity vs. Flow

Spin-On Element	Optimum Flow Rate		Maximum Flow Rate	
	Flow (gpm)	Capacity (quarts)	Flow (gpm)	Capacity (quarts)
0080MA010AM	2	0.12	6	0.08
0090MA010AM	2	0.12	6	0.08
0095MA010AM	4	0.17	8	0.11
0160MA040AM	4	0.23	8	0.16
0180MA040AM	6	0.45	15	0.32

Spin-on Connection Chart

Size	Can Connection Thread		
	MA	MG	MU
0040	3/4" - 16 UN - 2B	—	—
0080	—	3/4" BSPP	—
0080/0085	1" - 12 UN - 2B	—	—
0090/0095	1-1/2" - 16 UN - 2B	—	—
0160	—	1-1/4" BSPP	—
0160/0180	1-1/2" - 16 UN - 2B	—	—

MA = UN Tap Plate Thread (standard); MG = BSPP Tap Plate Thread (special); MU = Metric Tap Plate Thread (special - consult HYDAC)

Element K Factors

$$\Delta P \text{ Elements} = \text{Elements (K)} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

(From Tables Below)

Size	...MA...BN			
	3 μm	5 μm	10 μm	20 μm
0040	—	1.1799	0.6289	0.3613
0080	—	0.4423	0.2357	0.1354
0090	0.4841	0.3702	0.3451	0.1911
0095	0.2762	0.2112	0.1969	—
0160	0.2372	0.1983	0.1113	0.0625
0180	0.1231	0.1029	0.0577	0.0325

Size	...MA...P		
	3 μm	10 μm	25 μm
0040	7.763	2.348	1.516
0080	1.606	0.486	0.314
0085	—	0.351	—
0090	—	0.482	—
0095	0.894	0.270	—
0160	0.839	0.192	0.145
0180	0.443	0.134	0.087

Size	...MA...AM	
	010 μm	040 μm
0080	0.513	—
0085	—	—
0090	0.507	—
0095	0.284	—
0160	—	0.233
0180	—	0.136

All Element K Factors in psi / gpm.