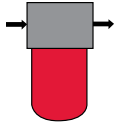


## DF Series

### Inline Filters

6000 psi • up to 180 gpm



### Features

- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Choice of NPT, SAE straight thread O-ring boss, and SAE 4-bolt flange porting (sizes 60 - 1320) to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, EPDM) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Screw-in bowl mounted below the filter head requires minimal clearance to remove the element for replacement, and contaminated fluid cannot be washed downstream when element is serviced.
- Differential Pressure Indicators. HYDAC indicators have no external dynamic seal. This results in a high system reliability due to magnetic actuation, thus eliminating a potential leak point.
- A poppet-type bypass valve (optional) provides positive sealing during normal operation and fast opening during cold starts and flow surges.
- For special finishes and coatings – consult HYDAC for minimum quantities, availability and pricing.
- Fatigue pressure ratings equals maximum allowable working pressure rating.

### Applications



Agricultural



Automotive



Construction



Gearboxes



Industrial



Offshore



Commercial  
Municipal



Power  
Generation



Pulp & Paper



Railways

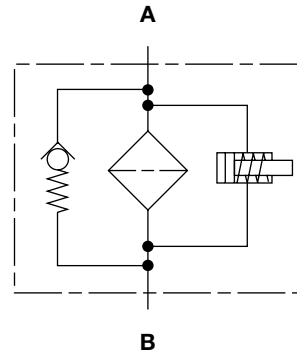


Shipbuilding



Steel / Heavy  
Industry

### Hydraulic Symbol



### Technical Details

<b>Mounting Method</b>	4 mounting holes	
<b>Port Connection</b>	30 SAE-8, 1/2" NPT, 1/2" BSPP 60/110 SAE-12, 3/4" NPT, 3/4" BSPP 3/4" SAE, Code 62 160/240/280 SAE-20, 1 1/4" NPT, 1 1/4" BSPP 1 1/4" SAE, Code 62 330/660/1320 SAE-24, 1 1/2" NPT, 1 1/2" BSPP 2" SAE Flange Code 62	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side
<b>Construction Materials</b>	Head Ductile iron Bowl Steel Housing (1320) Steel Cap (660 & 1320 ver. 2) Ductile iron	
<b>Flow Capacity</b>	30 8 gpm (30 lpm) 60 16 gpm (60 lpm) 110 29 gpm (110 lpm) 160 42 gpm (160 lpm) 240 63 gpm (240 lpm) 280 74 gpm (280 lpm) 330 87 gpm (330 lpm) 660 174 gpm (660 lpm) 1320 190 gpm (720 lpm)	
<b>Housing Pressure Rating</b>	Max. Operating Pressure 6000 psi (420 bar) Proof Pressure 9000 psi (610 bar) Fatigue Pressure 6000 psi (420 bar) @ 1 million cycles Burst Pressure 30 15950 psi (1100 bar) 60/110 17400 psi (1200 bar) 160/240/280 17110 psi (1180 bar) 330/660/1320 15080 psi (1040 bar)	
<b>Element Collapse Pressure Rating</b>	BH/HC, V 3045 psid (210 bar) BN/HC, W/HC 290 psid (20 bar)	
<b>Fluid Temp. Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	
<b>Indicator Trip Pressure</b>	ΔP = 29 psid (2 bar) -10% (optional) ΔP = 72 psid (5 bar) -10% (standard) ΔP = 116 psid (8 bar) -10% (optional non bypass)	
<b>Bypass Valve Cracking Pressure</b>	ΔP = 43 psid (3 bar) +10% (optional) ΔP = 87 psid (6 bar) +10% (standard) Non Bypass Available	

## Model Code

**DF BN/HC 30 T B 3 A 1 . X / 12 - V B6**

**Filter Type** \_\_\_\_\_  
 DF = Inline filter

**Element Media** \_\_\_\_\_  
 BH/HC = Betamicon® (High Collapse)      BN/HC = Betamicon® (Low Collapse)  
 V = Metal Fiber                                      W/HC = Wire Screen

**Size** \_\_\_\_\_  
 30, 60, 110, 160, 240, 280, 330, 660, 1320

**Pressure Range** \_\_\_\_\_  
 T = 420 bar

**Size and Nominal Connection** \_\_\_\_\_  
 B = 1/2 Threaded (size 30 only)                      I = SAE 3/4" Code 62 Flange (sizes 60-140 only)  
 C = 3/4 Threaded (sizes 60-140 only)              J = SAE 1 1/4" Code 62 Flange (sizes 160-280 only)  
 E = 1 1/4 Threaded (sizes 160-280 only)        L = SAE 2" Code 62 Flange (sizes 330-1320 only)  
 F = 1 1/2 Threaded (sizes 330-1320 only)

**Filtration Rating (microns)** \_\_\_\_\_  
 3, 5, 10, 20 = BH/HC, BN/HC      3, 5, 10, 20 = V                      25, 74, 149 = W/HC

**Type of ΔP Clogging Indicator** \_\_\_\_\_  
 A, B/BM, C, D

**Type Number** \_\_\_\_\_  
 1 = One piece bowl (sizes 30-660 only)      2 = Two piece bowl (sizes 660-1320 only)

**Modification Number (latest version always supplied)** \_\_\_\_\_

**Port Configuration** \_\_\_\_\_  
 (omit) = BSPP  
 3 = NPT ports – NPT ported filters will be SAE with adaptors in each port  
 12 = SAE straight thread o-ring boss ports  
 16 = SAE flange ports (sizes 60-1320 only)

**Seals** \_\_\_\_\_  
 (omit) = Nitrile (NBR) standard  
 V = Fluoroelastomer (FPM)  
 EPR = Ethylene Propylene (EPDM) Seals (subject to minimum quantities)

**Bypass Valve** \_\_\_\_\_  
 (omit) = Non-bypass      B3 = Bypass (3 bar)      B6 = Bypass (6 bar)

**Supplementary Details** \_\_\_\_\_  
 SO103H = Modification of BN4HC (Low Collapse) Element For Phosphate Esters  
 SO155H = Modification of BH4HC (High Collapse) Element For Phosphate Esters  
 SO184 = G-1/2 Drain in Bowl Option For Sizes 60 - 280 (comes standard for sizes 330, 660, & 1320)  
 W = Indicator with brass piston (for use with water based fluids)  
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)  
 T100 = Indicator Thermal Lockout, 100°F (C and D indicators only)

## Replacement Element Model Code

**0030 D 010 BN4HC / V**

**Size** \_\_\_\_\_  
 0030, 0060, 0110, 0160,  
 0240, 0280, 0330, 0660, 1320

**Filtration Rating (micron)** \_\_\_\_\_  
 3, 5, 10, 20 = BH4HC, BN4HC  
 3, 5, 10, 20 = V  
 25, 74, 149 = W/HC

**Element Media** \_\_\_\_\_  
 BH4HC, BN4HC, V, W/HC

**Supplementary Details** \_\_\_\_\_  
 (omit) = standard  
 V = Fluoroelastomer (FPM) seals

## Clogging Indicator Model Code

**VD 5 B . X /**

**Indicator Prefix** \_\_\_\_\_  
 VD = G 1/2 6000 psi

**Trip Pressure** \_\_\_\_\_  
 2 = 29 psid (2 bar) (option)  
 5 = 72 psid (5 bar) (standard)  
 Optional 15 psid (1 bar) & 116 psid (8 bar) available upon request

**Type of Indicator** \_\_\_\_\_  
 A = no indicator, plugged port  
 B/BM = Visual pop-up (auto/manual reset)  
 C = Electric switch  
 D = Electric switch and light

**Modification Number** \_\_\_\_\_

**Supplementary Details** \_\_\_\_\_

**Seals** \_\_\_\_\_  
 (omit) = Nitrile (NBR) (standard)  
 V = Fluoroelastomer (FPM)

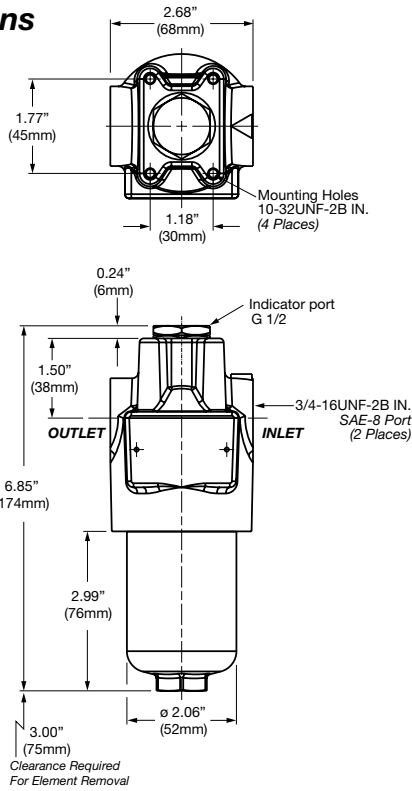
**Light Voltage (D type indicators only)** \_\_\_\_\_  
 L24 = 24V      L110 = 110V

**Thermal Lockout (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
 T100 = Lockout below 100°F

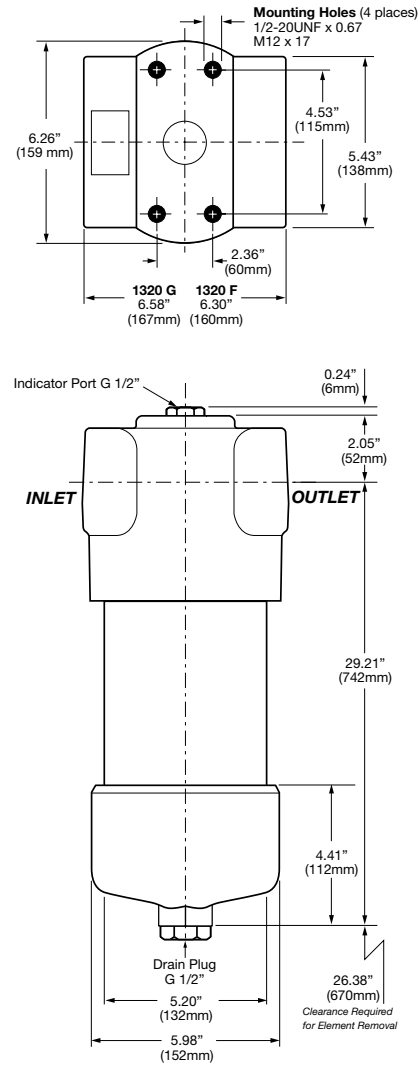
**Underwriters Approval (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
 CRUUS = Electrical Indicators  
 (For additional details and options, see Clogging Indicators section.)

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

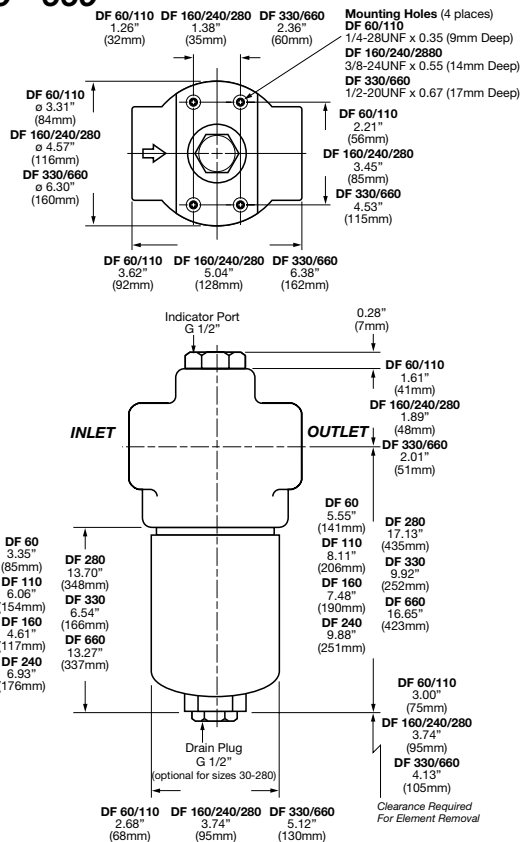
## Dimensions DF 30



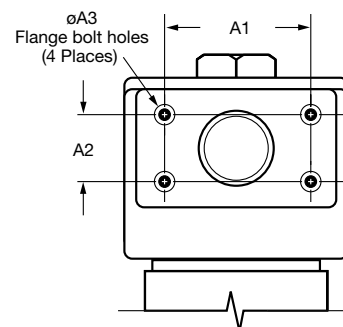
## DF 1320



## DF 60 - 660



## SAE - Code 62



Size	A1	A2	A3
60/110/140	50.8±0.3	23.8±0.3	3/8"-16UNC-2B x 24 DP
160/240/280	66.7±0.3	31.8±0.3	1/2"-UNC-2B x 25 DP
330/660/990/1320	96.8±0.3	44.5±0.3	3/4"-10UNC-2B x 38 DP

Size	30	60	110	160	240	280	330	660	1320
Weight (lbs.)	4.0	8.6	10.5	20.0	23.4	32.0	47.2	62.4	105.8

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

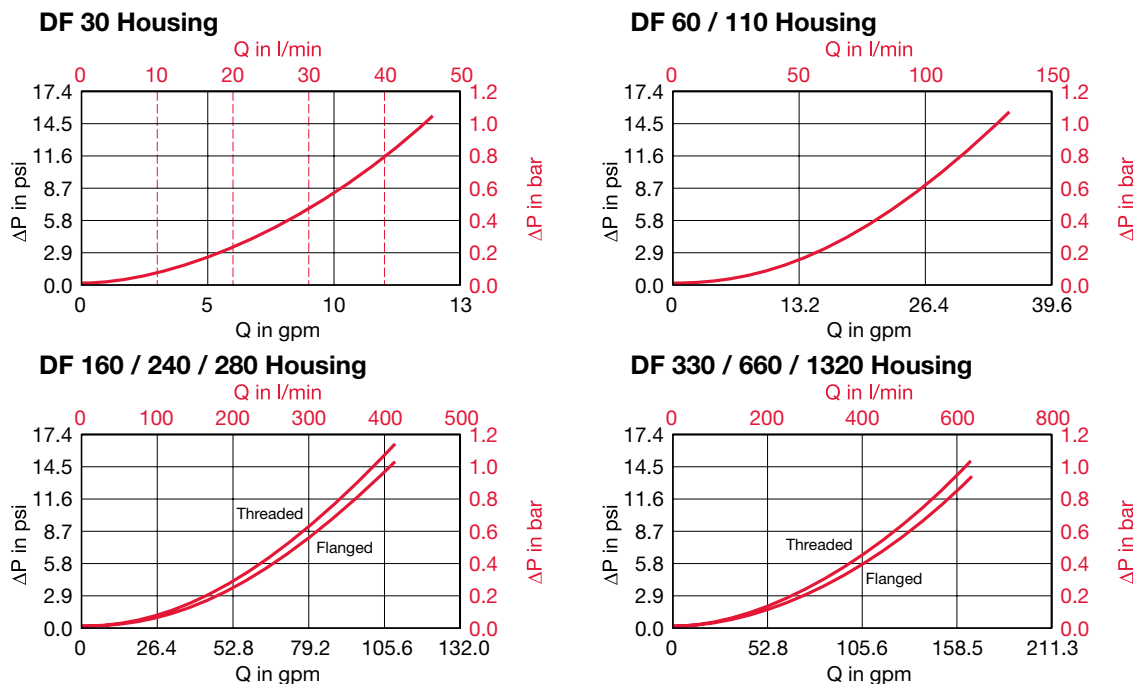
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	3.504	2.374	1.251	0.618
0060	1.582	1.116	0.723	0.433
0110	0.819	0.585	0.361	0.205
0160	0.718	0.480	0.252	0.193
0240	0.450	0.333	0.196	0.128
0280	0.220	0.171	0.092	0.071
0330	0.294	0.215	0.163	0.095
0660	0.136	0.099	0.061	0.044
1320	0.068	0.048	0.030	0.021

Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	5.000	2.780	1.989	1.042
0060	3.210	1.785	0.993	0.669
0110	1.394	0.819	0.488	0.307
0160	0.919	0.569	0.322	0.240
0240	0.578	0.374	0.214	0.158
0280	0.313	0.184	0.097	0.090
0330	0.422	0.244	0.154	0.108
0660	0.179	0.106	0.055	0.049
1320	0.089	0.054	0.031	0.024

Size	...D...V Elements			
	3 μm	5 μm	10 μm	20 μm
0030	1.011	0.740	0.411	0.200
0060	0.877	0.511	0.296	0.183
0110	0.452	0.304	0.182	0.118
0160	0.251	0.177	0.123	0.079
0240	0.169	0.137	0.093	0.062
0280	0.126	0.093	0.064	0.041
0330	0.121	0.097	0.065	0.043
0660	0.063	0.050	0.034	0.021
1320	0.032	0.026	0.018	0.012

Size	...D...W/HC Elements			
	25, 50, 74, 100, 149, 200 μm			
0030	0.166			
0060	0.042			
0110	0.023			
0160	0.016			
0240	0.010			
0280	0.009			
0330	0.008			
0660	0.004			
1320	0.002			

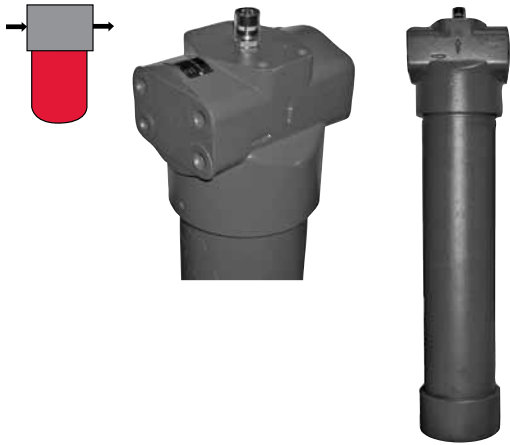
All Element K Factors in psi / gpm.



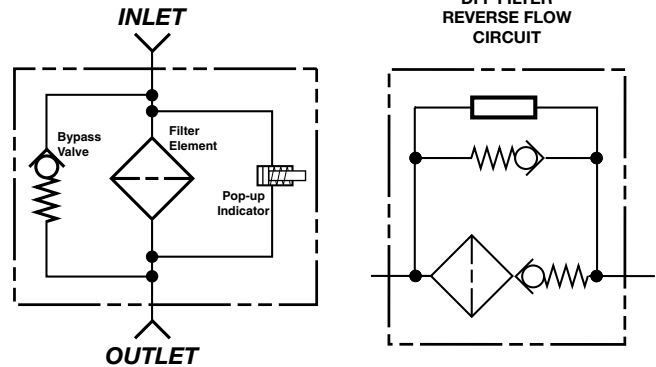
## DF/DFF 1500 Series

### Inline Filters

6090 psi • up to 250 gpm



### Hydraulic Symbol



### Features

- Available in T ported or L ported configurations
- Handles high flows to 250 GPM (*pricing competitive*)
- Available in bi-directional flow and single flow configurations
- Two part bowl for ease of operation and element change-out
- Filter head made of ductile iron
- Filter bowl made of steel
- Can mount head on top with bottom access or head on bottom with top access
- Available in 26" & 39" 9400/9901 element configurations - consult factory.

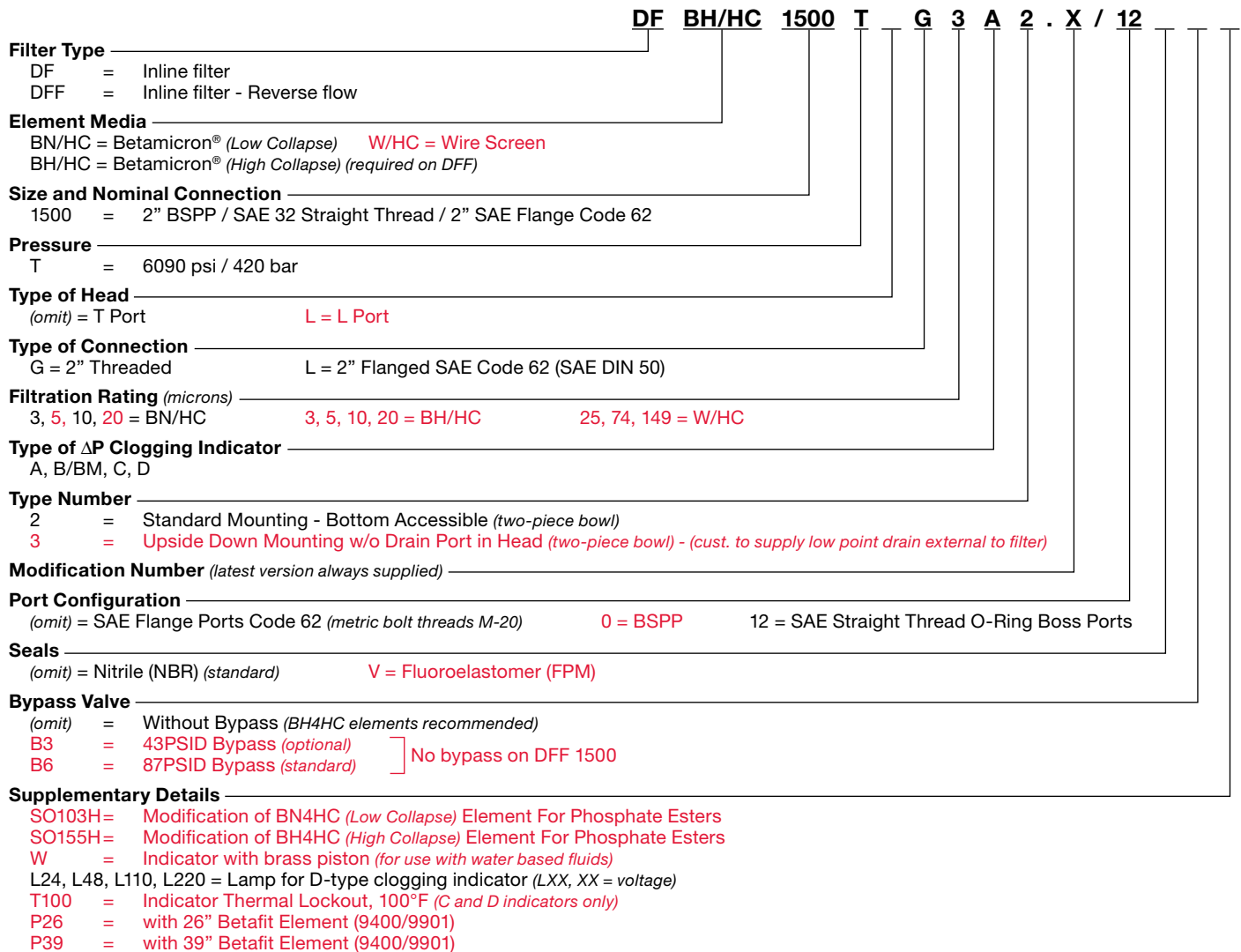
### Technical Details

<b>Mounting Method</b>	4 Mounting holes in the filter head - M-12 Threads
<b>Port Connection</b>	SAE-32 four bolt code 62 Flange (DIN 50) with metric bolt threads M-20 to 30mm deep / 2" SAE 32 straight thread O-Ring Boss / 2" BSPP thread
<b>Flow Direction</b>	Side inlet and outlet - Indicator on top Side inlet and top outlet - Indicator on side
<b>Construction Materials</b>	Head: Ductile Iron (GGG40) Bowl: Steel
<b>Flow Capacity</b>	250 gpm (950 lpm)
<b>Housing Pressure Rating</b>	Max. Operating Pressure 6090 psi (420 bar) Proof Pressure 9135 psi (630 bar) Fatigue Pressure 6090 psi (420 bar) @ 300,000 cycles Burst Pressure Contact HYDAC
<b>Element Collapse Pressure Rating</b>	BN/HC, W/HC 435 psid (30 bar) BH/HC 3045 psid (210 bar)
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.
<b>Indicator Trip Pressure</b>	$\Delta P = 29$ psid (2 bar) -10% $\Delta P = 72$ psid (5 bar) -10% $\Delta P = 116$ psid (8 bar) -10% ( <i>non-bypass</i> )
<b>Bypass Valve Cracking Pressure</b>	$\Delta P = 43$ psid (3 bar) +10% $\Delta P = 87$ psid (6 bar) +10% Non Bypass Available

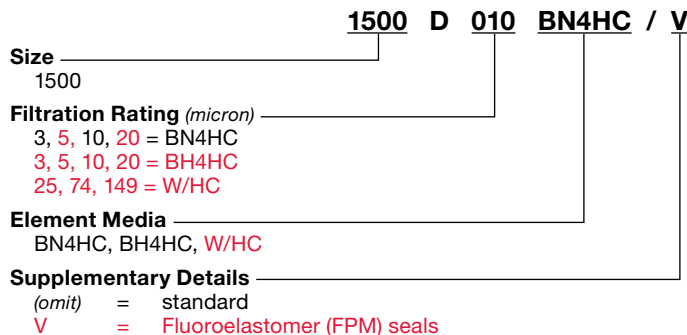
### Applications



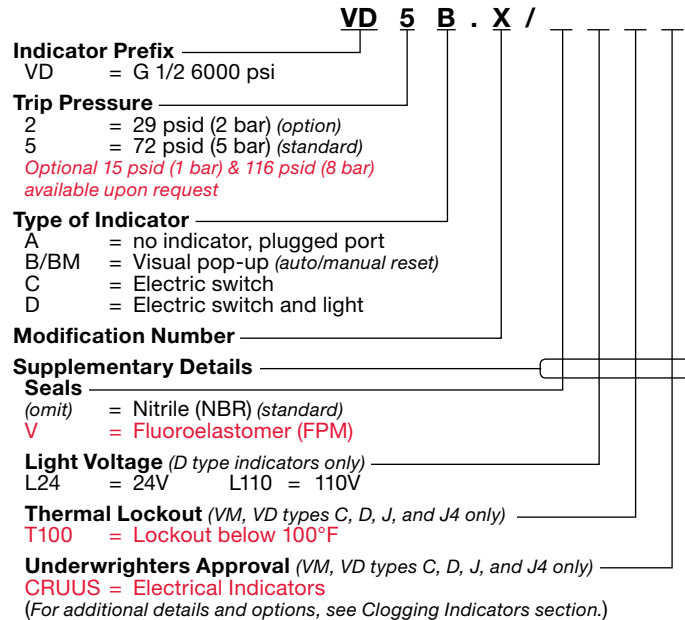
## Model Code



## Replacement Element Model Code

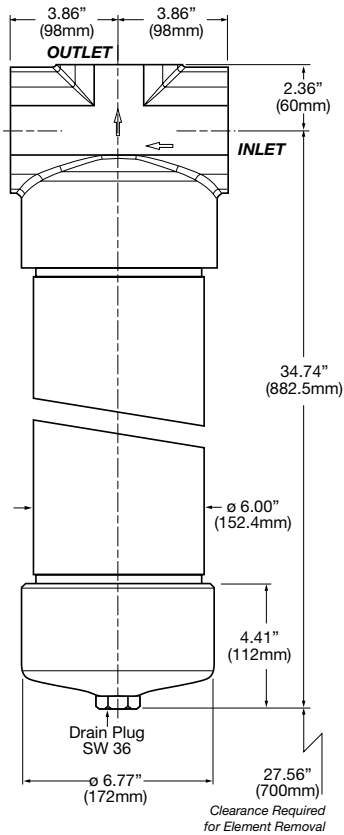


## Clogging Indicator Model Code

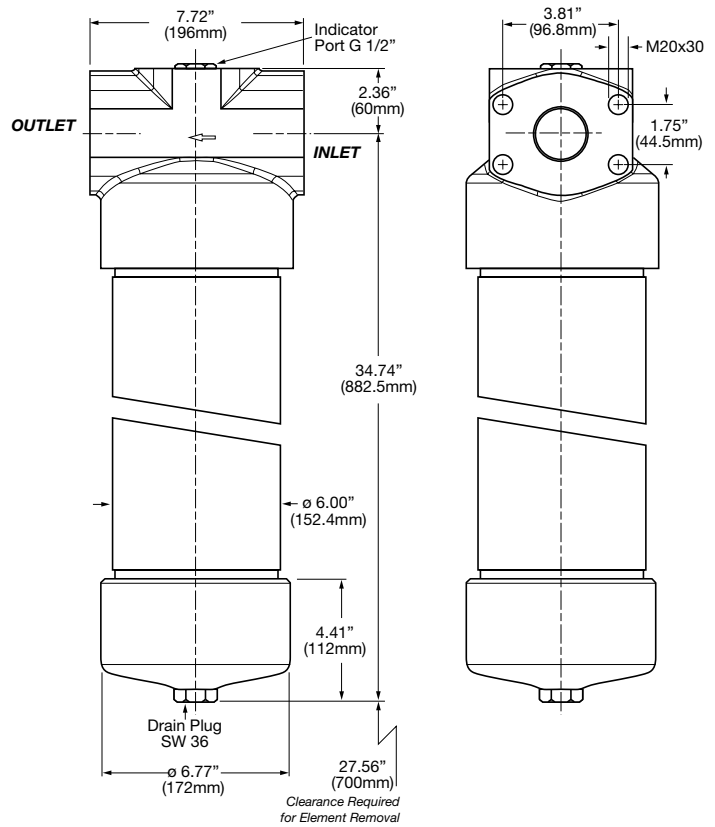


Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

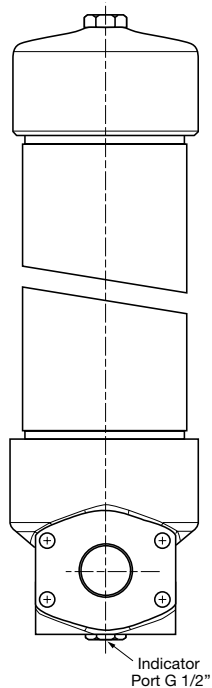
## Dimensions 2.0 Version "L" Configuration



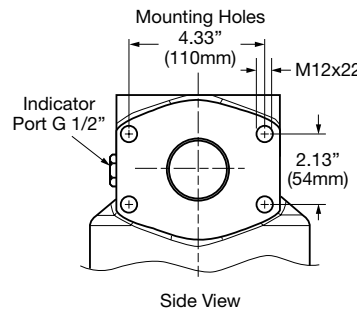
## "T" Configuration



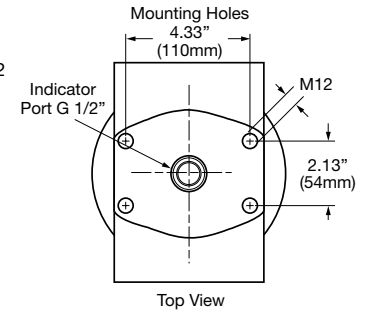
## 3.0 Version Element Access on Top Can be "L" or "T" Configuration



## Mounting Bolt Pattern "L" Configuration



## "T" Configuration



Note: No Drain Port provided – Customer to place Drain Port filter-side of isolation valving in piping.

Size

1500

Weight (lbs.)

170

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

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

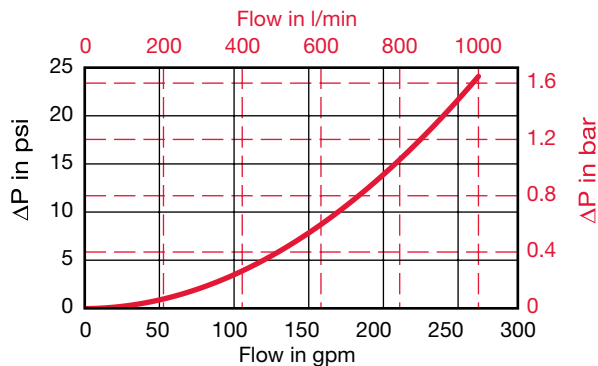
### Housing Curve:

Pressure loss through housing is as follows:

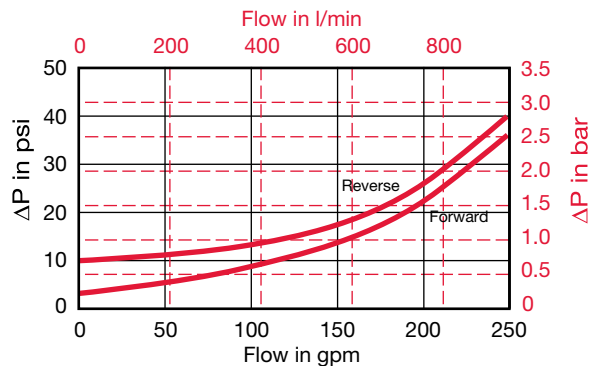
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see sizing section on page 19)

### DF 1500



### DFF 1500



## Element K Factors

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

(From Tables Below)

Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
1500	0.060	0.044	0.033	0.022

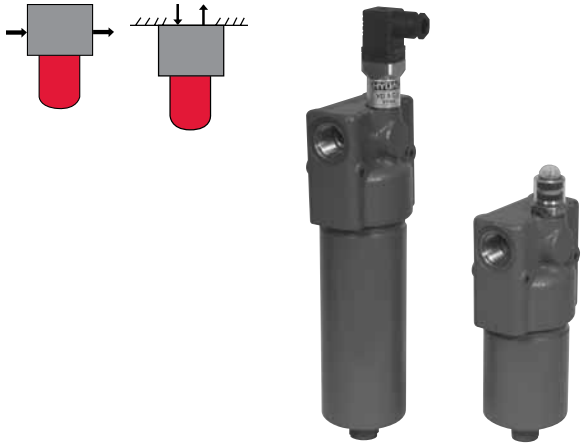
Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
1500	0.077	0.044	0.033	0.027

All Element K Factors in psi / gpm.

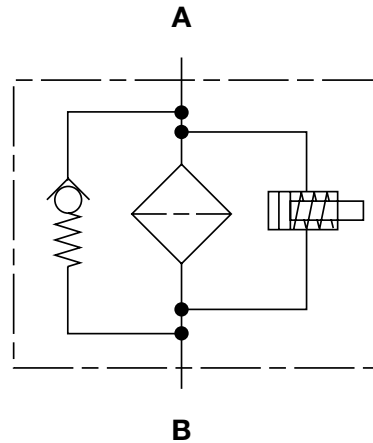
## HF2P Series

### Inline Filters

4000 psi • up to 25 gpm



### Hydraulic Symbol



### Features

- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/Outlet port options include SAE straight thread O-ring boss, BSPP and subplate mounting to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, EPDM) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Screw-in bowl mounted below the filter head requires minimal clearance to remove the element for replacement, and contaminated fluid cannot be washed downstream when element is serviced.
- Clogging indicators are actuated by differential pressure and have no external dynamic seal. High reliability is achieved and magnetic indicator actuation eliminates a potential leak point.
- A poppet type bypass valve is typically mounted out of the flow path between the inlet and outlet port to provide positive sealing during normal operation and fast response during cold starts and flow surges.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Applications



Agricultural



Automotive



Construction



Industrial

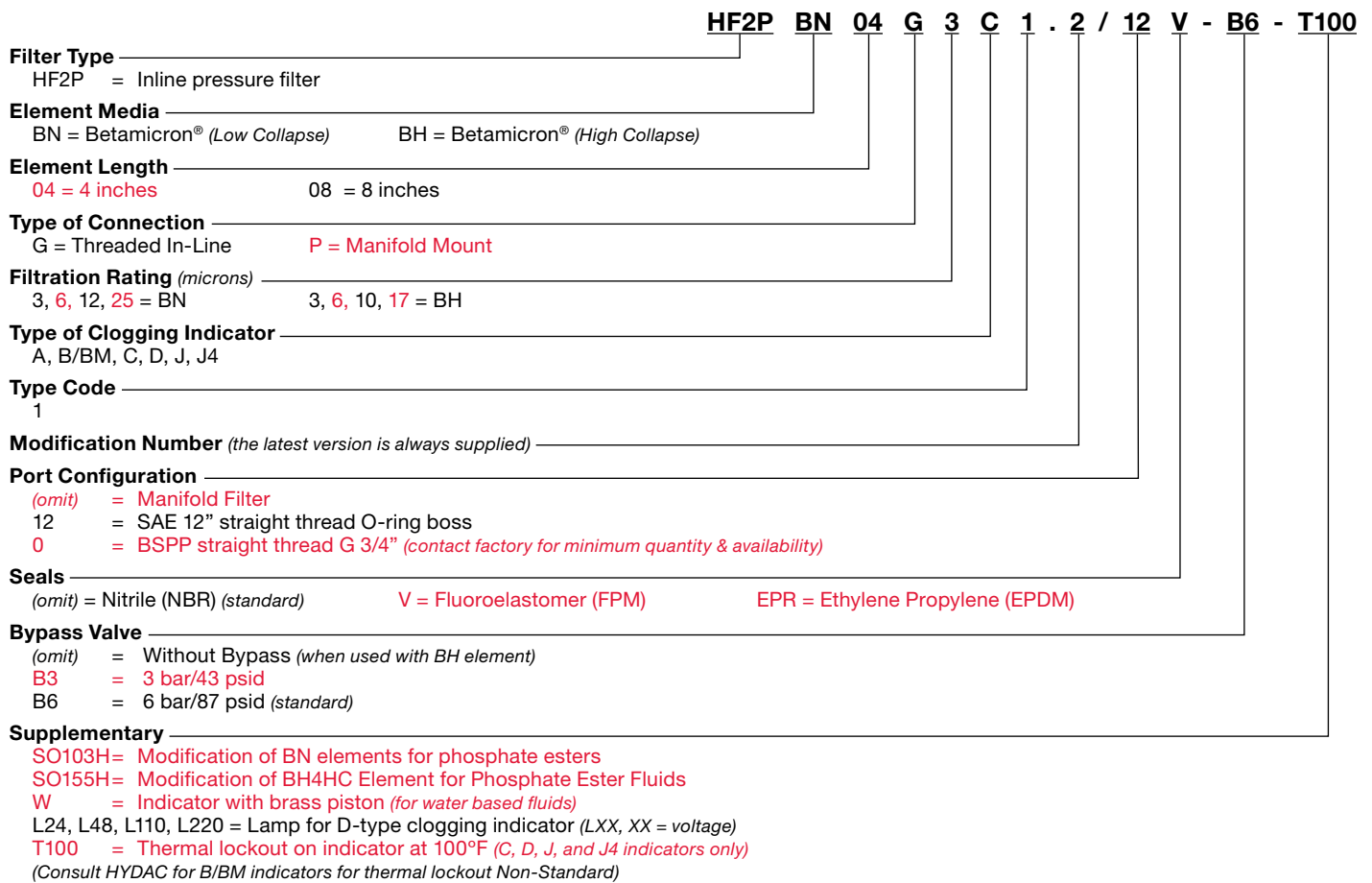


Railways

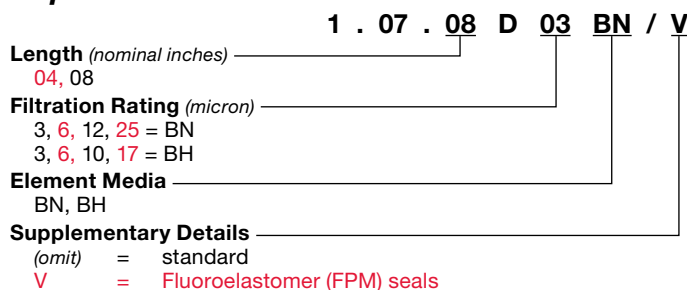
### Technical Details

<b>Mounting Method</b>	2 mounting holes	
<b>Port Connection</b>	SAE-12, 3/4" BSPP, Manifold Mount	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
<b>Flow Capacity</b>		
4"	16 gpm (60 lpm)	
8"	25 gpm (94 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	4000 psi (275 bar)	
Proof Pressure	6000 psi (420 bar)	
Fatigue Pressure	4000 psi (275 bar) @ 1 million cycles	
Burst Pressure	14,680 psi (1012 bar)	
<b>Element Collapse Pressure Rating</b>		
BH/HC	3045 psid (210 bar)	
BN	290 psid (20 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>		
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.		
<b>Indicator Trip Pressure</b>		
$\Delta P = 29$ psid (2 bar) -10% (optional)		
$\Delta P = 72$ psid (5 bar) -10% (standard)		
$\Delta P = 116$ psid (8 bar) -10% (optional on bypass)		
<b>Bypass Valve Cracking Pressure</b>		
$\Delta P = 43$ psid (3 bar) +10% (optional)		
$\Delta P = 87$ psid (6 bar) +10% (standard)		
Non Bypass Available		

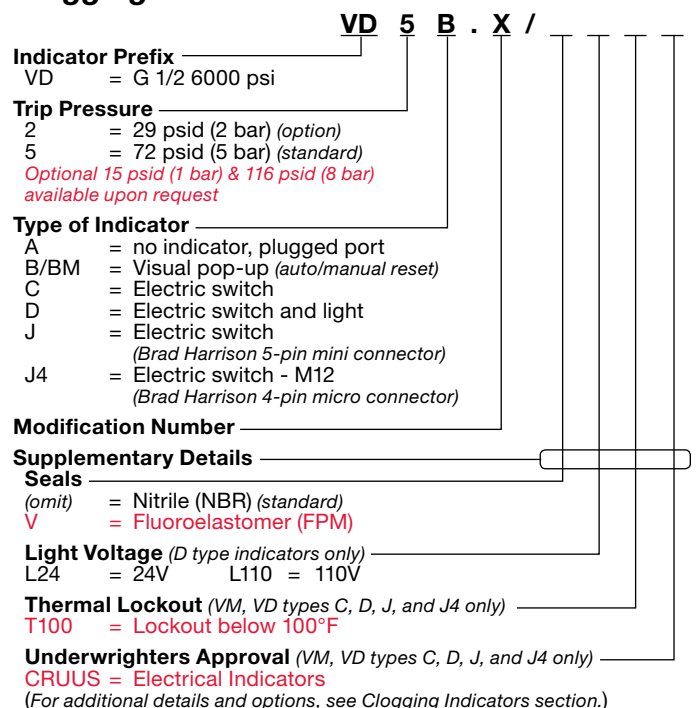
## Model Code



## Replacement Element Model Code



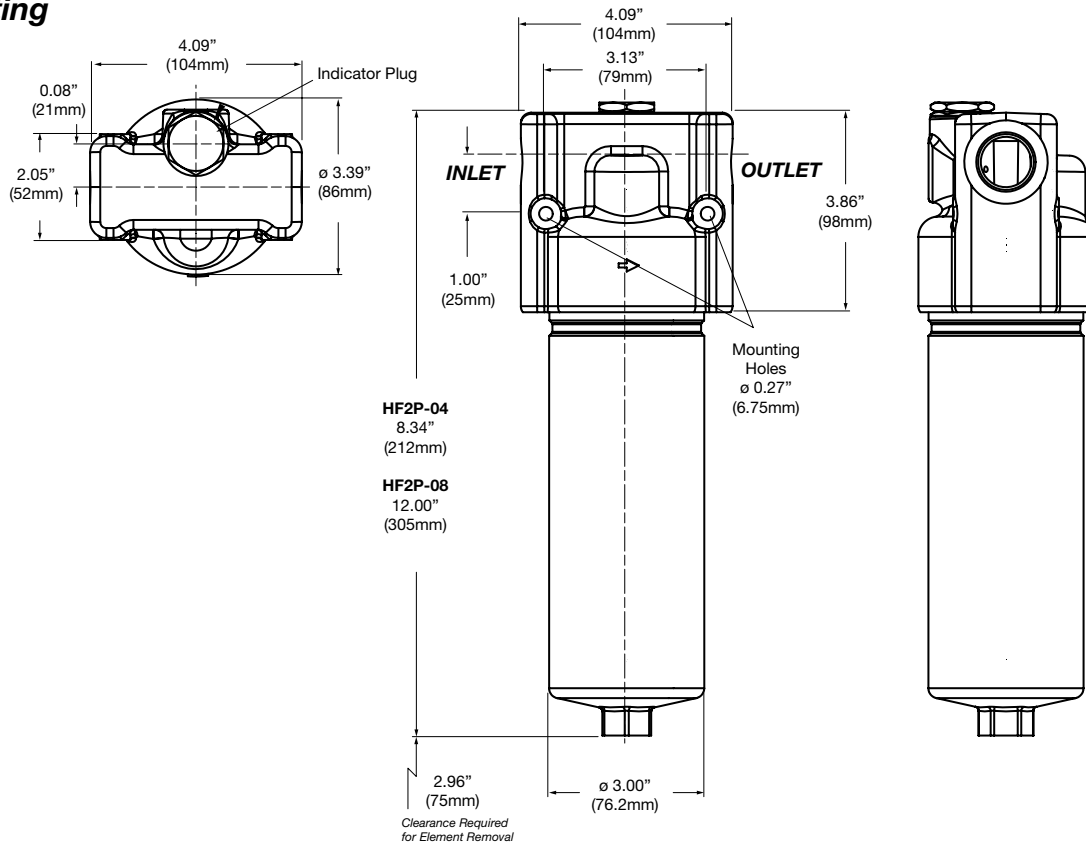
## Clogging Indicator Model Code



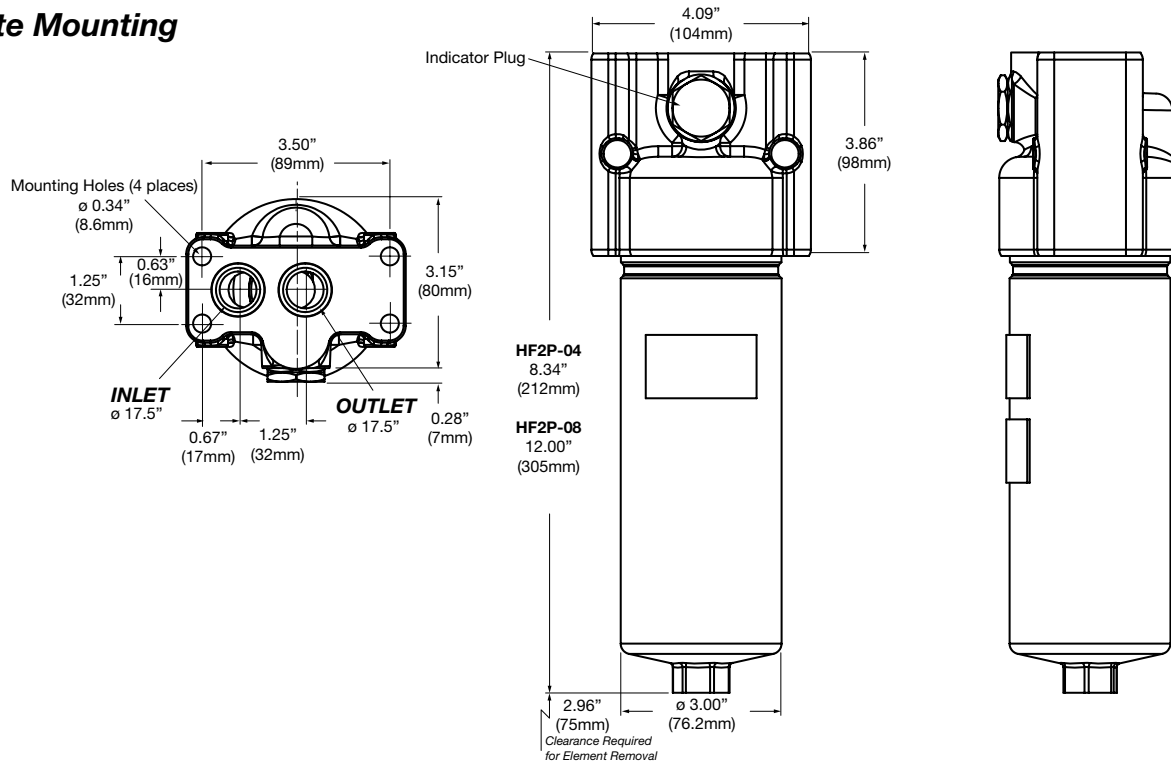
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability



## Dimensions Inline Mounting



## Subplate Mounting



Size	04	08
Weight (lbs.)	10.1	13.4

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

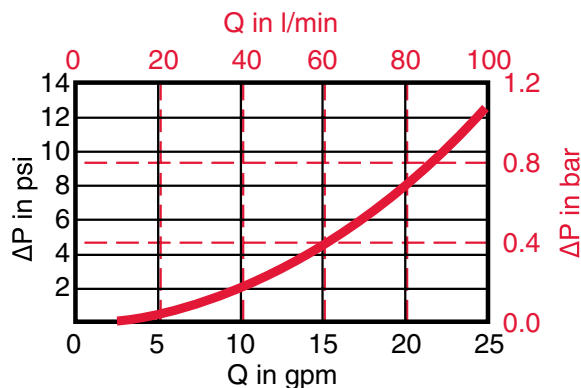
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

Size	1.07.XXD...BN			
	3 μm	6 μm	12 μm	25 μm
04	2.0461	1.7350	0.9248	0.5313
08	0.9751	0.8152	0.4574	0.2571

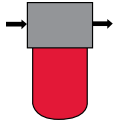
Size	1.07.XXD...BH			
	3 μm	6 μm	10 μm	17 μm
04	2.3965	1.6883	1.0266	0.5384
08	1.1652	0.8208	0.4991	0.2618

All Element K Factors in psi / gpm.

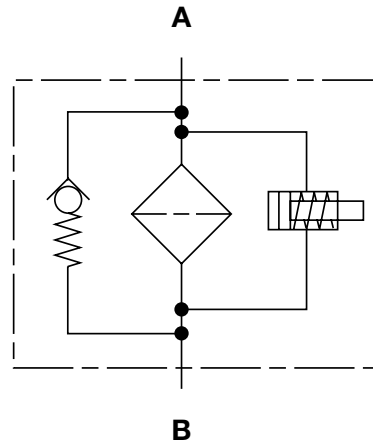
## HF3P Series

### Inline Filters

6000 psi • up to 120 gpm



### Hydraulic Symbol



### Features

- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/Outlet port options include SAE straight thread O-ring boss, BSPP and subplate mounting to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, EPDM) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Screw-in bowl mounted below the filter head requires minimal clearance to remove the element for replacement, and contaminated fluid cannot be washed downstream when element is serviced.
- Clogging indicators are actuated by differential pressure and have no external dynamic seal. High reliability is achieved and magnetic indicator actuation eliminates a potential leak point.
- A poppet type bypass valve is typically mounted out of the flow path between the inlet and outlet port to provide positive sealing during normal operation and fast response during cold starts and flow surges.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Applications



Automotive



Construction



Industrial



Railways

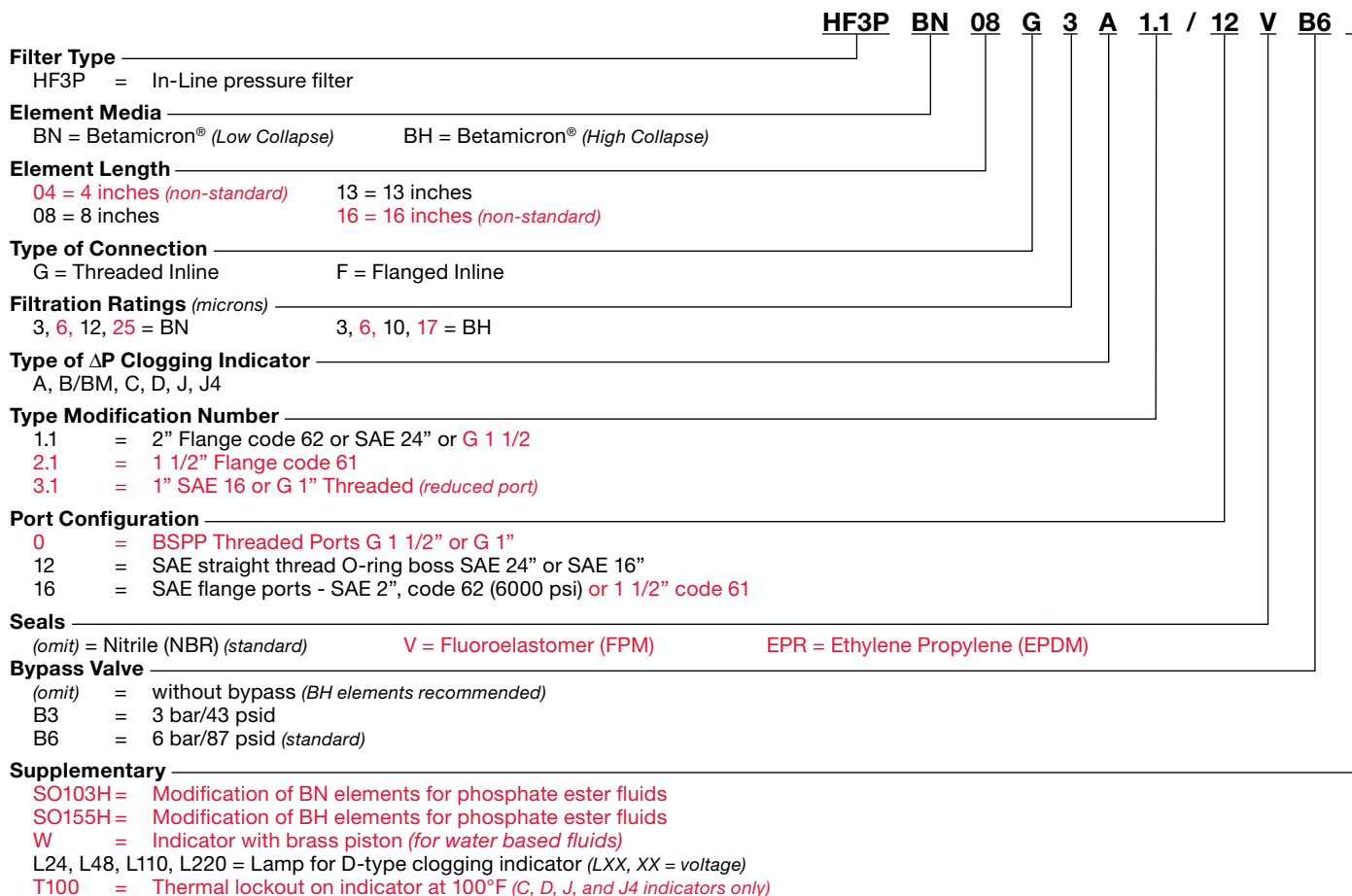


Steel / Heavy Industry

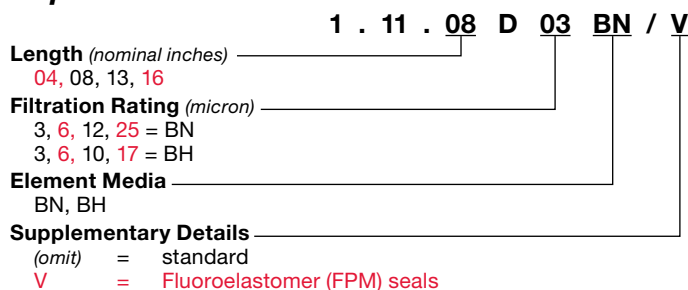
### Technical Details

<b>Mounting Method</b>	4 mounting holes	
<b>Port Connection</b>	SAE-16, SAE-24, 1" BSPP, 1 1/2" BSPP, 1 1/2" SAE Flange Code 61, 2" SAE Flange Code 62	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
Housing (size 16)	Steel	
Cap (size 16)	Ductile iron	
<b>Flow Capacity</b>		
4"	28 gpm (106 lpm)	
8"	55 gpm (208 lpm)	
13"	91 gpm (344 lpm)	
16"	120 gpm (454 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	6000 psi (420 bar)	
Proof Pressure	9000 psi (610 bar)	
Fatigue Pressure	6000 psi (420 bar) @ 1 million cycles	
Burst Pressure	15,080 psi (1040 bar)	
<b>Element Collapse Pressure Rating</b>		
BH	3045 psid (210 bar)	
BN	290 psid (20 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>		
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.		
<b>Indicator Trip Pressure</b>		
$\Delta P = 29$ psid (2 bar) -10% (optional)		
$\Delta P = 72$ psid (5 bar) -10% (standard)		
$\Delta P = 116$ psid (8 bar) -10% (optional on bypass)		
<b>Bypass Valve Cracking Pressure</b>		
$\Delta P = 43$ psid (3 bar) +10% (optional)		
$\Delta P = 87$ psid (6 bar) +10% (standard)		
Non Bypass Available		

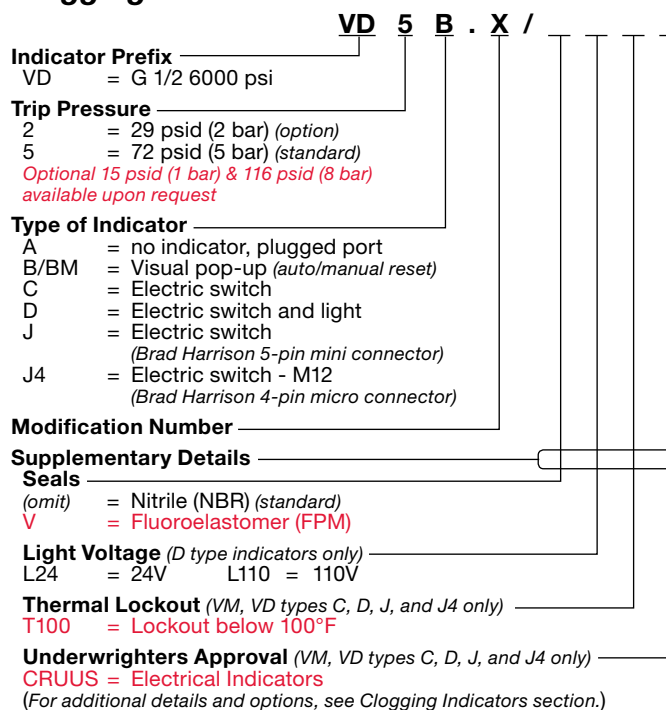
## Model Code



## Replacement Element Model Code

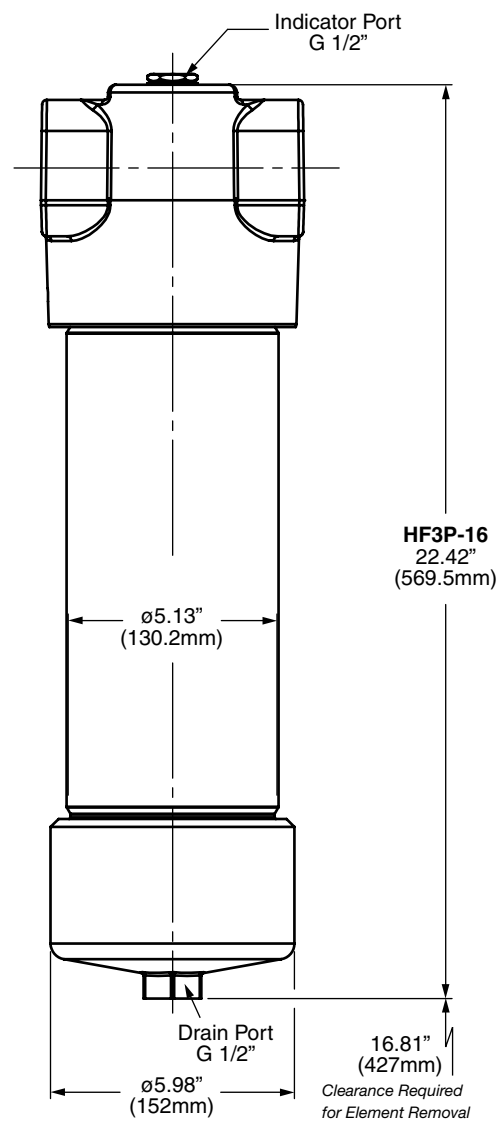
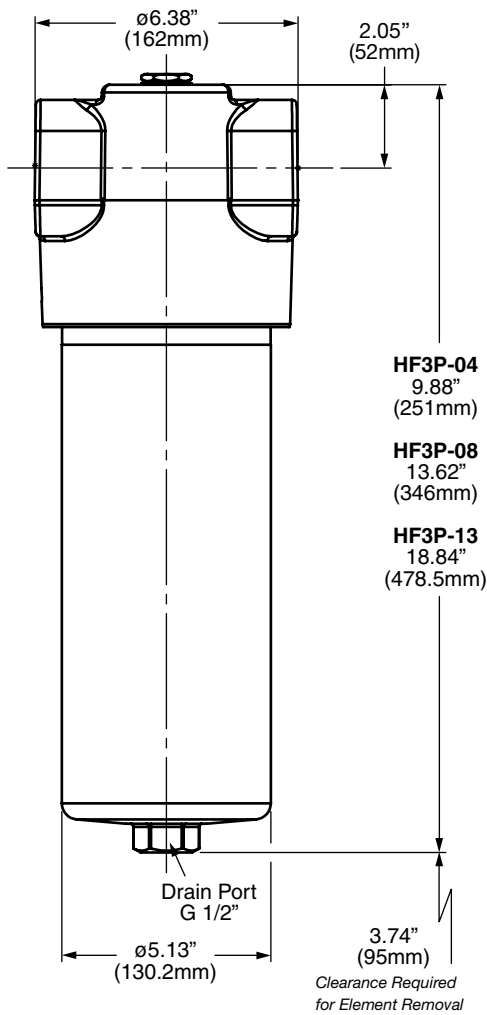
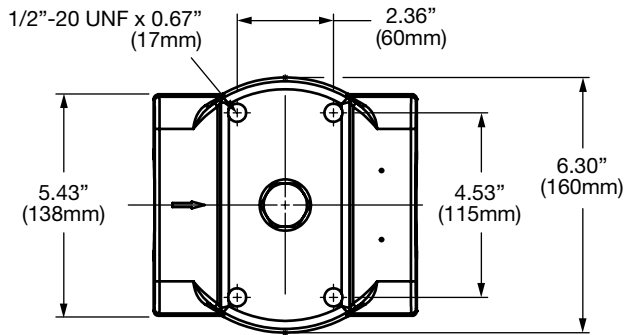


## Clogging Indicator Model Code



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

## Dimensions



Size	04	08	13	16
Weight (lbs.)	44.8	49.5	62.9	95.7

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

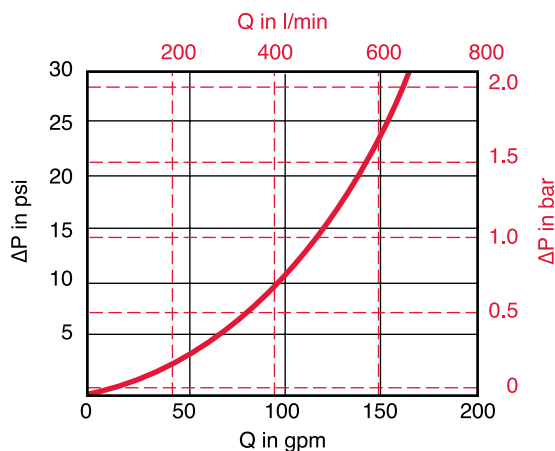
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

Size	1.11.XXD...BN			
	3 μm	6 μm	12 μm	25 μm
04	0.5895	0.4999	0.2664	0.1531
08	0.2886	0.2413	0.1354	0.0761
13	0.1751	0.1464	0.0821	0.0462
16	0.1322	0.1105	0.0620	0.0348

Size	1.11.XXD...BH			
	3 μm	6 μm	10 μm	17 μm
04	0.9366	0.6598	0.4012	0.2104
08	0.4553	0.3208	0.1951	0.1023
13	0.2738	0.1929	0.1173	0.0615
16	0.2060	0.1452	0.0883	0.0463

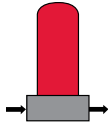
All Element K Factors in psi / gpm.



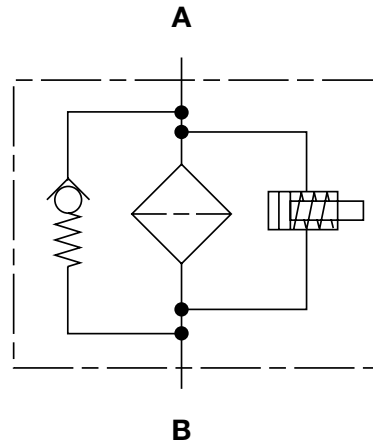
## HF4P Series

### Inline Filters

5000 psi • up to 120 gpm



### Hydraulic Symbol



### Features

- Meets HF4 automotive standard
- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/Outlet port options include SAE straight thread O-ring boss, BSPP and subplate mounting to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, EPDM) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Screw-in bowl mounted below the filter head requires minimal clearance to remove the element for replacement, and contaminated fluid cannot be washed downstream when element is serviced.
- Clogging indicators are actuated by differential pressure and have no external dynamic seal. High reliability is achieved and magnetic indicator actuation eliminates a potential leak point.
- A poppet type bypass valve is typically mounted out of the flow path between the inlet and outlet port to provide positive sealing during normal operation and fast response during cold starts and flow surges.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Applications



Automotive



Construction



Industrial



Power Generation



Pulp & Paper



Railways

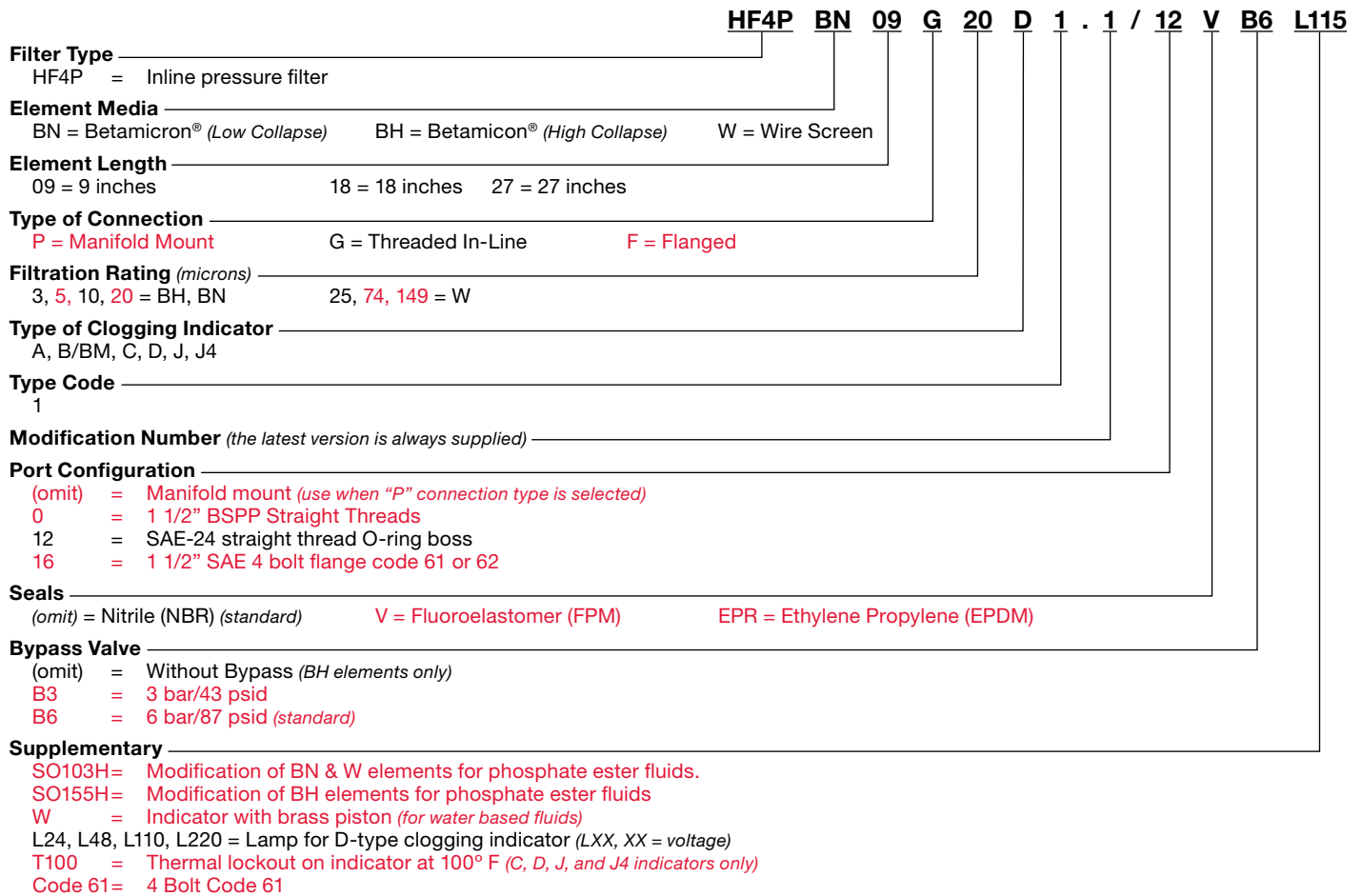


Steel / Heavy Industry

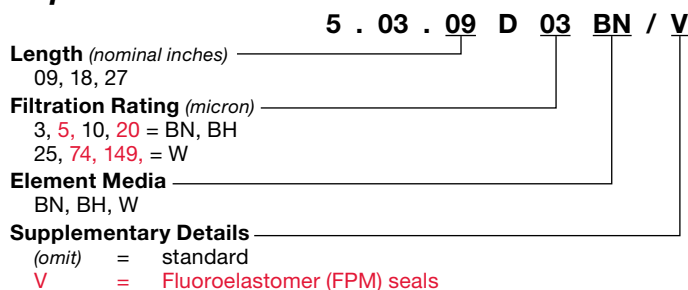
### Technical Details

<b>Mounting Method</b>	4 mounting holes
<b>Port Connection</b>	SAE-24, 1 1/2" BSPP, 1 1/2" SAE Flange Code 61, 1 1/2" SAE Flange Code 62, Manifold Mount
<b>Flow Direction</b>	Inlet: Side      Outlet: Side <i>(opposite each other)</i>
<b>Construction Materials</b>	Head, Cap      Ductile iron Housing      Steel
<b>Flow Capacity</b>	9"      50 gpm (189 lpm) 18"      100 gpm (378 lpm) 27"      120 gpm (454 lpm)
<b>Housing Pressure Rating</b>	Max. Operating Pressure      5000 psi (345 bar) Proof Pressure      7500 psi (517 bar) Fatigue Pressure      5000 psi (345 bar) @ 1 million cycles Burst Pressure      15,000 psi (1040 bar)
<b>Element Collapse Pressure Rating</b>	BH      3045 psid (210 bar) BN      150 psid (10 bar)
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.
<b>Indicator Trip Pressure</b>	$\Delta P = 29$ psid (2 bar) -10% <i>(optional)</i> $\Delta P = 72$ psid (5 bar) -10% <i>(standard)</i> $\Delta P = 116$ psid (8 bar) -10% <i>(optional on bypass)</i>
<b>Bypass Valve Cracking Pressure</b>	$\Delta P = 43$ psid (3 bar) +10% <i>(optional)</i> $\Delta P = 87$ psid (6 bar) +10% <i>(standard)</i> Non Bypass Available

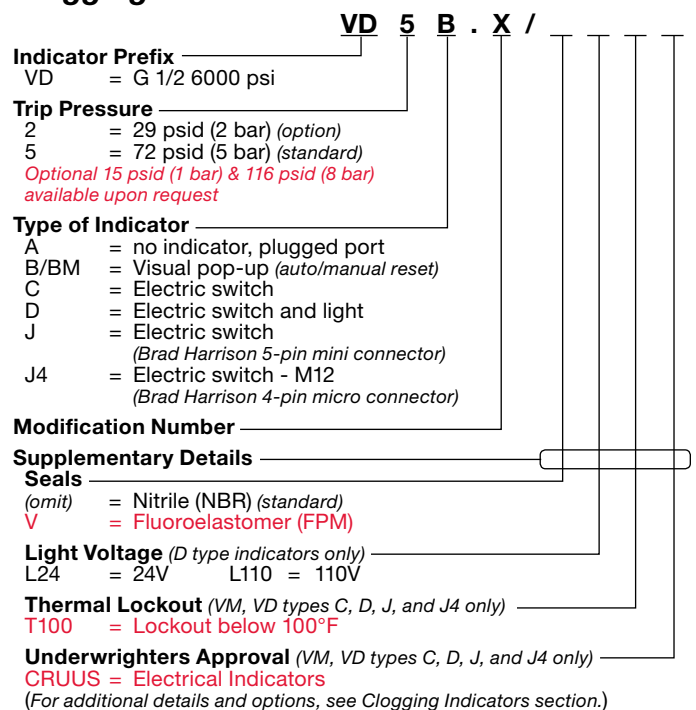
## Model Code



## Replacement Element Model Code

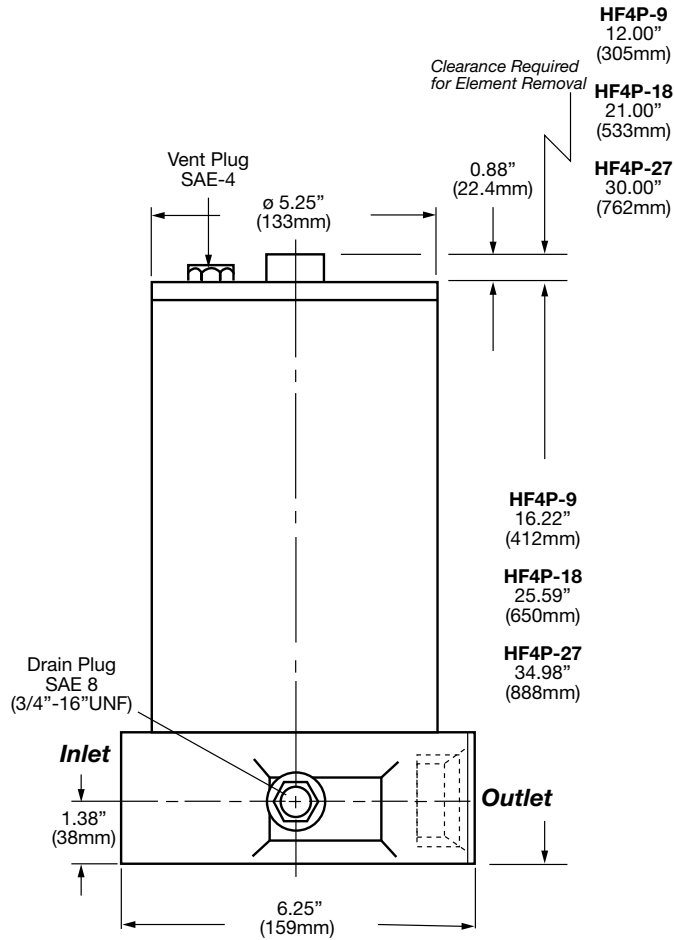


## Clogging Indicator Model Code

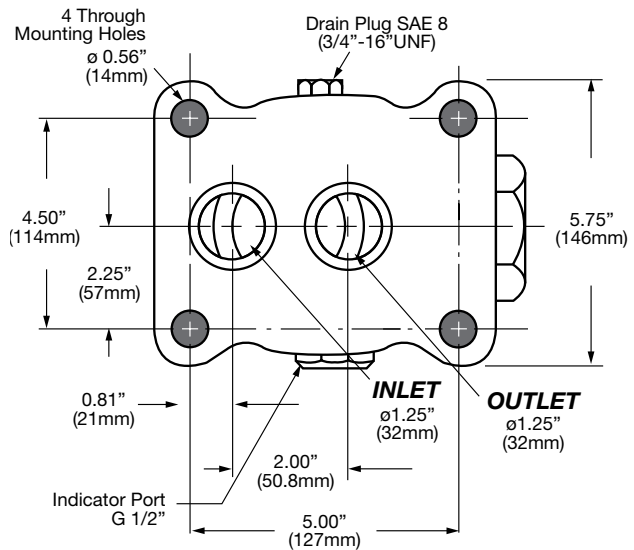
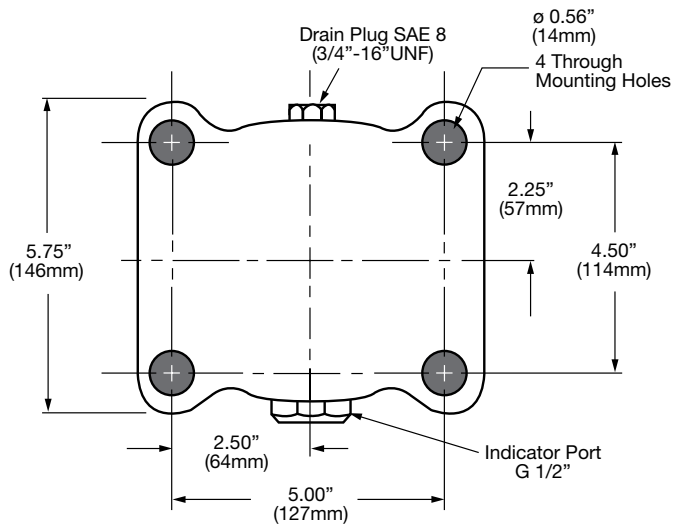
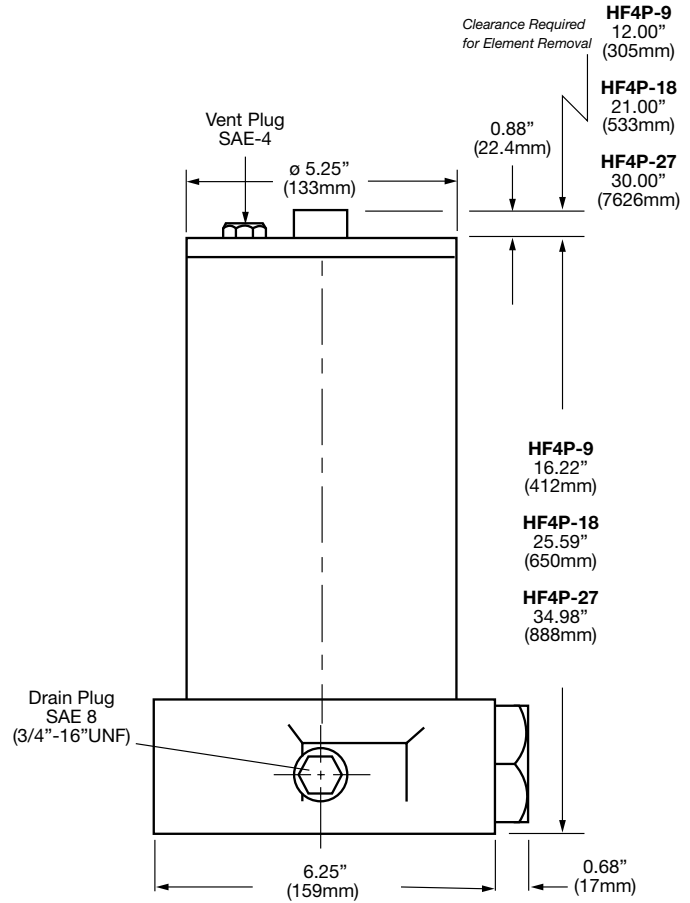


Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

## Dimensions HF4P Inline



## HF4P Manifold



Size	Inline	09	18	27	Manifold	09	18	27
Weight (lbs.)		59.4	79.3	105.6		61.2	81.1	107.4

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

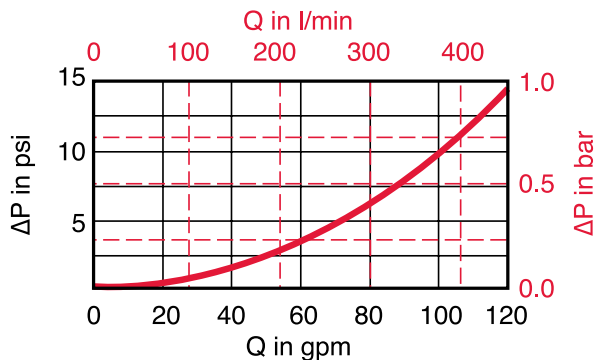
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

Size	5.03.XXD...BN			
	3 μm	5 μm	10 μm	20 μm
09	0.1680	0.1405	0.0788	0.0443
18	0.0800	0.0669	0.0375	0.0211
27	0.0517	0.0432	0.0242	0.0136

Size	5.03.XXD...BH			
	3 μm	5 μm	10 μm	20 μm
09	0.2068	0.1457	0.0886	0.0465
18	0.0967	0.0681	0.0414	0.0217
27	0.0630	0.0444	0.0270	0.0142

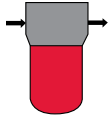
Size	5.03.XXD...W		
	25 μm	74 μm	149 μm
09	0.0073	0.0073	0.0073
18	0.0035	0.0035	0.0035
27	0.0023	0.0023	0.0023

All Element K Factors in psi / gpm.

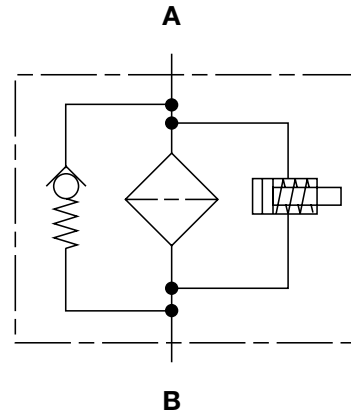
## MFM Series

### Inline Filters

4000 PSI • up to 30 GPM



### Hydraulic Symbol



### Features

- Because of their efficient design and construction, MFM filters are considered a cost effective solution for new equipment, or as a replacement for filters already specified on existing equipment.
- The MFM filter is available in 4 sizes comprised of four different bowl and element lengths. The models 35, 55, 75, and 95, provide maximum flow rates of 10, 18, 25, and 30 GPM respectively.
- A quick-response by-pass valve protects against high differential pressures caused by cold start-ups, flow surges and pressure spikes.
- The high bypass pressure setting (100 psid) minimizes the possibility of contamination due to premature bypassing.
- Filters may be specified with or without a clogging indicator. Both Visual and electrical indicators are available. Standard indicators actuate at 72 psid.
- Filter materials are compatible with all mineral, lubricating oils, and commonly used fire retardant fluids per ISO 2943.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Applications



Agricultural



Automotive



Construction



Gearboxes



Industrial

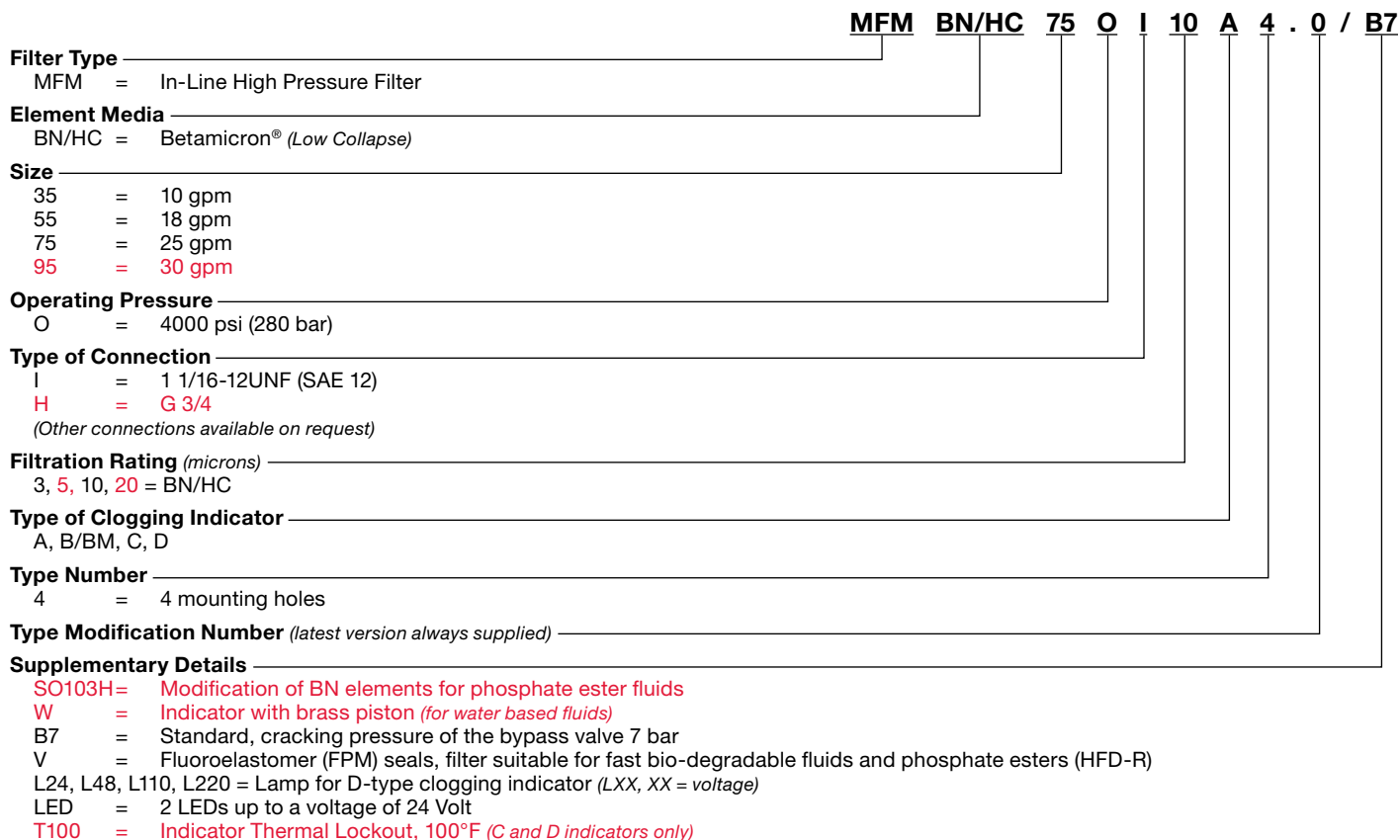


Commercial Municipal

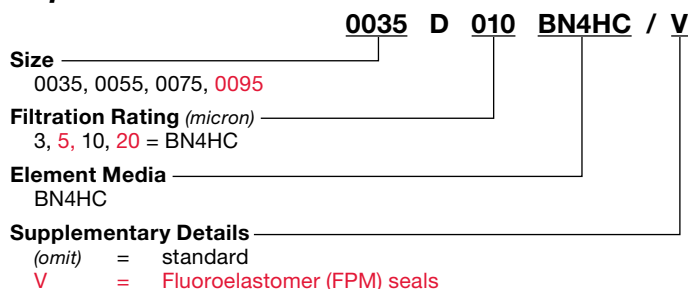
### Technical Details

<b>Mounting Method</b>	4 mounting holes - filter head	
<b>Port Connection</b>	SAE-12, 3/4" BSPP	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side <i>(opposite each other)</i>
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
<b>Flow Capacity</b>		
35	10 gpm (35 lpm)	
55	18 gpm (68 lpm)	
75	25 gpm (95 lpm)	
95	30 gpm (113 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	4000 psi (280 bar)	
Proof Pressure	6000 psi (400 bar)	
Fatigue Pressure	4000 psi (280 bar) @ 1 million cycles	
	4600 psi (320 bar) @ 100,000 cycles	
Burst Pressure	13,920 psi (960 bar)	
<b>Element Collapse Pressure Rating</b>		
BN/HC	290 psid (20 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>		
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.		
<b>Indicator Trip Pressure</b>		
ΔP = 72 psid (5 bar) -10%		
<b>Bypass Valve Cracking Pressure</b>		
ΔP = 100 psid (7 bar) +10% (standard)		

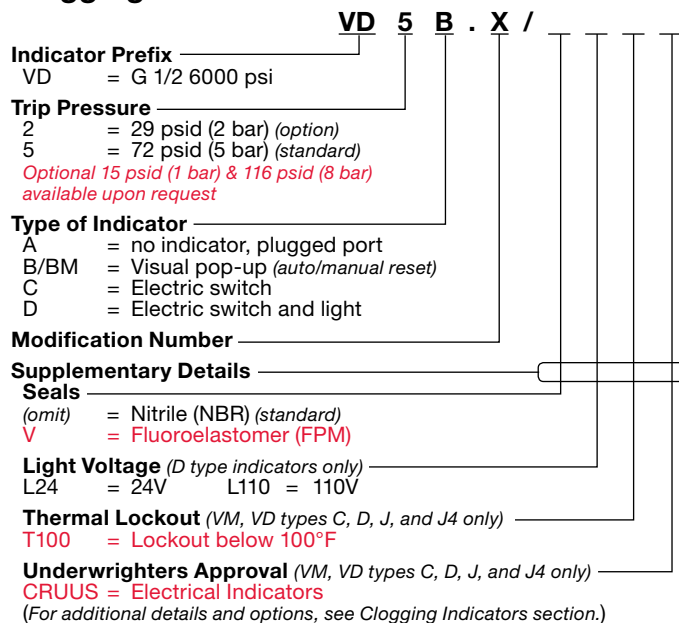
## Model Code



## Replacement Element Model Code



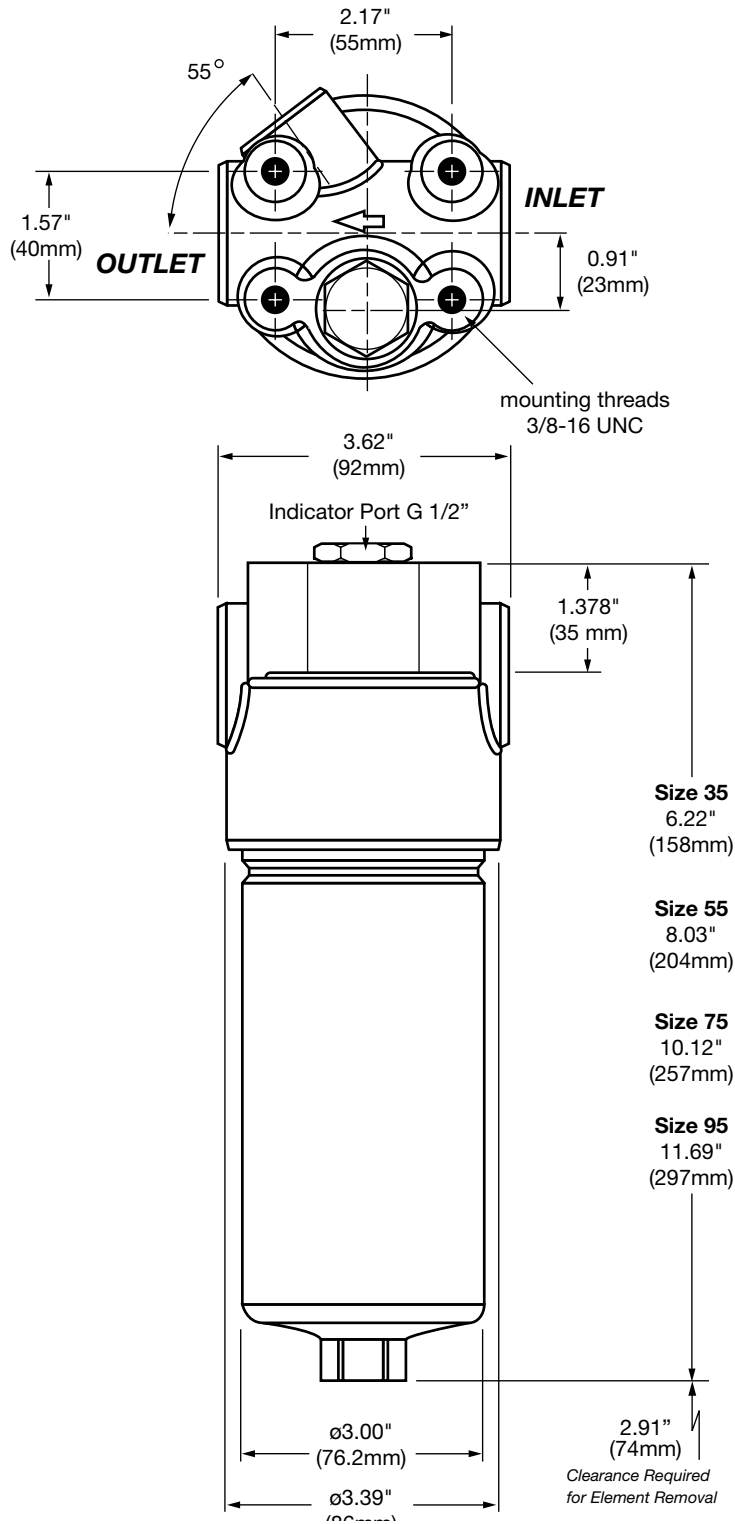
## Clogging Indicator Model Code



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



## Dimensions



Size	35	55	75	95
Weight (lbs.)	6.39	8.29	9.90	10.60

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

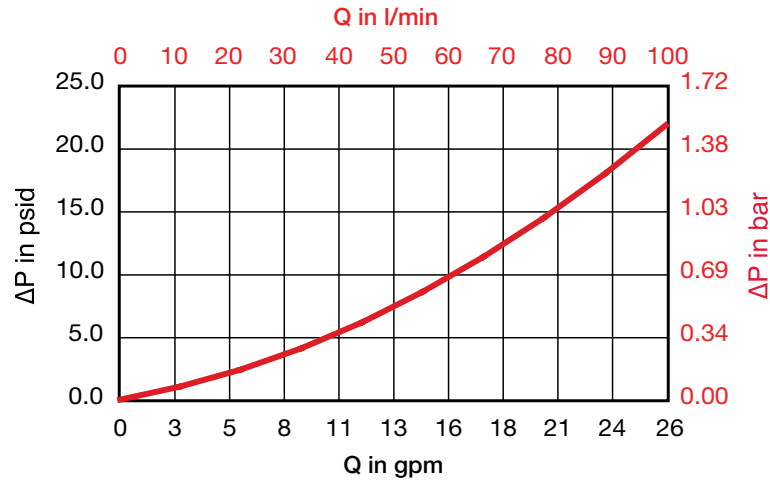
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

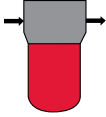
Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0035	1.294	1.041	0.811	0.510
0055	0.751	0.603	0.444	0.263
0075	0.510	0.411	0.290	0.170
0095	0.411	0.329	0.225	0.132

All Element K Factors in psi / gpm.

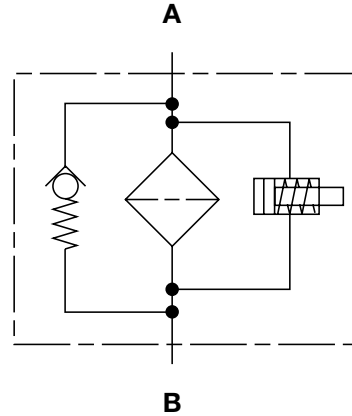
## HFM Series

### Inline Filters

5800 psi • up to 37 gpm



### Hydraulic Symbol



### Features

- The HFM filter is available in 2 sizes comprised of 2 different bowl and element lengths. The models 75 and 95, provide maximum flow rates of 29 and 37 GPM respectively.
- A quick-response by-pass valve protects against high differential pressures caused by cold start-ups, flow surges and pressure spikes.
- The high bypass pressure setting (100 psid) minimizes the possibility of contamination due to premature bypassing.
- Filters may be specified with or without a clogging indicator. Both Visual and electrical indicators are available. Standard indicators actuate at 72 psid.
- Filter materials are compatible with all mineral, lubricating oils, and commonly used fire retardant fluids per ISO 2943.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Technical Details

<b>Mounting Method</b>	3 or 4 mounting holes - filter head	
<b>Port Connection</b>	SAE 16, 1" BSPP	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side <i>(opposite each other)</i>
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
<b>Flow Capacity</b>		
75	29 gpm (110 lpm)	
95	37 gpm (140 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	5800 psi (400 bar)	
Proof Pressure	8700 psi (600 bar)	
Fatigue Pressure	Contact HYDAC office	
Burst Pressure	13,920 psi (960 bar)	
<b>Element Collapse Pressure Rating</b>		
BN/HC	290 psid (20 bar)	
<b>Fluid Temperature Range</b>		
	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>		
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.		
<b>Indicator Trip Pressure</b>		
$\Delta P = 72 \text{ psid (5 bar) } -10\%$		
<b>Bypass Valve Cracking Pressure</b>		
$\Delta P = 100 \text{ psid (7 bar) } +10\%$		

### Applications



Agricultural



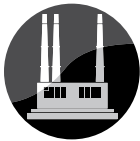
Automotive



Construction



Gearboxes



Industrial

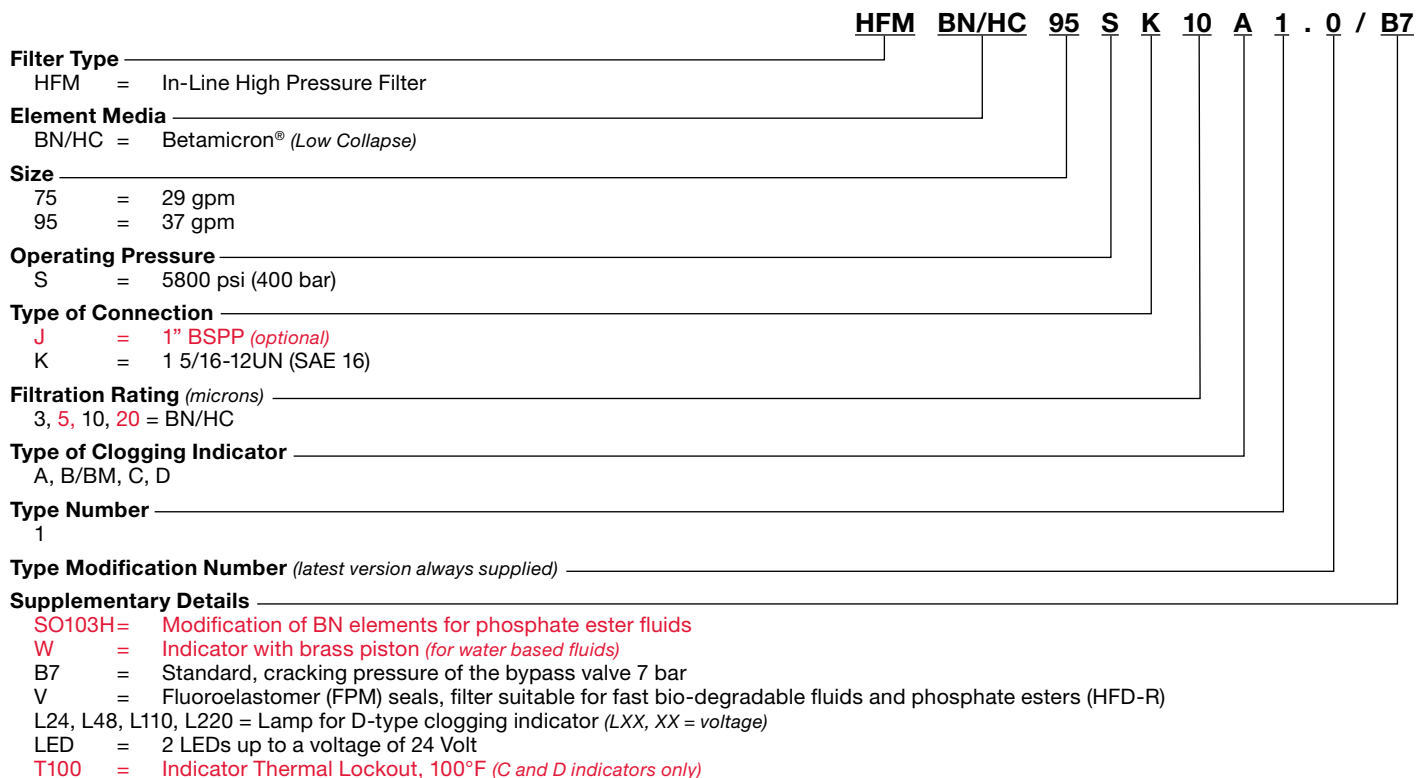


Commercial  
Municipal

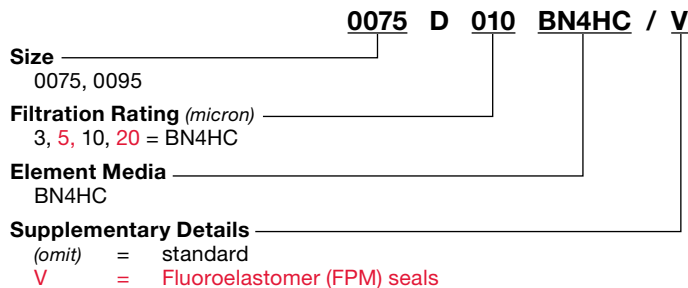


Power  
Generation

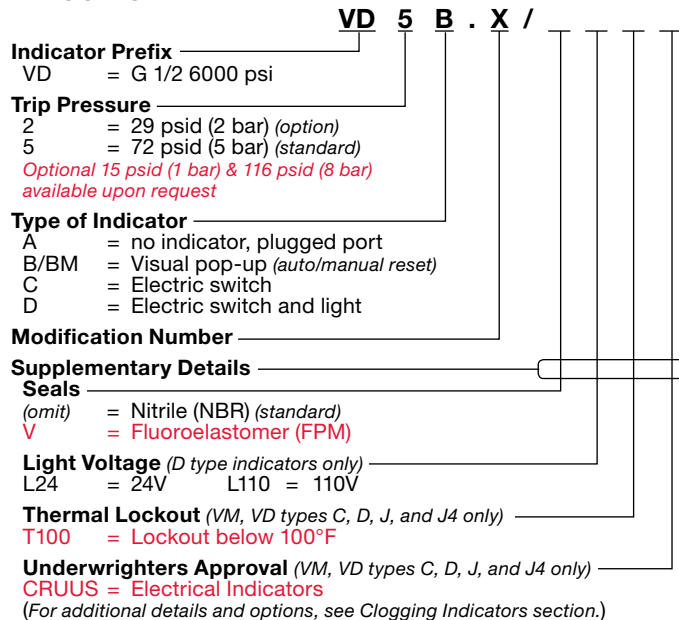
## Model Code



## Replacement Element Model Code

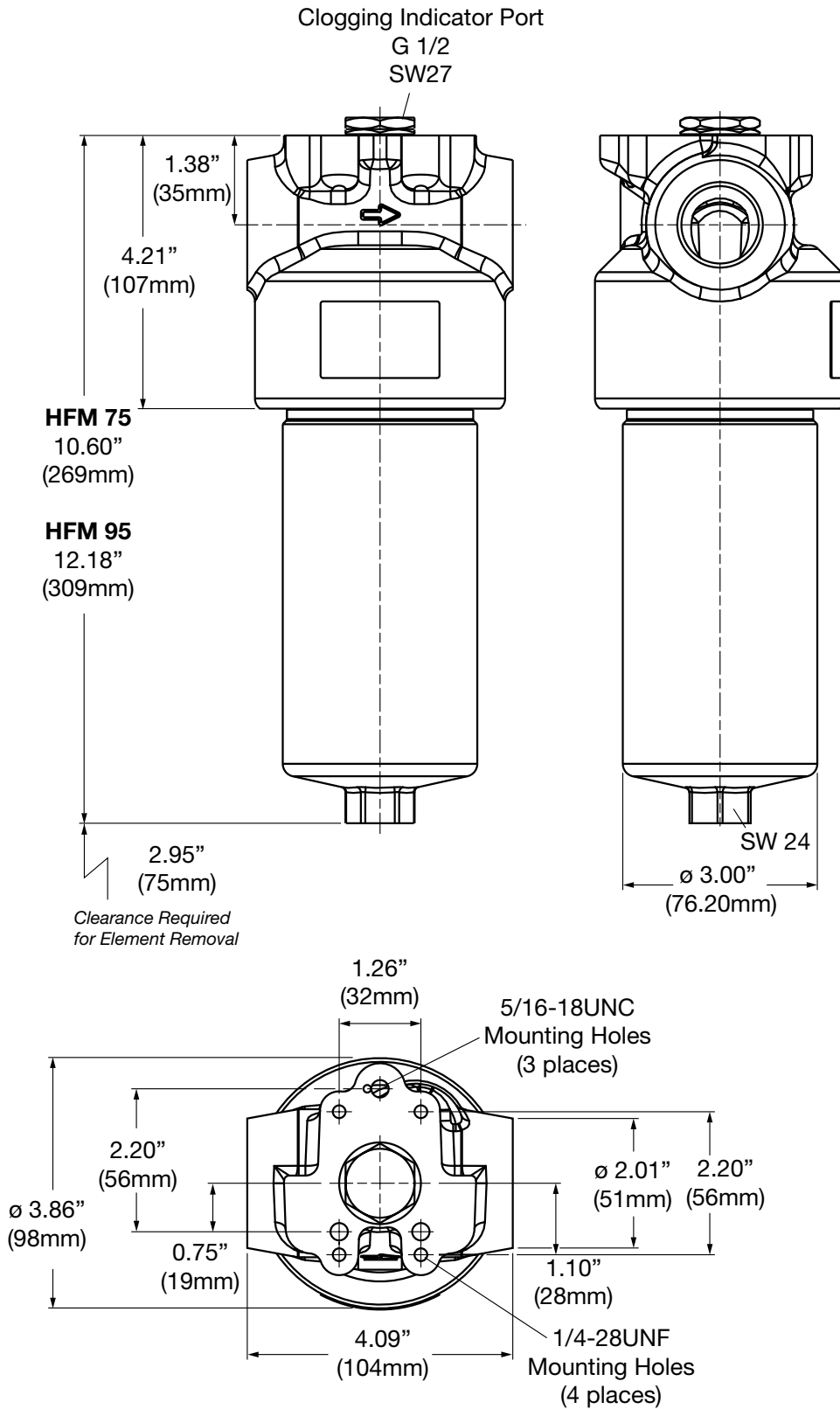


## Clogging Indicator Model Code



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

## Dimensions



Size	95
Weight (lbs.)	12.8

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

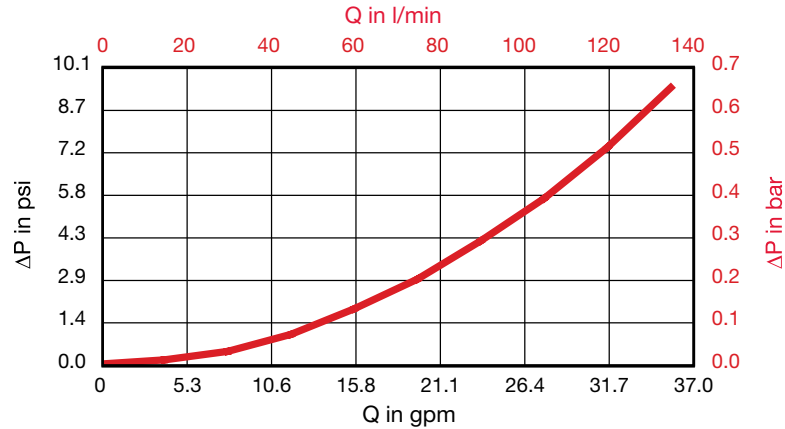
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

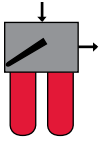
(From Tables Below)

Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0075	0.510	0.411	0.290	0.170
0095	0.411	0.329	0.225	0.132

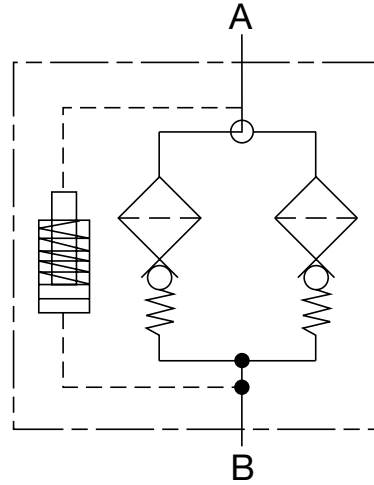
All Element K Factors in psi / gpm.



## DFDK Series Inline Duplex Filters 4500 psi • up to 90 gpm



### Hydraulic Symbol



### Features

- The DFDK Filters have a filter head of ductile iron and a screw-in bowl of cold-formed steel.
- The filter housings are designed to withstand pressure surges as well as high static pressure loads.
- The screw-in bowl allows the filter element to be easily removed for replacement or cleaning.
- A visual (*pop-up*), electrical, electrical/visual (lamp), or other electronic differential types of clogging indicators are available to suit each application.
- DFDK filters are available only with high collapse pressure elements since no bypass is provided.

### Technical Details

<b>Mounting Method</b>	4 mounting holes	
<b>Port Connection</b>	60/110 SAE-12 160/240/280 SAE-24 330/660/1320 2" SAE-32 Flange Code 62	
<b>Flow Direction</b>	60 - 280	330 - 1320
Inlet	Top	Top
Outlet	Side	Back
<b>Construction Materials</b>	Head Ductile iron Bowl Steel Housing (1320) Steel Cap (1320) Ductile iron	
<b>Flow Capacity</b>	60/110 13 gpm (50 lpm) 160/240/280 35 gpm (132 lpm) 330/660/1320 90 gpm (340 lpm)	
<b>Housing Pressure Rating</b>	Max. Operating Pressure 4500 psi (315 bar) Proof Pressure 6800 psi (475 bar) Fatigue Pressure Contact HYDAC Office Burst Pressure > 18,270 psi (1260 bar)	
<b>Element Collapse Pressure Rating</b>	BH/HC, V 3045 psid (210 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	
<b>Indicator Trip Pressure</b>	ΔP = 116 psid (8 bar) -10% (standard)	

### Applications



Automotive



Industrial



Power Generation



Pulp & Paper



Railways



Steel / Heavy Industry

## Model Code

**DFDK BH/HC 60 Q A C 3 A 1 . 0 -**

**Filter Type** \_\_\_\_\_  
DFDK = Duplex Pressure Filter with Ball Valve Selector

**Element Media** \_\_\_\_\_  
BH/HC = Betamicon® (High Collapse) **V = Metal Fiber**

**Size** \_\_\_\_\_  
60, 110, 160, 240, 280, 330, 660, 1320 (larger sizes available - contact HYDAC)

**Pressure Range** \_\_\_\_\_  
K = 2320 psi (160 bar) (sizes 1320 - 3960 with type code 3 only)  
Q = 4568 psi (315 bar) (sizes 30 - 1320 with type code 1 or 2 only)

**Valve** \_\_\_\_\_  
A = Ball Valve

**Connection** \_\_\_\_\_  
B = SAE 8 (size 30 only) L = 2" SAE Code 62 (sizes 330 - 1320 only)  
C = SAE 12 (sizes 60/110 only) M = 2 1/2" SAE Code 62 (sizes 1320 only)  
F = SAE 24 (sizes 160 - 280 only)

**Filtration Rating (micron)** \_\_\_\_\_  
3, 5, 10, 20 = BH/HC **3, 5, 10, 20 = V**

**Type of ΔP Clogging Indicator** \_\_\_\_\_  
A, B/BM, C, D

**Type Number** \_\_\_\_\_  
1 = One Piece Bowl (sizes 60 - 660 only)  
2 = Two Piece Bowl (size 280, 330, 660, 1320 only)  
3 = Upside down mounting - Element top access (size 1320 only)

**Modification Number (latest version always supplied)** \_\_\_\_\_

**Port Configuration** \_\_\_\_\_  
12 = SAE Straight thread O-ring Boss Ports (sizes 60-280 only)  
16 = SAE Flange Ports (sizes 330-1320 only)

**Seals** \_\_\_\_\_  
(omit) = Nitrile (NBR) (standard) **V = Fluoroelastomer (FPM)** **EPR = Ethylene Propylene (EPDM)**

**Supplementary Details** \_\_\_\_\_  
L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)  
**W** = Indicators with brass piston (for use with water based fluids)  
**SO155H** = Modification of BH4HC Elements for Phosphate Esters.  
**T100** = Indicator Thermal Lockout, 100°F (C and D indicators only)

## Replacement Element Model Code

**0030 D 010 BH4HC / V**

**Size** \_\_\_\_\_  
0060, 0110, 0160, 0240,  
0280, 0330, 0660, 1320

**Filtration Rating (micron)** \_\_\_\_\_  
3, 5, 10, 20 = BH4HC  
**3, 5, 10, 20 = V**

**Element Media** \_\_\_\_\_  
BH4HC, **V**

**Supplementary Details** \_\_\_\_\_  
(omit) = standard  
**V** = Fluoroelastomer (FPM) seals

## Clogging Indicator Model Code

**VD 5 B . X /**

**Indicator Prefix** \_\_\_\_\_  
VD = G 1/2 6000 psi

**Trip Pressure** \_\_\_\_\_  
8 = 116 psid (8 bar)

**Type of Indicator** \_\_\_\_\_  
A = no indicator, plugged port  
B/BM = Visual pop-up (auto/manual reset)  
C = Electric switch  
D = Electric switch and light

**Modification Number** \_\_\_\_\_

**Supplementary Details** \_\_\_\_\_  
**Seals**  
(omit) = Nitrile (NBR) (standard)  
**V** = Fluoroelastomer (FPM)

**Light Voltage (D type indicators only)** \_\_\_\_\_  
L24 = 24V L110 = 110V

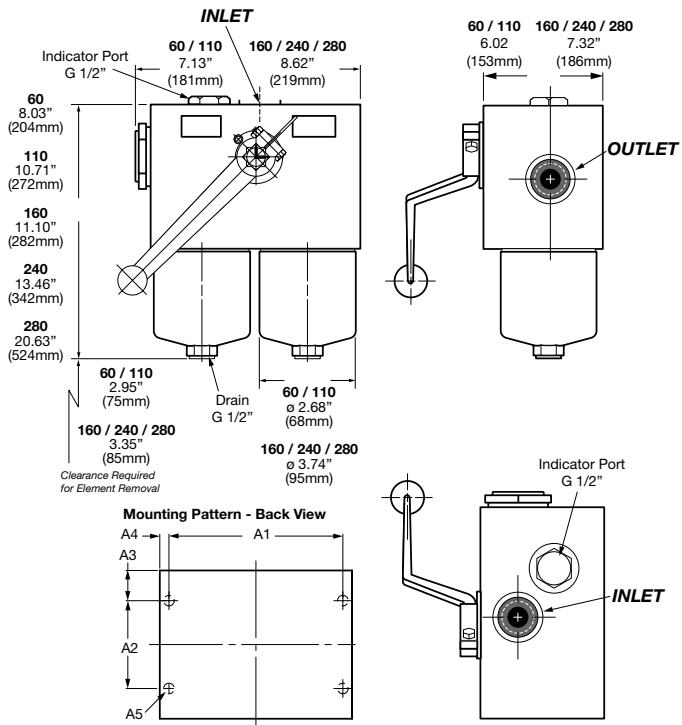
**Thermal Lockout (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
**T100** = Lockout below 100°F

**Underwriters Approval (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
**CRUUS** = Electrical Indicators  
(For additional details and options, see Clogging Indicators section.)

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

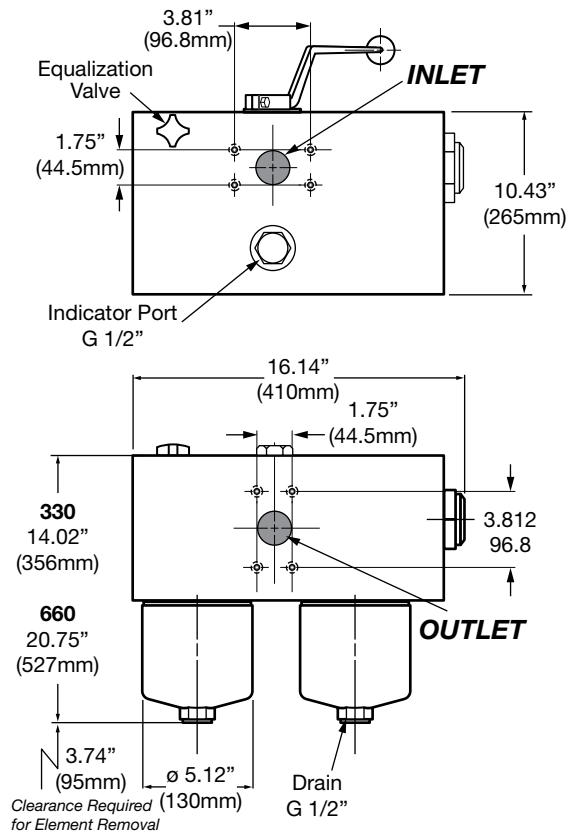
## Dimensions

### DFDK 60 / 110 / 160 / 240 / 280

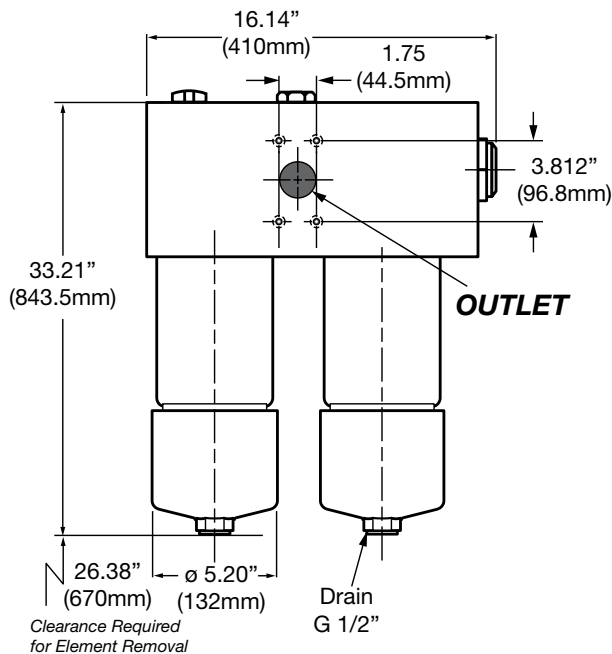


Size	A1	A2	A3	A4	A5
60/110	138 ± 0.2	78 ± 0.2	19	16	1/4"-28UNF-2Bx10DP
160/240/280	190 ± 0.2	96 ± 0.2	33	10	3/8"-24UNF11/16DP

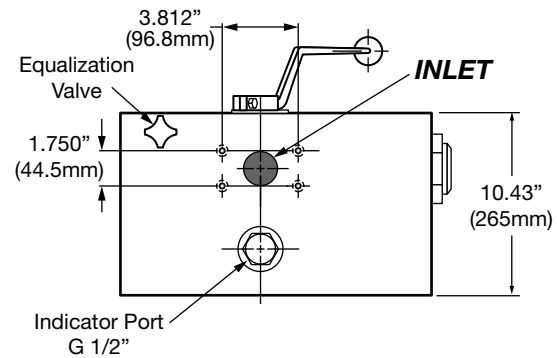
### DFDK 330 / 660



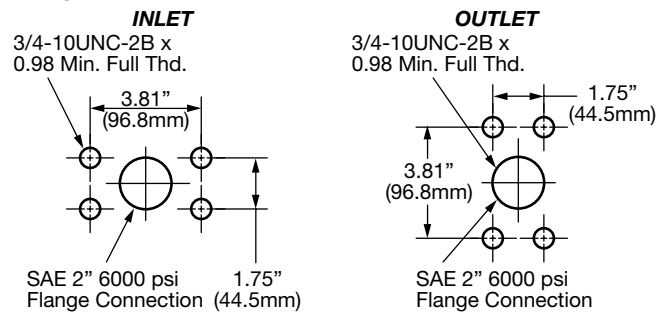
### DFDK 1320 - Back View



### DFDK 1320 - Top View



### Flange Detail 330 / 660 / 1320



Size	60	110	160	240	280	330	660	1320
Weight (lbs.)	16.0	36.2	70.6	76.3	93.5	335.0	366.0	427.7

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

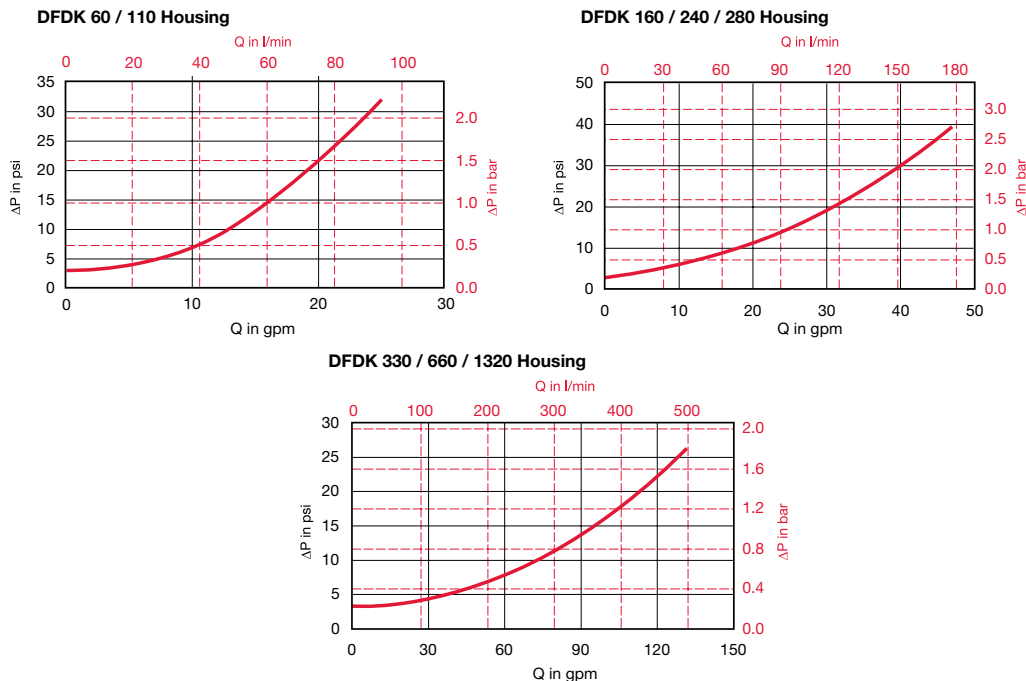
Assembly  $\Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$

### Housing Curve:

Pressure loss through housing is as follows:

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 section on page 19)



## Element K Factors

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

Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
0060	3.210	1.785	0.993	0.669
0110	1.394	0.819	0.488	0.307
0160	0.919	0.569	0.322	0.240
0240	0.578	0.374	0.214	0.158
0280	0.313	0.184	0.097	0.090
0330	0.422	0.244	0.154	0.108
0660	0.179	0.106	0.055	0.049
1320	0.089	0.054	0.031	0.024

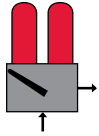
Size	...D...V Elements			
	3 μm	5 μm	10 μm	20 μm
0060	0.877	0.511	0.296	0.183
0110	0.452	0.304	0.182	0.118
0160	0.251	0.177	0.123	0.079
0240	0.169	0.137	0.093	0.062
0280	0.126	0.093	0.064	0.041
0330	0.121	0.097	0.065	0.043
0660	0.063	0.050	0.034	0.021
1320	0.032	0.026	0.018	0.012

All Element K Factors in psi / gpm.

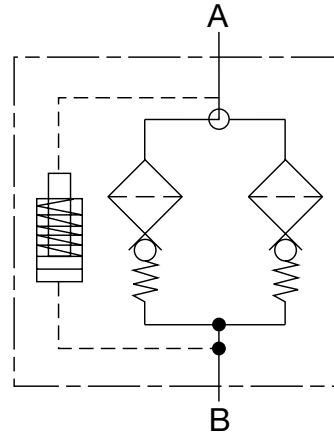
## HFDK4P Series

### Inline Duplex Filters

4500 psi • up to 90 gpm



### Hydraulic Symbol



### Features

- The HFDK4P pressure duplex filter meets HF4 automotive specification element requirements.
- The HFDK4P filters have a filter head and lid of ductile iron and a cold formed steel housing to meet high fatigue pressure requirements.
- The filter housings are designed to withstand pressure surges as well as high static pressure loads.
- The screw-in lids allow top access for the filter element to be easily removed for replacement.
- Visual (pop-up), electrical, electrical/visual (lamp), or electronic differential type clogging indicators are available.
- HFDK4P filters are available only with high collapse pressure elements with no bypass provided.

### Technical Details

<b>Mounting Method</b>	4 mounting holes
<b>Port Connection</b>	2" SAE Flange Code 62
<b>Flow Direction</b>	Inlet: Bottom    Outlet: Back
<b>Construction Materials</b>	
Head, Lid	Ductile iron
Housing	Steel
<b>Flow Capacity</b>	
9"	50 gpm (189 lpm)
18"	75 gpm (284 lpm)
27"	90 gpm (340 lpm)
<b>Housing Pressure Rating</b>	
Max. Operating Pressure	4500 psi (315 bar)
Proof Pressure	6800 psi (475 bar)
Fatigue Pressure	4500 psi (315 bar)
Burst Pressure	Contact HYDAC Office
<b>Element Collapse Pressure Rating</b>	
BH	3045 psid (210 bar)
<b>Fluid Temperature Range</b>	
-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	
<b>Indicator Trip Pressure</b>	
$\Delta P = 116 \text{ psid (8 bar) } -10\% \text{ (standard)}$	
$\Delta P = 72 \text{ psid (5 bar) } -10\% \text{ (optional)}$	

### Applications



Automotive



Industrial



Power Generation



Pulp & Paper

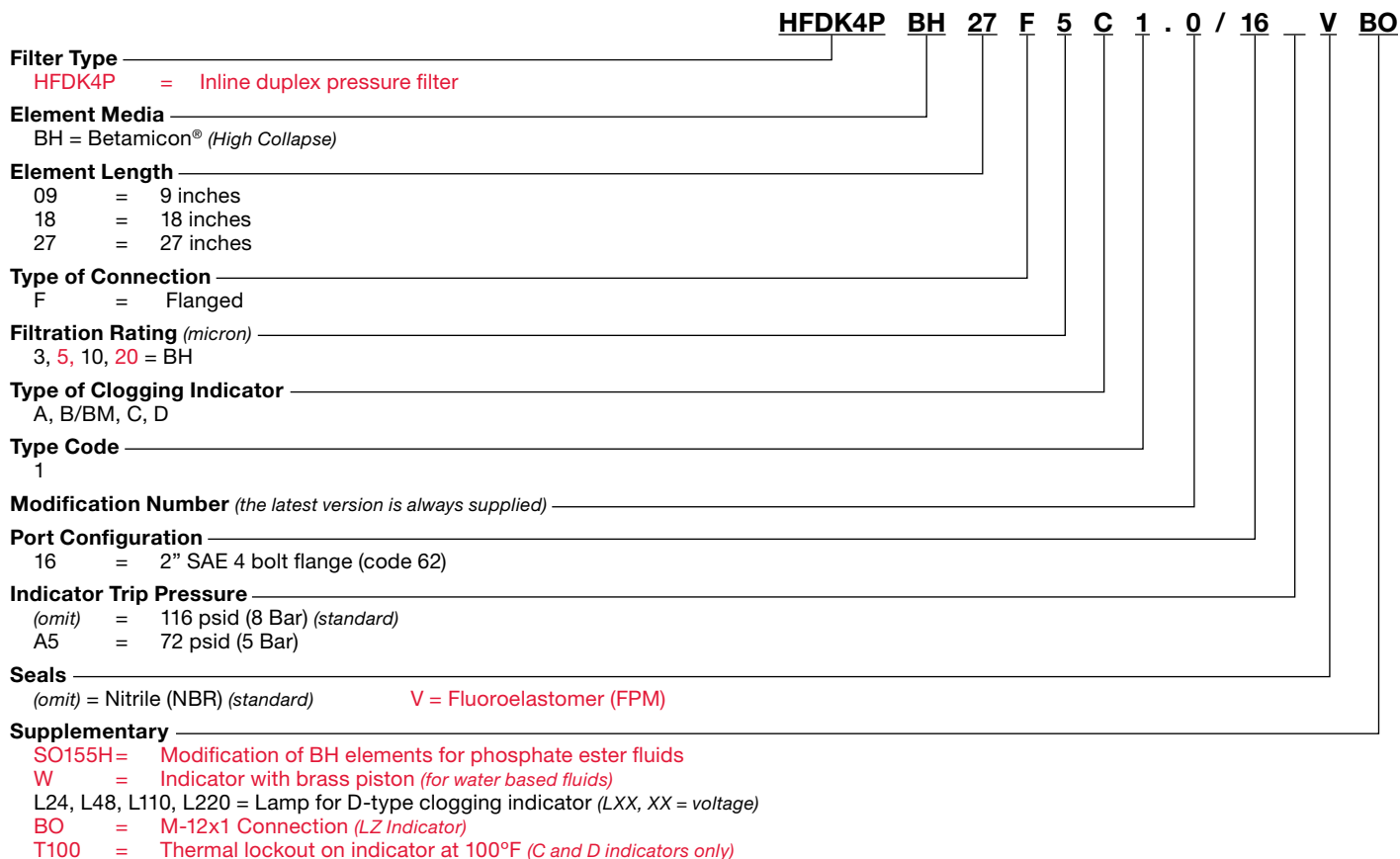


Shipbuilding

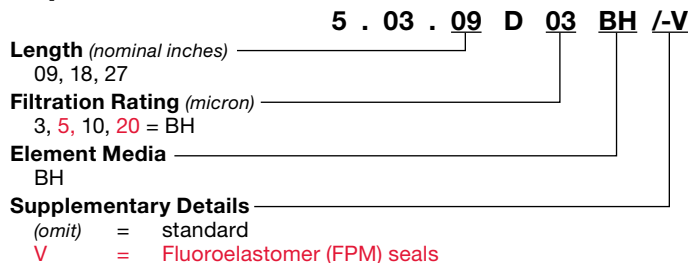


Steel / Heavy Industry

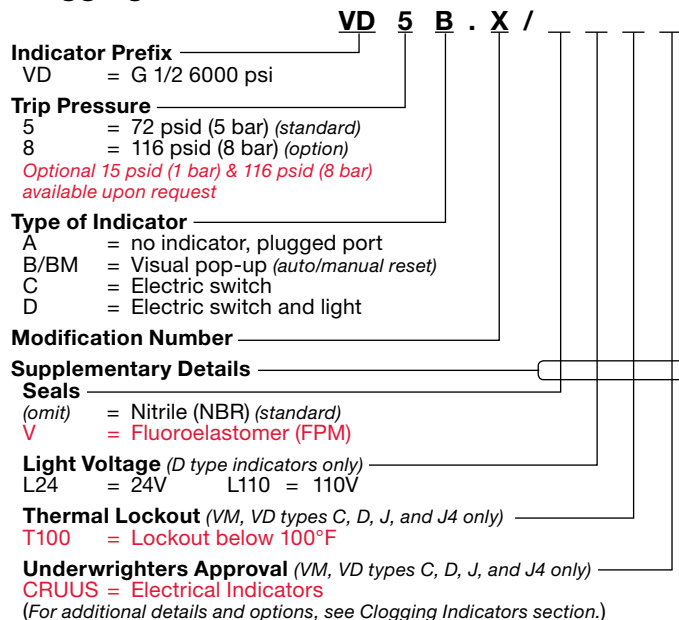
## Model Code



## Replacement Element Model Code



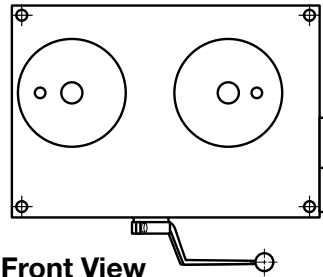
## Clogging Indicator Model Code



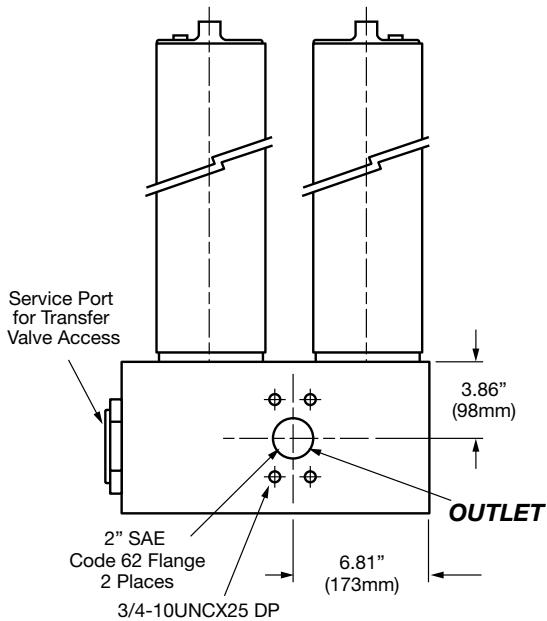
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

## Dimensions

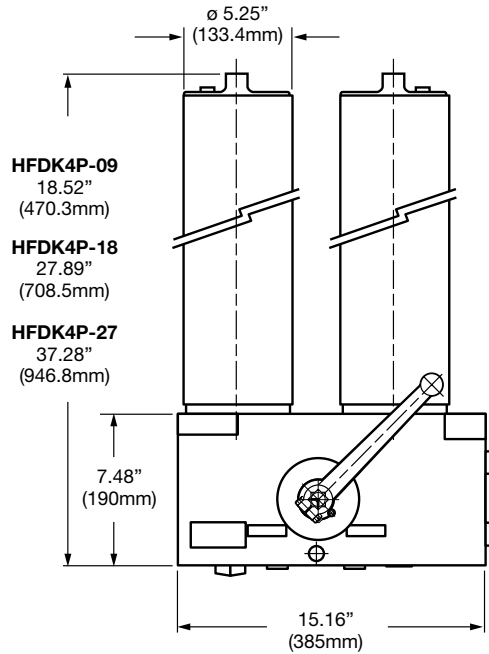
### Top View



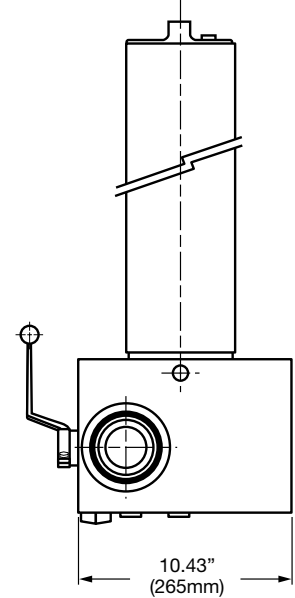
### Back View



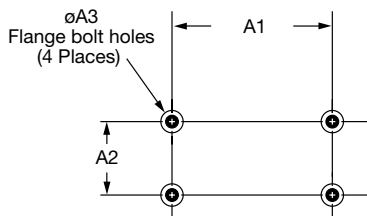
### Front View



### Side View

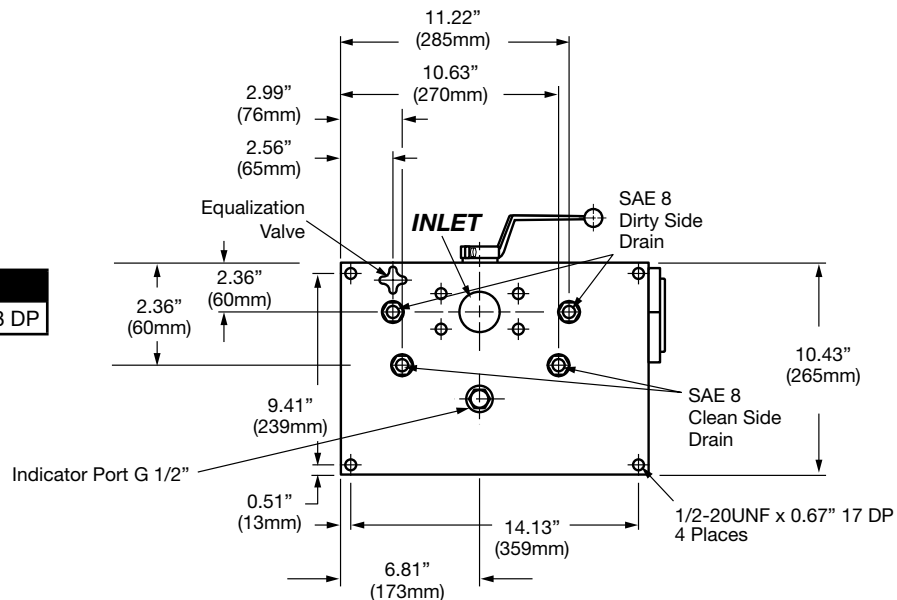


### Flange Detail



A1	A2	A3
96.8±0.3	44.5±0.3	3/4"-10UNC-2B x 38 DP

### Bottom View



Size	09	18	27
Weight (lbs.)	345	385.4	425.4

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

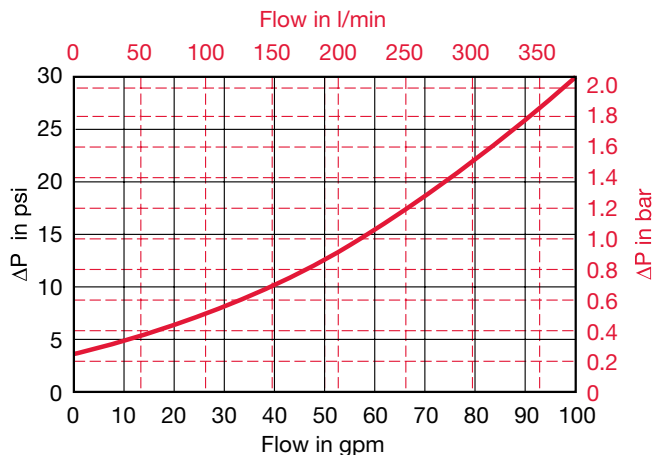
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

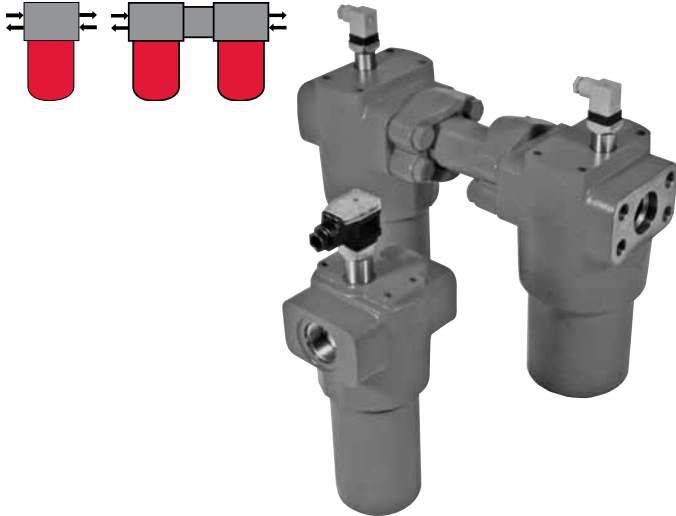
$$P \text{ Elements} = \text{Elements (K) Flow Factor (From Tables Below)} \times \text{Flow Rate (gpm)} \times \frac{\text{Actual Viscosity (SUS)}}{141 \text{ SUS}} \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Size	5.03.XXDBH			
	3 μm	5 μm	10 μm	20 μm
09	0.2068	0.1457	0.0886	0.0465
18	0.0967	0.0681	0.0414	0.0217
27	0.0630	0.0444	0.0270	0.0142

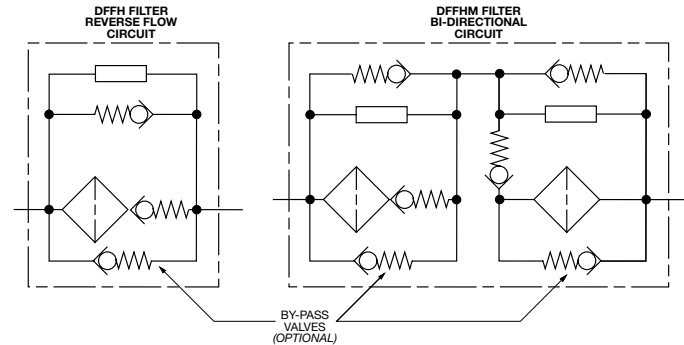
All Element K Factors in psi / gpm.



## DFFH & DFFHM Series Reverse Flow & Bi-directional Filters 6000 psi • up to 100 gpm



### Hydraulic Symbol



### Features

- DFFH Reverse Flow models filter fluid in the forward direction and bypass the filter element when the flow direction is reversed.
- DFFHM Bi-Directional model allows fluid filtering in both directions. There is a filter element for both directions.
- Inlet/outlet port options include SAE 4-bolt flange code 62, or SAE ports (DFFHM flange only) to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, and EPR) provide compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Screw-in bowl mounted below the filter head requires minimal clearance to remove the element for replacement; contaminated fluid cannot be washed downstream when element is serviced.
- Clogging indicators have no external dynamic seal. This results in high reliability due to magnetic actuation which eliminates a leak point.
- A poppet-type bypass valve (optional) provides positive sealing during normal operation and fast opening during cold starts and flow surges.

### Applications



Agricultural



Automotive



Construction



Industrial



Railways

### Technical Details

<b>Mounting Method</b>	DFFH: 4 mounting holes DFFHM: 8 mounting holes
<b>Port Connection</b>	DFFH 160/240/280 SAE-20, 1 1/4" SAE Flange Code 62 DFFH 330/660/1320 SAE-24, 2" SAE Flange Code 62 DFFHM 160/240/280 1 1/4" SAE Flange Code 62 DFFHM 330/660/1320 1 1/2" SAE Port or 2" SAE Flange Code 62
<b>Flow Direction</b>	Inlet: Side      Outlet: Side
<b>Construction Materials</b>	Head Ductile iron Bowl Steel
<b>Flow Capacity</b>	160 42 gpm (160 lpm) 240 63 gpm (240 lpm) 280 74 gpm (280 lpm) 330 87 gpm (330 lpm) 660/1320 100 gpm (380 lpm)
<b>Housing Pressure Rating</b>	Max. Operating Pressure 6000 psi (420 bar) Proof Pressure 9000 psi (610 bar) Fatigue Pressure 6000 psi (420 bar) Burst Pressure Contact HYDAC Office
<b>Element Collapse Pressure Rating</b>	BH/HC, V 3045 psid (210 bar) BN/HC, W/HC 290 psid (20 bar)
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.
<b>Indicator Trip Pressure</b>	$\Delta P = 29$ psid (2 bar) -10% (optional) $\Delta P = 72$ psid (5 bar) -10% (standard)
<b>Bypass Valve Cracking Pressure</b>	$\Delta P = 43$ psid (3 bar) +10% (optional) $\Delta P = 87$ psid (6 bar) +10% (standard)

## Model Code

**DFFH BH/HC 160 G 3 A 1 . 0 / 12**

**Filter Type** \_\_\_\_\_  
 DFFH = Reverse Flow Filter  
 DFFHM = Bi-Directional Filter

**Element Media** \_\_\_\_\_  
 BH/HC = Betamicon® (High Collapse)    BN/HC = Betamicon® (Low Collapse)    V = Metal Fiber

**Size and Nominal Connection** \_\_\_\_\_

<b>DFFH</b>	<b>DFFHM</b>
160 = 1 1/4" SAE Port or Flange	160 = 1 1/4" Flange (only)
240 = 1 1/4" SAE Port or Flange	240 = 1 1/4" Flange (only)
280 = 1 1/4" SAE Port or Flange	280 = 1 1/4" Flange (only)
330 = 1 1/2" SAE Port or 2" Flange	330 = 2" Flange (only)
660 = 1 1/2" SAE Port or 2" Flange	660 = 2" Flange (only)
1320 = 1 1/2" SAE Port or 2" Flange	1320 = 2" Flange (only)

**Type of Connection** \_\_\_\_\_  
 G = Threaded (not available for DFFHM)    F = Flange

**Filtration Rating (micron)** \_\_\_\_\_  
 3, 5, 10, 20 = BH/HC, BN/HC    3, 5, 10, 20 = V

**Type of ΔP Clogging Indicator** \_\_\_\_\_  
 A, B/BM, C, D

**Type Number** \_\_\_\_\_  
 1  
 2 = 2 Piece Bowl (size 1320 only)

**Modification Number (latest version is always supplied)** \_\_\_\_\_

**Port Configuration** \_\_\_\_\_  
 12 = SAE Straight Thread O-Ring Boss Ports (available on DFFH only)  
 16 = SAE Flange Ports

**Seals** \_\_\_\_\_  
 (omit) = Nitrile (NBR) (standard)    V = Fluoroelastomer (FPM)    EPR = Ethylene Propylene (EPDM)

**Bypass Valve** \_\_\_\_\_  
 (omit) = Without Bypass (BH4HC or V elements required)  
 B6 = 87 psid Bypass (standard)

**Supplementary Details** \_\_\_\_\_  
 SO103H = Modification of BN4HC (Low Collapse) & W/HC Element For Phosphate Ester  
 SO155H = Modification of BH4HC Element for Phosphate Ester Fluids  
 SO184 = G-1/2" Drain in Bowl Option For Sizes 160 - 280 (standard for sizes 330 & 660)  
 W = Indicator with brass piston (for water based fluids)  
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)  
 T100 = Indicator Thermal Lockout, 100°F (C and D indicators only)

## Replacement Element Model Code

**0160 D 010 BH4HC / V**

**Size** \_\_\_\_\_  
 0160, 0240, 0280,  
 0330, 0660, 1320

**Filtration Rating (micron)** \_\_\_\_\_  
 3, 5, 10, 20 = BH4HC, BN4HC  
 3, 5, 10, 20 = V

**Element Media** \_\_\_\_\_  
 BH4HC, BN4HC, V

**Supplementary Details** \_\_\_\_\_  
 (omit) = standard  
 V = Fluoroelastomer (FPM) seals

## Clogging Indicator Model Code

**VD 5 B . X /**

**Indicator Prefix** \_\_\_\_\_  
 VD = G 1/2 6000 psi

**Trip Pressure** \_\_\_\_\_  
 2 = 29 psid (2 bar) (option)  
 5 = 72 psid (5 bar) (standard)  
 Optional 15 psid (1 bar) & 116 psid (8 bar) available upon request

**Type of Indicator** \_\_\_\_\_  
 A = no indicator, plugged port  
 B/BM = Visual pop-up (auto/manual reset)  
 C = Electric switch  
 D = Electric switch and light

**Modification Number** \_\_\_\_\_

**Supplementary Details** \_\_\_\_\_

**Seals** \_\_\_\_\_  
 (omit) = Nitrile (NBR) (standard)  
 V = Fluoroelastomer (FPM)

**Light Voltage (D type indicators only)** \_\_\_\_\_  
 L24 = 24V    L110 = 110V

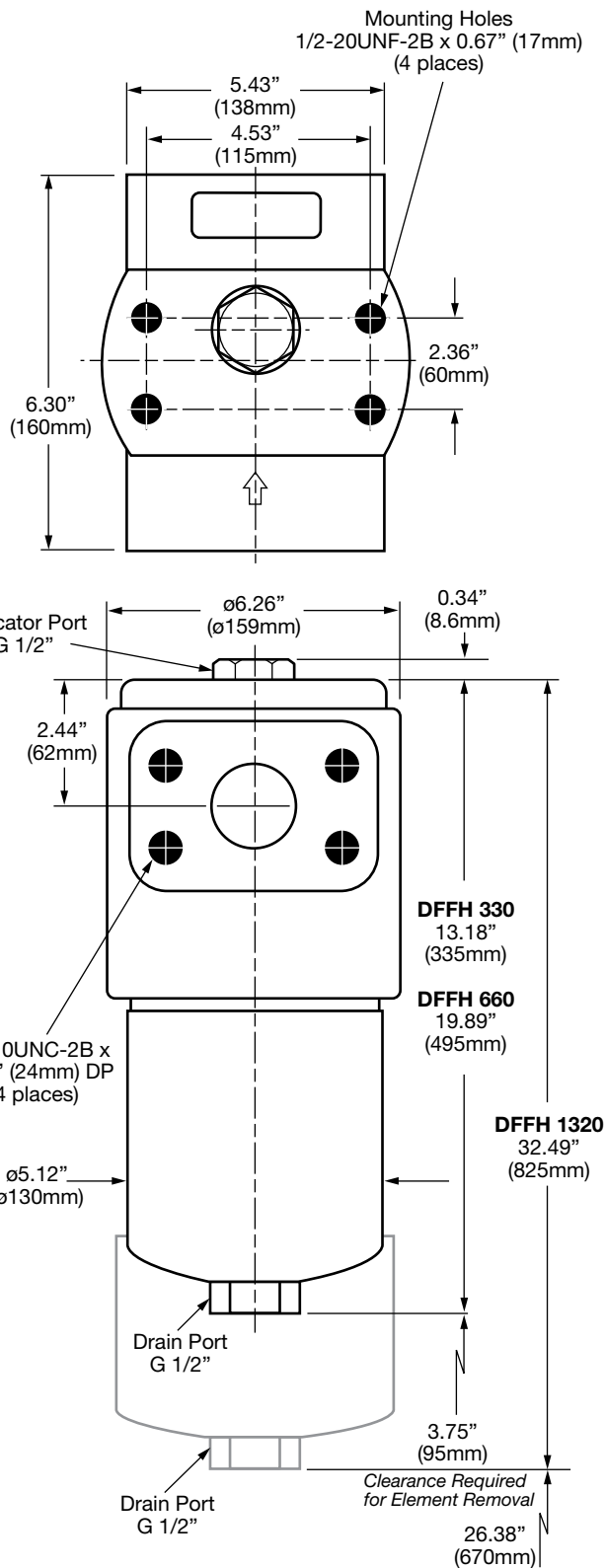
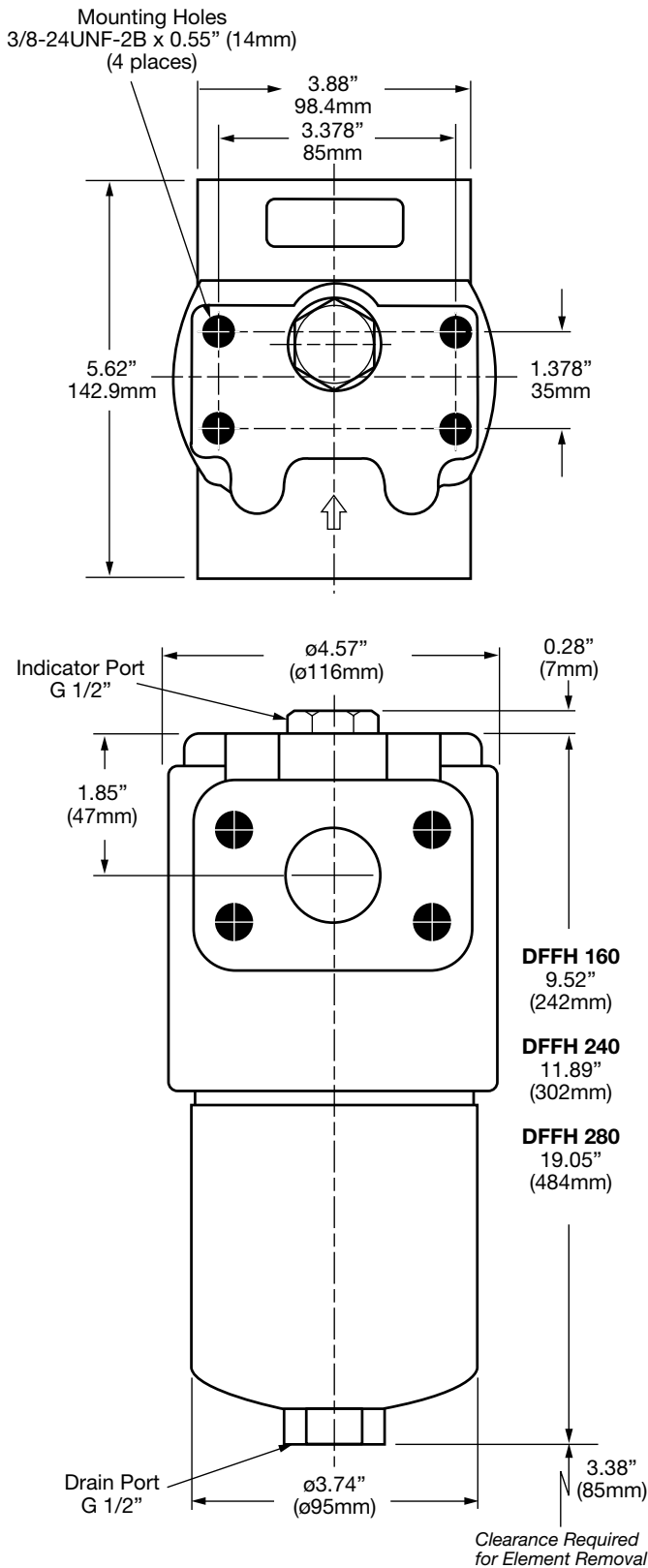
**Thermal Lockout (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
 T100 = Lockout below 100°F

**Underwriters Approval (VM, VD types C, D, J, and J4 only)** \_\_\_\_\_  
 CRUUS = Electrical Indicators  
 (For additional details and options, see Clogging Indicators section.)

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

## Dimensions DFFH 160 / 240 / 280

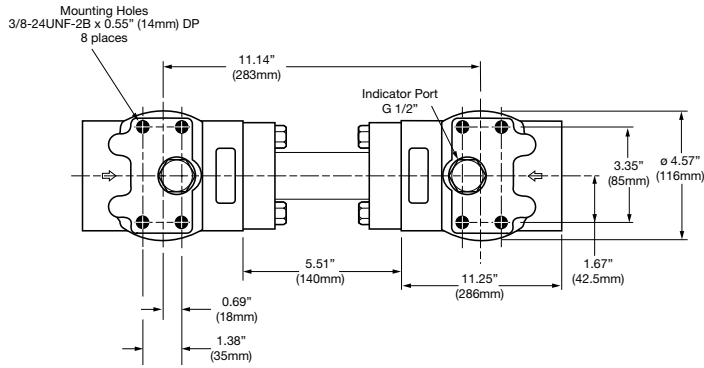
## DFFH 330 / 660 / 1320



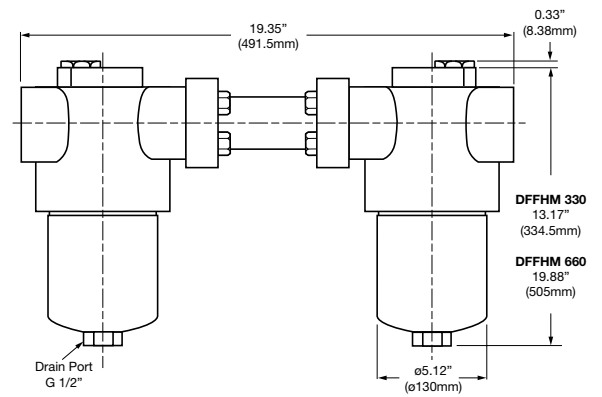
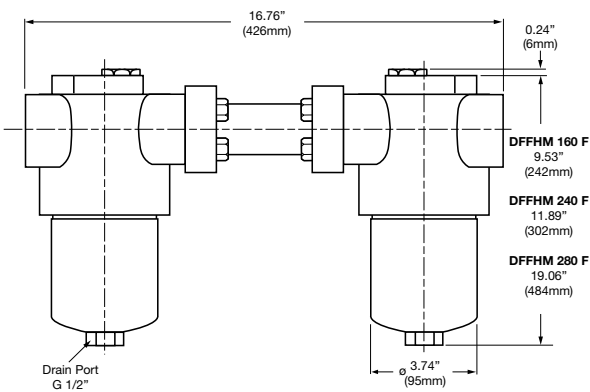
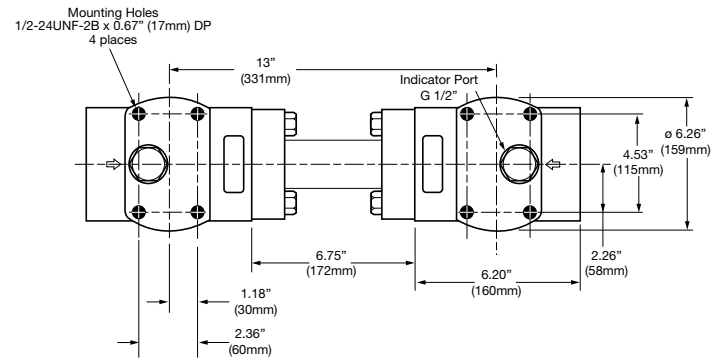
Size - DFFH	160	240	280	330	660	1320
Weight (lbs.)	24.6	27.4	36.6	58.6	73.9	117.3

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

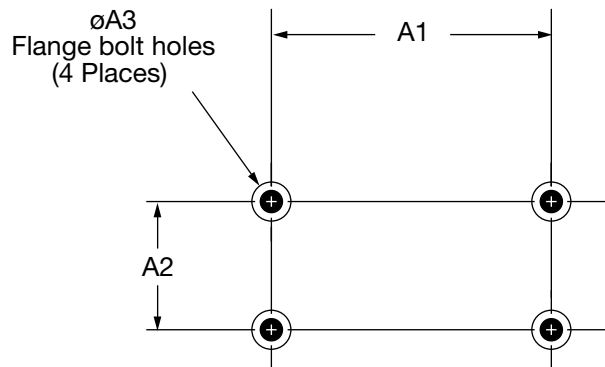
## DFFHM 160 / 240 / 280



## DFFHM 330 / 660



## Inlet / Outlet Flange Details

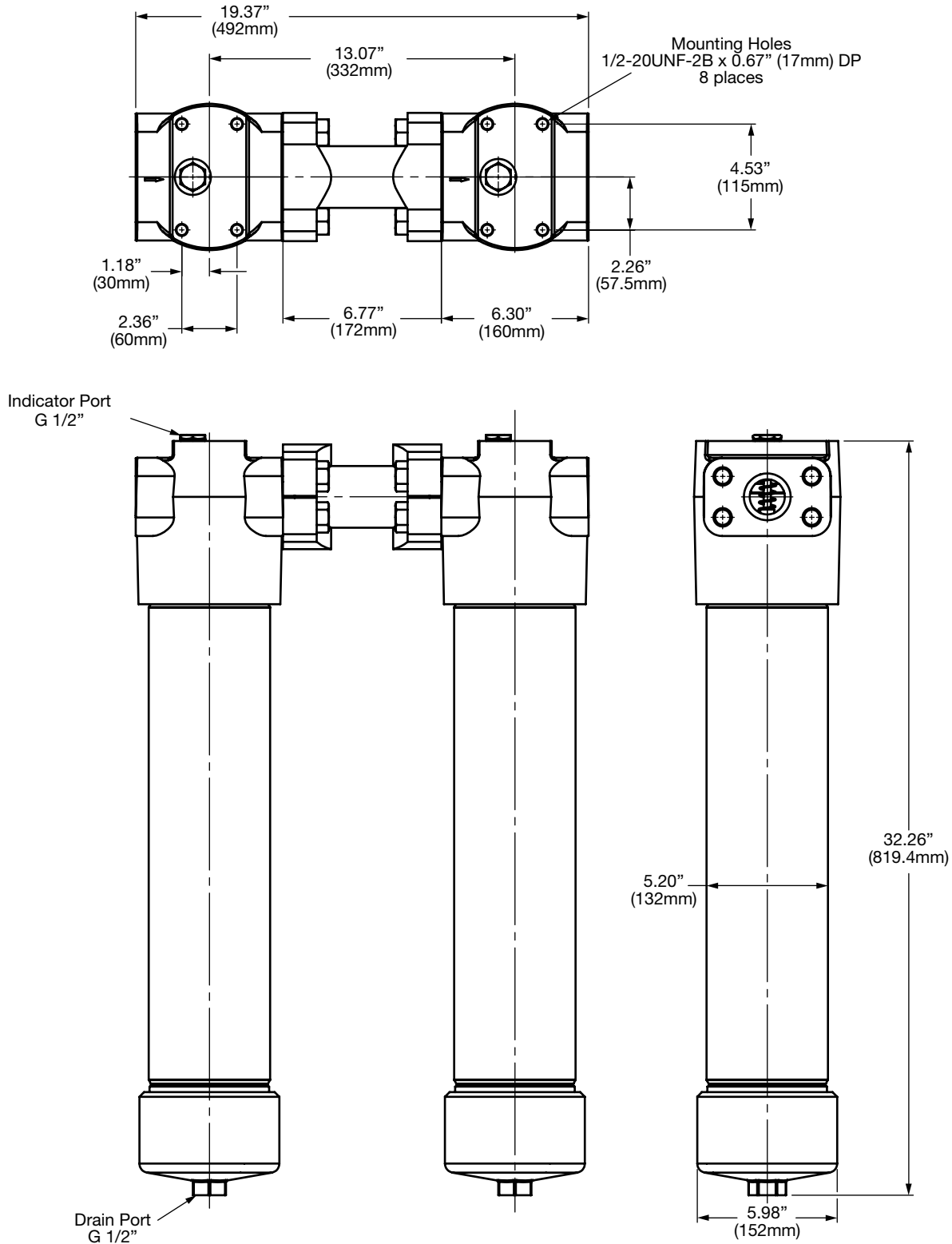


Size	A1	A2	A3
DFFH/M 160/240/280	66.7±0.3	31.8±0.3	1/2-UNC-2B x 25.4 DP
DFFH/M 330/660/1320	96.8±0.3	44.5±0.3	3/4-10UNC-2B x 24 DP

Size - DFFHM	160	240	280	330	660
Weight (lbs.)	57.1	62.7	71.1	134.2	165.0

Dimensions shown are for general information and overall envelope size only. Weights listed are without element.  
For complete dimensions please contact HYDAC to request a certified print.

## Dimensions DFFHM 1320



Size - DFFHM

1320

Weight (lbs.)

251.8

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

Assembly  $\Delta P$  = Housing  $\Delta P$  + Element  $\Delta P$

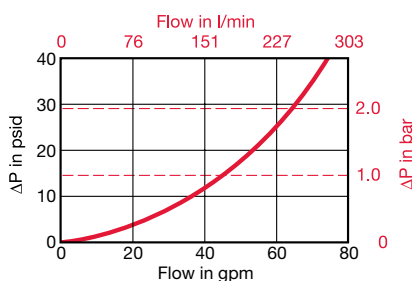
### Housing Curve:

Pressure loss through housing is as follows:

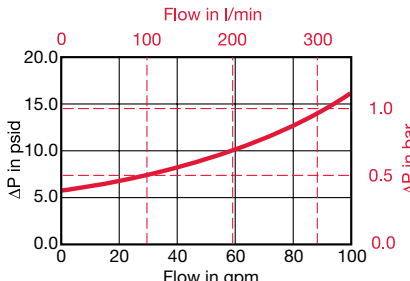
Housing  $\Delta P$  = Housing Curve  $\Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see sizing section on page 19)

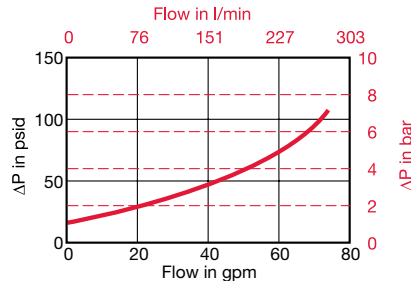
**DFFH 160/240/280 Forward Flow**



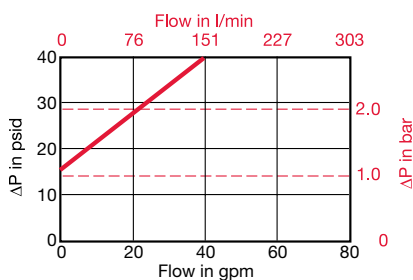
**DFFH 330/660/1320 Forward Flow**



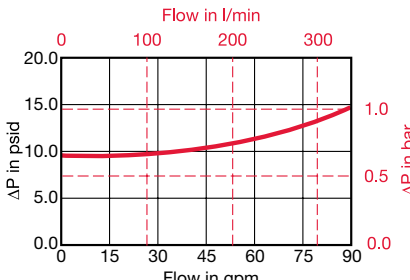
**DFFHM 160/240/280 Forward & Reverse Flow**



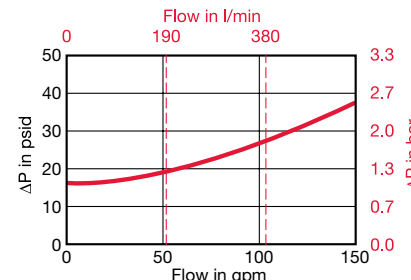
**DFFH 160/240/280 Reverse Flow**



**DFFH 330/660/1320 Reverse Flow**



**DFFHM 330/660/1320 Forward & Reverse Flow**



## Element K Factors

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

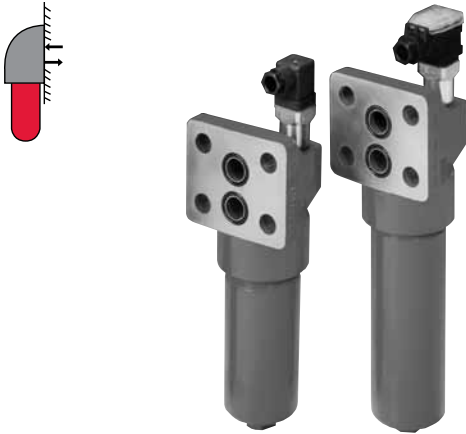
Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 $\mu\text{m}$	5 $\mu\text{m}$	10 $\mu\text{m}$	20 $\mu\text{m}$
0160	0.718	0.480	0.252	0.193
0240	0.450	0.333	0.196	0.128
0280	0.220	0.171	0.092	0.071
0330	0.294	0.215	0.163	0.095
0660	0.136	0.099	0.061	0.044
1320	0.068	0.048	0.030	0.021

Size	...D...BH4HC (Betamicon® High Collapse)			
	3 $\mu\text{m}$	5 $\mu\text{m}$	10 $\mu\text{m}$	20 $\mu\text{m}$
0160	0.919	0.569	0.322	0.240
0240	0.578	0.374	0.214	0.158
0280	0.313	0.184	0.097	0.090
0330	0.422	0.244	0.154	0.108
0660	0.179	0.106	0.055	0.049
1320	0.089	0.054	0.031	0.024

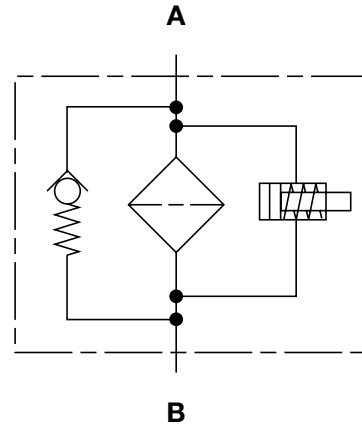
Size	...D...V Elements			
	3 $\mu\text{m}$	5 $\mu\text{m}$	10 $\mu\text{m}$	20 $\mu\text{m}$
0160	0.251	0.177	0.123	0.079
0240	0.169	0.137	0.093	0.062
0280	0.126	0.093	0.064	0.041
0330	0.121	0.097	0.065	0.043
0660	0.063	0.050	0.034	0.021
1320	0.032	0.026	0.018	0.012

All Element K Factors in psi / gpm.

## DF...QE Series Manifold Mount Filters 4500 psi • up to 180 gpm



### Hydraulic Symbol



### Features

- The DF...QE Filters have a filter head of ductile iron and a screw-in bowl of cold-formed steel for high fatigue strength.
- The filter housings are designed to withstand pressure surges as well as high static pressure loads.
- The screw-in bowl allows the filter element to be easily removed for replacement or cleaning.
- Visual (pop-up), electrical, electrical/visual (lamp), or electronic differential type clogging indicators can be installed.
- DF...QE filters are available with or without a bypass valve so either high or low collapse pressure elements may be used.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Technical Details

<b>Mounting Method</b>	4 mounting holes ( <i>manifold mount</i> )	
<b>Port Connection</b>	Diameters	
30	0.551" (14mm)	
60/110	0.787" (20mm)	
160/240/280	1.260" (32mm)	
330/660/1320	1.181" (30mm)	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
Housing (1320)	Steel	
Cap (1320)	Ductile iron	
<b>Flow Capacity</b>		
30	8 gpm (30 lpm)	
60	16 gpm (60 lpm)	
110	29 gpm (110 lpm)	
160	42 gpm (160 lpm)	
240	63 gpm (240 lpm)	
280	74 gpm (280 lpm)	
330	87 gpm (330 lpm)	
660	174 gpm (660 lpm)	
1320	180 gpm (1320 lpm)	
<b>Housing Pressure Rating</b>	QE	MHE
Max. Operating Pressure	4500 psi (315 bar)	3625 psi (250 bar)
Proof Pressure	6750 psi (472 bar)	5438 psi (375 bar)
Fatigue Pressure	4500 psi (315 bar)	3625 psi (250 bar)
	@ 1 mil. cycles	@ 100 mil. cycles
Burst Pressure	Contact HYDAC	
<b>Element Collapse Pressure Rating</b>		
BH/HC, V	3045 psid (210 bar)	
BN/HC, W/HC	290 psid (20 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>		
Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.		
<b>Indicator Trip Pressure</b>		
ΔP = 29 psid (2 bar) -10% ( <i>optional</i> )		
ΔP = 72 psid (5 bar) -10% ( <i>standard</i> )		
<b>Bypass Valve Cracking Pressure</b>		
ΔP = 43 psid (3 bar) +10% ( <i>optional</i> )		
ΔP = 87 psid (6 bar) +10% ( <i>standard</i> )		

### Applications



Industrial

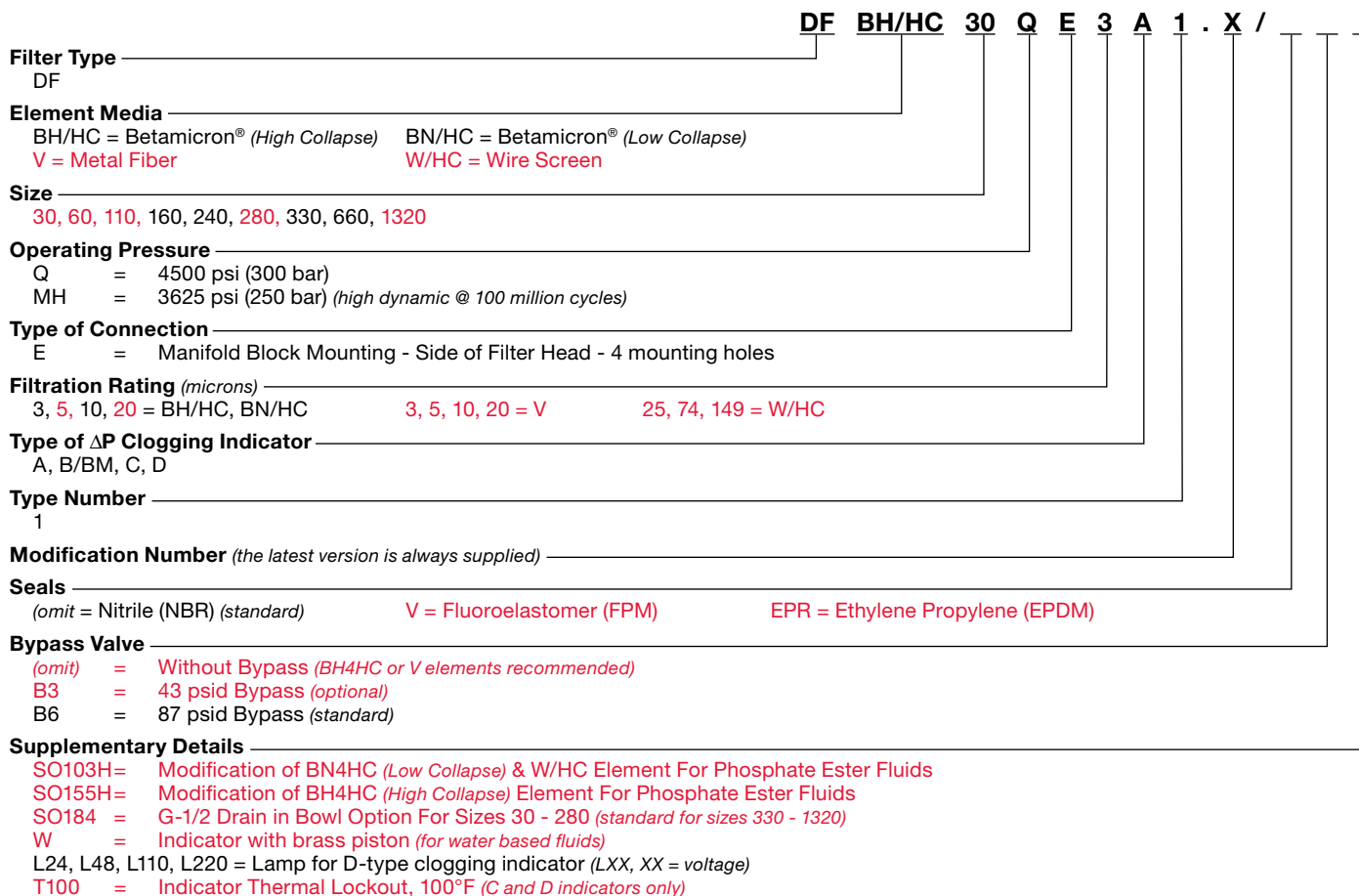


Railways

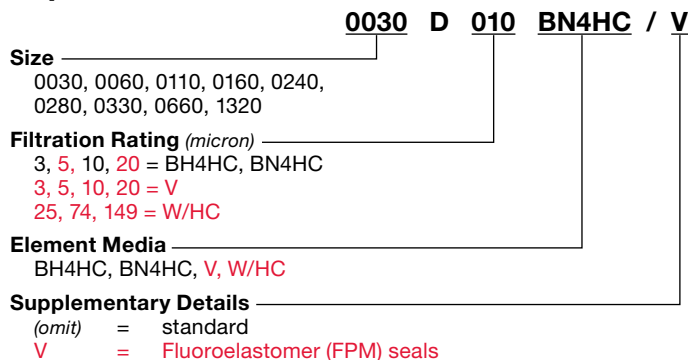


Steel / Heavy Industry

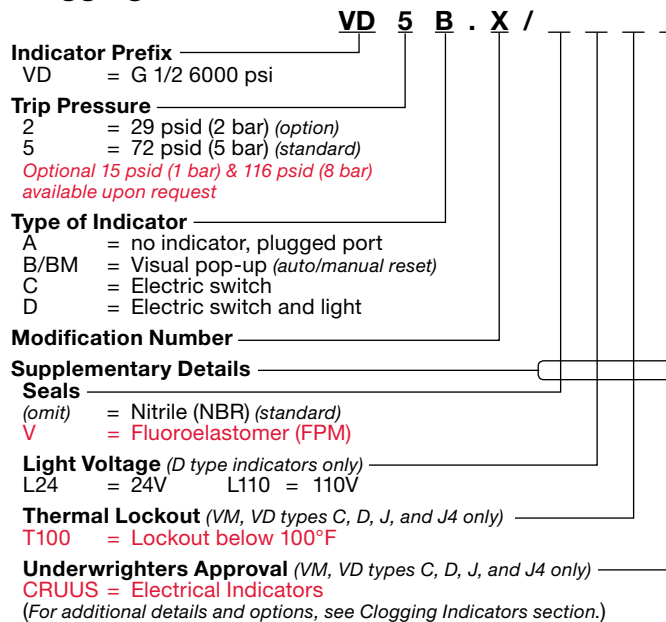
## Model Code



## Replacement Element Model Code



## Clogging Indicator Model Code

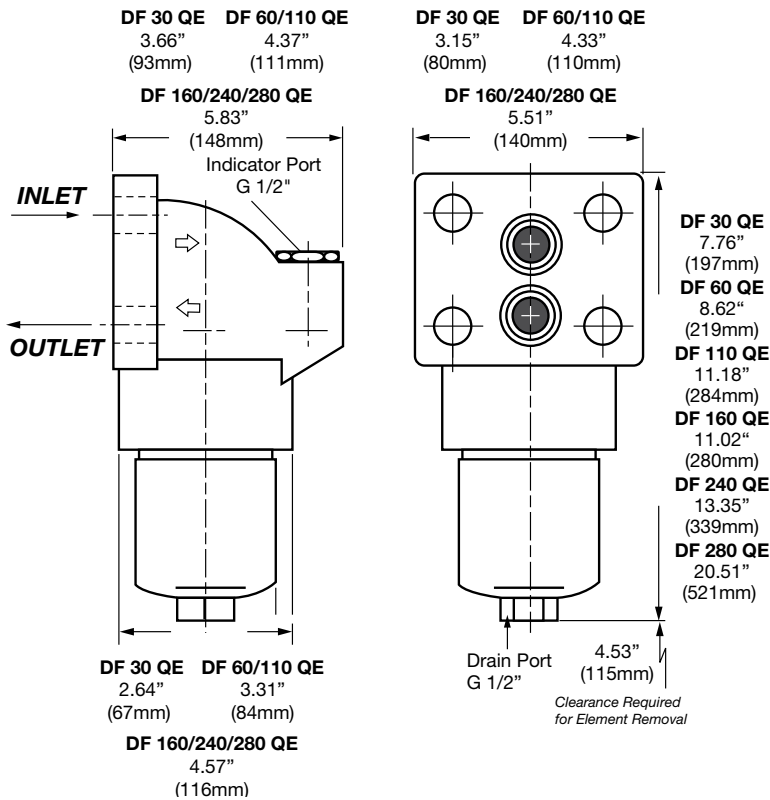


Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

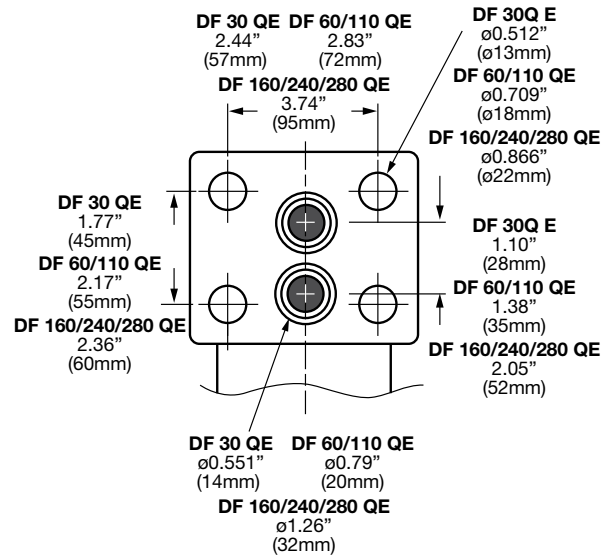


## Dimensions

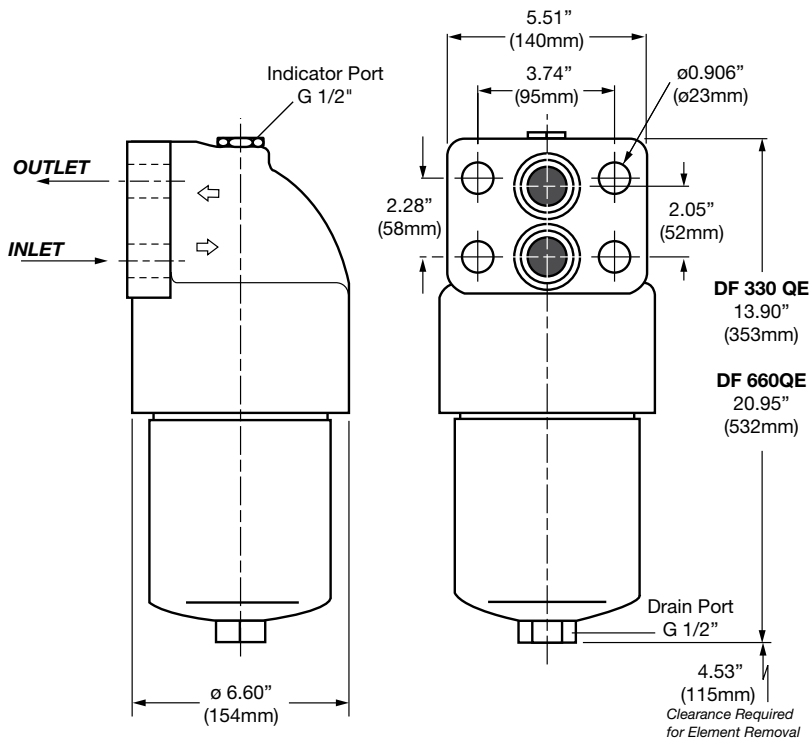
### DF 30 – 280 QE



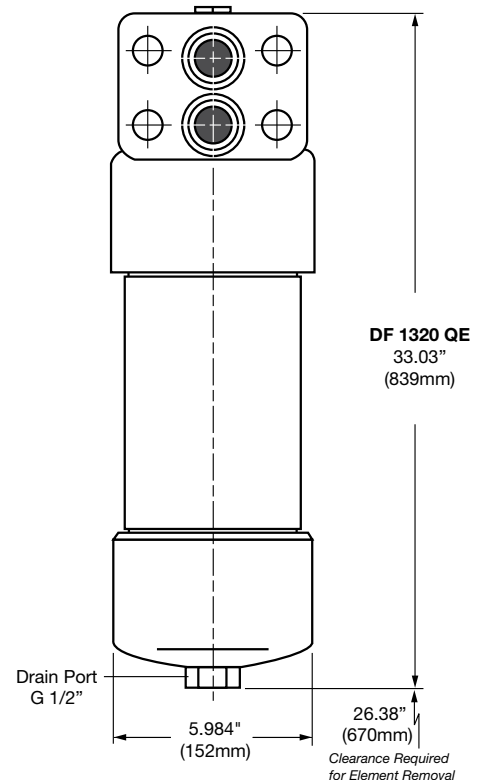
### Mounting Pattern



### DF 330 – 660 QE



### DF 1320 QE



Size	30	60	110	160	240	280	330	660	1320
Weight (lbs.)	6.0	10.8	12.8	20.0	22.7	31.9	47.8	63.2	105.8

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

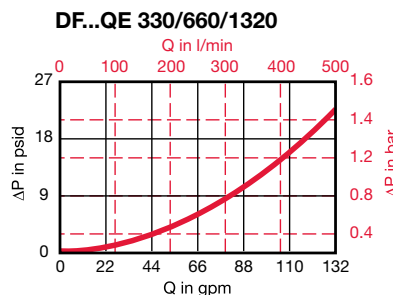
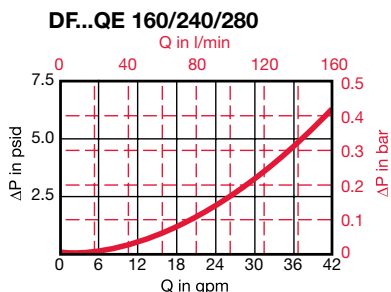
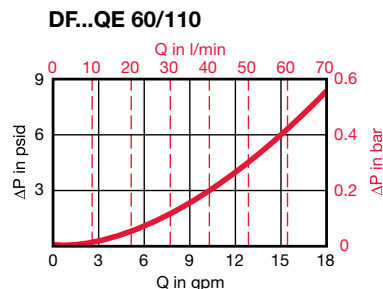
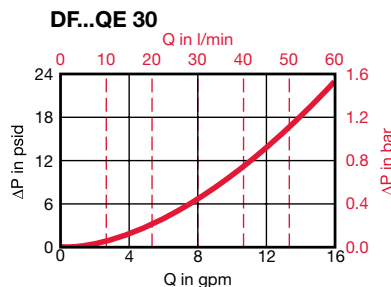
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### 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 section on page 19)



## Element K Factors

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

(From Tables Below)

Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	3.504	2.374	1.251	0.618
0060	1.582	1.116	0.723	0.433
0110	0.819	0.585	0.361	0.205
0140	0.701	0.450	0.261	0.157
0160	0.718	0.480	0.252	0.193
0240	0.450	0.333	0.196	0.128
0280	0.220	0.171	0.092	0.071
0330	0.294	0.215	0.163	0.095
0660	0.136	0.099	0.061	0.044
1320	0.068	0.048	0.030	0.021

Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	5.000	2.780	1.989	1.042
0060	3.210	1.785	0.993	0.669
0110	1.394	0.819	0.488	0.307
0160	0.919	0.569	0.322	0.240
0240	0.578	0.374	0.214	0.158
0280	0.313	0.184	0.097	0.090
0330	0.422	0.244	0.154	0.108
0660	0.179	0.106	0.055	0.049
1320	0.089	0.054	0.031	0.024

Size	...D...V Elements			
	3 μm	5 μm	10 μm	20 μm
0030	1.011	0.740	0.411	0.200
0060	0.877	0.511	0.296	0.183
0110	0.452	0.304	0.182	0.118
0160	0.251	0.177	0.123	0.079
0240	0.169	0.137	0.093	0.062
0280	0.126	0.093	0.064	0.041
0330	0.121	0.097	0.065	0.043
0660	0.063	0.050	0.034	0.021
1320	0.032	0.026	0.018	0.012

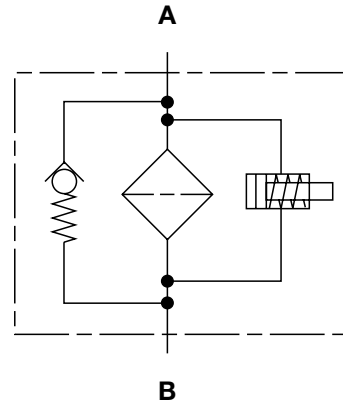
Size	...D...W/HC Elements 25, 50, 74, 100, 149, 200 μm			
0030	0.185			
0060	0.092			
0110	0.050			
0160	0.035			
0240	0.023			
0280	0.020			
0330	0.020			
0660	0.008			
0990	0.006			

All Element K Factors in psi / gpm.

## DFP Series Manifold Mount Filters 4500 psi • up to 180 gpm



### Hydraulic Symbol



### Features

- The filter housings are designed to withstand pressure surges as well as high static pressure loads.
- The screw-in bowl allows the filter element to be easily removed for replacement or cleaning.
- A visual (pop-up), electrical, electrical/visual (lamp), or electronic differential type clogging indicator can be installed.
- DFP filters are available with or without a bypass valve so either high or low collapse pressure elements may be used.
- Multiple indicator port locations (DFP330/660/1320 only) also allow two different types of indicators to be installed into the filter. Indicators of the same type, but with different trip pressures can also be installed.
- Fatigue pressure rating equals maximum allowable working pressure rating.

### Technical Details

<b>Mounting Method</b>	<i>(manifold mount)</i>	
60 - 280	4 mounting holes	
330 - 1320	6 mounting holes	
<b>Port Connection</b>	Diameter	
60/110	0.689" (17.5mm)	
160/240/280	0.843" (21.4mm)	
330/660/1320	1.181" (30mm)	
<b>Flow Direction</b>	Inlet: Top	Outlet: Top
<b>Construction Materials</b>		
Head	Ductile iron	
Bowl	Steel	
Housing (1320)	Steel	
Cap (1320)	Ductile iron	
<b>Flow Capacity</b>		
60	16 gpm (60 lpm)	
110	29 gpm (110 lpm)	
160	42 gpm (160 lpm)	
240	63 gpm (240 lpm)	
280	74 gpm (280 lpm)	
330	87 gpm (330 lpm)	
660	174 gpm (660 lpm)	
1320	180 gpm (1320 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	4500 psi (315 bar)	
Proof Pressure	6750 psi (472 bar)	
Fatigue Pressure	4500 psi (315 bar) @ 1 million cycles	
Burst Pressure	60/110	15,805 psi (1090 bar)
	160/240/280	>18,000 psi (1240 bar)
	330/660/1320	15,660 psi (1080 bar)
<b>Element Collapse Pressure Rating</b>		
BH/HC, V	3045 psid (210 bar)	
BN/HC, W/HC	290 psid (17 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	
<b>Indicator Trip Pressure</b>		
$\Delta P = 29$ psid (2 bar) -10% <i>(optional)</i>		
$\Delta P = 72$ psid (5 bar) -10% <i>(standard)</i>		
<b>Bypass Valve Cracking Pressure</b>		
$\Delta P = 43$ psid (3 bar) +10% <i>(optional)</i>		
$\Delta P = 87$ psid (6 bar) +10% <i>(standard)</i>		

### Applications



Agricultural



Construction



Industrial



Power Generation

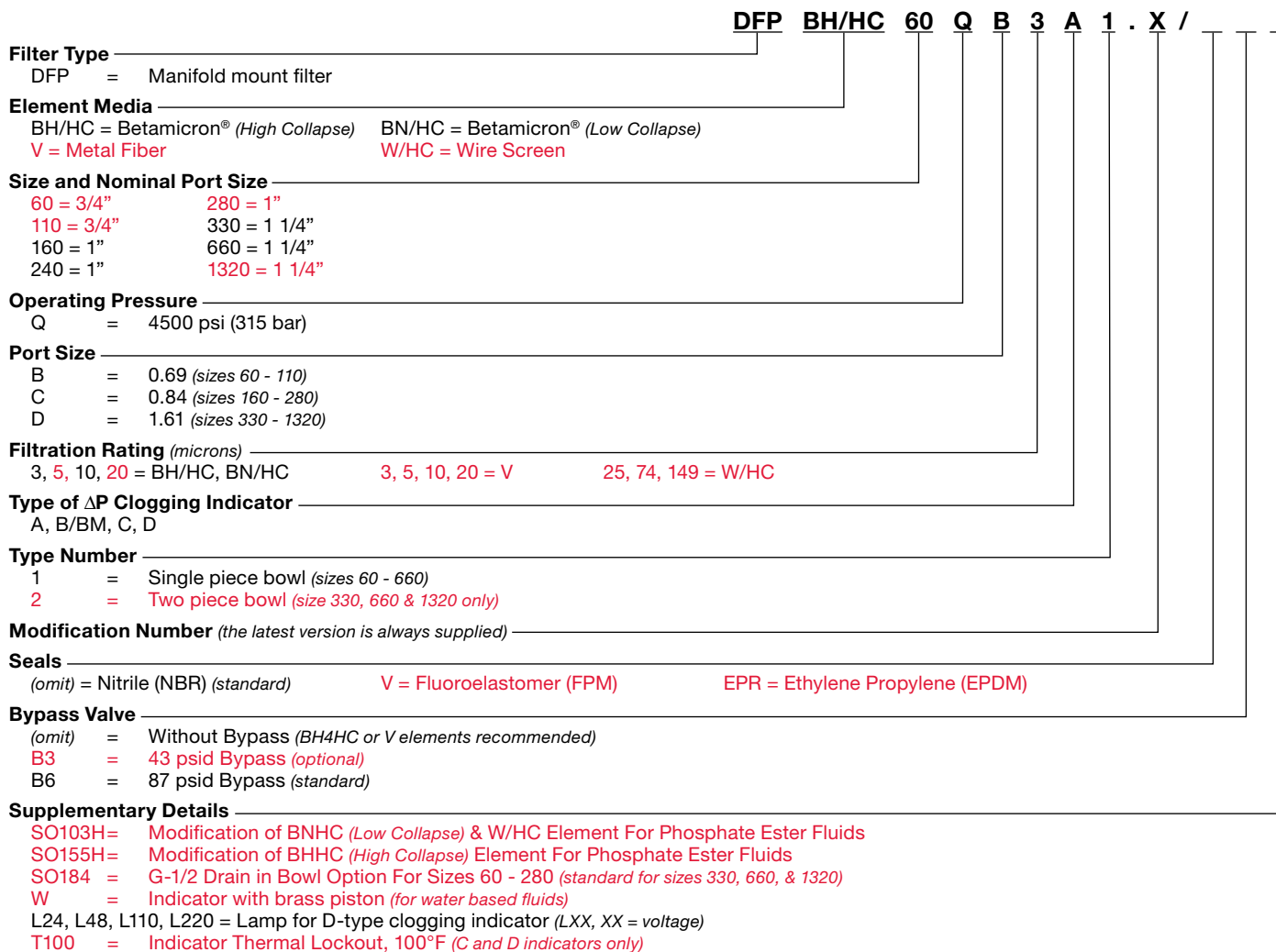


Railways

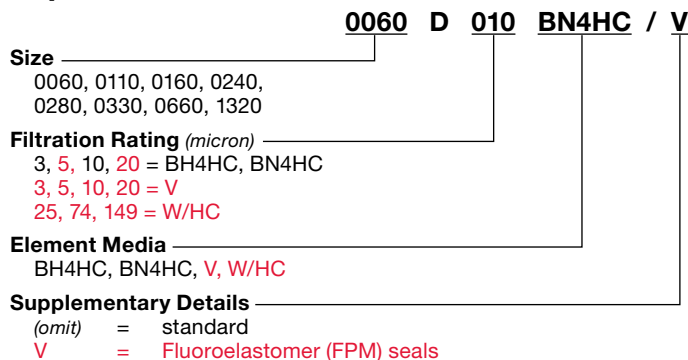


Steel / Heavy Industry

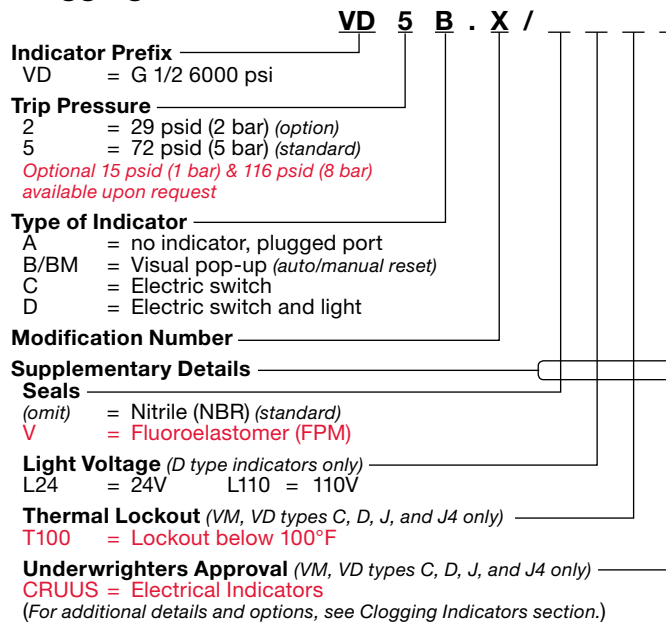
## Model Code



## Replacement Element Model Code

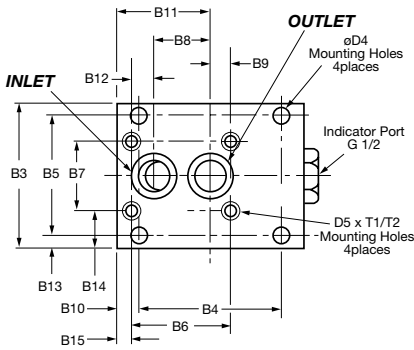


## Clogging Indicator Model Code



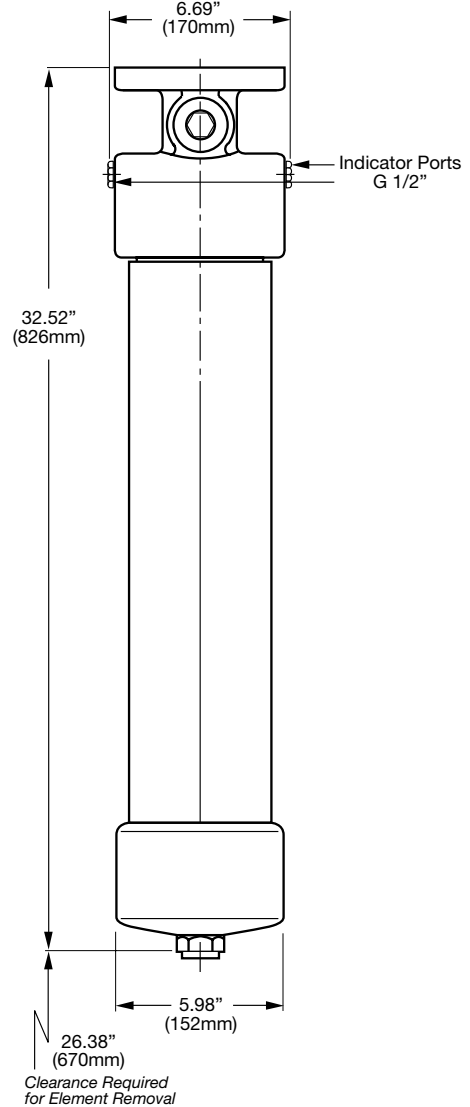
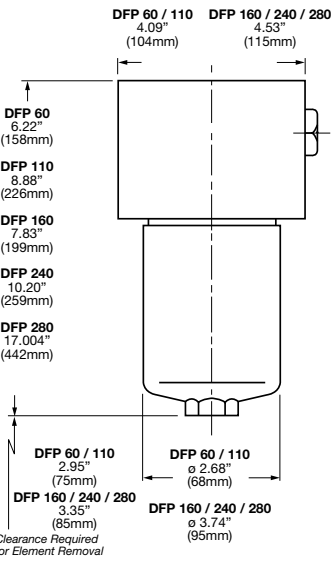
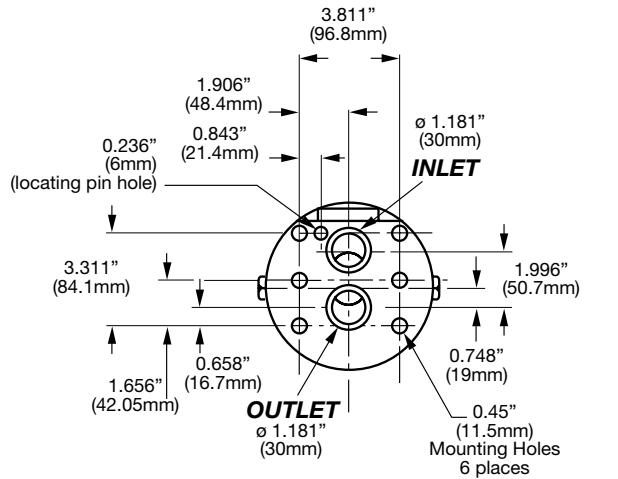
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

## Dimensions DFP 60 - 280

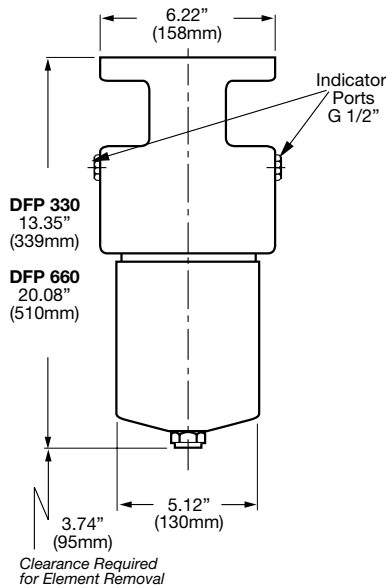
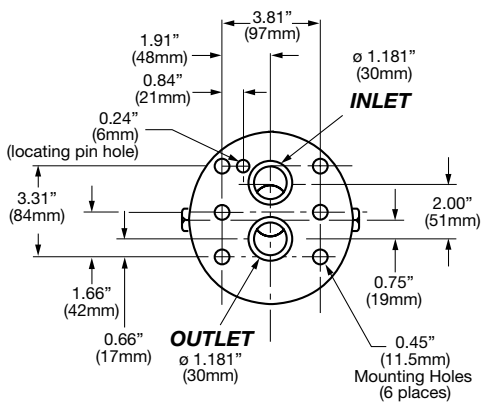


	60 / 110	160 / 240 / 280
B3	3.15" (80mm)	4.33" (110mm)
B4	3.50" (89mm)	3.54" (90mm)
B5	1.24" (31.6mm)	3.39" (86mm)
B6	-	2.40" (61mm)
B7	-	2.24" (57mm)
B8	1.24" (31.6mm)	1.50" (38mm)
B9	-	0.55" (14mm)
B10	0.30" (7.5mm)	0.49" (12.5mm)
B11	2.20" (56mm)	2.30" (58mm)
B12	-	0.35" (9mm)
B13	0.95" (24mm)	0.47" (12mm)
B14	-	1.04" (26.5mm)
B15	-	0.41" (10.5mm)
ø D4	0.33" (8.5mm)	0.35" (9mm)
Inlet	0.639" (17.5mm)	0.843" (21.4mm)
Outlet	0.639" (17.5mm)	0.843" (21.4mm)

## DFP 1320



## DFP 330 / 660



Size	60	110	160	240	280	330	660	1320
Weight (lbs.)	10.6	12.3	18.1	21.2	31.0	48.1	63.4	106.5

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

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

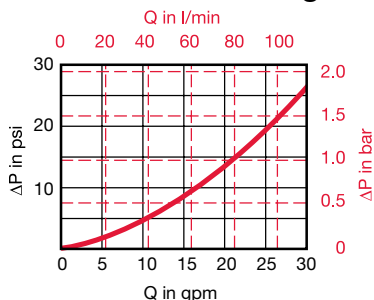
### Housing Curve:

Pressure loss through housing is as follows:

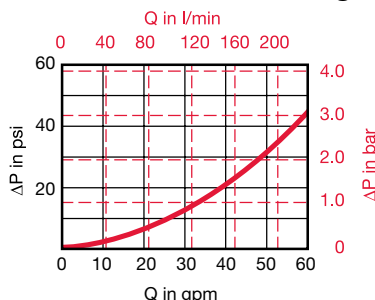
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see sizing section on page 19)

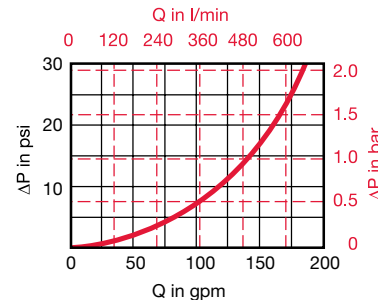
### DFP 60/110 Housing



### DFP 160/240/280 Housing



### DFP 330/660 Housing



## Element K Factors

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

(From Tables Below)

Size	...D...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0060	1.582	1.116	0.723	0.433
0110	0.819	0.585	0.361	0.205
0160	0.718	0.480	0.252	0.193
0240	0.450	0.333	0.196	0.128
0280	0.220	0.171	0.092	0.071
0330	0.294	0.215	0.163	0.095
0660	0.136	0.099	0.061	0.044
1320	0.068	0.048	0.030	0.021

Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
0060	3.210	1.785	0.993	0.669
0110	1.394	0.819	0.488	0.307
0160	0.919	0.569	0.322	0.240
0240	0.578	0.374	0.214	0.158
0280	0.313	0.184	0.097	0.090
0330	0.422	0.244	0.154	0.108
0660	0.179	0.106	0.055	0.049
1320	0.089	0.054	0.031	0.024

Size	...D...V Elements			
	3 μm	5 μm	10 μm	20 μm
0060	0.877	0.511	0.296	0.183
0110	0.452	0.304	0.182	0.118
0160	0.251	0.177	0.123	0.079
0240	0.169	0.137	0.093	0.062
0280	0.126	0.093	0.064	0.041
0330	0.121	0.097	0.065	0.043
0660	0.063	0.050	0.034	0.021
1320	0.032	0.026	0.018	0.012

Size	...D...W/HC Elements
	25, 50, 74, 100, 149, 200 μm
0060	0.092
0110	0.050
0160	0.035
0240	0.023
0280	0.020
0330	0.020
0660	0.008
0990	0.006

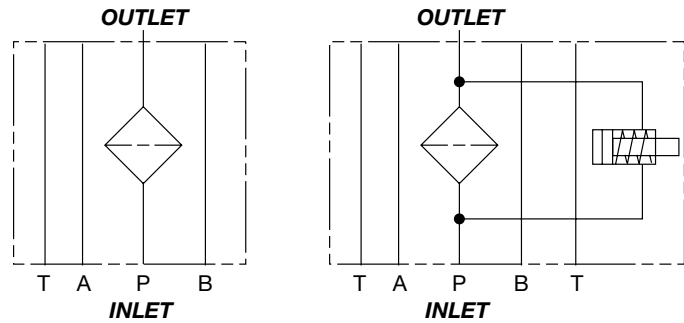
All Element K Factors in psi / gpm.

## DFZ Series Modular Stacking Filters

4500 psi • up to 10 gpm



### Hydraulic Symbol



### Features

- A visual (pop-up), electrical, electrical/visual (lamp) differential type clogging indicator can be installed.
- The DFZ filter can be ordered with the bowl on the left or the right side for easy element changeout.
- The DFZ filter is available in two mounting patterns to fit different hydraulic manifolds:  
ANSI/B93.7M-D03 / Cetop R35 (was B93.7-D01) DF 30 Z  
ANSI/B93.7M-D05 / Cetop R35 (was V93.7-D02)\* DF 60 Z or DF 110 Z

\*includes fifth port for optional tank connection

### Technical Details

<b>Mounting Method</b>	4 mounting holes ( <i>manifold mount</i> )	
<b>Port Connection</b>	30 ANSI D03/A6 DIN 24340 / Cetop R35 60/110 ANSI D05/A10 DIN 24340 / Cetop R35	
<b>Flow Direction</b>	Inlet: Side	Outlet: Side
<b>Construction Materials</b>	Head, Bowl Steel	
<b>Flow Capacity</b>	30 8 gpm (30 lpm) 60/110 16 gpm (60 lpm)	
<b>Housing Pressure Rating</b>	Max. Operating Pressure 4500 psi (315 bar) Proof Pressure 6750 psi (472 bar) Fatigue Pressure 30 4500 psi (315 bar) @ 250,000 cycles 60/110 4500 psi (315 bar) @ 1 million cycles	
	Burst Pressure > 18,270 psi (1260 bar)	
<b>Element Collapse Pressure Rating</b>	BH/HC, V 3045 psid (210 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoroelastomer or Ethylene Propylene seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	
<b>Indicator Trip Pressure</b>	ΔP = 116 psid (8 bar) -10% (standard)	

### Applications



Agricultural



Automotive



Construction



Industrial



Power Generation



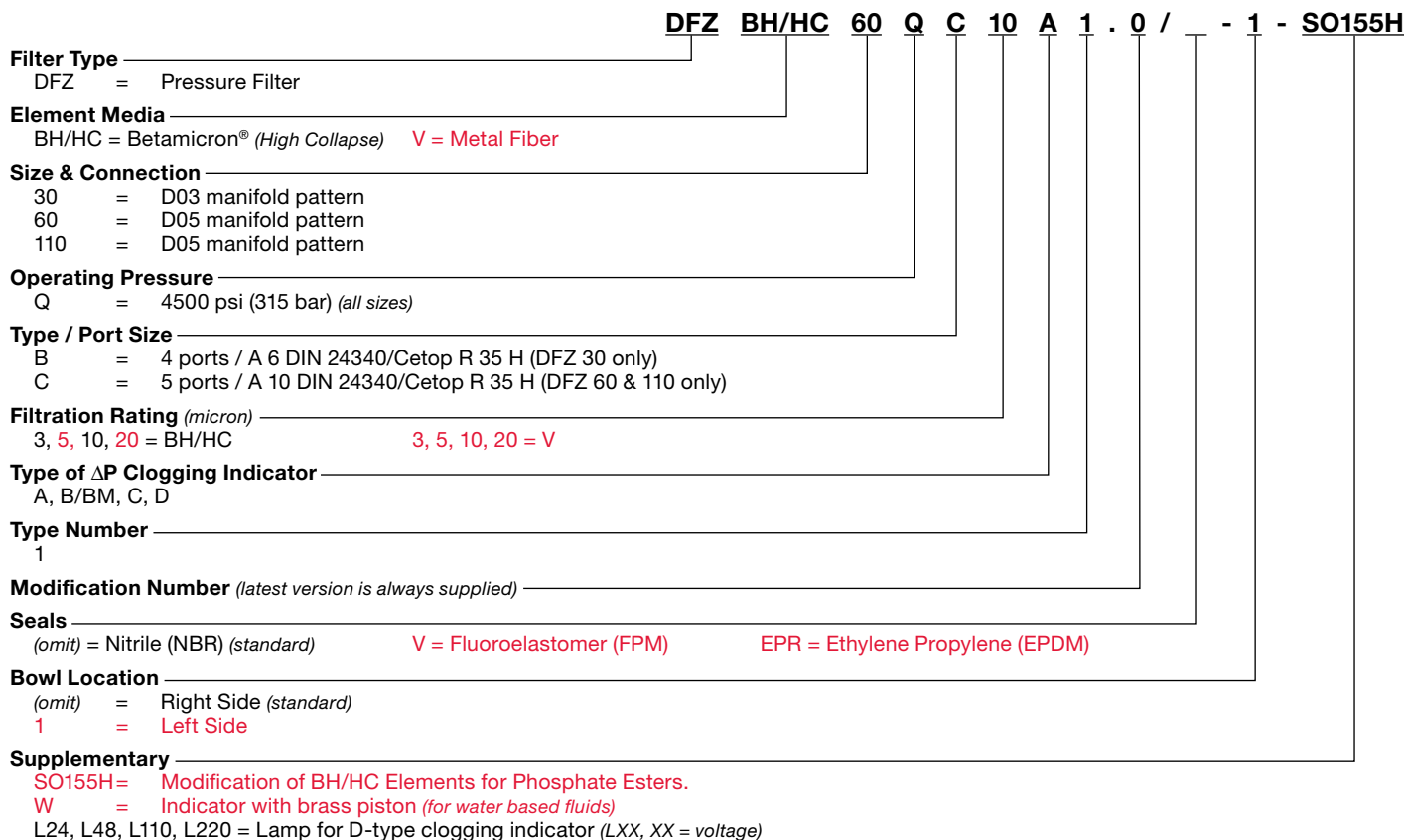
Railways



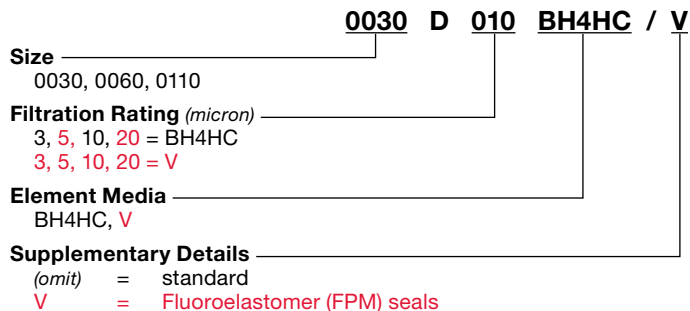
Steel / Heavy Industry



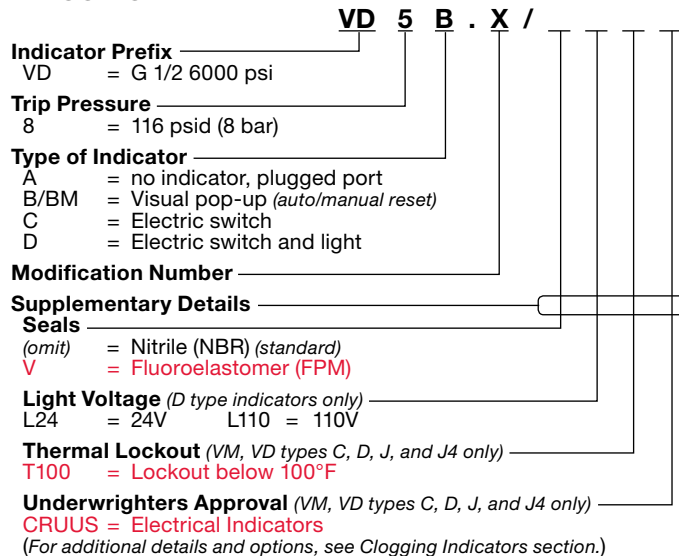
## Model Code



## Replacement Element Model Code



## Clogging Indicator Model Code



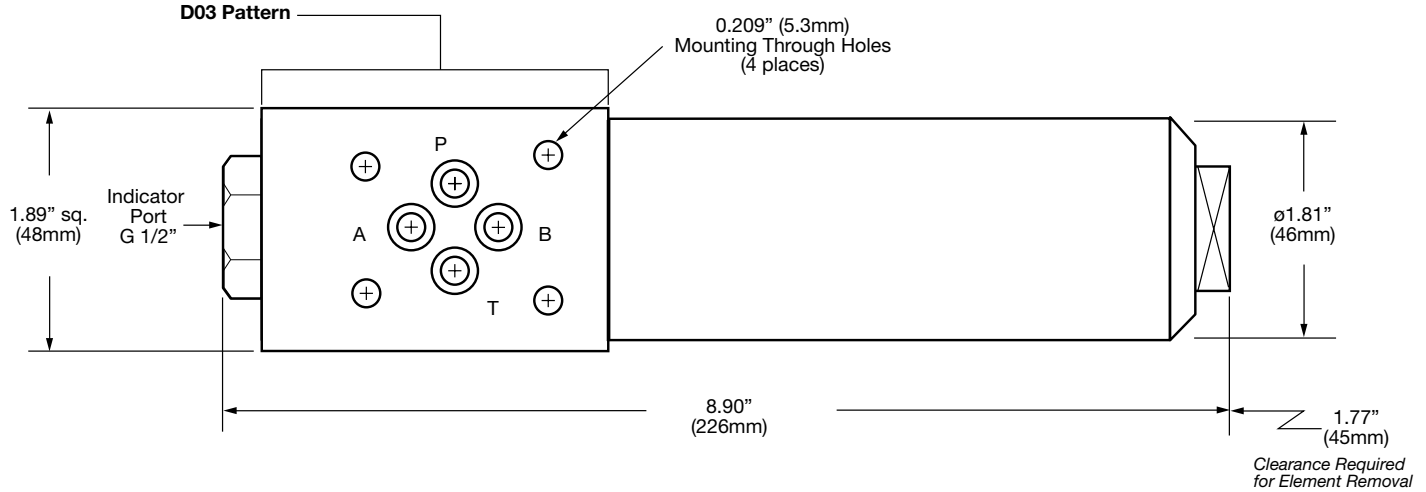
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability



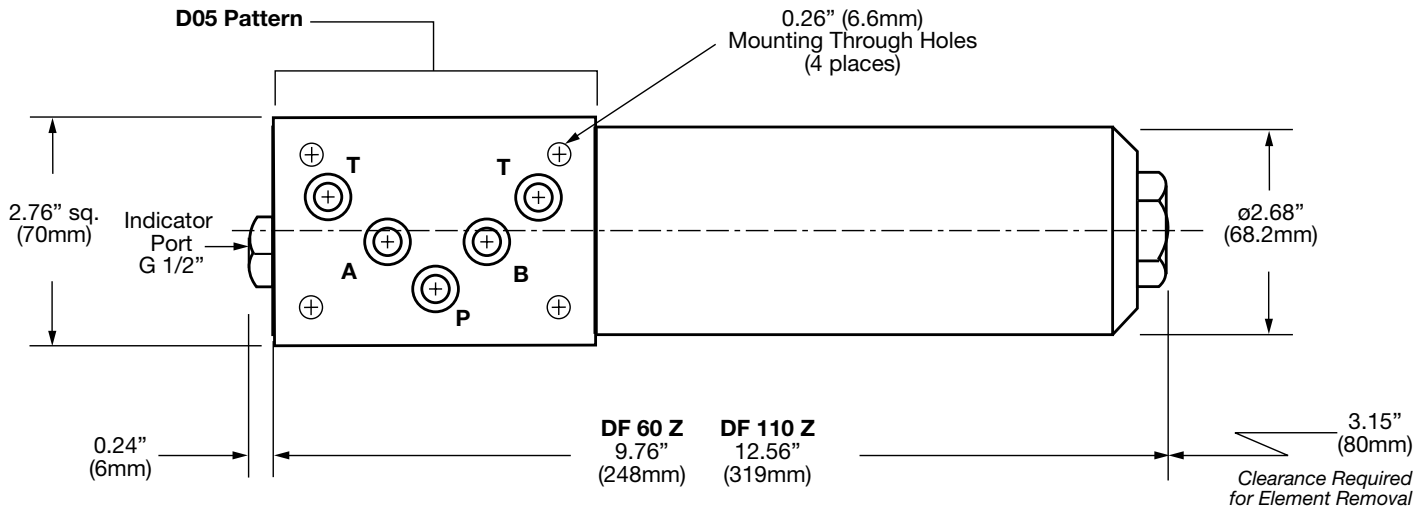
# HYDAC High Pressure Filters

## Dimensions

### DF 30 Z (Right Hand Version Shown) - (standard)



### DF 60 / 110 Z (Right Hand Version Shown) - (standard)



Size	60	110	160	240	280	330	660	1320
Weight (lbs.)	10.6	12.3	18.1	21.2	31.0	48.1	63.4	106.5

Dimensions shown are for general information and overall envelope size only. Weights listed are without element. For complete dimensions please contact HYDAC to request a certified print.

## Sizing Information

Total pressure loss through the filter is as follows:

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

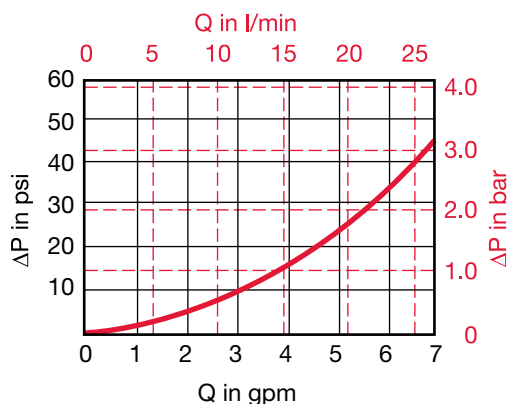
### Housing Curve:

Pressure loss through housing is as follows:

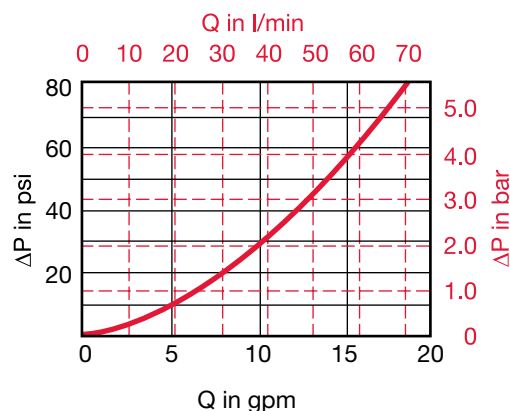
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see sizing section on page 19)

### DFZ 30 Housing



### DFZ 60 / 110 Housing



## Element K Factors

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

(From Tables Below)

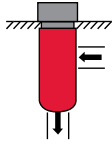
Size	...D...BH4HC (Betamicon® High Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	5.000	2.780	1.989	1.042
0060	3.210	1.785	0.993	0.669
0110	1.394	0.819	0.488	0.307

Size	...D...V Elements			
	3 μm	5 μm	10 μm	20 μm
0030	1.011	0.740	0.411	0.200
0060	0.877	0.511	0.296	0.183
0110	0.452	0.304	0.182	0.118

All Element K Factors in psi / gpm.

## CF Series Manifold Cartridge Filters

3000 psi • up to 25 gpm

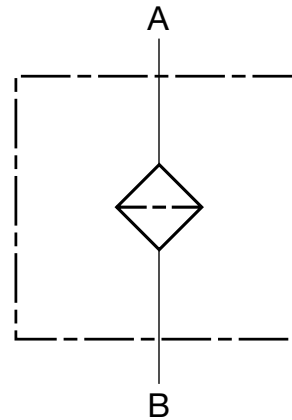


CFxx20



CFxx45

### Hydraulic Symbol



### Features

- Made of aluminum for light weight and low cost.
- Made to throw away when fully clogged.
- Low price - market competitive

### Technical Details

<b>Port Connections</b>	CF20	SAE-16 Modified Cavity
	CF45	SAE-20 Cavity (VC20-S3)
<b>Direction of Flow</b>	Outside to Inside flow	
<b>Materials of Construction</b>	Aluminum	
<b>Flow Capacity</b>		
CF20	5 GPM (15 micron - fiberglass media) 2.5 GPM recommended design flow max. - for high efficiency media	
CF45	12 GPM (25, 149 micron - wire screen media) 12 GPM (15 micron - fiberglass media) 6 GPM recommended design flow max. - for high efficiency media 25 GPM (25, 149 micron - wire screen media)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure:	3000 psi (207 bar)	
Proof Pressure:	4500 psi (310 bar)	
<b>Element Performance Rating</b>		
MM, W	290 psid (20 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatibility</b>	Compatible with all petroleum oils and synthetic fluids rated for use with Fluoro-Rubber seals. Contact HYDAC for information on special housing and element constructions available for use with water glycols, oil/water emulsions, and HWBF.	

### Applications



Agricultural



Construction



Industrial

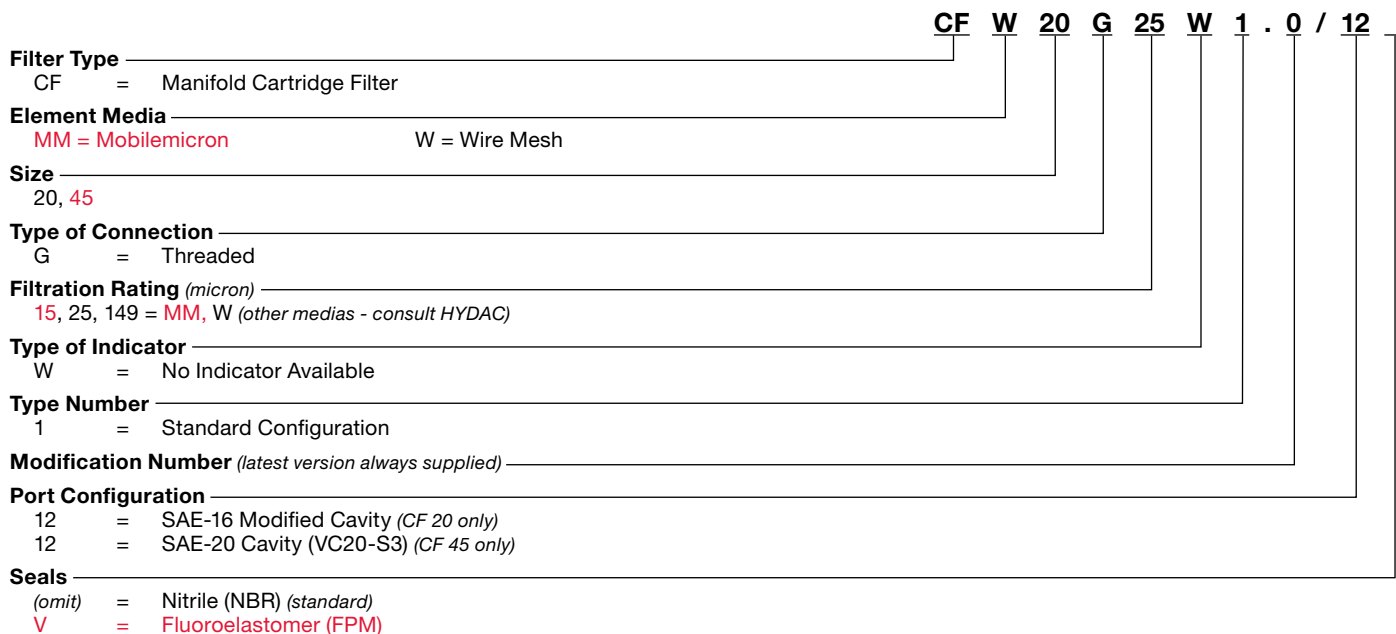


Commercial  
Municipal



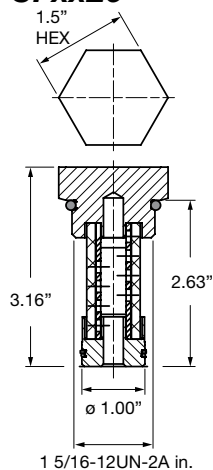
Railways

## Model Code

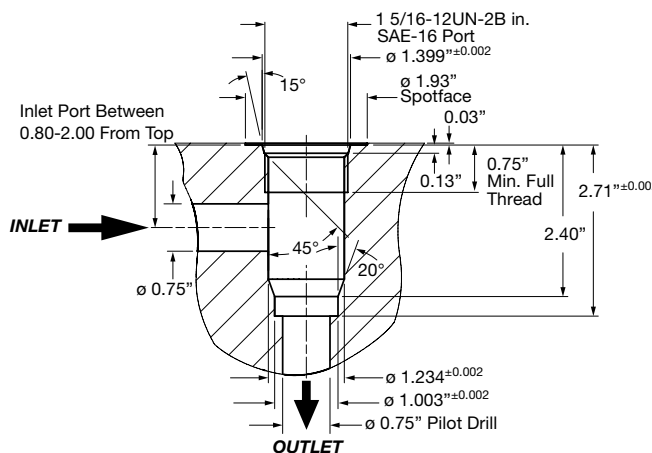


Model Codes Containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability

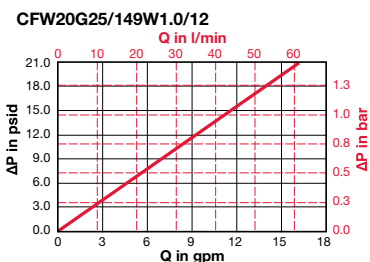
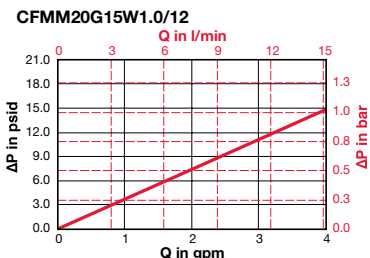
## Dimensions CFxx20



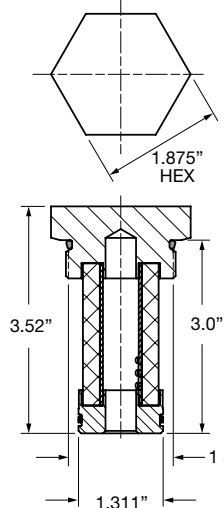
## Cavity



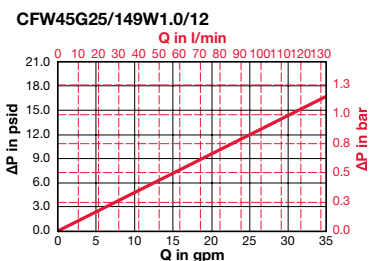
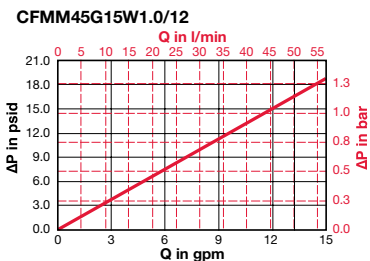
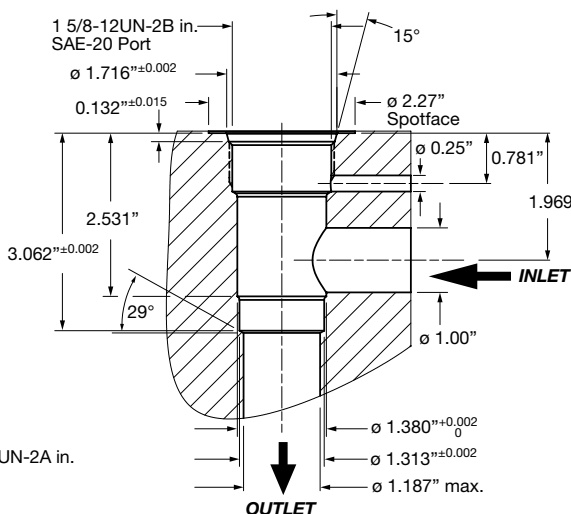
## Flow Curves



## CFxx45



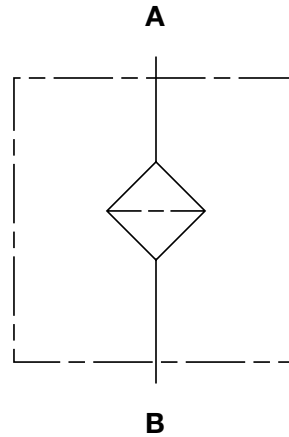
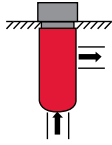
## Cavity



## CP-C16 Series Circuit Protector Manifold Cartridge Filters

3000 psi • up to 12 gpm

### Hydraulic Symbol



### Features

- Simple Cost Effective way method of component protection with minimal space requirements, eliminating design restraints.
- Fits into a standard manifold Cavity No. C16-2 Port.
- CP Circuit Protector Filters provide back-up protection when upstream pressure filters go into by-pass or if element damage occurs.
- Three (3) different element options 10, and 141 micron allow filter to be tailored to individual application needs.
- Suitable for petroleum based fluids.

### Technical Details

<b>Mounting Method</b>	C16-2 Cavity (1 5/16-12 UN-2B Thread)	
<b>Flow Direction</b>	Inlet: Bottom	Outlet: Side
<b>Construction Materials</b>	Steel	
<b>Flow Capacity</b>	12 gpm (45 lpm)	
<b>Housing Pressure Rating</b>		
Max. Operating Pressure	3000 psi (210 bar)	
Proof Pressure	4500 psi (210 bar)	
Fatigue Pressure	Contact HYDAC Office	
Burst Pressure	Contact HYDAC Office	
<b>Element Collapse Pressure Rating</b>		
W/HC	250 psid (17 bar)	
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)	
<b>Fluid Compatability</b>		
Compatible with all petroleum oils rated for use with Nitrile seals.		

### Applications



Agricultural



Automotive

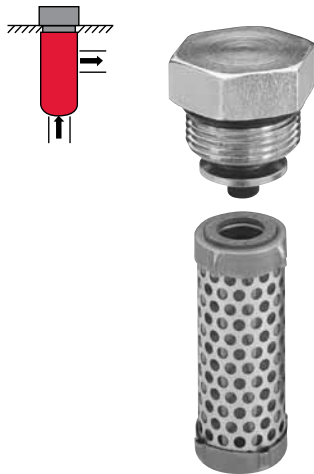


Construction

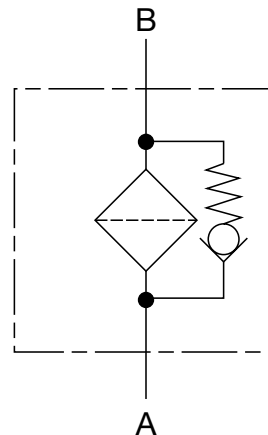


## CP-SAE Series Circuit Protector Manifold Cartridge Filters

6000 psi • up to 30 gpm



### Hydraulic Symbol



### Features

- Simple Cost Effective way to provide component protection with minimal space required eliminating design restraints.
- Fits into a standard manifold SAE O-ring Port.
- CP Circuit Protector Filters provide back-up protection when upstream pressure filters go into by-pass or if element damage occurs.
- CP-SAE provides operations protection through supply of a by-pass to assure flow to critical components if filter becomes clogged.
- Increased range of product use through three (3) different sizes available, 15 at 4 gpm, 40 at 12 gpm, and size 120 at 30 gpm.
- Suitable for petroleum based fluids.

### Technical Details

<b>Mounting Method</b>	
CP-SAE-15	SAE-10 Port
CP-SAE-40	SAE-16 Port
CP-SAE-120	SAE-24 Port
<b>Flow Direction</b>	Inlet: Bottom      Outlet: Side
<b>Construction Materials</b>	
CP-SAE-15	Carbon steel
CP-SAE-40	Carbon steel
CP-SAE-120	Stainless steel
<b>Flow Capacity</b>	
CP-SAE-15	4 gpm (15 lpm)
CP-SAE-40	12 gpm (45 lpm)
CP-SAE-120	30 gpm (113 lpm)
<b>Housing Pressure Rating</b>	
Max. Operating Pressure	6000 psi (420 bar)
Proof Pressure	9000 psi (630 bar)
Fatigue Pressure	Contact HYDAC Office
Burst Pressure	Contact HYDAC Office
<b>Element Collapse Pressure Rating</b>	
W	100 psid (6.9 bar)
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)
<b>Fluid Compatability</b>	
Compatible with all petroleum oils rated for use with Nitrile seals.	
<b>Bypass Valve Cracking Pressure</b>	
ΔP = 50 psid (3.4 bar) +10% (standard)	

### Applications



Agricultural



Automotive



Construction

### Replacement Elements

Part Number	Description	Flow Rate
02069397	0015 D 010 W	0015 - 4 gpm
02069398	0040 D 010 W	0040 - 12 gpm
02069399	0120 D 010 W	0120 - 30 gpm

## Model Code

**CP-SAE W 15 G 10 W 1 . 0 / 12 B3.5**

**Filter Type** \_\_\_\_\_  
 CP = Circuit Protector (SAE O-ring Port)

**Element Media** \_\_\_\_\_  
 W = Wire Mesh

**Size** \_\_\_\_\_  
 15 = 4 gpm      40 = 12 gpm      120 = 30 gpm

**Inline Port** \_\_\_\_\_  
 G = Male Threaded

**Filtration Rating (micron)** \_\_\_\_\_  
 10 = 10

**By-pass Indicator** \_\_\_\_\_  
 W = No indicator Port

**Type Number** \_\_\_\_\_  
 1 = Standard Configuration

**Modification Number** \_\_\_\_\_

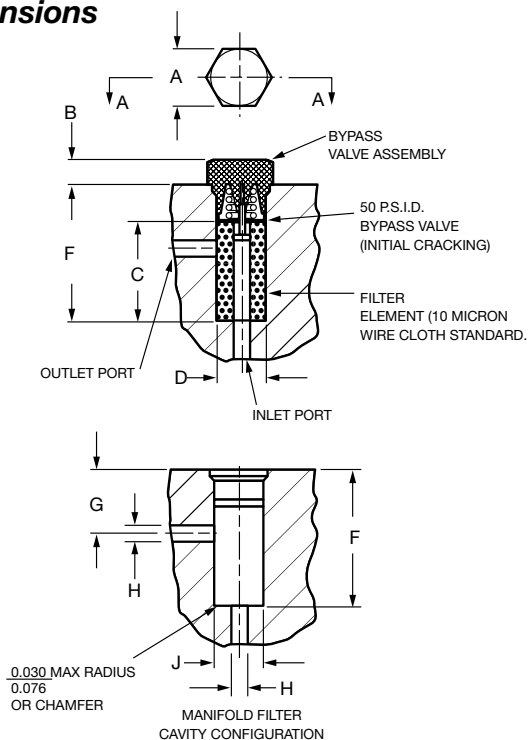
**Port Configuration** \_\_\_\_\_  
 12

**By-pass Valve** \_\_\_\_\_  
 B3.5 = 50 psi

**Seals** \_\_\_\_\_  
 (omit) = Nitrile (NBR) (standard)  
 V = Fluoroelastomer (FPM)

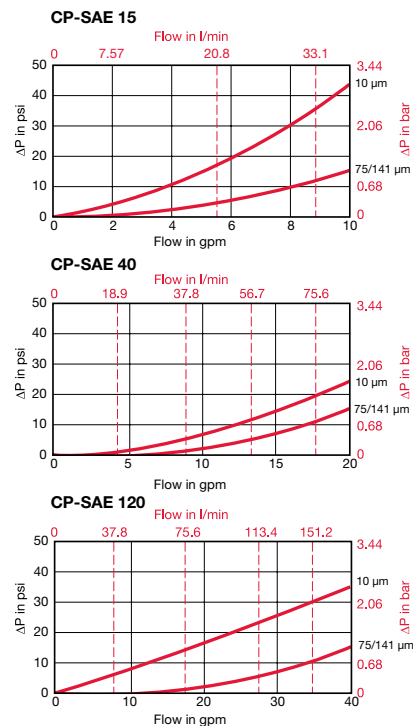
*Model Codes Containing RED are non-stock items — Minimum quantities may apply – Contact HYDAC for information and availability*

## Dimensions



## Flow Curves

Based on testing conducted with 150 SUS fluid at 105°F.



Model	A	B	C	D	E SAE O-Ring Port	F	G	H	J	Torque	
										Alu.	Steel
CP-SAE 15	1.00/25.4	0.41/10.4	1.75/44.5	0.74/18.8	-10 (7/8-14)	2.41/61.2	1.12/28.4 min 1.87/47.5 max	0.266/6.8	0.781/19.8 min 0.814/20.7 max	65 ft-lb	85 ft-lb
CP-SAE 40	1.5/38.1	0.5/12.7	2.50/63.5	1.00/25.4	-16 (1 5/16-12)	3.34/84.8	1.49/37.8 min 2.53/64.3 max	0.531/13.5	1.140/29.0 min 1.1875/30.1 max	150 ft-lb	200 ft-lb
CP-SAE 120	2.13/54.1	0.65/16.5	4.00/101.6	1.50/38.1	-24 (1 7/8-12)	5.01/127.3	1.92/48.8 min 3.81/96.8 max	0.875/22.2	1.750/44.5 min 1.803/45.8 max	230 ft-lb	305 ft-lb