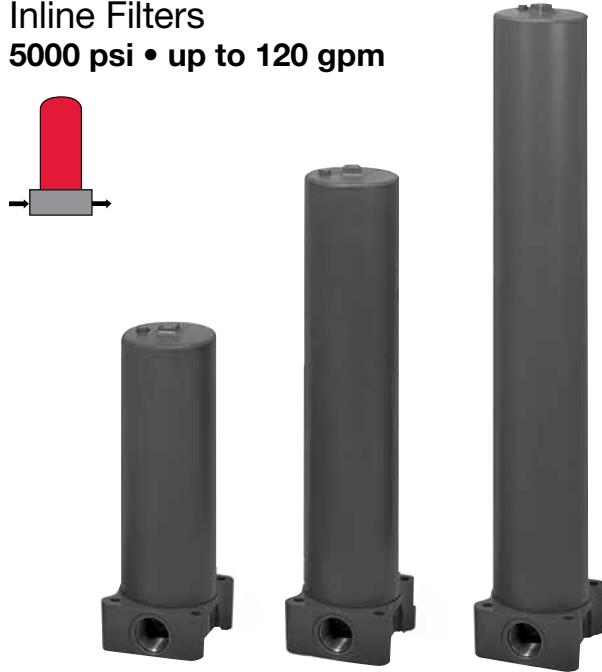


# HIGH PRESSURE FILTERS

## HF4P Series

### Inline Filters

5000 psi • up to 120 gpm



### 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, SAE flange code 62 and code 61 (optional) BSPP and subplate mounting to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. A choice of O-ring materials (nitrile rubber or fluorocarbon elastomer) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water based fluids.
- The element filter housing is permanently mounted above the filter head for easy top access and minimal clearance to remove elements for replacement.
- 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 located in filter head base is mounted 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.

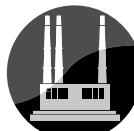
### Applications



Automotive



Construction



Industrial



Power Generation



Pulp & Paper

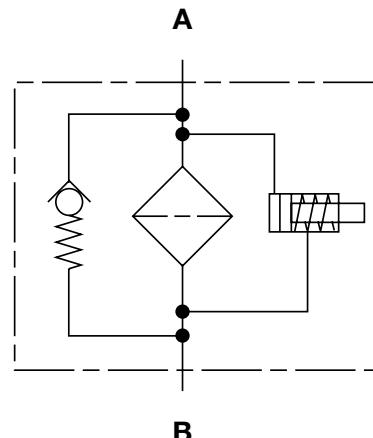


Railways



Steel / Heavy Industry

### Hydraulic Symbol



### Technical Specifications

<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 (opposite each other)
<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. Allowable Working Pressure	5000 psi (345 bar)
Fatigue Pressure	3500 psi (241 bar) @ 1 million cycles
Burst Pressure	14,400 psi (992 bar)
<b>Element Collapse Pressure Rating</b>	
BH	3045 psid (210 bar)
BN	145 psid (10 bar)
<b>Fluid Temperature Range</b>	
14°F to 212°F (-10°C to 100°C) Consult HYDAC for applications operating below 14°F (-10°C)	
<b>Fluid Compatibility</b>	
Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.	
<b>Indicator Trip Pressure</b>	
$\Delta P = 29 \text{ psid (2 bar)} -10\% \text{ (optional)}$	
$\Delta P = 72 \text{ psid (5 bar)} -10\% \text{ (standard)}$	
$\Delta P = 116 \text{ psid (8 bar)} -10\% \text{ (optional on non-bypass filters)}$	
<b>Bypass Valve Cracking Pressure</b>	
$\Delta P = 43 \text{ psid (3 bar)} +10\% \text{ (optional)}$	
$\Delta P = 87 \text{ psid (6 bar)} +10\% \text{ (standard)}$	
Non Bypass Available	

## Model Code

Filter Type	HF4P	BN	09	R	P	3	D	1	.	0	/	12	V	B6	L110
HF4P = Inline pressure filter															
Element Media	BH = Betamicon® (High Collapse) BN = Betamicron® (Low Collapse) W = Wire Mesh														
Element Length	09 = 9 inches	18 = 18 inches	27 = 27 inches												
Pressure Range	R = 345 Bar	L = 206 Bar													
Size & Nominal Connection	P = Manifold Mount	K = 1 1/2" Flanged	F = 1 1/2" Threaded												
Filtration Rating (microns)	3, 5, 10, 20 = BH, BN	25, 50, 100, 200 = W													
Type of Clogging Indicator	A, BM, C, D, J, J4 (Others available upon request, see Clogging Indicators section.)														
Type Code	1														
Modification Number	(the latest version is always supplied)														
Port Configuration	(omit) = Manifold mount (use when "P" connection type is selected) 0 = 1 1/2" BSPP Straight Threads 12 = SAE-24 straight thread O-ring boss 16 = 1 1/2" SAE 4 bolt flange code 61(L) or 62(R)														
Seals	(omit) = Nitrile rubber (NBR) (standard) V = Fluorocarbon elastomer (FKM)														
Bypass Valve	(omit) = Non-bypass – Critical applications (high collapse element required) B3 = 43 psid (3 bar) B6 = 87 psid (6 bar) Standard setting for pressure filters														

Supplementary Details  
 W = "VD..." indicator modified with a brass piston for use with high water based emulsions/solutions (HFA) & (HFC)  
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)  
 T100 = Thermal lockout on indicator at 100°F (C, D, J, and J4 indicators only)  
 cRUus = Electrical Indicator with underwriter's recognition  
 SO376 = Modification of ON and W/HC elements for HFA, HFB, HFC, and HFD flame retardant liquids

## Replacement Element Model Code

Length (nominal inches)	5	.	03	.	09	D	03	BN	/	V				
Length (nominal inches)	09, 18, 27													
Filtration Rating (micron)	3, 5, 10, 20 = BN, BH 25, 50, 100, 200 = W													
Element Media	BN, BH, W													
Seals	(omit) = Nitrile rubber (NBR) (standard) V = Fluorocarbon elastomer (FKM)													
Supplementary Details	SO376 = (same as above)													

## Clogging Indicator Model Code

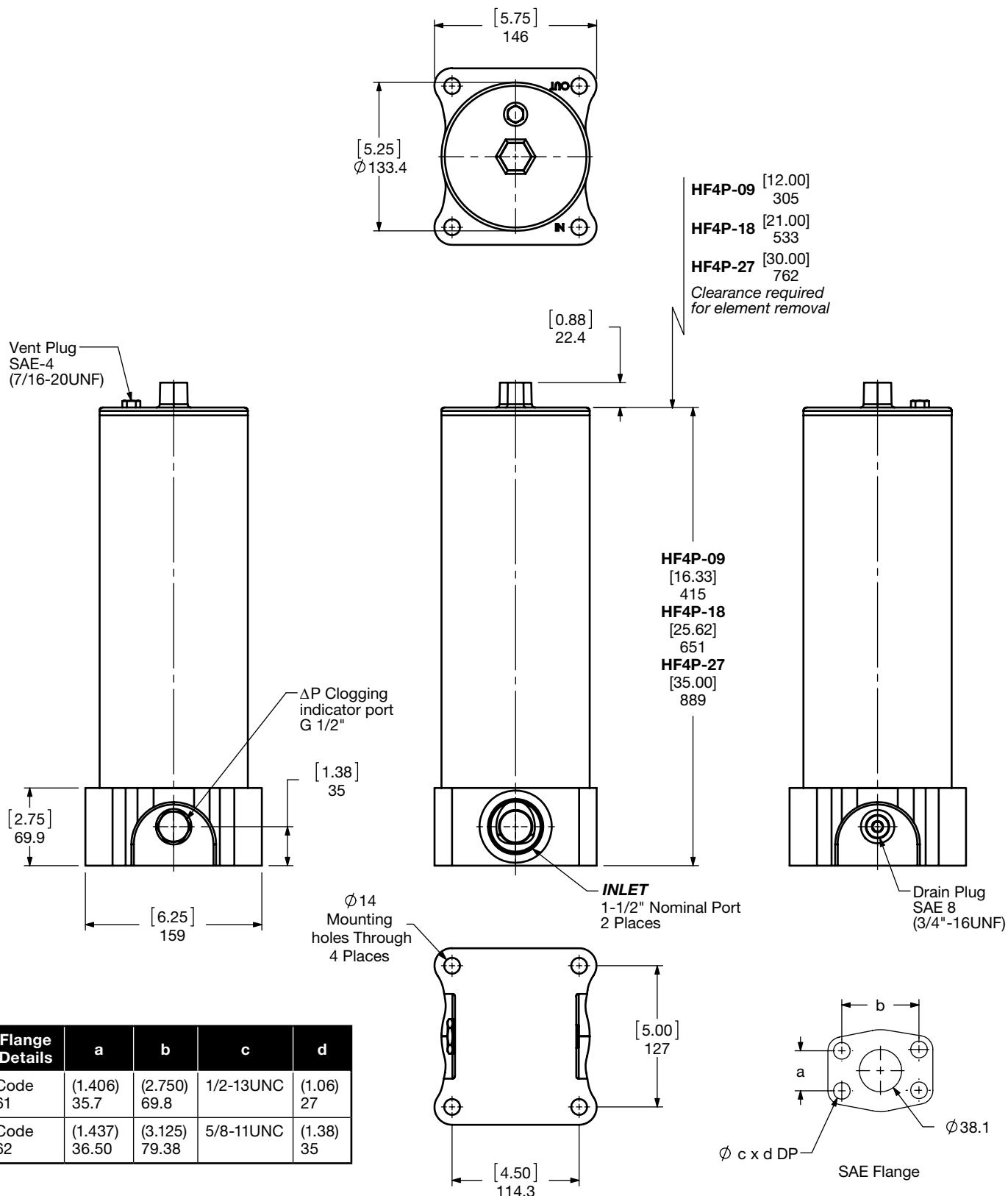
Indicator Prefix	VD	5	D	.	X	/	V						
VD = G 1/2 6000 psi													
Trip Pressure	2	= 29 psid (2 bar) (option) 5 = 72 psid (5 bar) (standard) Optional 15 psid (1 bar) & 116 psid (8 bar) available upon request											
Type of Indicator	A = No indicator, plugged port BM = Pop-up indicator (manual reset) C = Electric switch - SPDT D = Electric switch and LED light - SPDT J = Electric switch (Brad Harrison 5-pin mini connector) J4 = Electric switch - M12 (Brad Harrison 4-pin micro connector)												
Modification Number													
Supplementary Details													
Seals	(omit) = Nitrile rubber (NBR) (standard) V = Fluorocarbon elastomer (FKM)												
Light Voltage (D type indicators only)	L24 = 24V L48 = 48V L110 = 110V L220 = 220V												
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 with underwriter's recognition												
W = "VD..." indicator modified with a brass piston for use with high water based emulsions/solutions (HFA) & (HFC)													

(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

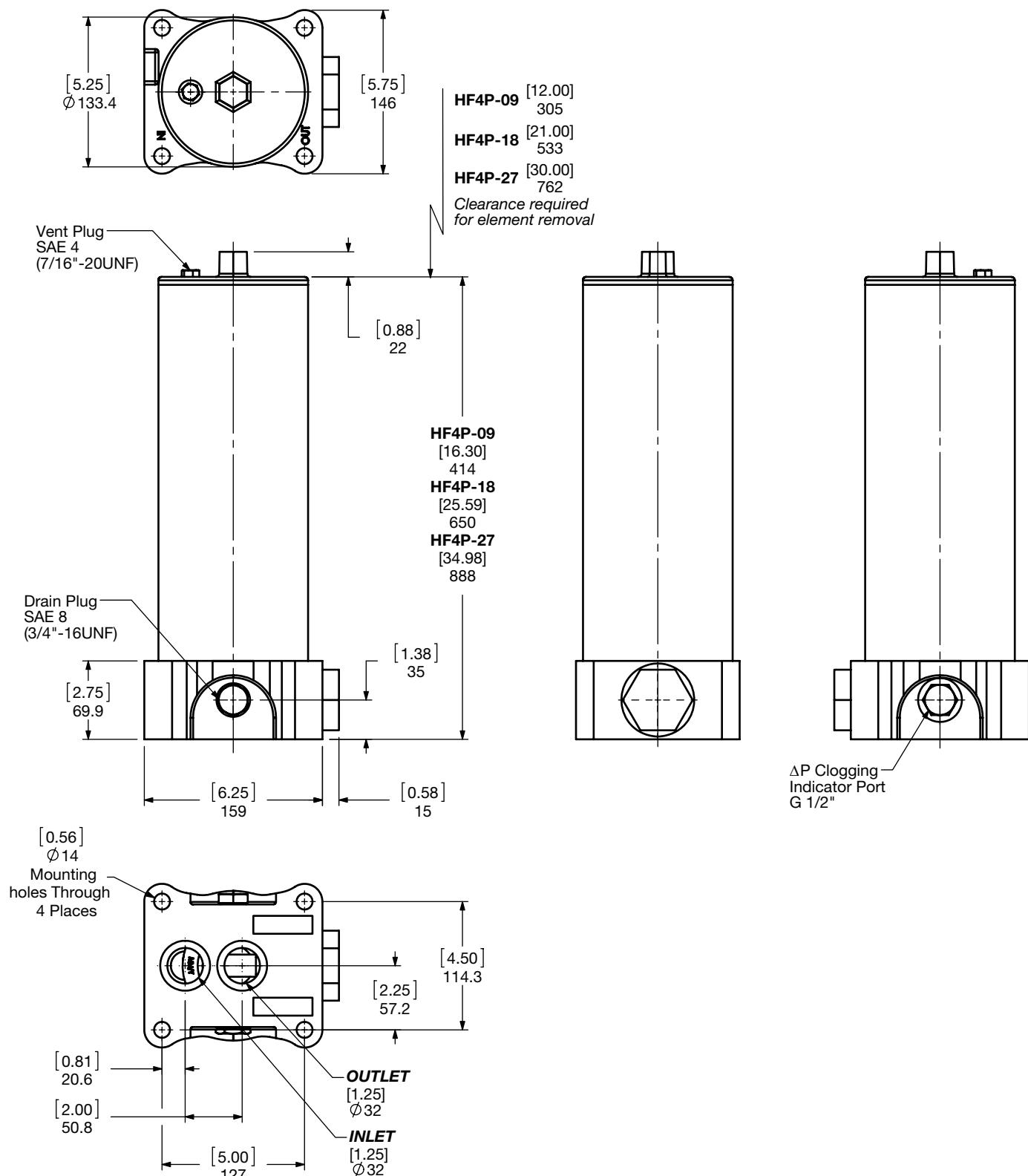
# HIGH PRESSURE FILTERS

## Dimensions HF4P Inline



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

**Dimensions**  
**HF4P Manifold**



Size	09	18	27
Weight (lbs.)	71.7	100.2	134.6

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

# HIGH PRESSURE FILTERS

## Sizing Information

Total pressure loss through the filter is as follows:

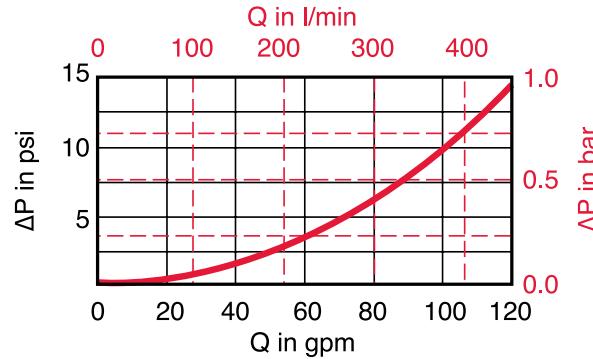
Assembly  $\Delta P$  = Housing  $\Delta P$  + Element  $\Delta P$

### Housing Curve:

Pressure loss through housing is as follows:

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

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



## Element K Factors

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

(From Tables Below)

Autospec HF4 Depth	5.03.XXDXXBN (Low Collapse)			
Size	3 $\mu\text{m}$	5 $\mu\text{m}$	10 $\mu\text{m}$	20 $\mu\text{m}$
5.03.09DXXBN	0.168	0.141	0.079	0.044
5.03.18DXXBN	0.080	0.067	0.038	0.021
5.03.27DXXBN	0.052	0.043	0.024	0.014

Autospec HF4 Depth	5.03.XXDXXBH (High Collapse)			
Size	3 $\mu\text{m}$	5 $\mu\text{m}$	10 $\mu\text{m}$	20 $\mu\text{m}$
5.03.09DXXBH	0.207	0.146	0.089	0.047
5.03.18DXXBH	0.097	0.068	0.041	0.022
5.03.27DXXBH	0.063	0.044	0.027	0.014

Autospec HF4 Wire Mesh	5.03.XXDXXW	
Size	25, 50, 100, 200 $\mu\text{m}$	
5.03.09DXXW		0.007
5.03.18DXXW		0.004
5.03.27DXXW		0.002

All Element K Factors in psi / gpm.

## Notes

