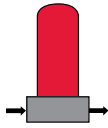


HIGH PRESSURE FILTERS

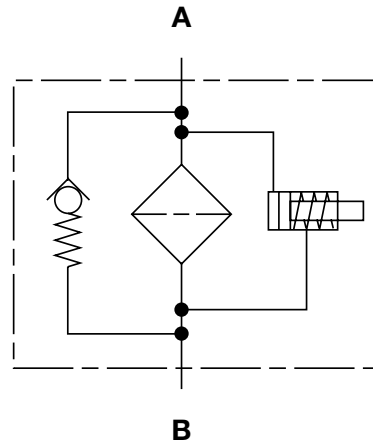
HF4P Series

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, 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

Technical Specifications

Mounting Method	4 mounting holes
Port Connection	SAE-24, 1 1/2" BSPP, 1 1/2" SAE Flange Code 61, 1 1/2" SAE Flange Code 62, Manifold Mount
Flow Direction	Inlet: Side Outlet: Side (opposite each other)
Construction Materials	Head, Cap Ductile iron Housing Steel
Flow Capacity	9" 50 gpm (189 lpm) 18" 100 gpm (378 lpm) 27" 120 gpm (454 lpm)
Housing Pressure Rating	Max. Allowable Working Pressure 5000 psi (345 bar) Fatigue Pressure 3500 psi (241 bar) @ 1 million cycles Burst Pressure 14,400 psi (992 bar)
Element Collapse Pressure Rating	BH 3045 psid (210 bar) BN 145 psid (10 bar) W/HC 290 psid (20 bar)
Fluid Temperature Range	14°F to 212°F (-10°C to 100°C) Consult HYDAC for applications operating below 14°F (-10°C)
Fluid Compatibility	Compatible with all hydrocarbon based, synthetic, water glycol, oil/water emulsion, and high water based fluids when the appropriate seals are selected.
Indicator Trip Pressure	$\Delta P = 29$ psid (2 bar) -10% (optional) $\Delta P = 72$ psid (5 bar) -10% (standard) $\Delta P = 116$ psid (8 bar) -10% (optional on non-bypass filters)
Bypass Valve Cracking Pressure	$\Delta P = 43$ psid (3 bar) +10% (optional) $\Delta P = 87$ psid (6 bar) +10% (standard) Non Bypass Available

Model Code

HF4P BN 09 R P 3 D 1 . 0 / 12 V B6 L110

Filter Type —————
 HF4P = Inline pressure filter

Element Media —————
 BH = Betamicon® (High Collapse) BN = Betamicon® (Low Collapse) W/HC = 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
 SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids

Replacement Element Model Code

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/HC

Element Media —————
 BN, BH, W/HC

Seals —————
 (omit) = Nitrile rubber (NBR) (standard)
 V = Fluorocarbon elastomer (FKM)

Supplementary Details —————
 SO376 = (same as above)
 SO263 = (same as above)

Clogging Indicator Model Code

VD 5 D . X / V

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
 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

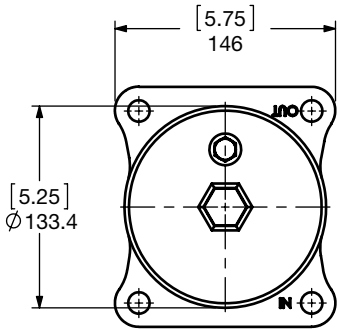
Underwriters Approval (VM, VD types C, D, J, and J4 only) —————
 cRUus = Electrical Indicators with underwriter's recognition
 W = "VD..." indicator modified with a brass piston for use with high water based emulsions/solutions (HFA) & (HFC)

(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



HF4P-09 [12.00]
305
HF4P-18 [21.00]
533
HF4P-27 [30.00]
762
*Clearance required
for element removal*

Vent Plug
SAE-4
(7/16-20UNF)

[0.88]
22.4

HF4P-09
[16.33]
415
HF4P-18
[25.62]
651
HF4P-27
[35.00]
889

ΔP Clogging
indicator port
G 1/2"

[1.38]
35

[2.75]
69.9

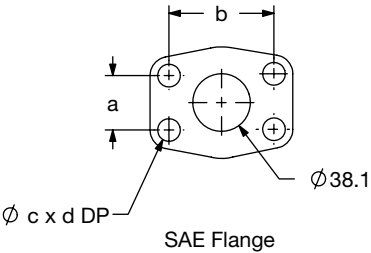
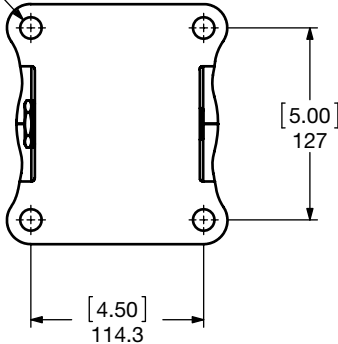
[6.25]
159

Ø 14
Mounting
holes Through
4 Places

INLET
1-1/2" Nominal Port
2 Places

Drain Plug
SAE 8
(3/4"-16UNF)

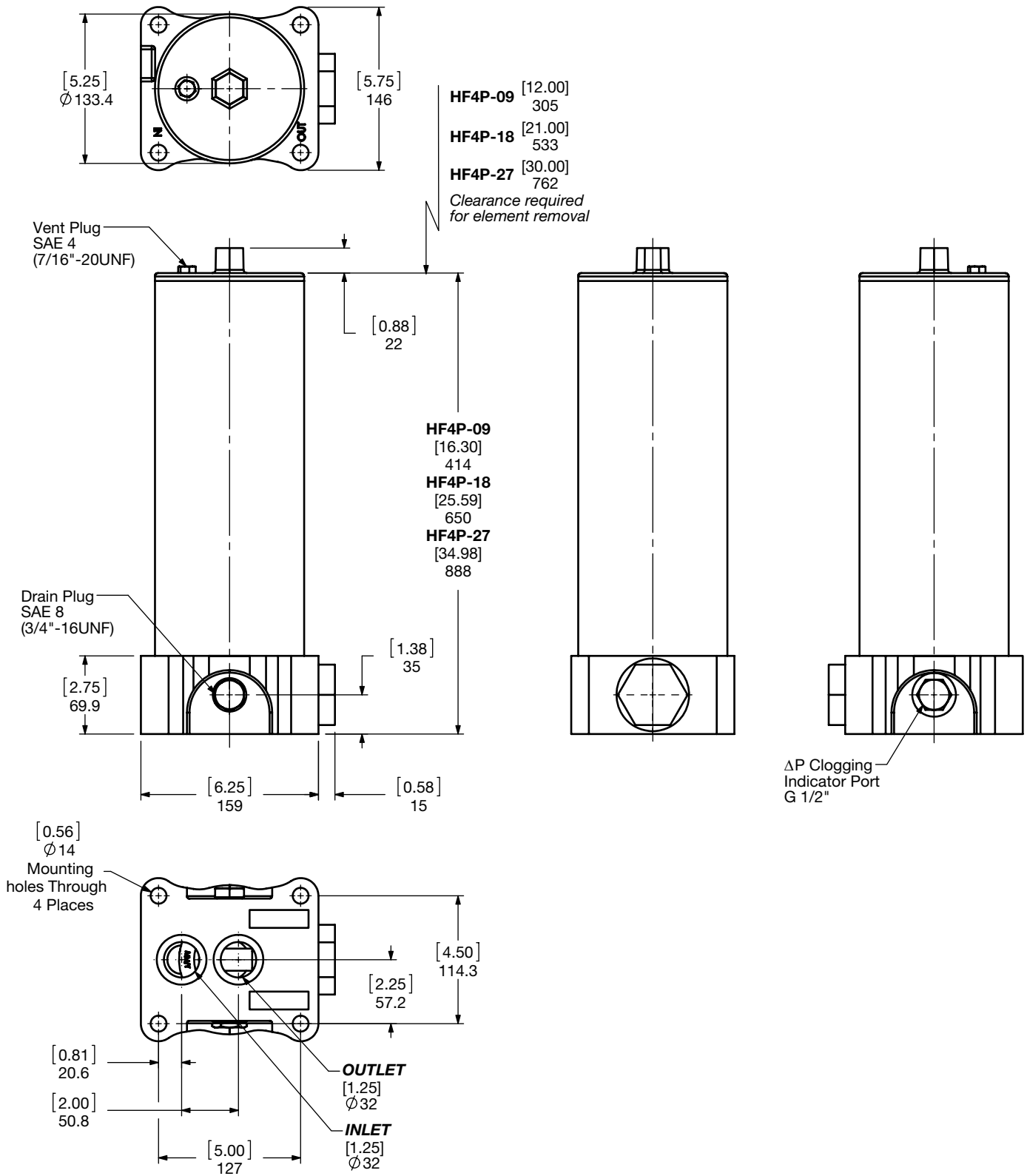
Flange Details	a	b	c	d
Code 61	(1.406) 35.7	(2.750) 69.8	1/2-13UNC	(1.06) 27
Code 62	(1.437) 36.50	(3.125) 79.38	5/8-11UNC	(1.38) 35



Size	09	18	27
Weight (lbs.)	69.9	98.4	132.8

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



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:

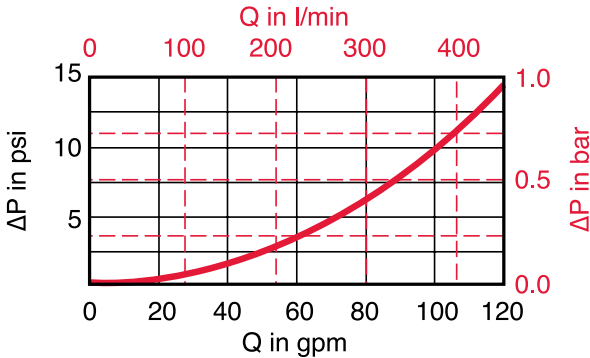
Assembly ΔP = Housing ΔP + Element ΔP

Housing Curve:

Pressure loss through housing is as follows:

Housing ΔP = Housing Curve ΔP x $\frac{\text{Actual Specific Gravity}}{0.86}$

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

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

Autospec HF4 Depth	5.03.XXDXXBN (Low Collapse)			
Size	3 μm	5 μm	10 μm	20 μm
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 μm	5 μm	10 μm	20 μm
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 μm			
5.03.09DXXW	0.007			
5.03.18DXXW	0.004			
5.03.27DXXW	0.002			

All Element K Factors in psi / gpm.

A large grid of graph paper, consisting of a 20x20 square grid of cells. In the bottom right corner, there is a small QR code.