E

Medium Pressure Filters

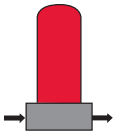
601-2999 psi

Low-cost aluminum construction inline filters, provide flexibility for use in both mobile and industrial applications. Durable and light weight, these filters are ideal for light industrial and demanding agriculture and construction applications. Duplex filters allow for uninterrupted operation during element change-out.

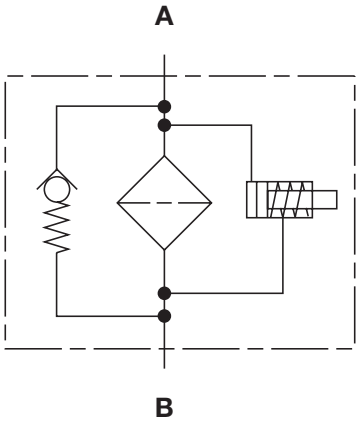
HF4RL Series

Inline Filters

750 psi • up to 90 gpm



Hydraulic Symbol



Features

- Inlet/outlet port options include SAE straight thread O-ring boss, and 1 1/2" SAE 4-bolt flange to allow easy installation without costly adapters.
- Choice of Nitrile rubber or Fluorocarbon elastomer seal material provides compatibility with petroleum oils, and most synthetic fluids, water-glycols, oil/water emulsions, and water based fluids.
- Screw-in cap mounted on top of the filter bowl allows quick and easy element changeout.
- To allow fluid to be drained from the filter before changing the element, a vent plug and a drain plug are provided. Element changes can be made with no mess and minimal loss of fluid.
- Clogging indicators, with and without thermal lockout, are magnetically actuated and have no external dynamic seal. High reliability is achieved and magnetic actuation eliminates leakage.
- A cartridge type bypass valve (optional) is mounted in-line in the filter head between the inlet and outlet port to provide positive sealing during normal operation and fast response during cold starts and flow surges.

Applications


Automotive


Gearboxes


Industrial


Pulp & Paper


Shipbuilding


Steel / Heavy Industry

Technical Specifications

Mounting Method	4 mounting holes
Port Connection	SAE-24, 1 1/2" BSPP, SAE-DN 38 Flange Code 61
Flow Direction	
Inlet / Outlet	Side
Construction Materials	
Head, Cap	Cast Aluminum
Housing	Steel
Flow Capacity	
09	50 gpm (190 lpm)
18	70 gpm (265 lpm)
27	90 gpm (341 lpm)
Housing Pressure Rating	
Max. Allowable Working Pressure	750 psi (52 bar)
Fatigue Pressure	750 psi (52 bar) @ 750,000 cycles
Burst Pressure	3200 psi (221 bar)
Element Collapse Pressure Rating	
BH	3045 psid (210 bar)
BN, W	145 psid (10 bar)
Fluid Temperature Range	14°F to 212°F (-10°C to 100°C)
Consult HYDAC for applications 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	
ΔP = 29 psid (2 bar) -10% *(optional)*	
ΔP = 72 psid (5 bar) -10% *(standard)*	
Bypass Valve Cracking Pressure	
ΔP = 43 psid (3 bar) +10% *(optional)*	
ΔP = 87 psid (6 bar) +10% *(standard)*	

PN#02081318 / 07.19 / FIL1907-2109

Model Code

HF4RL – BN – 09 G F 25 A 1 . 0 / 12 V B6 L110

Filter Type
HF4RL = In-line pressure filter

Element Media
BH = Betamicron® *(High Collapse)* BN = Betamicron® *(Low Collapse)* W = Wire Mesh

Size
09 = 9 inches
18 = 18 inches
27 = 27 inches

Pressure Rating
G = 750 psi (52 bar)

Type of Connection
F = 1 ½" Threaded (SAE-24; G/BSPP 1 1/2")
K = 1 ½" Flanged (SAE DN 38) Code 61

Filtration Rating *(micron)*
3, 5, 10, 20 = BN 3, 5, 10, 20 = BH 25, 50, 100, 200 = W

Type of ΔP Clogging Indicator
A, BM, C, D *(Others available upon request, see Clogging Indicators section.)*

Type Number
1

Modification Number *(latest version always supplied)*

Port Configuration
(omit) = SAE-DN Flange *(standard)*
0 = G/BSPP Straight Thread Ports
12 = SAE O-Ring Boss Straight Thread Ports

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

Bypass Valve
(omit) = without bypass *(BH element recommended)*
B3 = 43 psid / 3 bar *(29 psid indicator setting / 2 bar)*
B6 = 87 psid / 6 bar *(72 psid indicator setting / 5 bar) (standard)*

Supplementary Details
L24, L48, L110, L220 = Lamp for D-type clogging indicator *(LXX, XX = voltage)*
SO150H = Anodized for high water based fluids, phosphate esters, and skydrol fluids
W = Modification of "W" elements for use with oil water emulsions (HFA) and water polymer solutions (HFC)
T100 = Thermal lockout on indicator at 100°F *(standard - C and D type Clogging Indicators only)*
SFREE = Element specially designed to minimize electrostatic charge generation
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

5 . 03 . 09 D 03 BN / V

Size
09, 18, 27

Filtration Rating *(micron)*
3, 5, 10, 20 = BH 3, 5, 10, 20 = BN
25, 50, 100, 200 = W

Element Media
BN, BH, W

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

Supplementary Details
W = *(same as above)*
SFREE = *(same as above)*
SO376 = *(same as above)*

Clogging Indicator Model Code

VM 5 BM . X / V

Indicator Prefix
VM = G 1/2 3000 psi

Trip Pressure
2 = 29 psid (2 bar) *(optional)*
5 = 72 psid (5 bar)

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

Modification Number

Supplementary Details

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

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

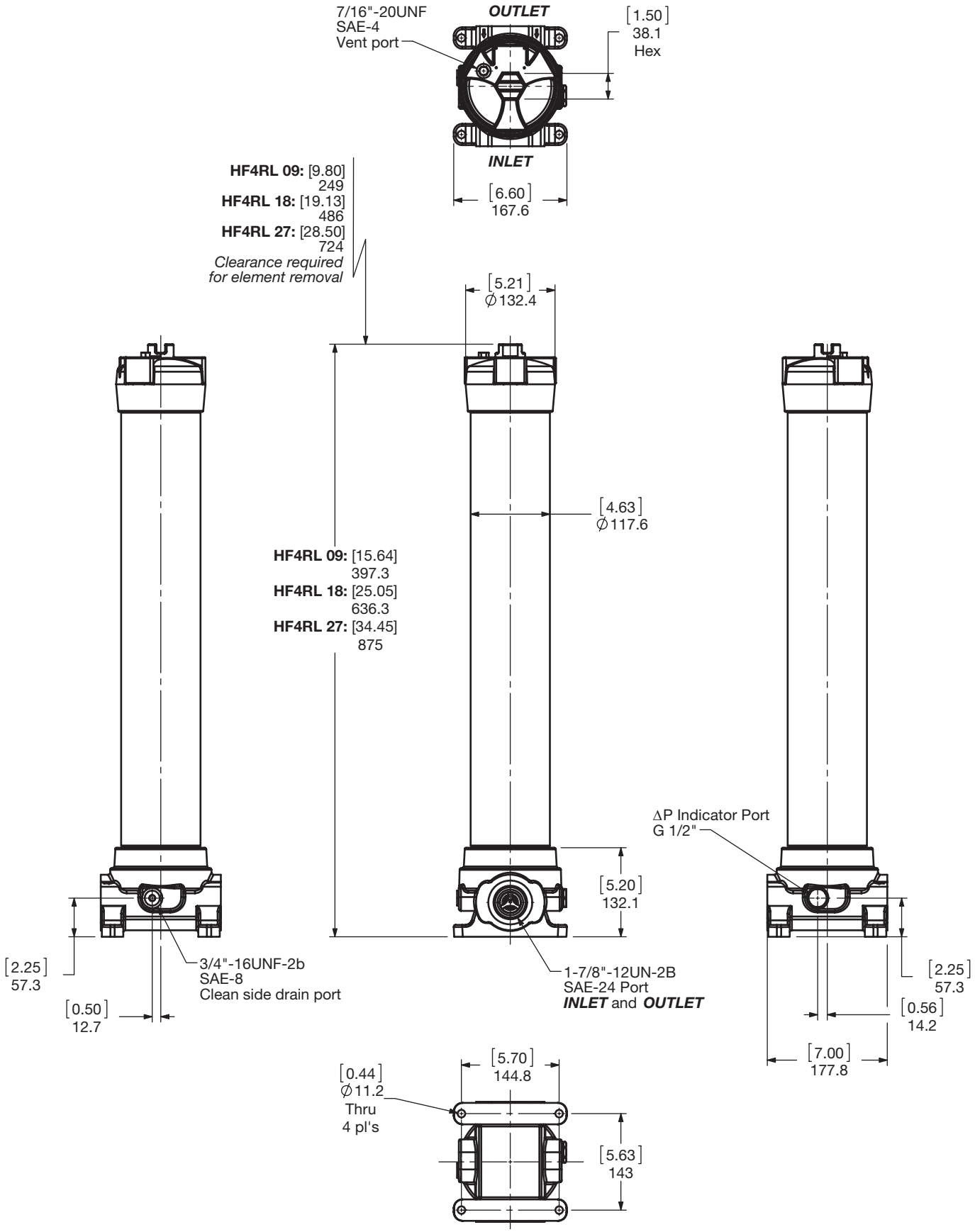
Underwriters Recognition *(VM, VD types C, D, J, and J4 only)*
cRUus = Electrical Indicator with underwriter's recognition

(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

MEDIUM PRESSURE FILTERS

Dimensions
HF4RL



Size	09	18	27
Weight (lbs.)	10.7	33	45.5

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

Sizing Information

Total pressure loss through the filter is as follows:

Assembly ΔP = Housing ΔP + Element ΔP

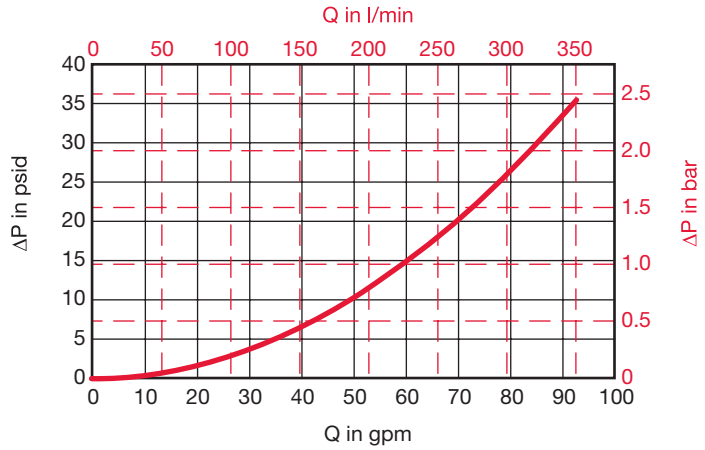
Housing Curve:

Pressure loss through housing is as follows:

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

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

HF4RL Housing



Element K Factors

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

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.