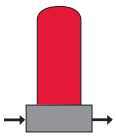
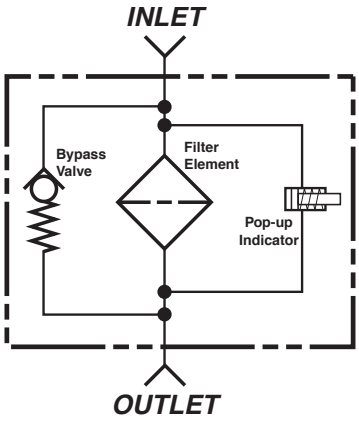
HF4RL Series
Inline Filters
750 PSI • up to 100 GPM



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 or Fluoro Rubber seal material provides compatibility with petroleum oils, and most synthetic fluids, water-glycols, oil/water emulsions, and water base 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 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 Details

Mounting Method	4 mounting holes
Port Connection	SAE-24, 1 1/2" BSPP, 1 1/2" SAE Flange, Code 61
Flow Direction	
Inlet / Outlet	Side
Construction Materials	
Head, Cap	Cast Aluminum
Housing	Steel
Flow Capacity	
09	50 gpm (190 lpm)
18	100 gpm (380 lpm)
27	120 gpm (450 lpm)
Housing Pressure Rating	
Max. Operating Pressure	750 psi (52 bar)
Proof Pressure	1125 psi (78 bar)
Fatigue Pressure	750 psi (52 bar) @ 1 million cycles
Burst Pressure	3200 psi (221 bar)
Element Collapse Pressure Rating	
BH	3000 psid (207 bar)
BN, W/HC, P	250 psid (17 bar)
Fluid Temperature Range	-22° to 250°F (-30° to 121°C)
Fluid Compatability	
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.	
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)*	

Model Code

HF4RL – BN – 09 G 25 D 1 . 0 / 12 V B6 L115

Filter Type
HF4RL = In-line pressure filter

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

Element Length
09 = 9 inches
18 = 18 inches
27 = 27 inches

Type of Connection
G = Threaded In-Line
F = Flanged *(available only with special "B" or "C" indicators)*

Filtration Rating *(micron)*
3, 5, 10, 20 = BH, BN 25, 74, 149 = W

Type of ΔP Clogging Indicator

			Indicator Models
A	=	no clogging indicator	
B	=	visual *(pop-up)* auto reset	VM...B
C	=	electrical clogging indicator *(electric switch)*	VM...C
D	=	electrical/visual *(lamp)* clogging indicator *(electric switch and light)*	VM...D

(*For details and additional indicator options, see pages 201 - 230*)

Type Number
1

Modification Number *(latest version always supplied)*

Port Configuration
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)*

Seals
(omit) = Nitrile (NBR) *(standard)*
V = Fluroelastomer (FPM)

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

Supplementary
SO103H = Modification of BN4 & W elements for phosphate ester fluids.
SO155H = Modification of BH4HC *(Betamicron® High Collapse)* Element For Phosphate Ester Fluids
SO150H = Anodized head & lid for water based fluids
W = Indicator with brass piston *(for use with high water based fluids HWBF)*
L24 = Lamp for 24 volts
L48 = Lamp for 48 volts
L115 = Lamp for 115 volts
(D-Type Clogging Indicator only)
T100 = Thermal lockout on indicator at 100°F *(standard)*
(Consult HYDAC for B & BM indicators for thermal lockout Non-Standard)

Replacement Element Model Code

5 . 03 . 09 D 03 BN / V

Length *(nominal inches)*
09, 18, 27

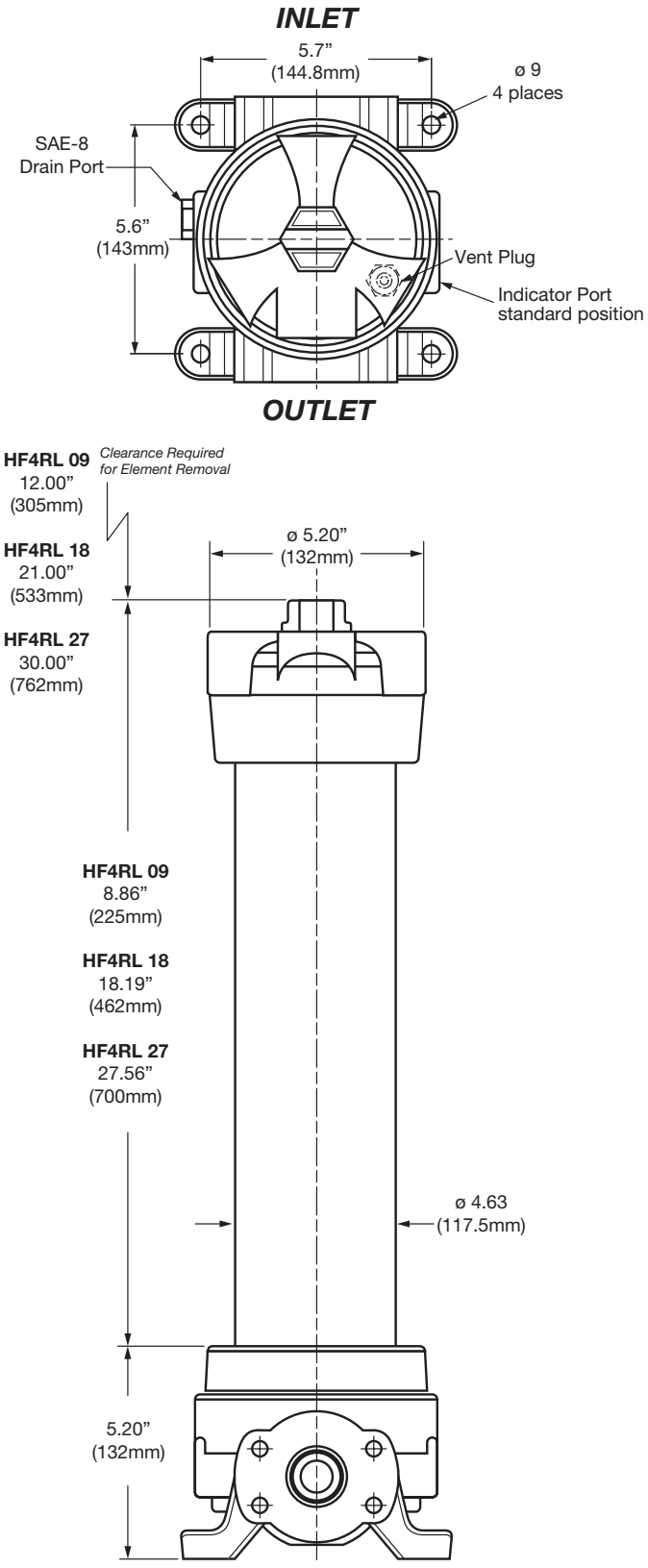
Filtration Rating *(micron)*
3, 5, 10, 20 = BN, BH 25, 74, 149, = W

Element Media
BN, BH, W

Supplementary Details
(omit) = standard
V = Fluroelastomer (FPM) seals

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

Dimensions



Size	09	18	27
Weight (lbs.)	19	30	41

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:

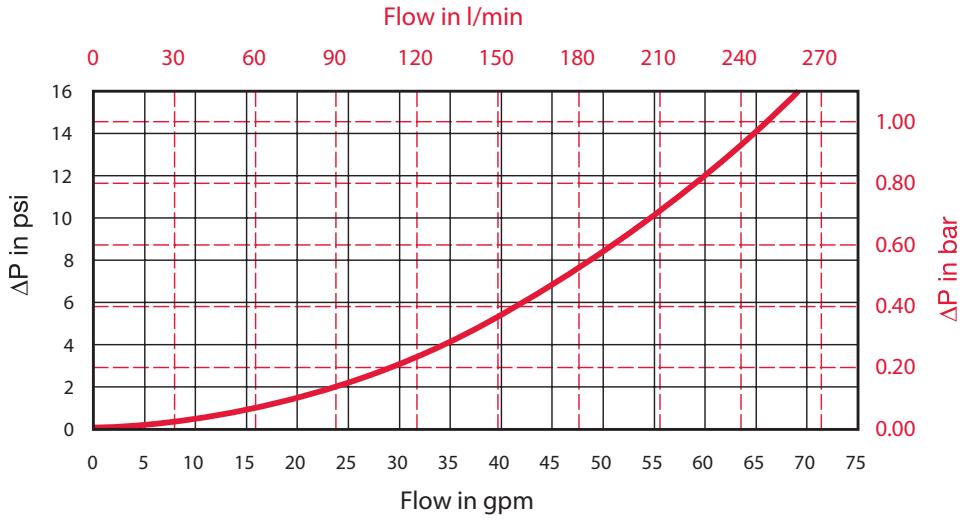
Assembly ΔP = Housing ΔP + Element ΔP

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 section on page 21)*



Element K Factors

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

Size	5.03.XXDBN			
	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.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

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.