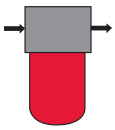
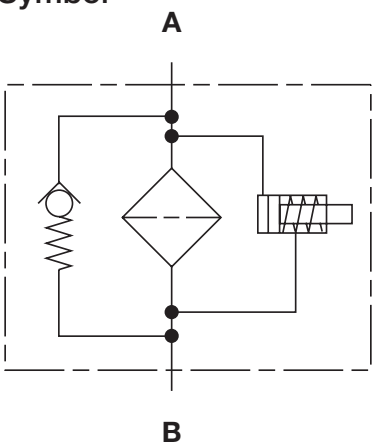
LF Series

Inline Filters

1500 psi • up to 180 gpm



Hydraulic Symbol



Features

- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Aluminum alloy is water tolerant - anodization is not required for water based fluids (HWBF).
- Inlet & outlet port options include NPT, BSPP and SAE straight thread O-ring boss to allow easy installation with maximum flexibility.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (nitrile rubber, fluorocarbon elastomer, ethylene propylene rubber) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water based 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.
- HYDAC differential Pressure 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) is separate from the main flow path, in the filter head, to provide 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.

Applications

Agricultural

Automotive

Construction

Industrial

Railways

Steel / Heavy Industry

Technical Specifications

Mounting Method	4 mounting holes	
Port Connection		
30	SAE-8, 1/2” NPT, 1/2” BSPP	
60/110	SAE-12, 3/4” NPT, 3/4” BSPP	
160/240/280	SAE-20, 1 1/4” NPT, 1 1/4” BSPP	
330/660	SAE-24, 1 1/2” NPT, 1 1/2” BSPP	
Flow Direction	Inlet: Side	Outlet: Side
Construction Materials		
Head	Cast Aluminum	
Bowl	Aluminum Extrusion (sizes 30 - 660) Steel (size 280)	
Flow Capacity		
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	84 gpm (330 lpm)	
660	174 gpm (660 lpm)	
Housing Pressure Rating		
Max. Operating Pressure	1500 psi (100 bar)	
Fatigue Pressure	1500 psi (100 bar)	
Burst Pressure	size 30 5510 psi (380bar) sizes 60 - 660 > 6090 psi (420 bar)	
Element Collapse Pressure Rating		
BH4HC, V	3045 psid (210 bar)	
ON, W/HC	290 psid (20 bar)	
Fluid Temperature Range	-22°F to 212°F (-30°C to 100°C)	
Consult HYDAC for applications operating below -22°F (-30°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	
ΔP 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

LF ON 30 I B 3 B 1 . 0 / 12

Filter Type
LF = Inline filter

Element Media
ON = Optimicron® *(low collapse)*
W/HC = Wire Mesh
BH/HC = Betamicron® *(High Collapse)*
V = Metal Fiber

Size
30, 60, 110, 160, 240, 280, 330, 660

Operating Pressure
I = 1500 psi (100 bar)

Type of Connection
B = 1/2" Threaded *(size 30 only)*
C = 3/4" Threaded *(sizes 60 & 110 only)*
E = 1 1/4" Threaded *(sizes 160 - 280 only)*
F = 1 1/2" Threaded *(sizes 330 - 660 only)*

Filtration Rating *(microns)*
1, 3, 5, 10, 15, 20 = ON
3, 5, 10, 20 = BH/HC
25, 50, 100, 200 = W/HC
3, 5, 10, 20 = V

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

Type Number
1 = Sizes 30 to 660

Modification Number *(latest version always supplied)*

Port Configuration
0 = BSPP
3 = NPT Ports *(with adapters)*
12 = SAE Straight Thread O-Ring Boss Ports

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

Bypass Valve
(omit) = Non-Bypass – Critical applications *(high collapse element required)*
B3 = 43 psid (3 bar) *(optional)*
B6 = 87 psid (6 bar) *(standard setting for pressure filters)*

Supplementary Details
L24, L48, L110, L220 = Lamp for D-type clogging indicator *(LXX, XX = voltage)*
SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids
SO184 = G-1/2 Drain in Bowl Option For Sizes 60 - 280 *(comes standard for sizes 330, 660, & 1320)*
T100 = Indicator Thermal Lockout, 100°F *(C and D indicators only)*
W = Modification of "V" elements for use with oil water emulsions (HFA) and water polymer solutions (HFC)
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

0030 D 003 ON / V

Size
0030, 0060, 0110, 0160,
0240, 0280, 0330, 0660

Filtration Rating *(micron)*
1, 3, 5, 10, 15, 20 = ON
3, 5, 10, 20 = BH4HC
25, 50, 100, 200 = W/HC
3, 5, 10, 20 = V

Element Media
ON, BH4HC, W/HC, V

Seals
(omit) = Nitrile rubber (NBR)
V = Fluorocarbon elastomer (FKM)
EPR = Ethylene propylene rubber (EPR)

Supplementary Details
SFREE = *(same as above)*
SO263 = *(same as above)*
W = *(same as above)*
SO376 = *(same as above)*

Clogging Indicator Model Code

VM 2 B . X /

Indicator Prefix
VM = G 1/2 3000 psi

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

Type of Indicator
A = No indicator, plugged port
B = Pop-up indicator *(auto reset)*
BM = Pop-up indicator *(manual reset)*
C = Electric switch - SPDT
D = Electric switch and LED light - SPDT

Modification Number

Supplementary Details

Seal
(omit) = Nitrile rubber (NBR)
V = Fluorocarbon elastomer (FKM)
EPR = Ethylene propylene rubber (EPR)

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

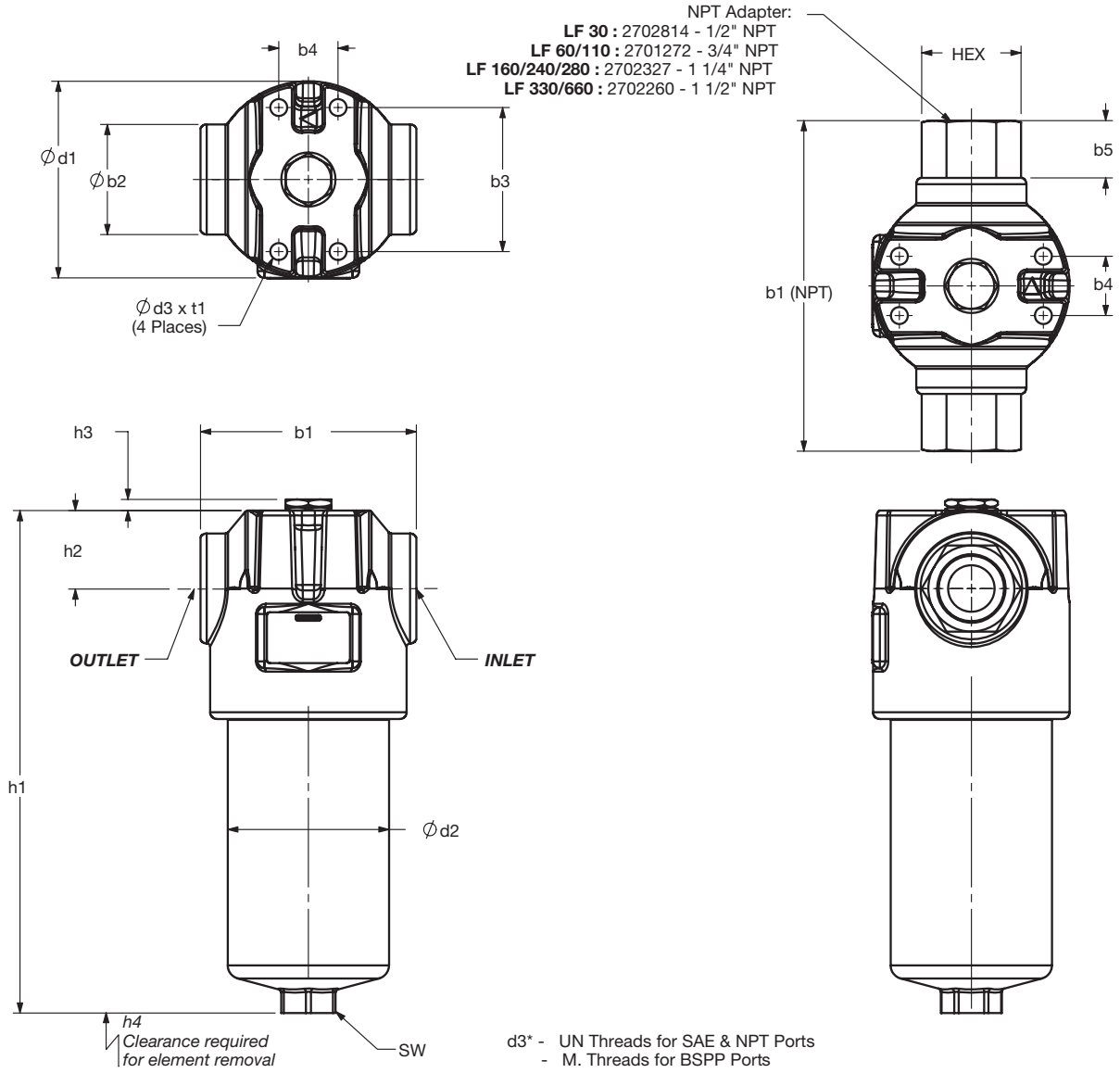
Underwriters Recognition *(VM, VD types C, D, J, and J4 only)*
cRUus = Electrical Indicator with underwriter's recognition

(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
LF 30 - 660



d3* - UN Threads for SAE & NPT Ports
- M. Threads for BSPP Ports

Size	b1	b1 (NPT)	b2	b3	b4	b5	d1	d2	d3*	h1	h2	h3	h4	SW	t1	HEX
30	(2.72) 69	(4.84) 123	(1.42) 36	(1.77) 45	(1.18) 30	(1.062) 27	(2.64) 67	(2.05) 52	10-32UNF-2B M5 X 0.8	(6.16) 156	(1.22) 31	(0.28) 7	(2.95) 75	(0.94) 24	(0.24) 6	(1.125) 28.6
60	(3.54) 90	(5.80) 147.2	(1.89) 48	(2.20) 56	(1.26) 32	(1.126) 28.6	(3.31) 84	(2.68) 68	1/4-28UNF-2B M6 X 1.0	(6.95) 176.5	(1.54) 39	(0.24) 6	(2.95) 75	(1.06) 27	(0.35) 9	(1.38) 34.93
110	(3.54) 90	(5.80) 147.2	(1.89) 48	(2.20) 56	(1.26) 32	(1.126) 28.6	(3.31) 84	(2.68) 68	1/4-28UNF-2B M6 X 1.0	(9.68) 246	(1.54) 39	(0.24) 6	(2.95) 75	(1.06) 27	(0.35) 9	(1.38) 34.93
160	(4.92) 125	(7.67) 194.9	(2.56) 65	(3.35) 85	(1.38) 35	(1.376) 34.95	(4.57) 116	(3.74) 95	3/8-24UNF-2B M10 X 1.5	(9.29) 236	(1.81) 46	(0.24) 6	(3.74) 95	(1.26) 32	(0.55) 14	(2.00) 50.8
240	(4.92) 125	(7.67) 194.9	(2.56) 65	(3.35) 85	(1.38) 35	(1.376) 34.95	(4.57) 116	(3.74) 95	3/8-24UNF-2B M10 X 1.5	(11.67) 296.5	(1.81) 46	(0.24) 6	(3.74) 95	(1.26) 32	(0.55) 14	(2.00) 50.8
280	(4.92) 125	(7.67) 194.9	(2.56) 65	(3.35) 85	(1.38) 35	(1.376) 34.95	(4.57) 116	(3.74) 95	3/8-24UNF-2B M10 X 1.5	(18.98) 482	(1.81) 46	(0.24) 6	(3.74) 95	(1.26) 32	(0.55) 14	(2.00) 50.8
330	(6.26) 159	(9.07) 230.4	(3.35) 85	(4.53) 115	(2.36) 60	(1.406) 35.71	(6.3) 160	(5.12) 130	1/2-20UNF-2B M12 X 1.75	(11.90) 302.5	(1.97) 50	(0.24) 6	(4.13) 105	(1.42) 36	(0.67) 17	(2.25) 57.15
660	(6.26) 159	(9.07) 230.4	(3.35) 85	(4.53) 115	(2.36) 60	(1.406) 35.71	(6.3) 160	(5.12) 130	1/2-20UNF-2B M12 X 1.75	(18.40) 467.5	(1.97) 50	(0.24) 6	(4.13) 105	(1.42) 36	(0.67) 17	(2.25) 57.15

Size	30	50	110	160	240	330	660
Weight (lbs.)	1.8	3.4	4	8.2	9.5	17.7	24.3

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

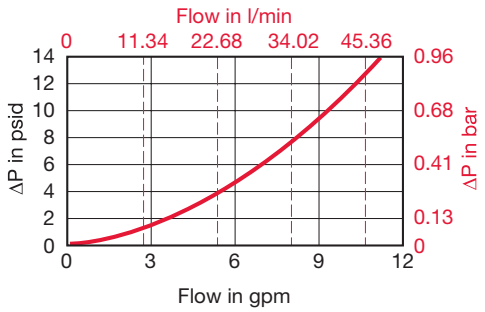
Housing Curve:

Pressure loss through housing is as follows:

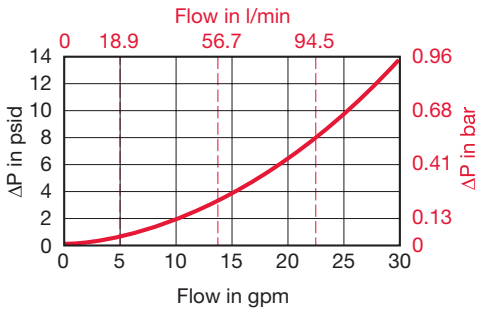
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

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

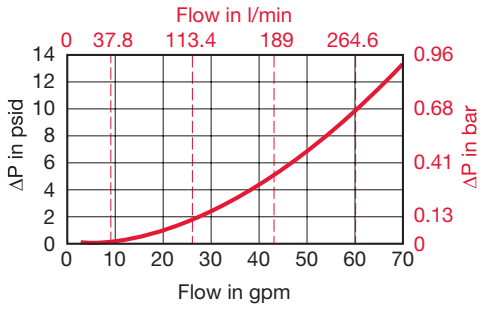
LF 30 Housing



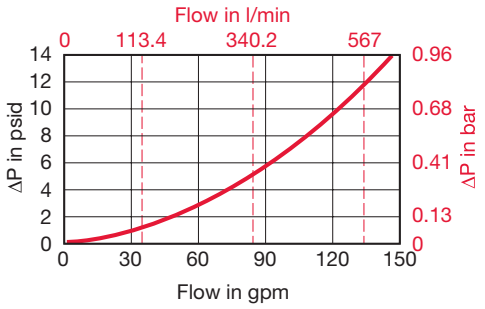
LF 60 / 110 Housing



LF 160 / 240 / 280 Housing



LF 330 / 660 Housing



Element K Factors

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

"ON" Pressure Elements:	...D...ON (Optimicron Pressure Elements)					
Size	1 µm	3 µm	5 µm	10 µm	15 µm	20 µm
0030 D XXX ON	4.27	3.507	2.376	1.251	0.768	0.62
0060 D XXX ON	2.936	1.427	1.004	0.664	0.537	0.347
0110 D XXX ON	1.416	0.735	0.527	0.333	0.254	0.164
0160 D XXX ON	1.015	0.604	0.423	0.225	0.204	0.175
0240 D XXX ON	0.631	0.379	0.293	0.175	0.134	0.115
0280 D XXX ON	0.304	0.185	0.15	0.082	0.075	0.064
0330 D XXX ON	0.452	0.23	0.185	0.135	0.085	0.067
0660 D XXX ON	0.207	0.106	0.086	0.051	0.039	0.031

"D" Pressure Elements	...D...BH4HC (Betamicron High Collapse)			
Size	3 µm	5 µm	10 µm	20 µm
0030 D XXX BH4HC	5.005	2.782	1.992	1.043
0060 D XXX BH4HC	3.216	1.789	0.993	0.670
0110 D XXX BH4HC	1.394	0.818	0.489	0.307
0160 D XXX BH4HC	0.922	0.571	0.324	0.241
0240 D XXX BH4HC	0.582	0.373	0.214	0.159
0280 D XXX BH4HC	0.313	0.187	0.099	0.088
0330 D XXX BH4HC	0.423	0.247	0.154	0.110
0660 D XXX BH4HC	0.181	0.104	0.055	0.049

Wire Mesh	...D...W/HC Elements (Low Collapse)
Size	25, 50, 100, 200 µm
0030 D XXX W/HC	0.166
0060 D XXX W/HC	0.042
0110 D XXX W/HC	0.023
0160 D XXX W/HC	0.016
0240 D XXX W/HC	0.010
0280 D XXX W/HC	0.005
0330 D XXX W/HC	0.008
0660 D XXX W/HC	0.004

All Element K Factors in psi / gpm.