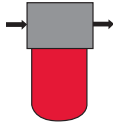


MEDIUM PRESSURE FILTERS

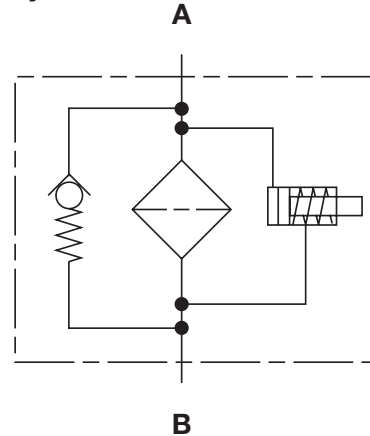
LF Series

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

Filter Type _____ **LF** _____
 LF = Inline filter

Element Media _____ **ON** _____ **BH/HC** = Betamicron® (High Collapse)
 W/HC = Wire Mesh **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) E = 1 1/4" Threaded (sizes 160 - 280 only)
 C = 3/4" Threaded (sizes 60 & 110 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
 SO882 = Quality Protection Design

Replacement Element Model Code

Size _____ **0030** **D** **003** **ON** / **V** _____
 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)
 SO882 = (same as above)

Clogging Indicator Model Code

Indicator Prefix _____ **VM** **2** **B** . **X** / _____
 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
 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

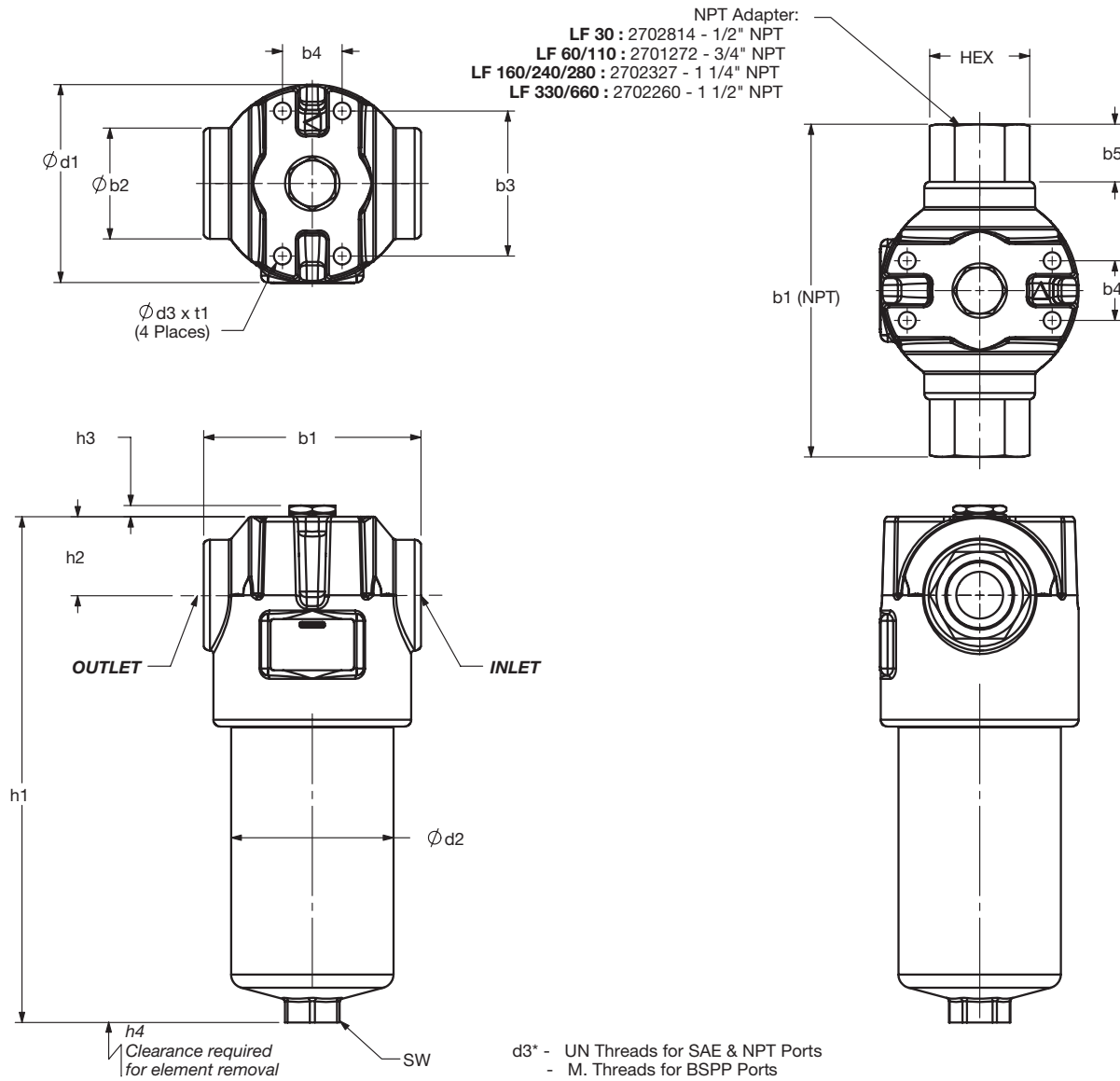
(For additional details and options, see Clogging Indicators section.)

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



| 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

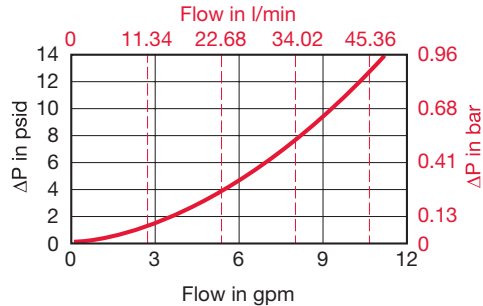
Housing Curve:

Pressure loss through housing is as follows:

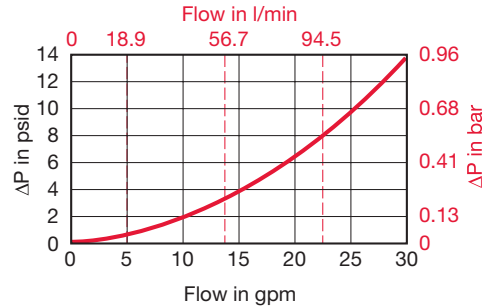
Housing ΔP = Housing Curve $\Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$

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

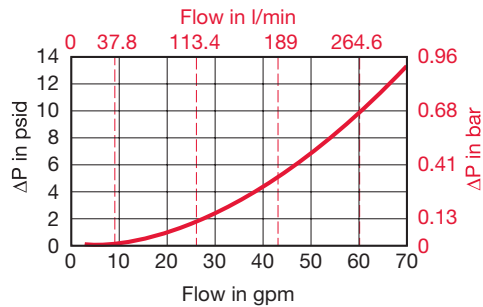
LF 30 Housing



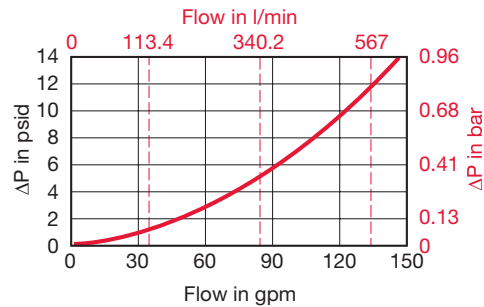
LF 60 / 110 Housing



LF 160 / 240 / 280 Housing



LF 330 / 660 Housing



Element K Factors

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

| "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 (Betamicon 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.