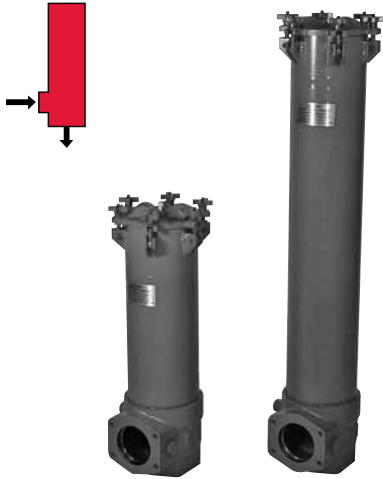
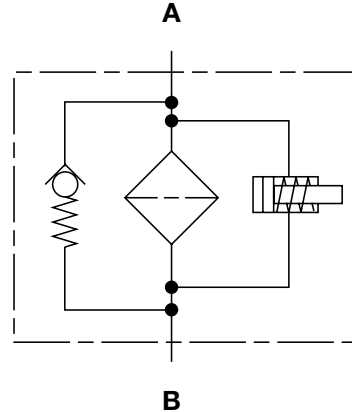


NFH Series Modular Inline Return Line Filters 500 psi • up to 450 gpm



Hydraulic Symbol



Features

- Top access for easy element changeout.
- All models have an air bleed valve (vent) installed in the lid.
- Single large element with no leak points for highest efficiency and dirt capacity
- Lid with swing bolts for fast servicing without tools
- Drain port (Far side) SAE 12 (3/4")
- Clogging Indicator for local and/or remote signals
- Easily banked in parallel (manifolded) for high viscosity applications.
- Available with Betafit elements - consult HYDAC.

Technical Details

Mounting Method	
NFH	2 mounting holes - filter head
NFH Manifold	Floor mounting brackets
Port Connection	
SAE-64 Flange Code 61	
Flow Direction	
Inlet: Side	Outlet: Bottom
Construction Materials	
Head, Lid, Elbows, Manifolds	Ductile Iron
Housing	Steel
Flow Capacity	
1300	343 gpm (1300 lpm)
2600, 5200, 7800, 10400	450 gpm (1700 lpm)
Housing Pressure Rating	
Max. Operating Pressure	500 psi (35 bar)
Proof Pressure	750 psi (52 bar)
Fatigue Pressure	500 psi (35 bar)
Burst Pressure	> 1440 psi (100 bar)
Element Collapse Pressure Rating	
BN/HC, W/HC	290 psid (20 bar)
ECO/N, BN/AM, P/HC, AM	145 psid (10 bar)
Fluid Temperature Range	
-22° to 250°F (-30° to 121°C)	
Fluid Compatibility	
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	
$\Delta P = 29 \text{ psid (2 bar) } -10\%$ (standard)	
$\Delta P = 72 \text{ psid (5 bar) } -10\%$ (optional)	
Bypass Valve Cracking Pressure	
$\Delta P = 43 \text{ psid (3 bar) } +10\%$	
$\Delta P = 87 \text{ psid (6 bar) } +10\%$	

Applications



Automotive



Gearboxes



Industrial



Power Generation



Pulp & Paper



Shipbuilding



Steel / Heavy Industry

Model Code

NFH BN/HC 5200 E P 5 C 1 . 1 / 16 A V B1 T70

Filter Type _____
 NFH = In-line Return Line Filter

Element Media _____
 BN/HC = Betamicon® (Low Collapse) ECO/N = ECOmicron® (Low Collapse)
 AM = Aquamicron® BN/AM = Betamicon® Aquamicron®
 P/HC = Polyester W/HC = Wire Screen

Size _____
 1300 = Single NFH 7800 = Manifold: 3 size 2600 Housings
 2600 = Single NFH 10400 = Manifold: 4 size 2600 Housings
 5200 = Manifold: 2 size 2600 Housings

Operating Pressure _____
 E = 500 psi (34 bar)

Type of Connection _____
 P = SAE DN 100 (4") flange

Filtration Rating (microns) _____
 3, 5, 10, 20 = BN/HC, ECO/N 10, 20 = P/HC 3, 10 = BN/AM
 25, 74, 149 = W/HC 40 = AM

Type of ΔP Clogging Indicator _____
 A, B/BM, C, D

Type Number _____
 1

Modification Number (latest version always supplied) _____

Port Configuration _____
 16 = SAE-64, (4") Code 61 Flange

Flow Path (facing connecting manifold) _____
 (omit) = Sizes 1300 and 2600 only C = Left inlet, Right outlet] (sizes 5200 - 10400 only)
 A = Left inlet, Left outlet D = Right inlet, Left outlet]
 B = Right inlet, Right outlet] (sizes 5200 - 10400 only)

Seals _____
 (omit) = Nitrile (NBR) (standard) V = Fluoroelastomer (FPM) EPR = Ethylene Propylene (EPDM)

Bypass Valve _____
 (omit) = 43 psid Bypass (standard)
 B1 = 15 psid Bypass
 B6 = 87 psid Bypass] not available with ECO/N
 KB = No Bypass]

Supplementary Details _____
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)
 T100 = Indicator Thermal Lockout, 100°F (C and D only)
 S0103H = Modification of BN4HC and P/HC Elements for Phosphate Esters

Replacement Element Model Code

1300 R 010 BN4HC / V

Size _____
 1300, 2600

Type _____
 R

Filtration Rating (micron) _____
 3, 5, 10, 20 = BN4HC, ECO/N 3, 10 = BN/AM
 40 = AM 10, 20 = P/HC
 25, 74, 149 = W/HC

Element Media _____
 BN4HC, ECO/N, BN/AM, AM, P/HC, W/HC

Supplementary Details _____
 (omit) = standard
 V = Fluoroelastomer (FPM) seals

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)]

Type of Indicator _____
 A = no indicator, plugged port
 B/BM = Visual pop-up (auto/manual reset)
 C = Electric switch
 D = Electric switch and light

Modification Number _____

Supplementary Details _____

Seals _____
 (omit) = Nitrile (NBR) (standard)
 V = Fluoroelastomer (FPM)

Light Voltage (D type indicators only) _____
 L24 = 24V L110 = 110V

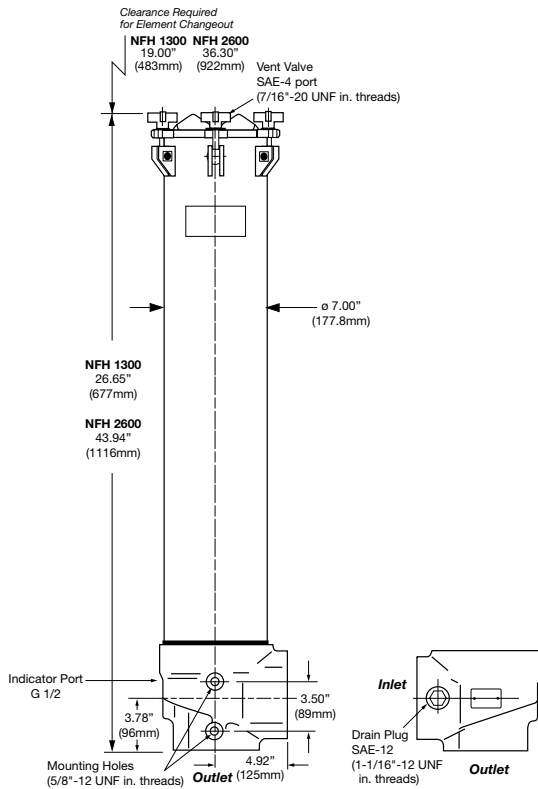
Thermal Lockout (VM, VD types C, D, J, and J4 only) _____
 T100 = Lockout below 100°F

Underwriters Approval (VM, VD types C, D, J, and J4 only) _____
 CRUUS = Electrical Indicators
 (For additional details and options, see Clogging Indicators section.)

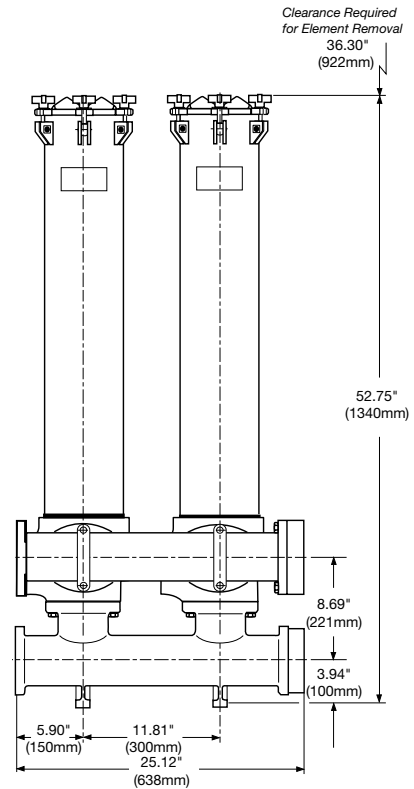
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

Dimensions

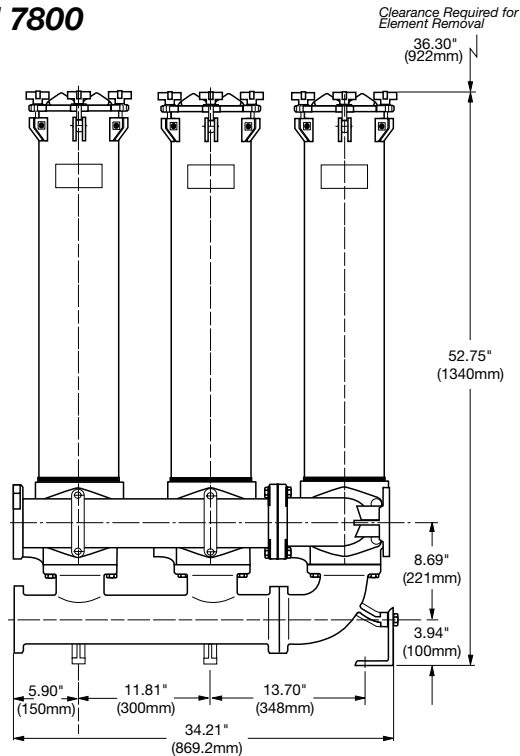
NFH 1300 / 2600



NFH 5200



NFH 7800



NFH 10400 (Consult HYDAC)

Size	1300	2600	5200	7800	10400
Weight (lbs.)	83	109	343	458	658

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:

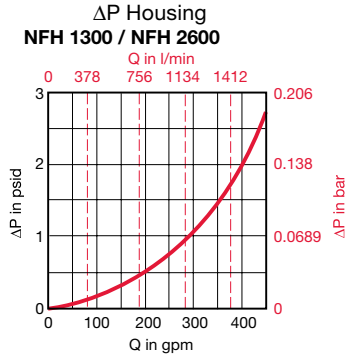
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

Housing Curve:

Pressure loss through housing is as follows:

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

The curve below shows the clean ΔP through the Housing for a single filter. To determine Clean ΔP for manifolds with multiple housings, multiply the Clean ΔP curve value by the percentage values in the table.



NFH System	Multiplier
5200	73%
7800	61%
10400	48%

Example

Conditions	
400 gpm flow	
NFH 5200 manifold specified	
ΔP Curve	= 2 psid
ΔP 5200	= 2 psid X 0.73
	= 1.5 psid <small>Piping & Housing</small>
ΔP Total System = 1.5 psid + ΔP Element	

Bypass Valve Curve:

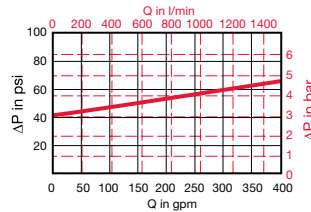
Curves shown are applicable for mineral oil with a specific gravity of 0.86. Differential pressure increases in proportion to the specific gravity of the fluid.

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

Element ΔP Calculations:

Sizing (K) Flow Factors below show the pressure drops across clean elements (excluding housings and piping). (K) Factors are calculated from mineral based fluid at viscosity of 141 SUS and specific gravity of 0.86. To determine clean ΔP for NFH manifolds with more than one housing, use the adjusted (K) factors below and multiply by total flow rate.

1300 / 2600 Bypass Valve



Example

Conditions	
Lube system	
Viscosity of 1,000 SUS	
Specific gravity 0.86	
75 gpm flow	
Low pressure drop essential	
10 μ m Betamicon® filter element	
Selection	
An NFH 2600 filter gives an Adjusted Clean element ΔP as follows:	
Clean ΔP = 75 gpm x 0.011 = 0.825 psid	
Clean $\Delta P_{adj.}$ = 0.825 x $\frac{1000}{141}$ = 5.85 psid	

Element K Factors

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

(From Tables Below)

Housing Size	# of Elements	Size	...R...BN4HC (Betamicon® Low Collapse)				...R...ECO/N (ECOmicron®)			
			3 μ m	5 μ m	10 μ m	20 μ m	3 μ m	5 μ m	10 μ m	20 μ m
1300	1	1300	0.045	0.032	0.024	0.014	0.049	0.034	0.029	0.020
2600	1	2600	0.023	0.016	0.011	0.007	0.024	0.017	0.014	0.010
5200	2	2600	0.012	0.008	0.006	0.004	0.012	0.009	0.007	0.005
7800	3	2600	0.008	0.006	0.004	0.002	0.008	0.006	0.005	0.003
10400	4	2600	0.006	0.004	0.003	0.002	0.006	0.004	0.004	0.003

Housing Size	# of Elements	Size	...R...BN/AM		...R...P/HC (Paper)	...R...W/HC (Wire Screen)
			3 μ m	10 μ m	10 μ m	25, 50, 100, 200 μ m
1300	1	1300	0.088	0.033	0.007	0.0027
2600	1	2600	0.052	0.019	0.003	0.0011
5200	2	2600	0.026	0.010	0.002	0.0005
7800	3	2600	0.017	0.006	0.001	0.0004
10400	4	2600	0.013	0.005	0.0008	0.0003

All Element K Factors in psi / gpm.