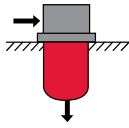


RF Series In-tank / Inline Filters

360 psi • up to 400 gpm



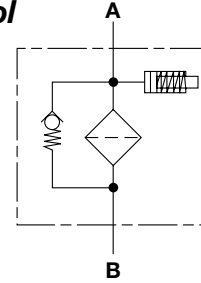
Features

- RF 30 filters constructed of polyamide plastic.
- RF 60 - 330 filters constructed of aluminum material. Aluminum alloy is water tolerant - anodization is not required for high water based fluids (HWBF).
- RF 660 - 1300 filters constructed of ductile iron.
- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/outlet port options include NPT, SAE straight thread O-ring boss, and SAE 4-bolt flange to allow easy installation without costly adapters.
- O-ring seals are used to provide positive, reliable sealing. Choice of O-ring materials (Nitrile, Fluoroelastomer, EPDM) provides compatibility with petroleum oils, synthetic fluids, water-glycols, oil/water emulsions, and high water base fluids.
- Bolt-on lid requires minimal clearance for removal.
- Reusable contamination basket prevents loss of retained contaminants into the reservoir during element replacement.
- Clogging indicators can be serviced without interruption of the hydraulic system.
- Single piece casting provides rigidity for inline or in-tank mounting.

Applications



Hydraulic Symbol



Technical Details

Mounting Method	4 Mounting holes - filter housing	
Port Connections	Inlet / Outlet	
30	1/2" NPT / 0.71" Dia Smooth	
60/110	SAE-12 / SAE-12	
160/240	SAE-20 / SAE-20	
330	SAE-20 / 2" NPT	
	2" NPT / 2" NPT	
660	2" SAE Flange, Code 61 / 2" NPT	
	3" SAE Flange, Code 61 / 3" NPT	
	3" SAE Flange, Code 61 /	
	3" SAE Flange, Code 61	
950	3-1/2" SAE Flange, Code 61 /	
	3-1/2" SAE Flange, Code 61	
1300	4" SAE Flange, Code 61 /	
	4" SAE Flange, Code 61	
Direction of Flow	Inlet: Side	Outlet: bottom
Materials of Construction	Housing	Lid
30	Polyamide	Polyamide
60-330	Aluminum	Aluminum
660-1300	Ductile Iron	Ductile Iron
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)	
330	87 gpm (330 lpm)	
660	174 gpm (660 lpm)	
950	251 gpm (950 lpm)	
1300	343 gpm (1300 lpm)	
Housing Pressure Rating		
Max. Oper. Press:	360 psi (25 bar); (size 30 - 145 psi, 10 bar)	
Proof Pressure:	217 psi (15 bar)	
Fatigue Pressure:	145 psi (10 bar) @ 1 million cycles	
Burst Pressure:	30	580 psi (40 bar)
	60/110	1080 psi (75 bar)
	160/240	1230 psi (85 bar)
	330	1440 psi (100 bar)
	660-1300	>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)	
V	3045 psid (210 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	P = 29 psi (2 bar) -10% (standard) P = 72 psi (5 bar) -10% (optional)	
Bypass Valve Cracking Pressure	ΔP = 43 psid (3 bar) +10% (standard) ΔP = 87 psid (6 bar) +10% (optional)	

Model Code

RF BN/HC 330 D L 10 H 1 . X / 16 - V - B6

Filter Type _____
 RF = Return Line Filter

Element Media _____
 BN/HC = Betamicon® (Low Collapse) ECO/N = ECOmicron® (Low Collapse)
 AM = Aquamicron® BN/AM = Betamicon®/Aquamicron®¹
 P/HC = Polyester W/HC = Wire Screen

Size _____
 30, 60, 110, 160, 240, 330, 660, 950, 1300

Pressure Rating _____
 B = 145 psi (10 bar) (size 30 only)
 D = 360 psi (25 bar)

Type of Connection _____
 B = 1/2" NPT (size 30) M = SAE 48 Flange (size 660)
 C = SAE 12 (sizes 60, 110) N = SAE 48 Flange Inlet / 3" NPT Outlet (size 660)
 E = SAE 20 (sizes 160 - 330) O = SAE 56 Flange (size 950)
 G = 2" NPT (size 330) P = SAE 64 Flange (size 1300)
 L = SAE 32 Flange Inlet / 2" NPT Outlet (size 330)

Filtration Rating (micron) _____
 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 Static or ΔP Clogging Indicator _____
 A, B/BM, C, D, H

Type Number _____
 1 = Standard Connection

Modification Number (latest version always supplied) _____

Inlet Port Configuration _____
 3 = NPT (sizes 30 & 330)
 12 = SAE Straight Thread Inlet/Outlet Connections (sizes 60, 110, 160, 240)
 16 = SAE Flange Code 61 Inlet Connections (sizes 330 - 1300 only)

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

Bypass Valve _____
 (omit) = 43 psid (3 bar) (return line - standard)
 KB = No Bypass (flushing system) not available with ECO/N
 B6 = 87 psid (6 bar) (return line)
 B1 = 15 psid (1 bar) (lubrication or coolant applications)
 B0.2 = 3 psid (0.20 bar) (suction line)

Supplementary _____
 SO103H = Modification of BN4HC & W/HC Elements For Phosphate Ester Fluids
 L24, L48, L110, L220 = Lamp for D-type clogging indicator (LXX, XX = voltage)
 DE = ΔP Indicator (sizes 660, 950, 1300)

Replacement Element Model Code

0330 R 010 BN4HC / V

Size _____
 0030, 0060, 0110, 0160, 0240,
 0330, 0660, 0950, 1300

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

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

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

Clogging Indicator Model Code

VR 2 B . X /

Indicator Prefix _____
 VR = Return Filters

Trip Pressure _____
 2 = 29 psid (2 bar) (return filters)
 5 = 72 psid (5 bar) (optional)

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

Modification Number _____

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

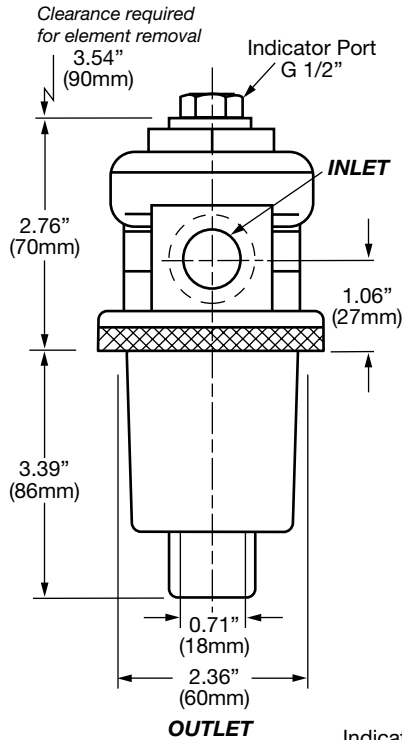
Seals _____
 (omit) = Nitrile (NBR) (standard)
 V = Fluoroelastomer (FPM)

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

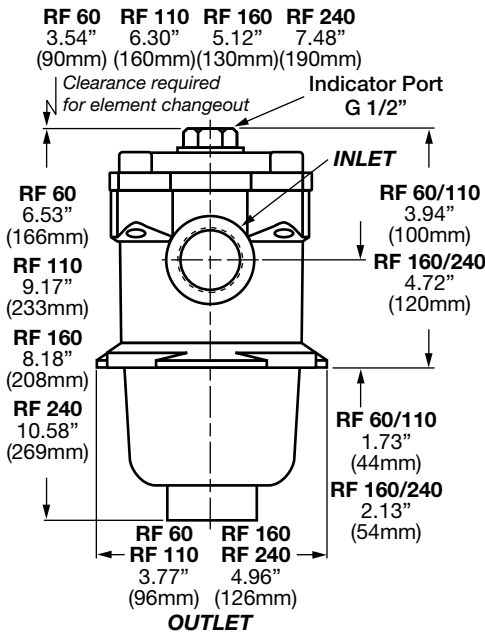
Model Codes Containing RED are non-stock items — Minimum quantities may apply — Contact HYDAC for information and availability

Dimensions

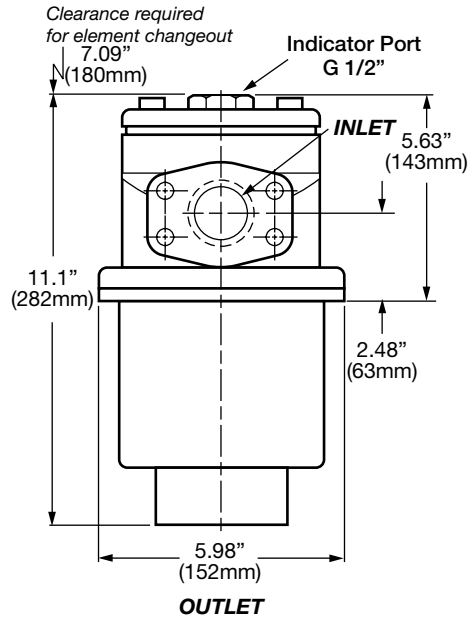
RF 30



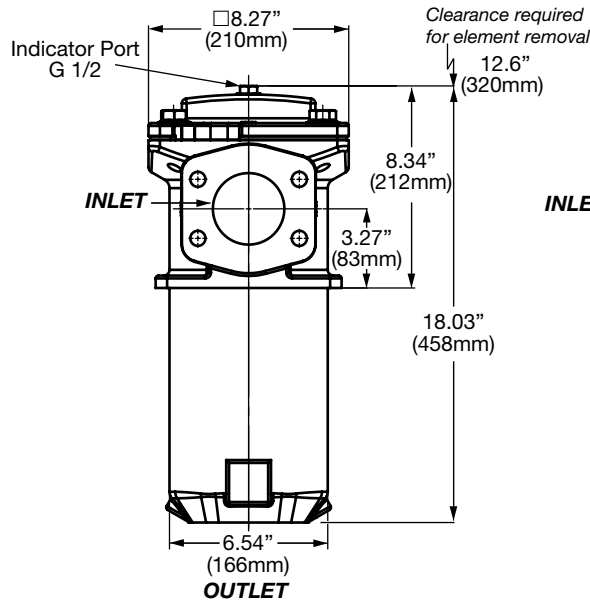
RF 60 - 240



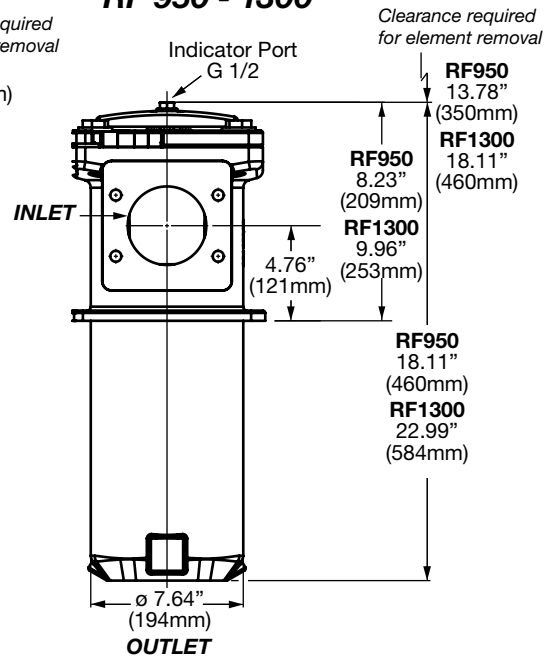
RF 330



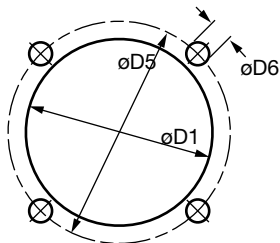
RF 660



RF 950 - 1300



Mounting Pattern



Size	øD1	øD5	øD6
30	2.35" (60mm)	3.07" (78mm)	0.20" (5mm)
60 / 110	3.15" (80mm)	3.94" (100mm)	0.26" (6.5mm)
160 / 240	4.17" (106mm)	5.32" (135mm)	0.30" (7.5mm)
330	5.31" (135mm)	6.9" (170mm)	0.35" (9mm)
660	6.89" (175mm)	8.66" (220mm)	0.55" (14mm)
950 / 1300	8.19" (208mm)	11.42" (290mm)	0.71" (18mm)

Size	30	60	110	160	240	330	660	950	1300
Weight (lbs.)	0.7	1.7	2.0	3.3	3.7	7.5	40.8	86	94.8

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:

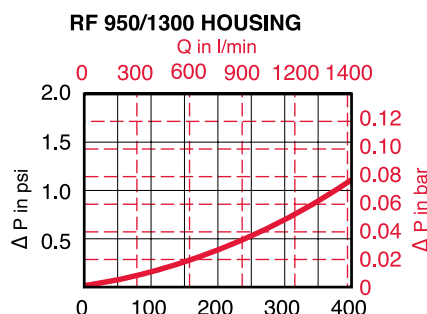
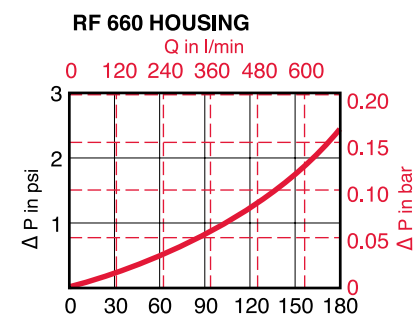
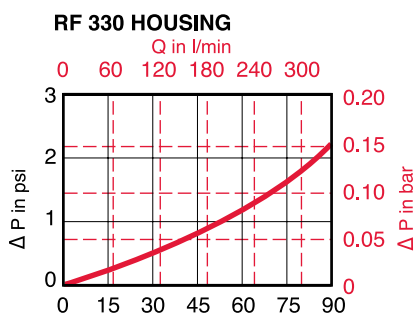
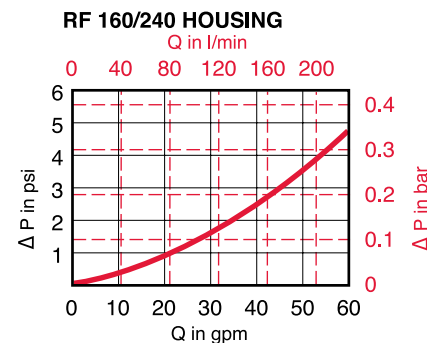
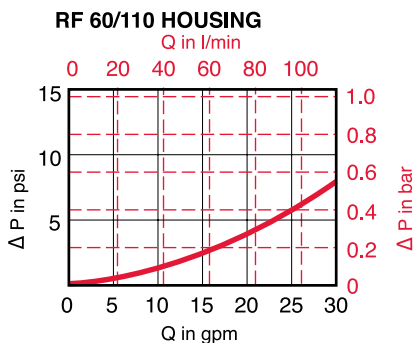
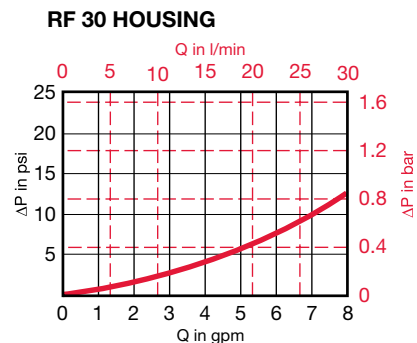
Assembly P = Housing P + Element P

Housing Curve:

Pressure loss through housing is as follows:

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

Adjustments must be made for viscosity & specific gravity of the fluid to be used! (see sizing section on page 19)



Element K Factors

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

(From Tables Below)

Size	...R...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
0030	3.749	2.407	1.470	0.808
0060	1.470	1.005	0.598	0.376
0110	0.817	0.517	0.329	0.178
0160	0.522	0.323	0.208	0.159
0240	0.338	0.208	0.142	0.096
0330	0.232	0.150	0.093	0.066
0660	0.105	0.066	0.042	0.029
0950	0.064	0.043	0.030	0.020
1300	0.045	0.032	0.024	0.014

Size	...R...P/HC (Paper)	
	10, 20 μm	
0030	0.458	
0060	0.255	
0110	0.128	
0160	0.077	
0240	0.049	
0330	0.037	
0660	0.016	
0950	0.010	
1300	0.007	

Size	...R...W/HC (Wire Screen)	
	25, 50, 74, 100, 149, 200 μm	
0030	0.110	
0060	0.055	
0110	0.030	
0160	0.021	
0240	0.015	
0330	0.010	
0660	0.005	
0950	0.003	
1300	0.003	

Size	...R...ECO/N			
	3 μm	5 μm	10 μm	20 μm
0110	-	-	0.464	0.317
0160	0.556	0.378	0.329	0.225
0240	-	-	0.209	-
0330	0.228	0.156	0.135	-
0660	0.100	0.068	0.059	0.041
0950	0.068	0.0467	0.041	0.028
1300	0.049	0.034	0.029	0.020

Size	...R...BN/AM	
	3 μm	10 μm
0330	0.477	0.164
0660	0.192	0.066
0950	0.132	0.045
1300	0.088	0.033

Size	...R...AM
	040A
0330	0.216
0660	0.095
0950	0.067
1300	0.048

All Element K Factors in psi / gpm.