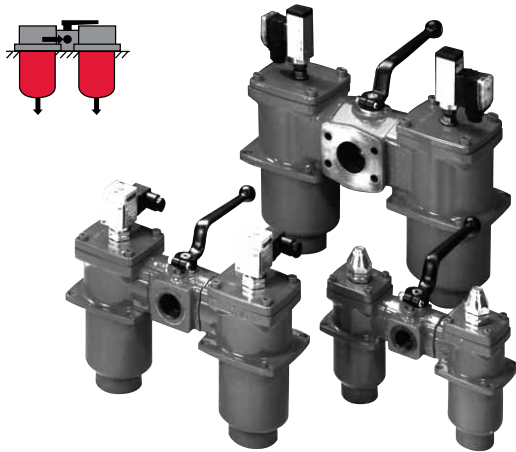


## RFD Series In-Tank / Inline Duplex Filters 360 psi • up to 400 gpm



### Features

- RFD 60 - 330 filters are constructed of aluminum.
- Aluminum alloy is water tolerant - anodization is not required for water based fluids (HWBF).
- RFD 660 - 1300 filters are constructed of ductile iron.
- Non-welded housing design reduces stress concentrations and prevents fatigue failure.
- Inlet/outlet port options include NPT (RFD 61-241 inlet only), 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.
- All RFD duplex filters have a ball-type selector valve to provide continuous filtration without system shut-down to change clogged elements.

### Applications



Agricultural



Automotive



Construction



Gearboxes



Industrial



Power Generation

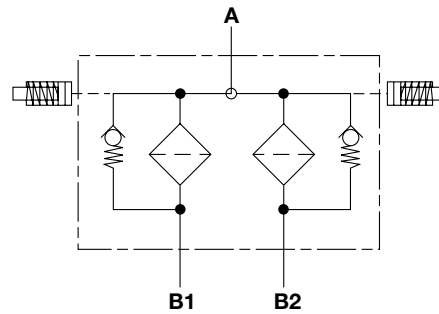


Pulp & Paper



Steel / Heavy Industry

### Hydraulic Symbol



### Technical Details

<b>Mounting Method</b>	4 Mounting holes in the filter housing		
<b>Port Connections</b>	Inlet / Outlet		
60/110	SAE-12 / SAE-12		
160/240	SAE-16 / SAE-20		
330	2" SAE Flange, Code 61 / 2"NPT		
660	3" SAE Flange, Code 61 / 3"NPT		
950	4" SAE Flange, Code 61 / 3-1/2" SAE Flange, Code 61		
1300	4" SAE Flange, Code 61 / 4" SAE Flange, Code 61		
<b>Direction of Flow</b>	Side Inlet and Bottom Outlet		
<b>Materials of Construction</b>	Housing	Lid	Transfer Valve
60 - 240	Aluminum	Aluminum	Steel
330	Aluminum	Aluminum	Aluminum
660-1300	Ductile Iron	Ductile Iron	Ductile Iron
<b>Flow Capacity</b>			
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)		
<b>Housing Pressure Rating</b>			
Max. Oper. Press:	360 psi (25 bar)		
Proof Pressure:	540 psi (38 bar)		
Fatigue Pressure:	360 psi (25 bar) @ 700,000 cycles		
Burst Pressure:	60/110	1080 psi (75 bar)	
	160/240	1230 psi (85 bar)	
	330	1440 psi (100 bar)	
	660-1300	>1440 psi (100 bar)	
<b>Element Collapse Pressure Rating</b>			
BN/HC, W/HC,	290 psid (20 bar)		
ECO/N, BN/AM, P/HC, AM	145 psid (10 bar)		
V	3045 psid (210 bar)		
<b>Fluid Temperature Range</b>	-22° to 250°F (-30° to 121°C)		
<b>Fluid Compatibility</b>	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.		
<b>Indicator Trip Pressure</b>	P = 29 psi (2 bar) -10% (standard) P = 72 psi (5 bar) -10% (optional)		
<b>Bypass Valve Cracking Pressure</b>	ΔP = 43 psid (3 bar) +10% (standard) ΔP = 87 psid (6 bar) +10% (optional)		

## Model Code

**RFD BN/HC 330 D A L 10 H 1 . X / 16 - V - B6**

**Filter Type** \_\_\_\_\_  
RFD = Duplex In-Tank Return Line Filter

**Element Media** \_\_\_\_\_  
BN/HC = Betamicon® (Low Collapse)      ECO/N = ECOmicon® (Low Collapse)  
AM = Aquamicon®\*      BN/AM = Betamicon®/Aquamicon®\*  
P/HC = Polyester      W/HC = Wire Screen

**Size** \_\_\_\_\_  
60, 110, 160, 240, 330, 660, 950, 1300

**Pressure Rating** \_\_\_\_\_  
D = 360 psi (25 bar)

**Type of Changeover Valve** \_\_\_\_\_  
A = Ball Valve

**Type of Connection** \_\_\_\_\_  
C = SAE 12 (sizes 60, 110); 3/4" NPT w/ Adapter  
D = SAE 16 Inlet / SAE-20 Outlet (sizes 160, 240); 1" NPT w/Adapter  
L = 2" SAE Flange Inlet / 2" NPT Outlet (size 330)  
N = 3" SAE Flange Inlet / 3" NPT Outlet (size 660)  
O = 4" SAE Flange Inlet / 3 1/2" SAE Flange Outlet (size 950)  
P = 4" SAE Flange (size 1300)

**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 Clogging Indicator** \_\_\_\_\_  
A, B/BM, C, D, H

**Type Number** \_\_\_\_\_  
1 = Standard Connection

**Modification Number (latest version always supplied)** \_\_\_\_\_

**Port Configuration** \_\_\_\_\_  
3 = NPT (sizes 60, 110, 160, 240)  
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)  
B6 = 87 psid (6 bar) (return line)  
B1 = 15 psid (1 bar) (lubrication or coolant applications) } not available with ECO/N  
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)  
\* Only available in sizes 330, 660, 950, and 1300.

## Replacement Element Model Code

**0330 R 010 BN4HC / V**

**Size** \_\_\_\_\_  
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, W/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

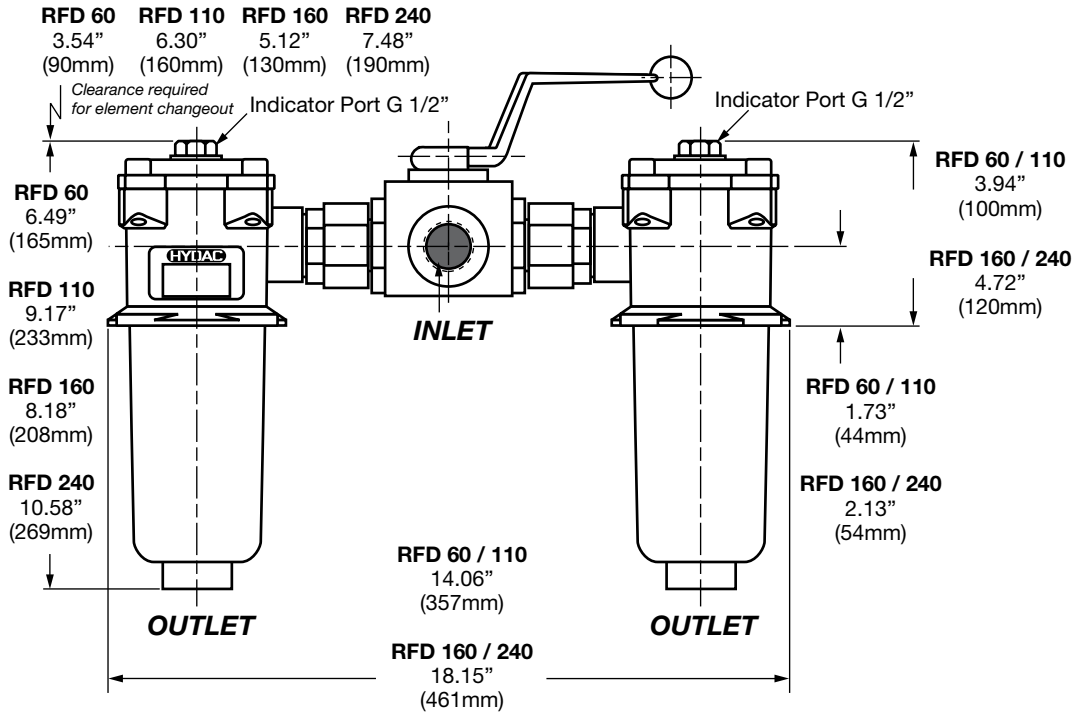
**Modification Number** \_\_\_\_\_

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

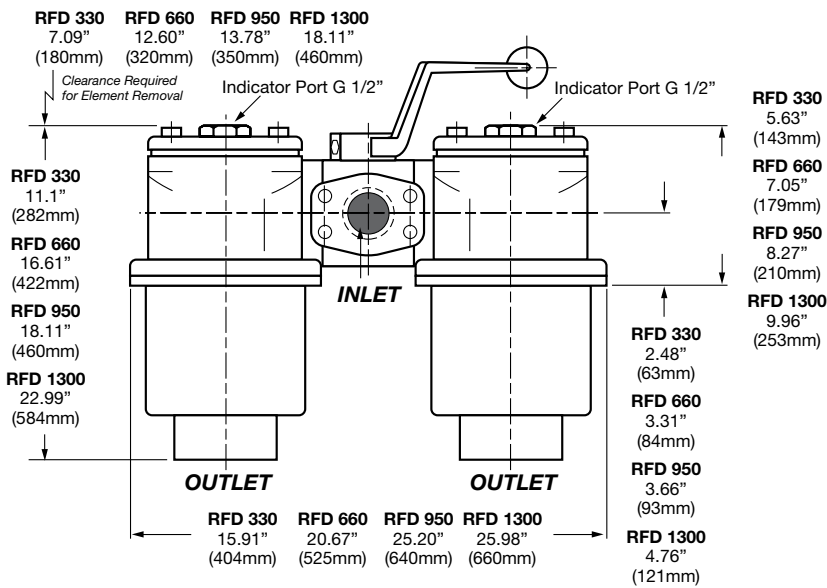
**Seals** \_\_\_\_\_  
(omit) = Nitrile (NBR) (standard)  
V = Fluoroelastomer (FPM)  
(For additional details and options, see Clogging Indicators section.)

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

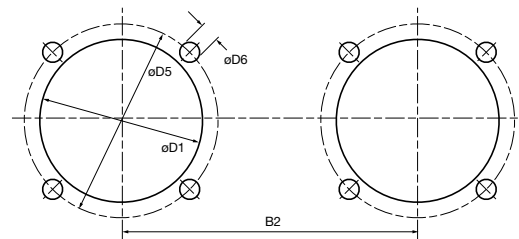
## Dimensions RFD 60 - 240



## RFD 330 - 1300



## Mounting Pattern



Size	$\phi D1$	$\phi D5$	$\phi D6$	B2
60 / 110	3.15" (80mm)	3.94" (100mm)	0.26" (6.5mm)	10.26" (260.5mm)
160 / 240	4.17" (106mm)	5.32" (135mm)	0.30" (7.5mm)	13.21" (335.5mm)
330	5.31" (135mm)	6.9" (170mm)	0.35" (9mm)	10.00" (254mm)
660	6.89" (175mm)	8.66" (220mm)	0.55" (14mm)	12.99" (330mm)
950	8.19" (208mm)	11.42" (290mm)	0.71" (18mm)	13.35" (390mm)
1300	8.19" (208mm)	11.42" (290mm)	0.71" (18mm)	16.14" (410mm)

Size	60	110	160	240	330	660	950	1300
Weight (lbs.)	7.0	8.2	13.4	15.6	29.5	112.2	215	238

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:

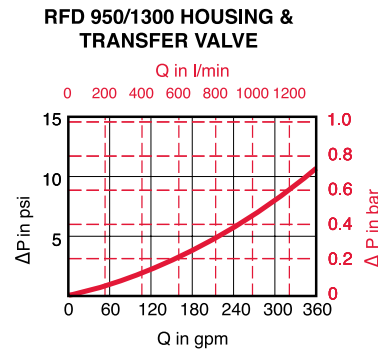
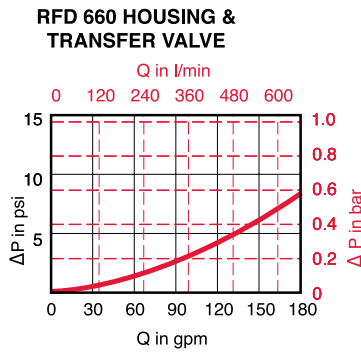
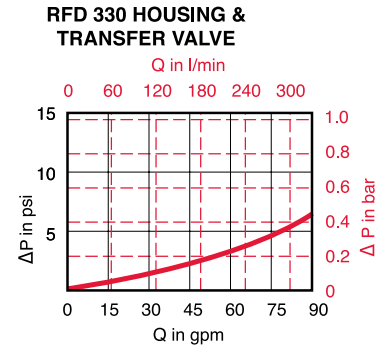
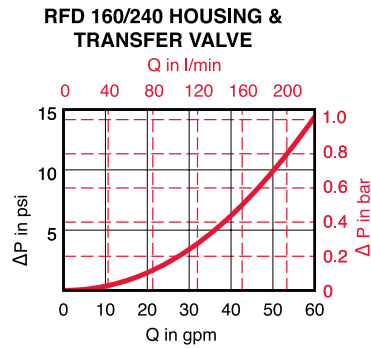
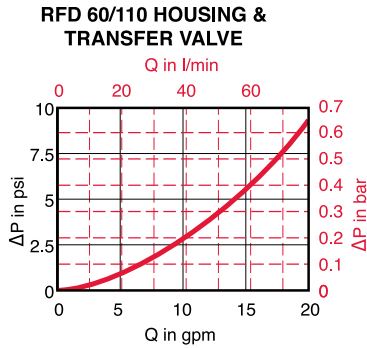
$$\text{Assembly } \Delta P = \text{Housing } \Delta P + \text{Element } \Delta P$$

### Housing Curve:

Pressure loss through housing is as follows:

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

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



## Element K Factors

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

(From Tables Below)

Size	...R...BN4HC (Betamicon® Low Collapse)			
	3 μm	5 μm	10 μm	20 μm
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...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...P/HC (Paper)
	10, 20 μm
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
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...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.