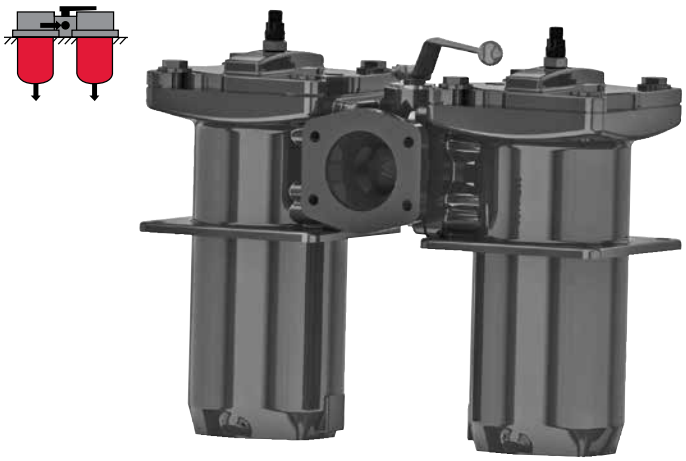
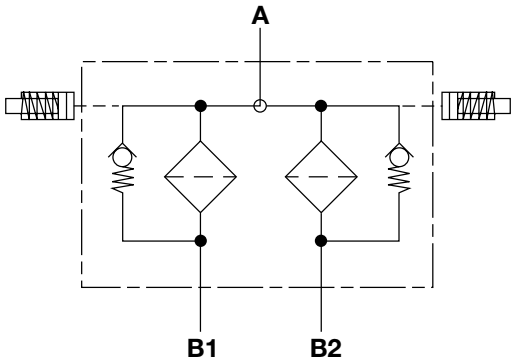
RFD Series

In-Tank / Inline Duplex Filters

360 psi • up to 400 gpm



Hydraulic Symbol



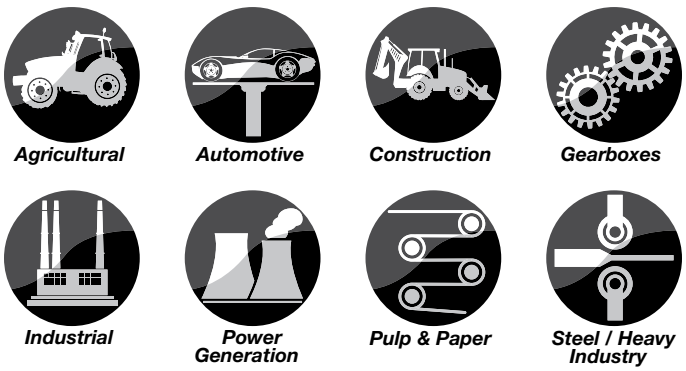
Features

- RFD 110 - 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 110-240 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 rubber, fluorocarbon elastomer, ethylene propylene rubber) 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.
- All RFD duplex filters have a ball-type selector valve to provide continuous filtration without system shut-down to change clogged elements.
- Single piece housing castings provide strength and rigidity for in-line or in-tank mounting
- Flange connection bolts included for inlet connection only. Bolts are suitable for use with split flange halves, per ISO6162-1 / SAE J518-1.

Note: This filter is configured with an …..R…. type (return/low pressure) element, so if the filter requires a bypass, the bypass is located in the closed end cap of the cartridge element.

Sizes 60 and 160 have been discontinued. Replacement elements, seal kits and lid assemblies are still available.

Applications



Technical Specifications

Mounting Method	4 Mounting holes in the filter housing		
Port Connections	Inlet / Outlet		
110	SAE-12 / SAE-12; 3/4"NPT (adapter) / SAE-12		
240	SAE-16 (adapter) / G-1-1/4" female; 1"NPT (adapter) / G-1-1/4" female		
330	G2" / G2"; SAE DN 51 Code 61 Flange / G2"		
660	SAE DN 76 Code 61 / SAE DN 76 Code 61 SAE DN 76 Code 61 / SAE DN 89 Code 61		
950	SAE DN 102 Code 61/ SAE DN 89 Code 61		
1300	SAE DN 102 Code 61/ SAE DN 102 Code 61		
Direction of Flow	Side Inlet and Bottom Outlet		
Materials of Construction			
	Housing	**Lid**	**Transfer Valve**
110 - 240	Aluminum	Aluminum	Steel
330	Aluminum	Aluminum	Aluminum
660-1300	Ductile Iron	Ductile Iron	Ductile Iron
Flow Capacity			
110	29 gpm (110 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. Allowable Working Pressure*	360 psi (25 bar)		
Fatigue Pressure	360 psi (25 bar) @ 700,000 cycles		
Burst Pressure	110	1080 psi (75 bar)	
	240	1230 psi (85 bar)	
	330	1440 psi (100 bar)	
	660-1300	>1440 psi (100 bar)	
Element Collapse Pressure Rating			
SN, W/HC, ECON2, BN4AM, P/HC, AM	290 psid (20 bar)		
V	145 psid (10 bar) 435 psid (30 bar)		
Fluid Temperature Range	14°F to 212°F (-10°C to 100°C)		
Consult HYDAC for applications below 14°F (-10°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.			
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)*			

*Note: All RFD Filters MAWP reduce to 7 bar (101.5 psi) when using the following "VMF" and "VR" indicators: B, BM, E, ES, GC, LE, LZ.

PN#02081318 / 04.26 / FIL1907-2109

Model Code

RFD SN 330 D A L 10 D 1 . X / 16 - V - B6

Filter Type
RFD = Duplex In-Tank Return Line Filter

Element Media
SN = Sustainmicron
ECON2 = ECOmicron®
W/HC = Wire Mesh
P/HC = Polyester
BN/AM = Betamicron®/Aquamicron®
AM* = Aquamicron® *(*Only available in sz. 330, 660, 950, & 1300)*
V = Metal Fiber

Size
110, 240, 330, 660, 950, 1300

Pressure Rating
D = 360 psi (25 bar)
V = 101.5 psi (7 bar) *(When using the following "VR" indicators: B, BM, E, ES, GC, LE, LZ)*

Type of Changeover Valve
A = Ball Valve

Type of Connection
C = 3/4" Threaded *(size 110)*; SAE-12 or 3/4" NPT (w/adapter) inlet / SAE-12 outlet
D = 1" Threaded Inlet (adapter) / G-1-1/4" female Outlet *(size 240)*; SAE-16 or 1" NPT *(w/adapter)* inlet
G = 2" Threaded *(BSPP only size 330)* – Inlet and Outlet
L = SAE DN 51 Code 61 Flange Inlet / 2" BSPP Outlet *(size 330)*
M = SAE DN 76 Code 61 Flange Inlet / SAE DN 76 Code 61 Flange Outlet *(size 660)*
N = SAE DN 76 Code 61 Flange Inlet / 3" BSPP Outlet *(size 660)*
O = SAE DN 102 Code 61 Flange Inlet / SAE DN 89 Code 61 Flange Outlet *(size 950)*
P = SAE DN 102 Code 61 Flange Inlet / SAE DN 102 Code 61 Flange Outlet *(size 1300)*

Filtration Rating *(micron)*
3, 5, 10, 20 = SN
10, 20 = P/HC
3, 5, 10, 20 = ECON2
25, 50, 100, 200 = W/HC
3, 10 = BN/AM
3, 5, 10, 20 = V
40 = AM

Type of Static or ΔP Clogging Indicator
A, B, BM, C, D, E *(Others available upon request, see Clogging Indicators section.)* - Note: 2 required

Type Number
1 = Standard Connection

Modification Number *(latest version always supplied)*

Port Configuration
(omit) = SAE DN Flange Inlet Connections *(sizes 330 - 1300 only)*
12 = SAE Straight Thread Inlet/Outlet Connections *(sizes 110, 240)*
0 = BSPP Straight Thread
3 = NPT *(sizes 110, 240)*

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

Bypass Valve
(omit) = 43 psid (3 bar) *(standard)*
B1 = 14.5 psid (1 bar) *(lube or coolant)*
B2 = 29 psid (2 bar)
B6 = 87 psid (6 bar) *(return line extended life)*
KB = no bypass *(flushing system)*
not available with ECON2

Supplementary Details
SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids
L24, L48, L110, L220 = Lamp for D-type clogging indicator *(LXX, XX = voltage)*
SFREE = Element specially designed to minimize electrostatic charge generation
SO376 = Modification of ON and W/HC elements for HFA, HFB, HFC, and HFD flame retardant liquids

Replacement Element Model Code

0330 R 010 SN / V B6

Size
0110, 0240, 0330, 0660, 0950, 1300

Filtration Rating *(micron)*
3, 5, 10, 20 = SN
3, 10 = BN4AM
40 = AM
10, 20 = P/HC
3, 5, 10, 20 = XSX
3, 5, 10, 20 = ECON2
25, 50, 100, 200 = W/HC
3, 5, 10, 20 = V

Element Media
SN, XSX, BN4AM, ECON2, AM, W/HC, P/HC, V

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

Bypass Valve
(omit) = 43 psid (3 bar) *(standard)* B1 = 14.5 psid (1 bar)
B2 = 29 psid (2 bar) B6 = 87 psid (6 bar) KB = no bypass

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

Clogging Indicator Model Code

VR 5 D . X / V

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 = Pop-up indicator *(auto reset - static only)*
BM = Pop-up indicator *(manual reset)*
C = Electric switch - SPDT
D = Electric switch and LED light - SPDT
E = Visual pressure gauge

Modification Number

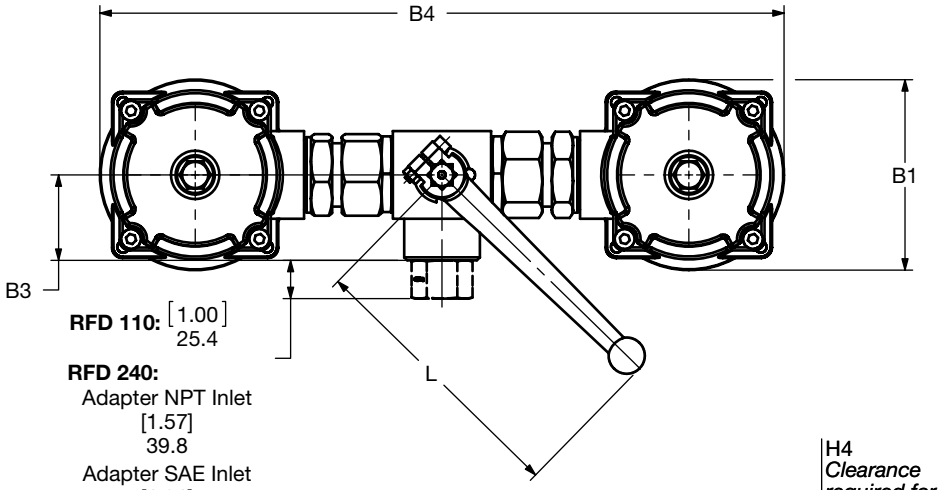
Supplementary Details
Seals
(omit) = Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)

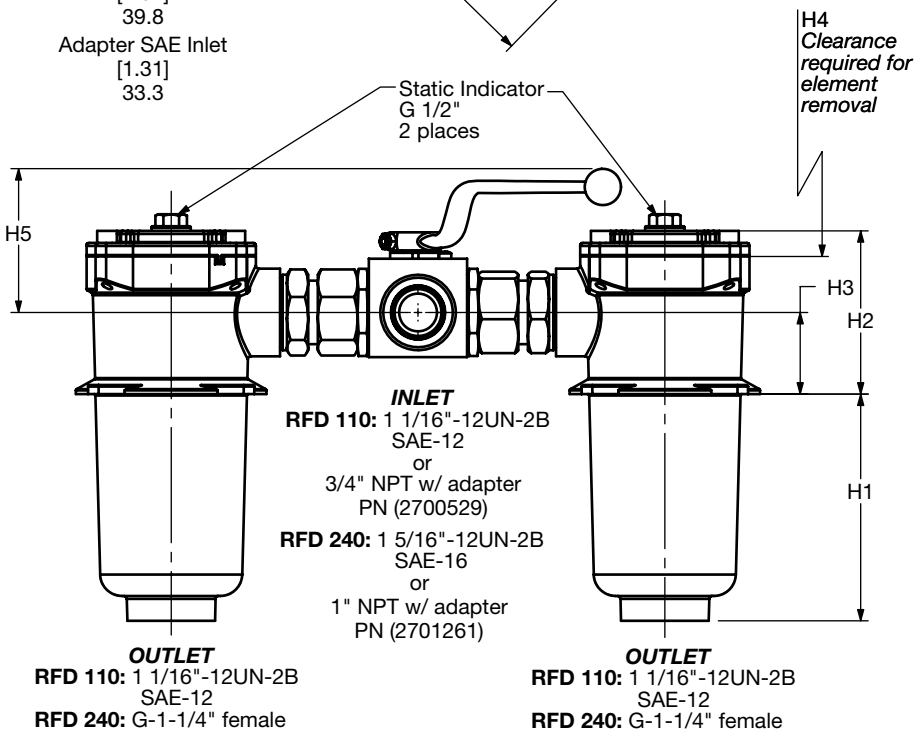
Light Voltage *(D type indicators only)*
L24 = 24V L48 = 48V L110 = 110V L220 = 220V

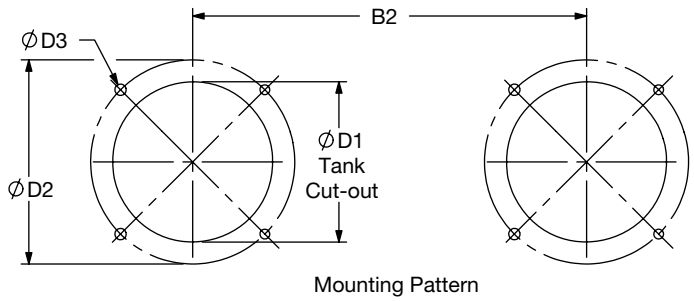
(For additional details and options, see Clogging Indicators section.)

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

Dimensions
RFD 110 - 240







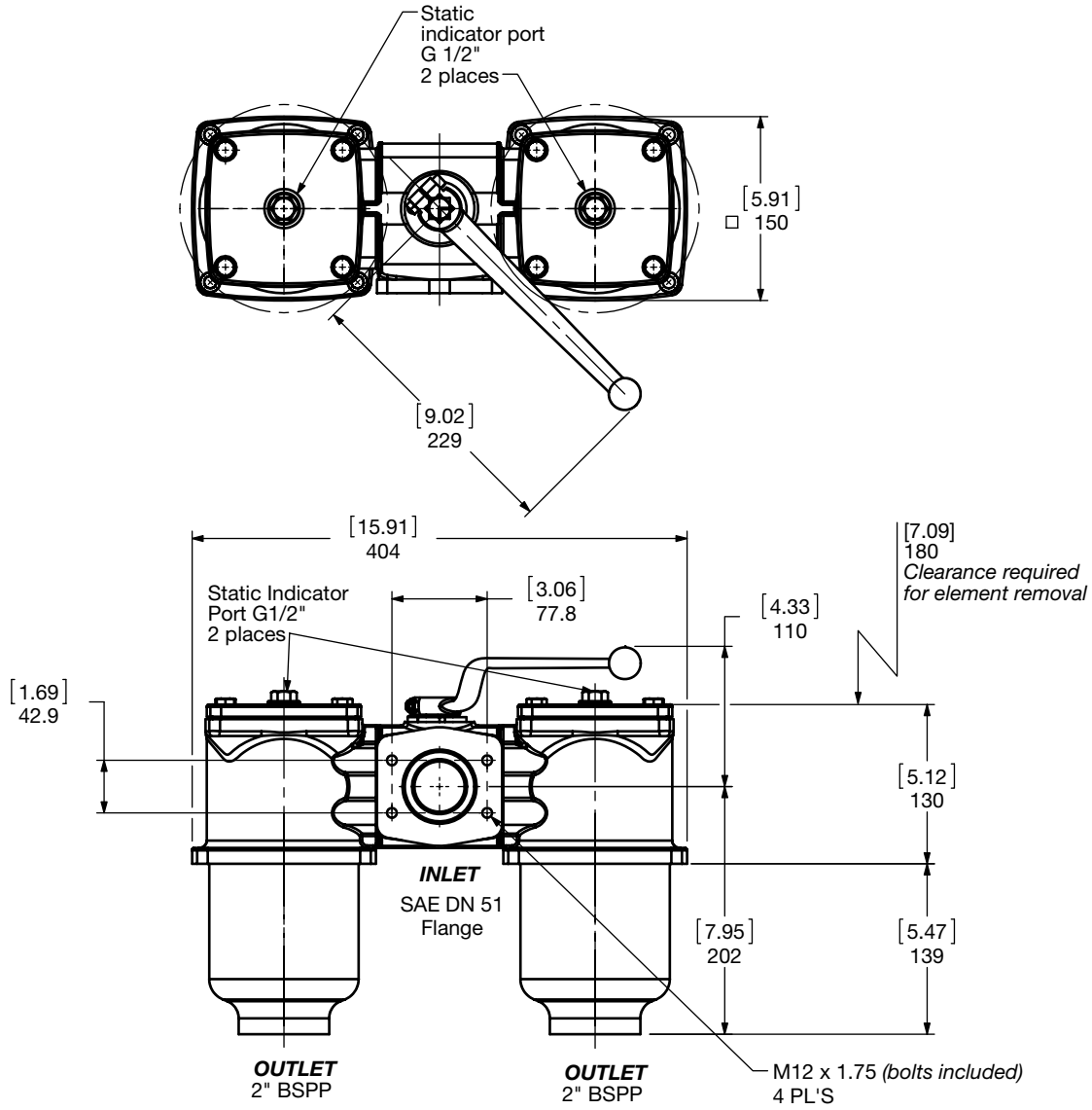
Mounting Pattern

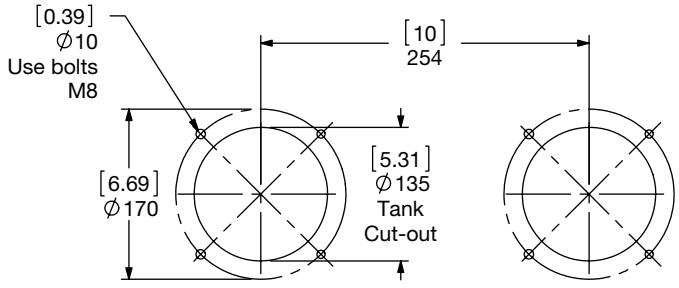
Size	110	240
B1	[3.77] 96	[4.96] 126
B2	[10.26] 260.5	[13.2] 335.5
B3	[1.87] 47.5	[2.22] 56.5
B4	[14] 357	[18.14] 461
D1	[3.15] 80	[4.17] 106
D2	[3.9] 100	[5.3] 135
D3	[0.315] 8	[0.374] 9.5
H1	[5.24] 133	[5.91] 150
H2	[3.46] 88	[4.25] 108
H3	[1.73] 44	[2.13] 54
H4	[5.71] 145	[7.1] 180
H5	[3.62] 92	[3.74] 95
L	[6.81] 173	[6.81] 173
Reservoir bolts	M5	M6

Size	110	240
Weight (lbs.)	8.2	17.2

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.

Dimensions
RFD 330



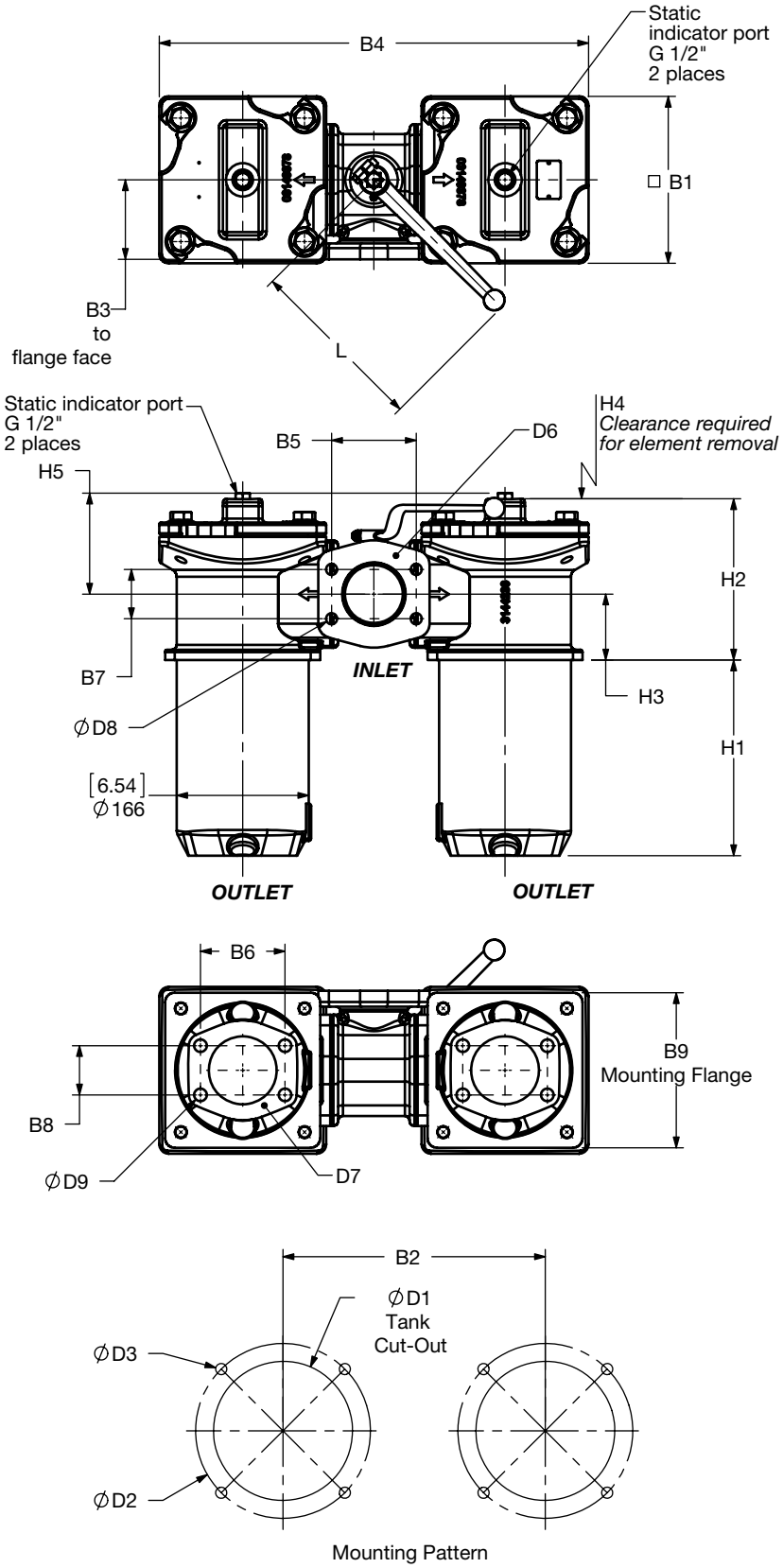


Mounting Pattern

Size	330
Weight (lbs.)	29.6

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.

Dimensions
RFD 660 - 1300



Size	660	950	1300
B1	[8.27] 210	[9.61] 244	[9.61] 244
B2	[12.99] 330	[15.35] 390	[16.14] 410
B3	[3.9] 100	[5.51] 140	[5.51] 140
B4	[21.26] 540	[25.2] 640	[25.98] 660
B5	[4.19] 106.5	[5.13] 130.2	[5.13] 130.2
B6	[4.19] 106.4	[4.75] 120.7	[5.13] 130.2
B7	[2.43] 61.9	[3.06] 77.8	[3.06] 77.8
B8	[2.43] 61.9	[2.75] 69.9	[3.06] 77.8
B9	[7.68] 195	[9.84] 250	[9.84] 250
D1	[7.1] 180	[8.19] 208	[8.19] 208
D2	[8.66] 220	[11.42] 290	[11.42] 290
D3	[0.55] 14	[0.71] 18	[0.63] 16
D6	SAE DN 76 Flange	SAE DN 102 Flange	SAE DN 102 Flange
D7	3” BSPP or SAE DN 76 Flange	SAE DN 89	SAE DN 102
D8	M16 x 2*	M16 x 2*	M16 x 2*
D9	M16 X 2, 18 mm deep	M16 X 2, 20 mm deep	M16 X 2, 20 mm deep
H1	[9.68] 246	[9.94] 252.5	[13.01] 330.5
H2	[7.99] 203	[8.85] 225	[10.6] 269
H3	[3.27] 83	[[3.66] 93	[4.76] 121
H4	[12.6] 320	[15.16] 385	[19.09] 485
H5	[4.48] 114	[6.69] 170	[6.69] 170
L	[9.02] 229	[12.52] 318	[12.52] 318
Bolts**	M12 x 1.75	M16 x 2	M16 x 2

*Bolts included
** Recommended reservoir mounting bolts

Size	660	950	1300
Weight (lbs.)	158.8	231.5	260.2

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.

PN#02081318 / 04.26 / FIL1907-2109

Sizing Information

Total pressure loss through the filter is as follows:

Assembly ΔP = Housing ΔP + Element ΔP

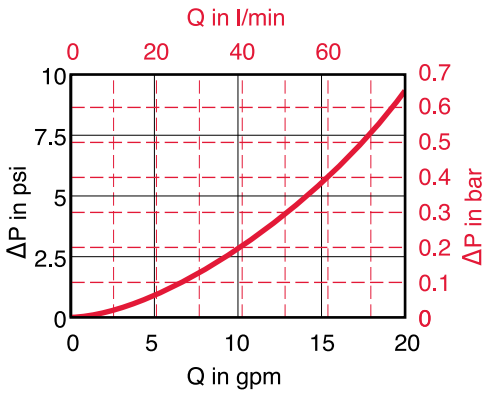
Housing Curve:

Pressure loss through housing is as follows:

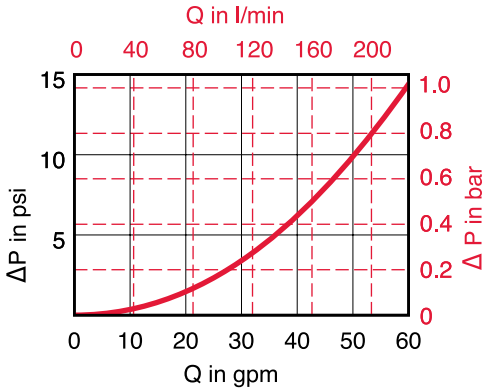
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

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

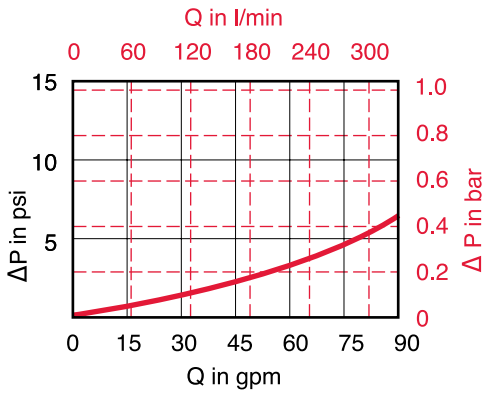
RFD 110 HOUSING & TRANSFER VALVE



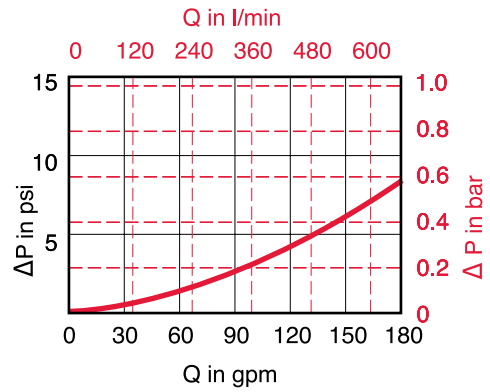
RFD 240 HOUSING & TRANSFER VALVE



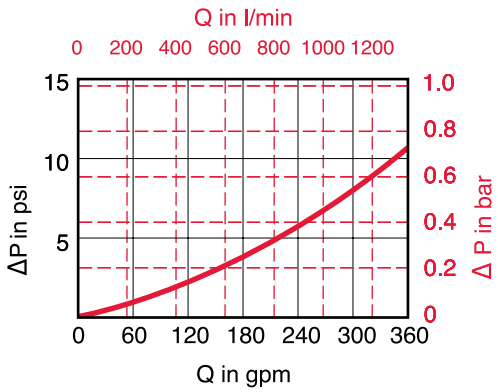
RFD 330 HOUSING & TRANSFER VALVE



RFD 660 HOUSING & TRANSFER VALVE



RFD 950/1300 HOUSING & TRANSFER VALVE



Element K Factors

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

Sustainmicron	...R...SN Elements			
Size	3 µm	5 µm	10 µm	20 µm
0110 R XXX SN	0.5446	0.4388	0.2707	0.1457
0240 R XXX SN	0.2248	0.1811	0.1160	0.0648
0330 R XXX SN	0.1771	0.1388	0.0692	0.0455
0660 R XXX SN	0.0852	0.0632	0.0324	0.0196
0950 R XXX SN	0.0482	0.0414	0.0230	0.0129
1300 R XXX SN	0.0338	0.0306	0.0169	0.0092

Stat-X	...R...XSX			
Size	3 µm	5 µm	10 µm	20 µm
0110 R XXX XSX	0.719	0.487	0.296	0.178
0240 R XXX XSX	0.284	0.201	0.125	0.077
0330 R XXX XSX	0.204	0.15	0.081	0.056
0660 R XXX XSX	0.093	0.066	0.037	0.025
0950 R XXX XSX	0.057	0.043	0.026	0.017
1300 R XXX XSX	0.04	0.032	0.019	0.012

ECOmicron	...R...ECON2			
Size	3 µm	5 µm	10 µm	20 µm
0240 R XXX ECON2	0.340	0.209	0.143	0.099
0330 R XXX ECON2	0.230	0.148	0.093	0.066
0660 R XXX ECON2	0.104	0.066	0.044	0.027
0950 R XXX ECON2	0.066	0.044	0.027	0.022
1300 R XXX ECON2	0.044	0.033	0.022	0.016

Betamicron/Aquamicron	...R...BN4AM	
Size	3 µm	10 µm
0330 R XXX BN4AM	0.477	0.165
0660 R XXX BN4AM	0.192	0.066
0950 R XXX BN4AM	0.132	0.044
1300 R XXX BN4AM	0.088	0.033

Aquamicron	...R...AM
Size	40 µm
0330 R 040 AM	0.115
0660 R 040 AM	0.051
0950 R 040 AM	0.036
1300 R 040 AM	0.026

Wire Mesh	...R...W/HC
Size	25, 50, 100, 200 µm
0110 R XXX W/HC	0.016
0240 R XXX W/HC	0.007
0330 R XXX W/HC	0.011
0660 R XXX W/HC	0.004
0950 R XXX W/HC	0.003
1300 R XXX W/HC	0.002

Polyester	...R...P/HC	
Size	10 µm	20 µm
0110 R XXX P/HC	0.050	0.025
0240 R XXX W/HC	0.023	0.012
0330 R XXX W/HC	0.016	0.008
0660 R XXX W/HC	0.008	0.004
0950 R XXX W/HC	0.006	0.003
1300 R XXX W/HC	0.004	0.002

All Element K Factors in psi / gpm.

Notes