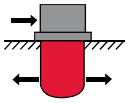
RFM Series

In-Tank Return Line Filters

145 psi • up to 224 gpm



Features

- The compact and lightweight design make RFM filters especially suitable for mobile applications.
- RFM filters are constructed of polyamide plastic housing and lid.
- RFM 90/150/210/270 drop in replacement for "Tank Topper" filters.
- Sizes 50 - 851 aluminum alloy is water tolerant - anodization is not required for water based fluids (HWBF).
- The filter bowl on models 50 - 270 also serves as a contamination basket - removed to change element.
- Models 330, 500, 661, and 851 have filter elements equipped with separate, reusable contamination baskets.
- Sizes 75/90/150/165/185 available with 4- or 2-bolt tank flange.
- Second inlet optional port available for sizes 75, 165, 185 only with 4-bolt mounting head.
- Sizes 975 & 1100 added for increased flow capacities
- Sizes 50, 975 and 1100 utilize separate bypass assemblies
- Size 50 only available with BN4HC elements

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. *(Exception - sizes 50, 975, 1100)*

Consult HYDAC for applications using RFM50. RFM50 is not a standard offering.

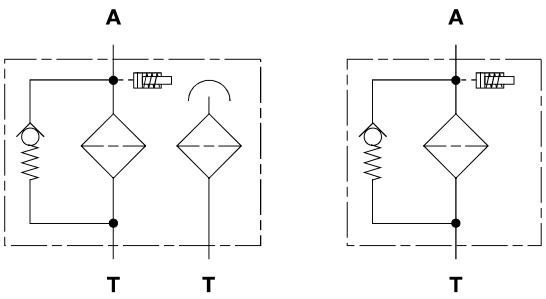
Applications

Agricultural

Automotive

Construction

Hydraulic Symbol



Technical Specifications

Mounting Method			
75/90/150/165/185	2 mounting holes - filter housing		
50/75/90/150/165/185/210/270/330/500/661/851/975/1100	4 mounting holes - filter housing		
Port Connections	Inlet / Outlet		
50	SAE-8 / 0.9"		
90/150	SAE-12 / 1"		
75/165/185	SAE-16 / 1.26" Smooth Port		
210/270	SAE-20 / Open Bottom		
330/500	SAE-24 / 2" NPT 1 1/2" SAE Flange, Code 61 / 2" NPT		
661/851	2 1/2" SAE Flange, Code 61 / G 2 1/2" BSPP		
975/1100	2" SAE Straight Thread / 2" NPT 2 1/2" NPT Threaded / 2" NPT M 2 1/2" SAE Code 61 Flange / 2" NPT M		
Direction of Flow	Side inlet and bottom outlet.		
Mat. of Construc.	Head	Bowl	Lid
50/90/150/75/165/185	Aluminum	Polyamide	Polyamide
210/270	Aluminum	Steel	Polyamide
330/500/661/851	Aluminum	Polyamide	Aluminum
975/1100	Aluminum	Steel	Steel
Flow Capacity			
50 - 13 gpm (50 lpm)	270 - 71 gpm (270 lpm)		
75 - 20 gpm (75 lpm)	330 - 87 gpm (330 lpm)		
90 - 24 gpm (90 lpm)	500 - 132 gpm (500 lpm)		
150 - 40 gpm (150 lpm)	661 - 174 gpm (660 lpm)		
165 - 43 gpm (165 lpm)	851 - 225 gpm (850 lpm)		
185 - 49 gpm (185 lpm)	975 - 258 gpm (950 lpm)		
210 - 55 gpm (210 lpm)	1100 - 300 gpm (1100 lpm)		
Housing Pressure Rating			
Max. Allowable Working Pressure*	145 psi (10 bar), 101.5 psi (7 bar) *(Sizes 975 & 1100)*		
Fatigue Pressure	145 psi (10 bar) @ 1 million cycles		
Burst Pressure	75-500	>580 psi (40 bar)	
	50, 661/851	536 psi (37 bar)	
	975/1100	Consult Factory	
Element Collapse Pressure Rating			
BN4HC *(size 50, 975 & 1100 only)*	145 psid (10 bar)		
ON *(size 50-851 only)*, W/HC	290 psid (20 bar)		
ECON2, BN4AM, AM, P/HC, MM	145 psid (10 bar)		
V	435 psid (30 bar)		
Fluid Temperature Range	-22°F to 212°F (-30°C to 100°C)		
Consult HYDAC for applications 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.			
Indicator Trip Pressure			
P = 20 psi (1.4 bar) - 10%			
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 - All sizes except 50, 975, 1100)*			
ΔP = 87 psid (6 bar) +10% *(Optional - Sizes 50, 975 & 1100 not available)*			
ΔP = 25 psid (1.7 bar) +10% *(Standard for Sizes 50, 975 & 1100)*			

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

Model Code

RFM MM 210 B E 10 A 0.1

RFM ON 330 B F F 3 D 1 . X / 12 - V - _ - L24

Filter Type
RFM = In-Tank Return Line Filter

Element Media
ON = Optimicron® BN/HC = Betamicron® *(Sizes 50, 975, 1100 only)*
BN/AM = Betamicron®/Aquamicron® *(Sizes 330 to 851 only)*
ECON2 = ECOmicron® *(Not for sizes 50, 75, 210, 270)*
AM = Aquamicron® *(Sizes 330 to 851 only)*
W/HC = Wire Mesh *(Sizes 75 to 851)* P/HC = Polyester *(Sizes 330 to 851 only)*
MM = Mobilemicron® *(Sizes 75 to 851)*

Size
50, 75, 90, 150, 165, 185, 210, 270, 330, 500, 661, 851, 975, 1100

Working Pressure
B = 145 psi (10 bar) V = 101.5 psi (7 bar) *(975 & 1100 Standard* - Note previous page)*

Optional Second Inlet Connection
(omit)= no second port
D = 1" Threaded (SAE-16) *(sz. 75, 165, 185)*
F = 1 1/2" Threaded (SAE-24) *(sz. 330, 500 only)*
G = 2" Threaded Port *(sz. 975, 1100 only)*
K = 1 1/2" SAE Flange Code 61 *(sz. 330, 500 only)*
M = 2 1/2" SAE Flange Code 61 *(sz. 661, 851, 975 & 1100 only)*
N = 2 1/2" NPT Threads *(sz. 975, 1100 only)*
V = 2 x 1" (SAE-16) *(sz. 210, 270 only)*

Inlet Connection/Port Size *(1 Inlet)*
B = 1/2" Threaded (SAE-8) *(sz. 50 only)*
C = 3/4" Threaded (SAE-12) *(sz. 90, 150 only)*
D = 1" Threaded (SAE-16) *(sz. 75, 165 & 185 only*
E = 1 1/4" Threaded (SAE-20) *(sz. 210, 270 only)*
F = 1 1/2" Threaded (SAE-24) *(sz. 210, 270, 330, & 500 only)*
G = 2" Threaded Port *(sz. 975 & 1100 only)*
K = 1 1/2" SAE Flange Code 61 *(sz. 330, 500 only)*
M = 2 1/2" SAE Flange Code 61 *(sz. 661, 851, 975 & 1100 only)*
N = 2 1/2" NPT Threads *(sz. 975, 1100 only)*
Z = Customer Specific

Filtration Rating *(microns)*
1, 3, 5, 10, 15, 20 = ON 3, 5, 10, 20 = BN/HC 3, 10 = BN/AM 3, 5, 10, 20 = ECON2
40 = AM 25, 74, 149 = W/HC 10, 20 = P/HC 10, 15 = MM

Type of Static Clogging Indicator
A, B, BM, C, D, E, F, FD *(Others available upon request)*

Type Number
0 = no indicator, no ports 1-3 = clogging indicator positions *(see chart)*

Modification Number *(latest version always supplied)*

Inlet Port Configuration
0 = BSPP Straight Thread Ports
12 = SAE Straight Thread O-Ring Boss Ports *(sz. 50-500, 975, 1100)*
3 = NPT Ports *(sizes 975, 1100 only)*
16 = SAE Flange Code 61 *(sz. 330-851, 975, 1100)*

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

Bypass Valve
(omit) = 43 psid (3 bar) *(standard)*
B1 = 14.5 psid (1 bar) lube or coolant
B1.7 = 25 psid (1.7 bar) *(50, 975 & 1100 only setting available for bypass)*
B6 = 87 psid (6 bar) *(return line extended life)*
KB = no bypass *(flushing systems)*
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)*
SO150H = Anodized for high water based fluids, phosphate esters and skydrol fluids *(sz. 975 & 1100 only)*
T = Filter Breather *(sz. 75, 90, 150, 165, 185, 210, 270 only) - (includes oil separator on 2 bolt versions sizes 75, 165, 185 only)*
C = Outlet check valves *(sizes 975, 1100 only)*
DTxx = Down tube *(xx length in inches - up to 12 inches)*
DSxx = Dip stick *(xx length in inches)*
D = Diffuser *(sizes 75, 165, 185 only)*
G = BSPP threaded outlet
4L = 4 Bolt mounting flange *(sizes 90-185)*
2MO = Indicator with Deutsch Connector *(FD indicator only)*
SFREE = Element specially designed to minimize electrostatic charge generation

Replacement Element Model Code

0330 R 003 ON / V B6

Size
0050, 0075, 0090, 0150, 0165, 0185, 0210, 0270, 0330, 0500, 0660, 0850, 0975, 1100

Filtration Rating *(micron)*
1, 3, 5, 10, 15, 20 = ON
3, 5, 10, 20 = BN4HC *(sz. 50, 975, 1100 only)*
3, 10 = BN4AM 3, 5, 10, 20 = ECON2
40 = AM 25, 74, 149 = W/HC
10, 20 = P/HC 10, 15 = MM

Element Media
ON, BN4HC, BN4AM, ECON2, AM, W/HC, P/HC, MM

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

Bypass Valve
(omit) = 43 psid (3 bar) *(standard)*
B1.7 = 25 psid (1.7 bar)
KB = no bypass
B1 = 14.5 psid (1 bar)
B6 = 87 psid (6 bar)

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

Clogging Indicator Model Code

VR 2 D . X / _ V

Indicator Prefix
VR = Return Filters *(sizes 330 to 851)*
VMF = Mobile Filters *(sizes 75 to 270)*

Trip Pressure
1.4 = 20 psid (1.4 bar) 2 = 29 psid (2 bar)
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
E = Visual pressure gauge
F = Electric pressure switch
FD = Electric pressure switch w/Deutsch Connector

Modification Number

Supplementary Details
2M0 = Deutsch Connector *(male)*

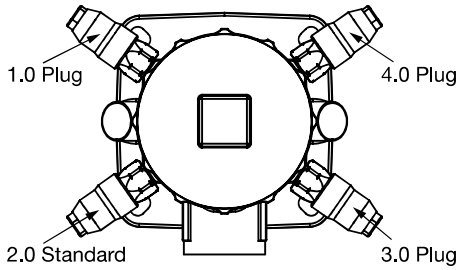
Seals
(omit)= Nitrile rubber (NBR) *(standard)*
V = Fluorocarbon elastomer (FKM)
EPR = Ethylene propylene rubber (EPR)

(For additional details and options, see Section H - Clogging Indicators.)

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

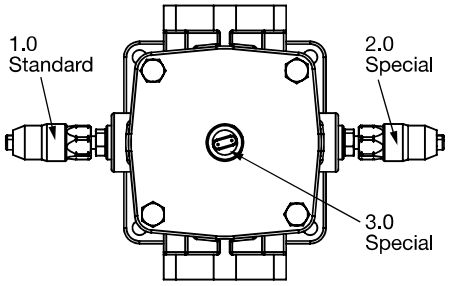
Clogging Indicator Locations (cont'd)

RFM 210/270



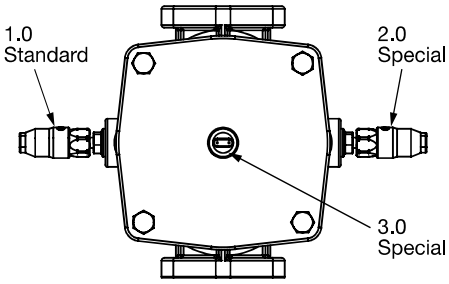
Type No.	Location of Clogging Indicator	Indicator Model
1.X	Clogging Indicator left back 45° to Inlet	VMF...
2.X	Clogging Indicator left front 45° to Inlet	VMF...
3.X	Clogging Indicator right front 45° to Inlet	VMF...
4.X	Clogging Indicator right back 45° to Inlet	VMF...

RFM 330/500



Type No.	Location of Clogging Indicator	Indicator Model
1.X	Clogging Indicator left 90° to Inlet	VR...
2.X	Clogging Indicator right 90° to Inlet	VR...
3.X	Clogging Indicator on Top	VR...

RFM 661/851

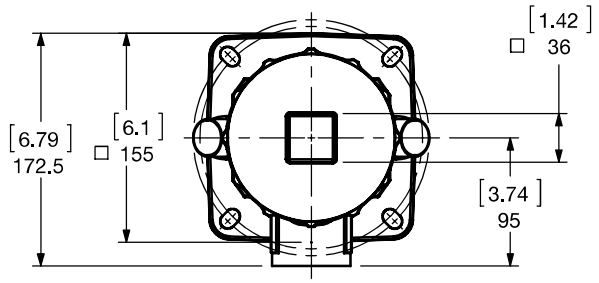


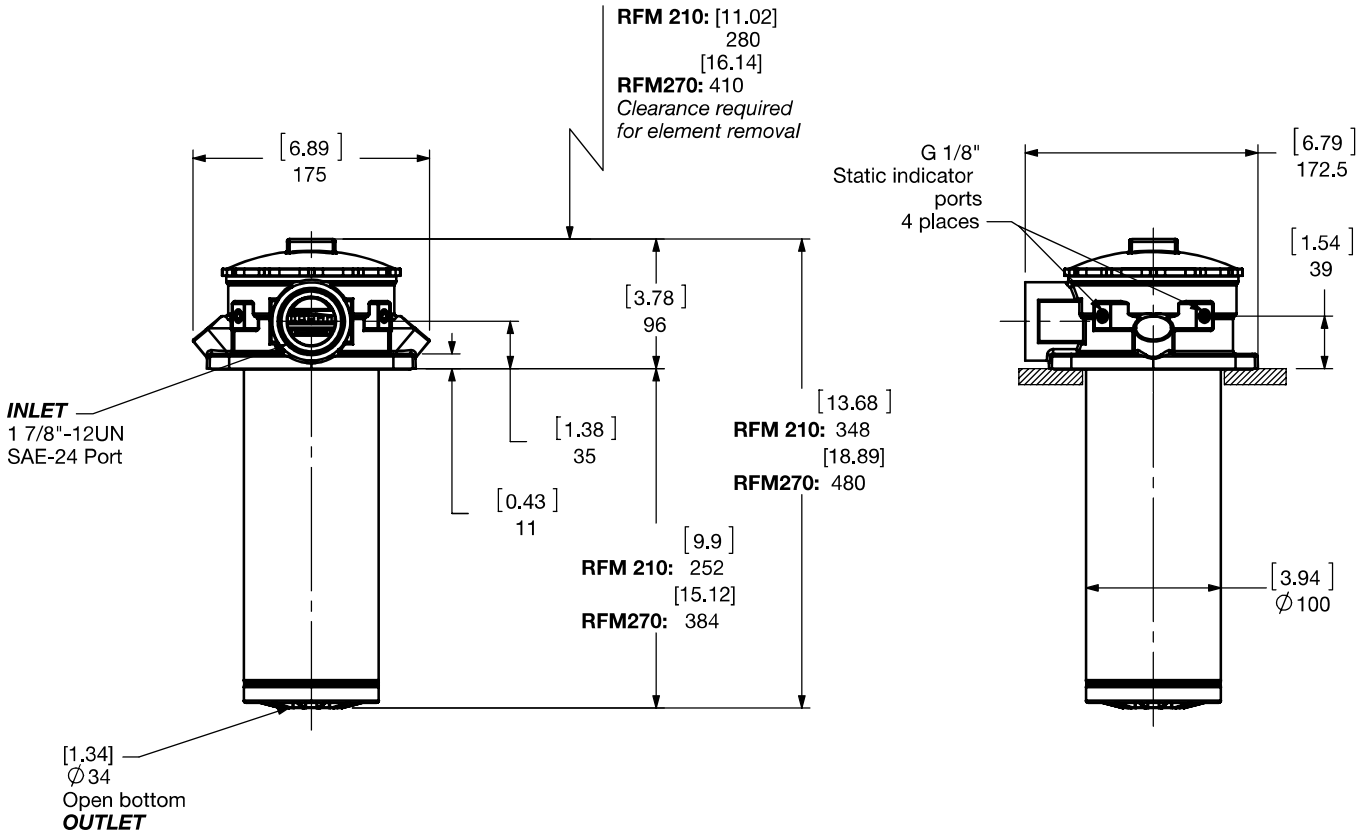
Type No.	Location of Clogging Indicator	Indicator Model
1.X	Clogging Indicator left 90° to Inlet	VR...
2.X	Clogging Indicator right 90° to Inlet	VR...
3.X	Clogging Indicator on Top	VR...

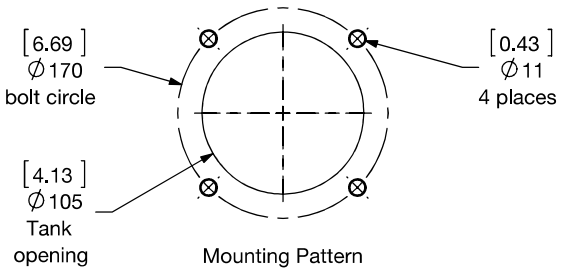
LOW PRESSURE FILTERS

Dimensions

RFM 210/270







Size	210	270
Weight (lbs.)	7	9.5

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.

LOW PRESSURE FILTERS

Sizing Information

Total pressure loss through the filter is as follows:

Assembly ΔP = Housing ΔP + Element ΔP

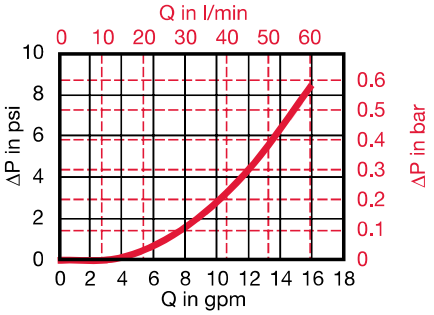
Housing Curve:

Pressure loss through housing is as follows:

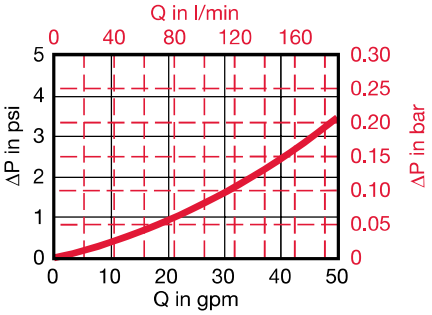
$$\text{Housing } \Delta P = \text{Housing Curve } \Delta P \times \frac{\text{Actual Specific Gravity}}{0.86}$$

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

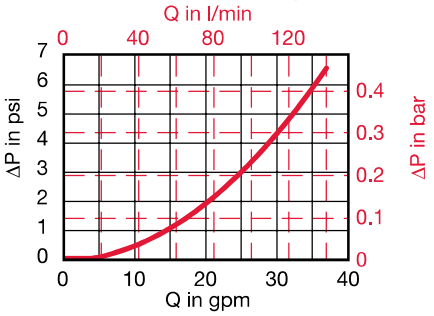
RFM 50/-4L Housing



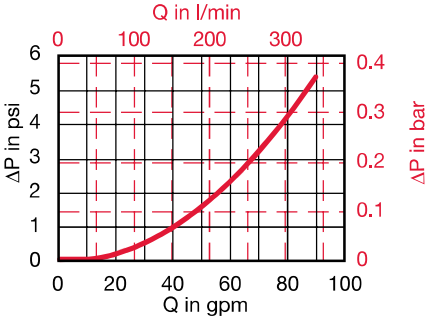
RFM 75/165/185
& RFM 75/165/185/-4L Housing



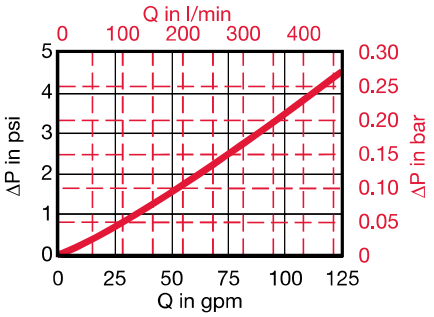
RFM 90/150
& RFM 90/150/-4L Housing



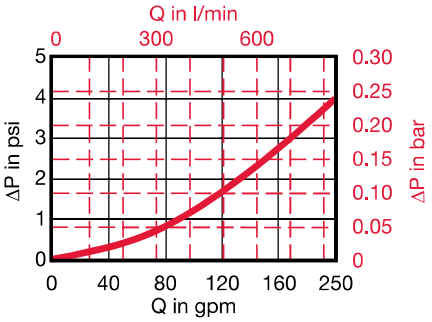
RFM 210 / 270 Housing



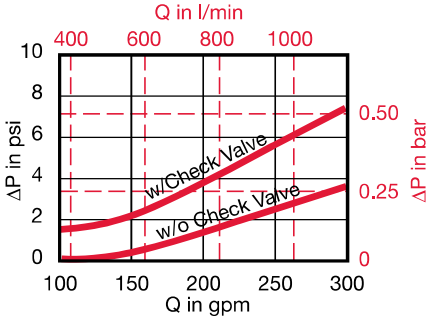
RFM 330/500 Housing



RFM 661/851Housing



RFM 975 / 1100 Housing



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