

Filters



RFM Series Two and Four Bolt Versions Service and Parts

up to 224 gpm (850 lpm), up to 145 psi (10 bar)

1. Maintenance

1.1 General

Please follow the maintenance instructions.

1.2 Installation

Before installing the filter into the system, check that the operating pressure of the system does not exceed the permitted operating pressure of the filter.

Refer to the type code label on the filter.

1.3 Commissioning

Check that the correct filter element is installed, replace lid and tighten (or lid screws when applicable) alternately. Switch on the hydraulic system and check filter for leakage. Vent filter at an appropriate point in the system.

1.4 Maintenance Tools

Size	Torque Nm [ft-lb]	Lid Protrusion / Hex Screw
50	13 [18]	1" Ext. Sq.
75	15 [11]	27 mm Ext. Sq.
90/150	10 [7]	27 mm Ext. Sq.
165/185	15 [11]	27 mm Ext. Sq.
210/270	35 [25]	36 mm Ext. Sq.
330/500	35 [26]	5/16" Int. Hex (SAE Threaded / SAE Code 61) 8 mm Int. Hex (G/BSPP or SAE DN - US version)
600	35 [26]	16 mm Ext. Hex (G/BSPP or SAE DN - GER version)
661/851	35 [26]	3/8" Int. Hex (SAE Code 61) 10 mm Int. Hex (SAE DN - US ver.) 18 mm Ext. Hex (SAE DN - GER ver.)

1.5 Torque Values for Clogging Indicators

Type	Torque Nm [ft-lb]
VR clogging indicator (RFM 330-851) B, BM, GC, LE, LZ, LEM only	15 [11]
VR clogging indicator (RFM 330-851) All other indicator types	33 [24]
VMF clogging indicator (RFM 75-270)	10 [7.5]

Note: use Loctite 542 or equivalent for VMF indicator installation.

1.6 Torque Values for Reservoir Mounting Bolts

Size	Torque Nm [ft-lb]
50	10 [13.5] (M6 rec. bolt)
75/165/185	20 [15] (M10 rec. bolt)
90/150	10 [7.5] (M8 rec. bolt)
210/270	20 [15] (M10 rec. bolt)
330/500	20 [15] (M10 rec. bolt)
661/851	25 [19] (M12 rec. bolt)

2. Element Replacement

2.1 Element Removal

- Switch off hydraulic system and release filter pressure.
- Size 75 - 270
Unscrew and lift off the lid.
Size 330-851
Loosen lid bolts and lift off the lid.
- Pull out filter element (with contamination retainer, if present) by the handle. Examine element surface for dirt residues and larger particles since these can be an indication of damage to components.
- Remove contamination retainer (if present) by turning counter-clockwise – bayonet fitting.
Note: For sizes 210, 270 and 600 the dirt retainer cannot be removed - integral to the element.
- Replace or clean filter element(s) (only W/HC and V elements can be cleaned).
- Clean housing and lid (and contamination retainer when it is a separate, non-integral piece from the element).
- Examine filter, especially sealing surfaces, for mechanical damage.
- Check O-rings – and replace if necessary.

2.2 Element Installation

- Lubricate the sealing surfaces on the filter housing and lid, as well as the O-ring, with clean operating fluid.
- When installing a new filter element, check that the designation corresponds to that of the old element.
- If present, install the contamination retainer onto the new or cleaned filter element by turning clockwise.
- Place filter element carefully on to the element nozzle in the housing.
- Replace lid and tighten with appropriate tightening torque.
- Switch on hydraulic system and vent filter at a suitable point in the system.
- Check filter for leakage.

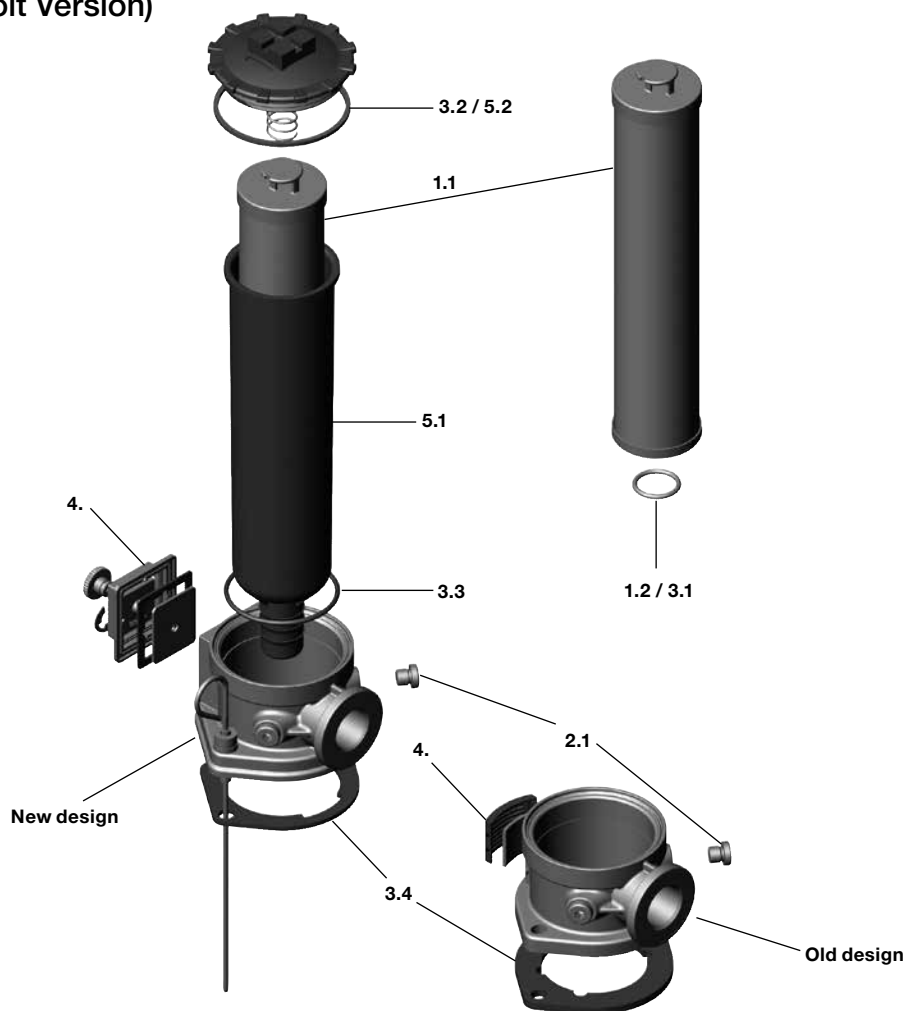
NOTE:

Filter elements which cannot be cleaned must be disposed of in accordance with environmental protection regulations.

FILTER MAINTENANCE

3. Spare Parts

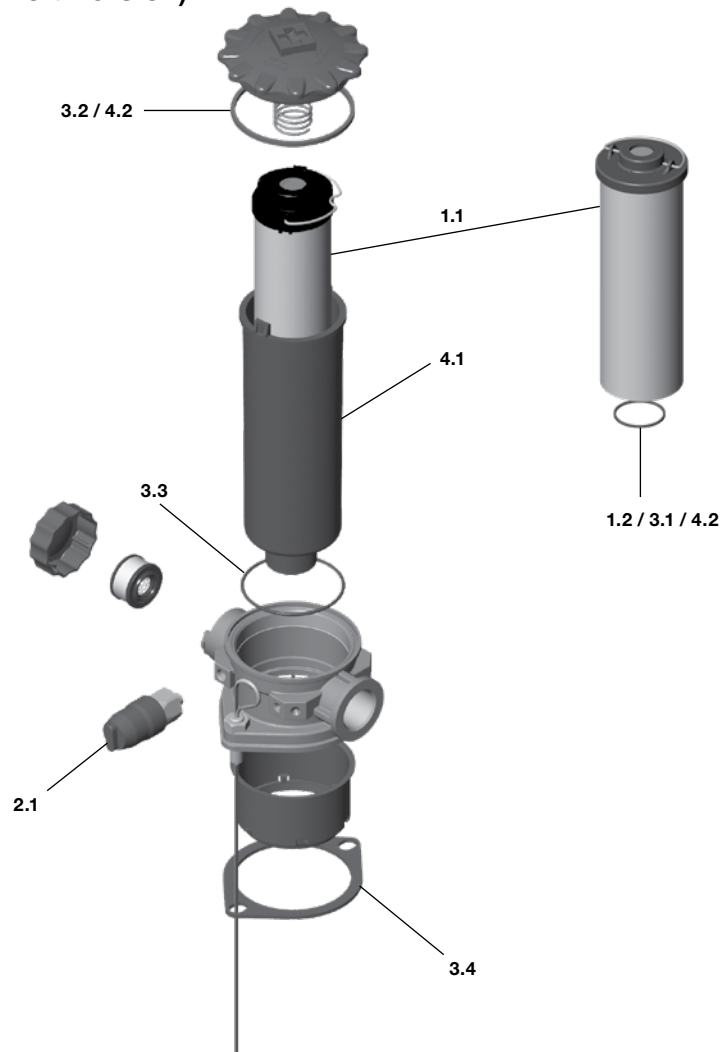
3.1 RFM 90 and 150 (2 Bolt Version)



Item	Consists	Designation	RFM 90	RFM 150
1.		Filter element	see Point 4. Replacement elements	
	1.1	Filter element	0090 R...	0150 R...
	1.2	O-ring	22 x 3	
2.		Clogging indicator or indicator plug	See Point 5. Replacement clogging indicator	
	2.1	Indicator plug VMF	VSTI G 1/8" See Point 5. Replacement clogging indicator	
3.		Seal kit (ELAST) NBR Seal kit (ELAST) FKM	01278817 01278818	
	3.1	O-ring (element)	22 x 3	
	3.2	Seal RFM (cover plate)	Seal RFM 90/170	
	3.3	O-ring (head)	60 x 3	
	3.4	Tank seal	Seal RFM 110/150 (tank seal) (old design) Seal RFM 90/150 (tank seal) (new design)	
4.		Breather filter RFM 90/150	01284043 (old design) consists of: cover plate (03044350) and breather filter (03046029)	
		Breather filter RFM 90/150	01284044 (new design) consists of: seal (03186665) and breather filter (03186665)	
5.		Bowl Assembly Bowl Assembly /-V	1281607 TBD	1278136 TBD
	5.1	Bowl	BOWL RFM90	BOWL RFM150
	5.2	O-ring (bowl)	60 x 3	60 x 3

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

3.2 RFM 75, 165, 185 (2 Bolt Version)



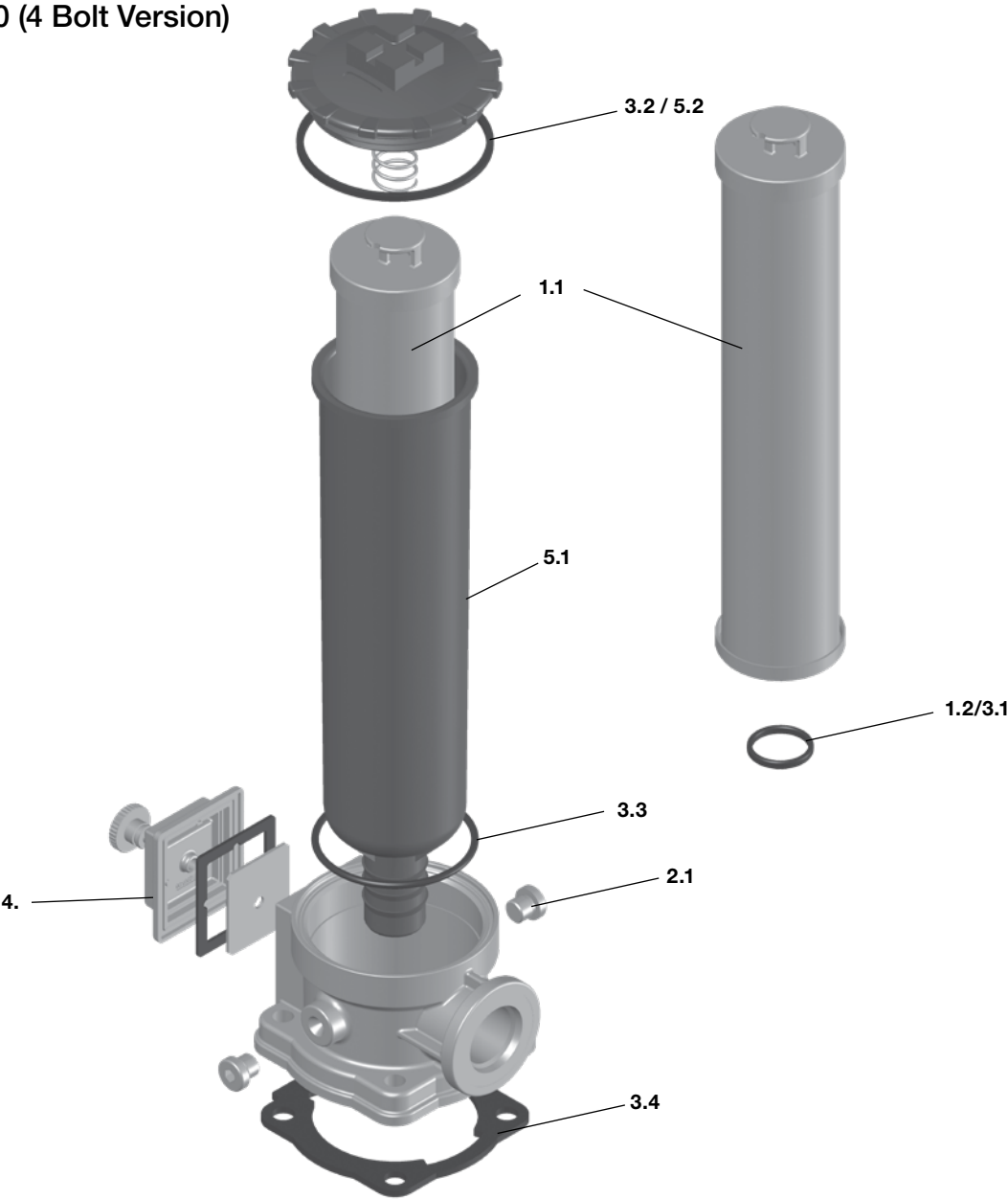
Item	Consists	Designation	RFM 75	RFM 165	RFM 185
1.		Filter element	See Point 4. Replacement elements		
	1.1	Filter element	0075 R...	0165 R...	0185 R...
	1.2	O-ring	34 x 3.5		
2.		Clogging indicator or indicator plug	See Point 5. Replacement clogging indicator		
	2.1	Indicator plug VMF	VSTI G 1/8” See Point 5. Replacement clogging indicator		
3.		Seal kit (ELAST) NBR Seal kit (ELAST) FKM	01273696 01278823	01273696 01278823	01273696 01278823
	3.1	O-ring (element)	34 x 3.5		
	3.2	Seal RFM (cover plate)	Seal RFM/RFN		
	3.3	O-ring (head)	71.12 x 2.62		
	3.4	Tank seal	Seal RFM..165		
Other parts (not numbered)					
		Air filter element 0165 L 010 P	03064520		

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

Item	Consists	Designation	RFM 75	RFM 165	RFM 185
4.		Bowl Assembly	1266345	318721	1284751
		Bowl Assembly /-V	2202831	2202832	2202833
	4.1	Bowl	BOWL RFM75	BOWL RFM165	BOWL RFM185
	4.2	O-ring (bowl)	71.12 x 2.62	71.12 x 2.62	71.12 x 2.62

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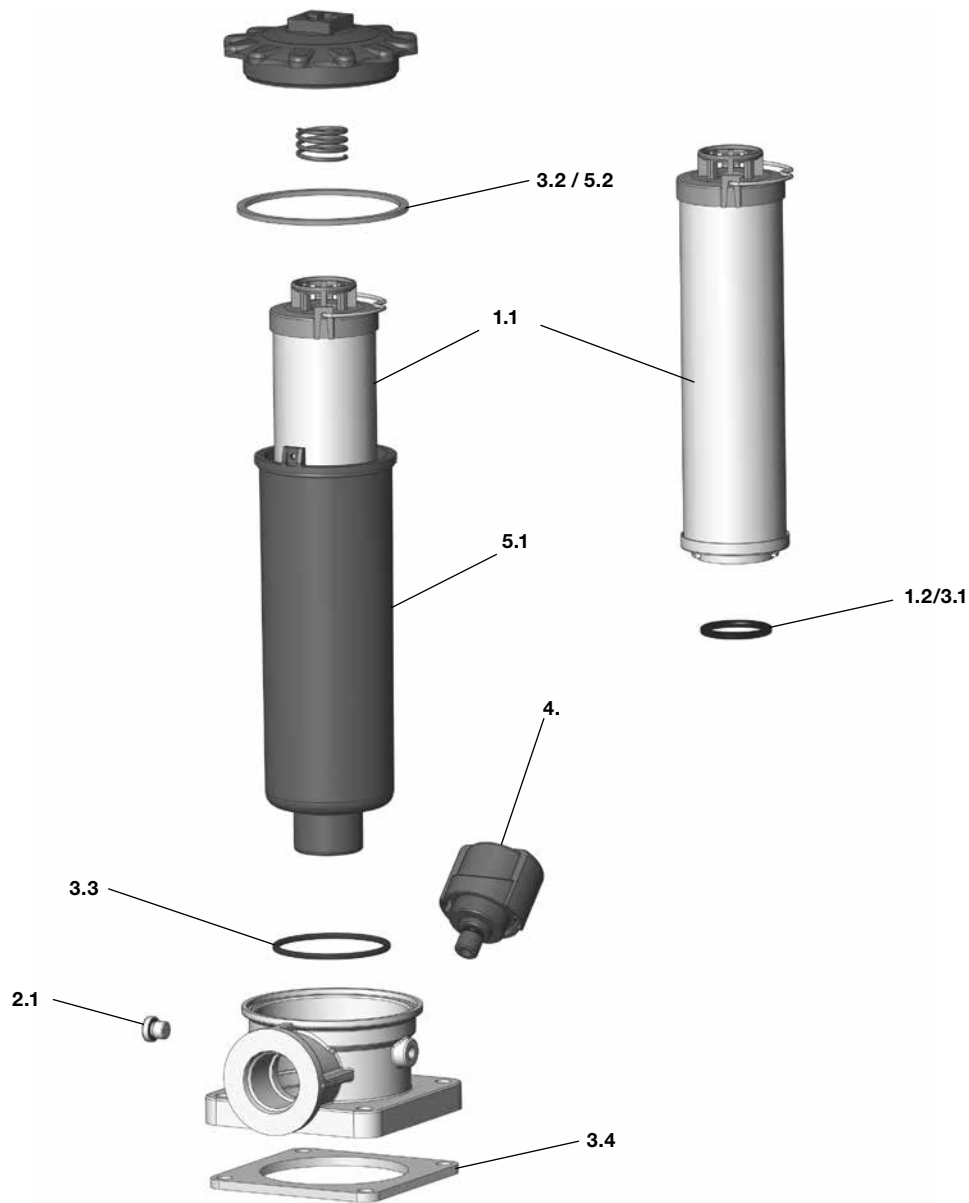
3.3 RFM 90 and 150 (4 Bolt Version)



Item	Consists	Designation	RFM 90	RFM 150
1.		Filter element	See Point 4. Replacement elements	
	1.1	Filter element	0090 R...	0150 R...
	1.2	O-ring	22 x 3	
2.		Clogging indicator or screw plug	See Point 5. Replacement clogging indicator	
	2.1	Screw plug VMF	VSTI G 1/8" See Point 5. Replacement clogging indicator	
3.		Seal kit (ELAST) NBR 4L Seal kit (ELAST) FKM 4L	01305305 01305306	
	3.1	O-ring (element)	22 x 3	
	3.2	Seal RFM (lid)	Seal RFM 90/170	
	3.3	O-ring (bowl)	60 x 3	
	3.4	Tank seal	Seal RFM 90/150 /-4L	
4.		Breather filter RFM 90/150	01284044 contains: seal (03588248) and breather filter (03186665)	
5.		Bowl Assembly Bowl Assembly /-V	1281607 TBD	1278136 TBD
	5.1	Bowl	BOWL RFM90	BOWL RFM150
	5.2	O-ring (bowl)	60 x 3	60 x 3

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

3.4 RFM 75/165/185 (4 Bolt Version)

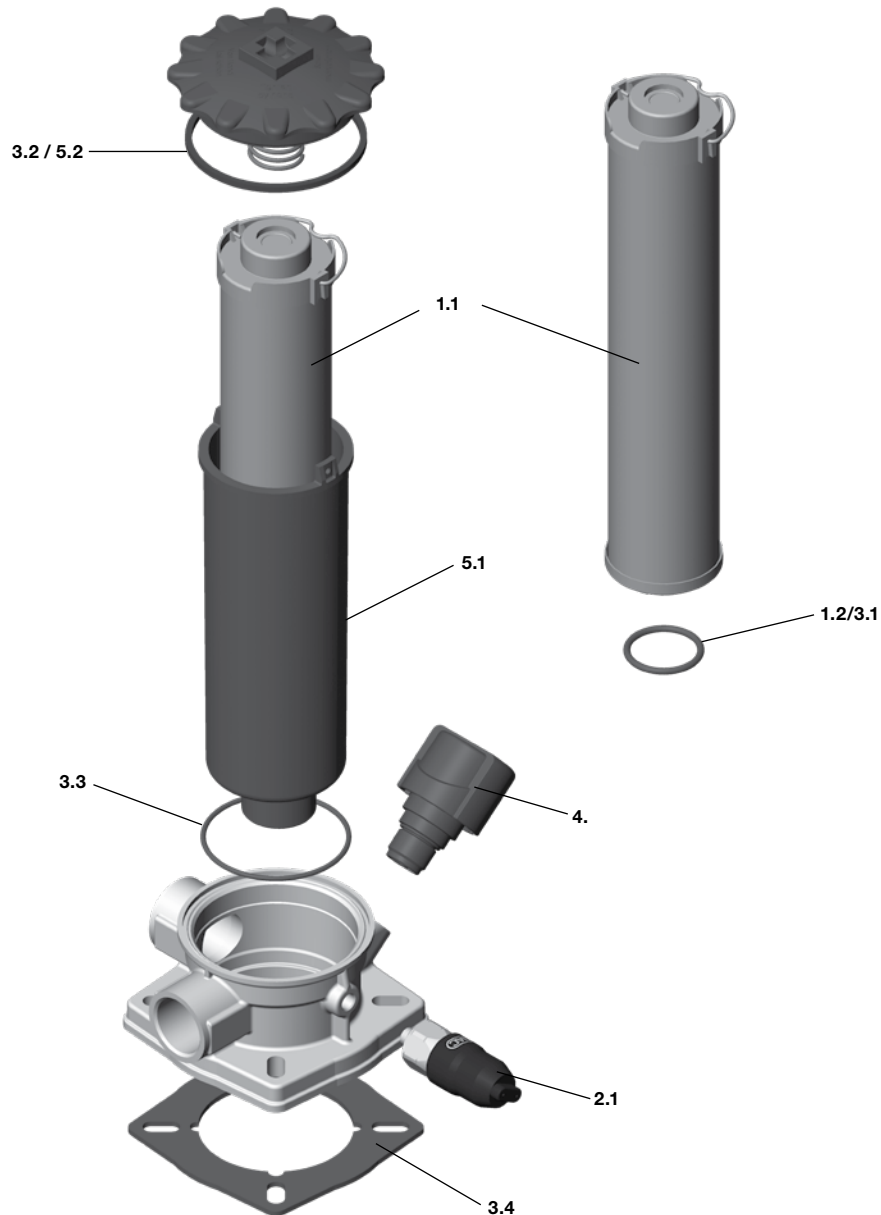


Item	Consists	Designation	RFM 75	RFM 165	RFM 185
1.		Filter element	See Point 4. Replacement elements		
	1.1	Filter element	0075 R...	0165 R...	0185 R...
	1.2	O-ring	34 x 3.5		
2.		Clogging indicator or indicator plug	See Point 5. Replacement clogging indicator		
	2.1	Indicator plug VMF	VSTI G 1/8"		
			See Point 5. Replacement clogging indicator		
3.		Seal kit (ELAST) NBR	2097265		
		Seal kit (ELAST) FKM	2097266		
	3.1	O-ring (element)	34 x 3.5		
	3.2	Seal RFM (lid)	Kantseal		
	3.3	O-ring (head)	71.12 x 2.62		
	3.4	Tank seal	Seal RFM 75/165/185/-4L		
4.		Breather filter BF P 10 G 3 W 1.0 /-AS	01284373		
5.		Bowl Assembly	1266345	318721	1284751
		Bowl Assembly /-V	2202831	2202832	2202833
	5.1	Bowl	BOWL RFM75	BOWL RFM165	BOWL RFM185
	5.2	O-ring (bowl)	71.12 x 2.62	71.12 x 2.62	71.12 x 2.62

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

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3.5 RFM 75/165/185 (4 Bolt Version; Multi-Inlet Version)



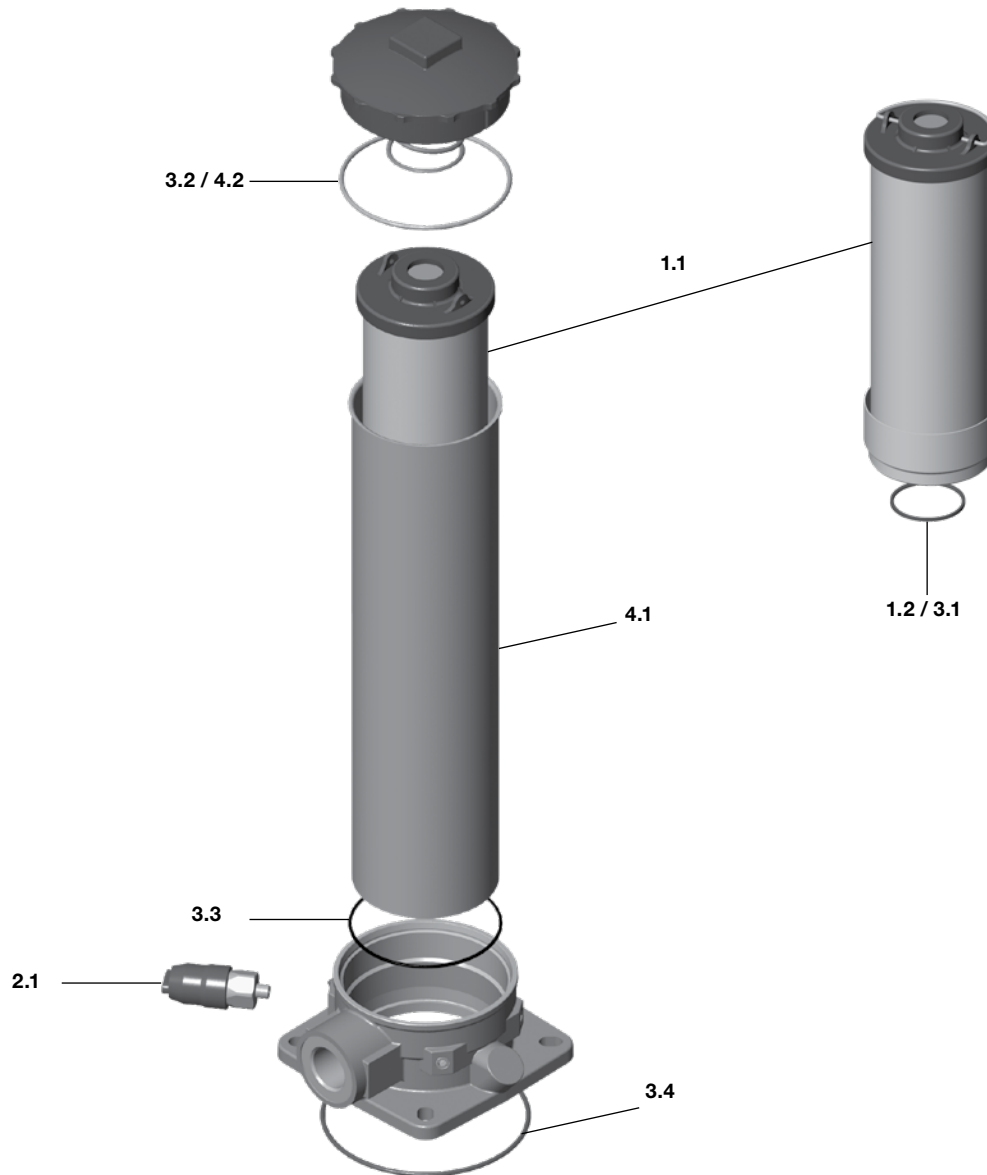
Item	Consists	Designation	RFM 75	RFM 165	RFM 185
1.		Filter element	See Point. 4. Replacement elements		
	1.1	Filter element	0075 R...	0165 R...	0185 R...
	1.2	O-ring	34 x 3.5		
2.		Clogging indicator or screw plug	See Point 5. Replacement clogging indicator		
	2.1	Screw plug VMF	VSTI G 1/8"		
			See Point 5. Replacement clogging indicator		
3.		Seal kit (ELAST) NBR	1301230		
		Seal kit (ELAST) FKM	1305307		
	3.1	O-ring (element)	34 x 3.5		
	3.2	Seal RFM (cover)	Kantseal		
	3.3	O-ring (head)	71.12 x 2.62		
	3.4	Tank seal	Seal RFM 185		
4.		Breather filter BF P 10 M 3 W 1.0	01284377		
5.		Bowl Assembly Bowl Assembly /-V	1266345 2202831	318721 2202832	1284751 2202833
	5.1	Bowl	BOWL RFM75	BOWL RFM165	BOWL RFM185
	5.2	O-ring (bowl)	71.12 x 2.62	71.12 x 2.62	71.12 x 2.62

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.

- Lid assembly kits on request - kits include complete lid with seals.

- Bolts not included.

3.6 RFM 210, 270 - 4 Bolt

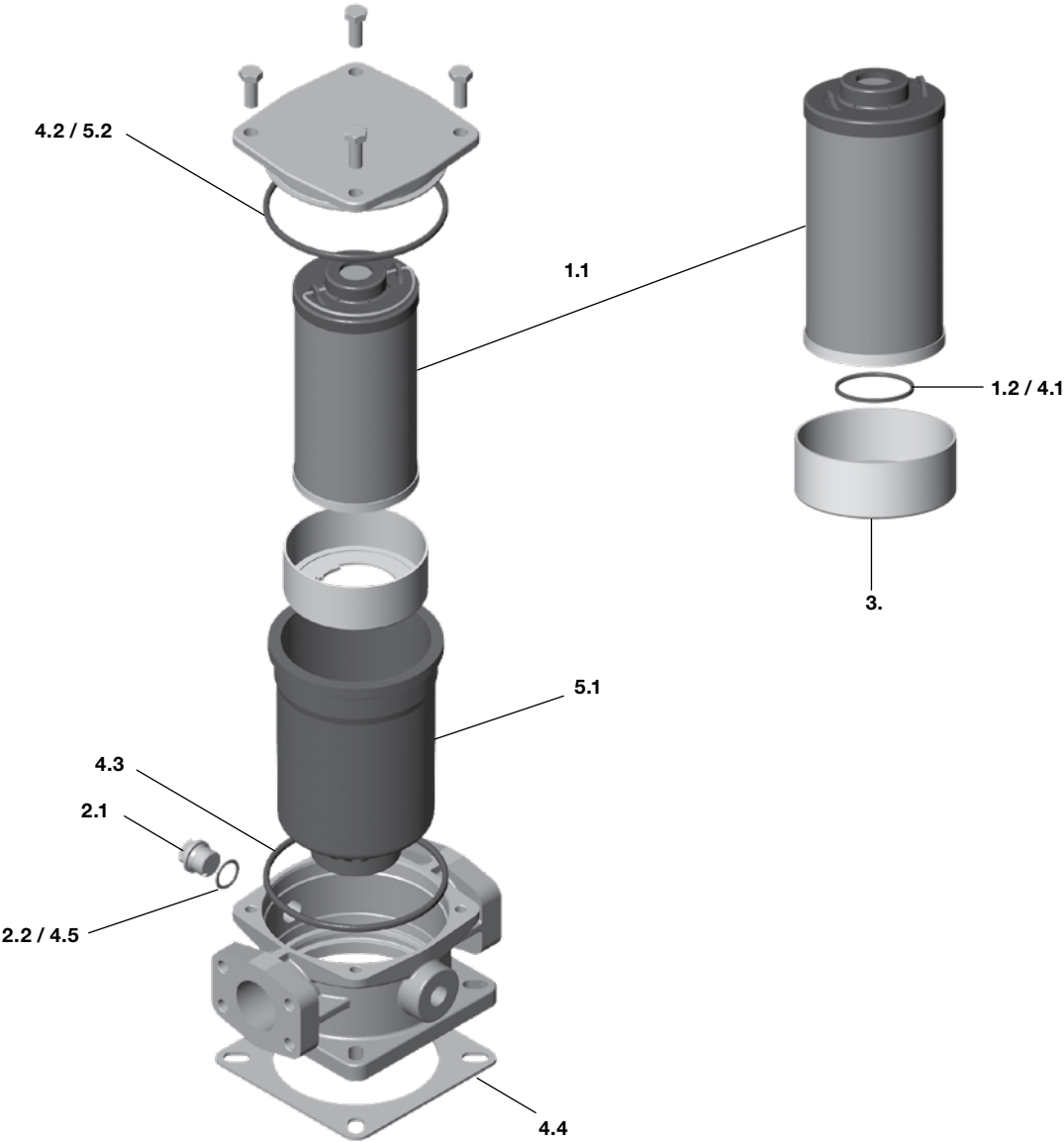


Item	Consists	Designation	RFM 210	RFM 270
1.		Filter element	See Point. 4. Replacement elements	
	1.1	Filter element	0210 R...	0270 R...
	1.2	O-ring	40 x 3.5	
2.		Clogging indicator or screw plug	See Point 5. Replacement clogging indicator	
	2.1	Screw plug VMF	Screw plug 1/8 See Point 5. Replacement clogging indicator	
3.		Seal kit (ELAST) NBR	01278819	
		Seal kit (ELAST) FKM	01278820	
	3.1	O-ring (element)	40 x 3.5	
	3.2	O-ring (lid)	110.72 x 3.53	
	3.3	O-ring (head)	94.92 x 2.62	
	3.4	O-ring (tank seal)	135.89 x 5.33 (pressure diecasting) 142.47 x 3.53 (shell casting) 136.12 x 3.53 (sand casting)	
4.		Bowl Assembly	2202834	2202836
		Bowl Assembly /-V	2202835	2202837
	4.1	Bowl	BOWL RFM210	BOWL RFM270
	4.2	O-ring (bowl)	94.92 x 2.62	94.92 x 2.62

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

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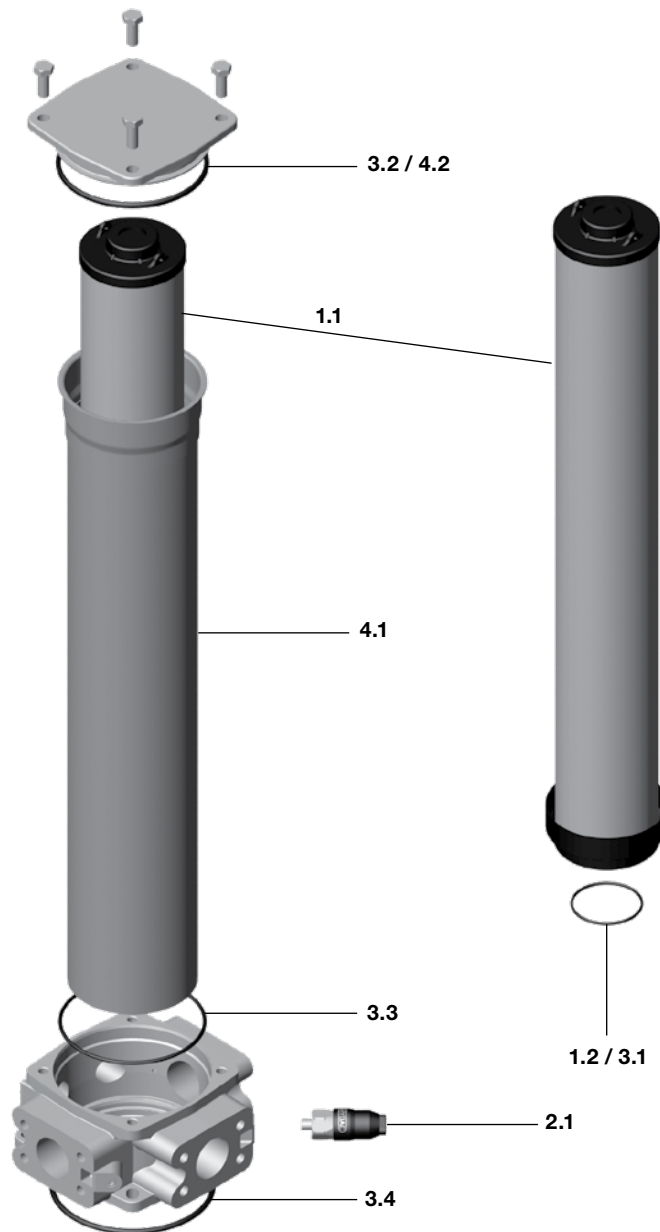
3.7 RFM 330, 500, 661, 851 - 4 Bolt



Item	Consists	Designation	RFM 330		RFM 500	RFM 661	RFM 851
1.		Filter element	See Point. 4. Replacement elements				
	1.1	Filter element	0330 R...	0500 R...		0660 R...	0850 R...
	1.2	O-ring	48 x 3			68 x 5	
2.		Clogging indicator or screw plug VR 0 A.0 VR 0 A.0 /-V	See Point 5. Replacement clogging indicator				
			00306006 00305928				
	2.1	Screw plug	G 1/2"				
	2.2	O-ring	18 x 2.5				
3.		Contamination retainer	01202364			01202357	
4.		Seal kit (ELAST) NBR Seal kit (ELAST) FKM	01250666 00313109			00312485 00313110	
	4.1	O-ring (element)	48 x 3			68 x 5	
	4.2	O-ring (lid)	123.19 x 5.33			164.47 x 5.33	
	4.3	O-ring (head)					
	4.4	O-ring (tank seal)	Seal RFM 330			Seal RF	
	4.5	O-ring (VR 0 A.0)	18 x 2.5				
5.		Bowl Assembly Bowl Assembly /-V	Consult HYDAC				
	5.1	Bowl					
	5.2	O-ring (bowl)					

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
- Lid assembly kits on request - kits include complete lid with seals.
- Bolts not included.

3.8 RFM 600 - 4 Bolt



Item	Consists	Designation	RFM 600
1.		Filter element	See Point. 4. Replacement elements
	1.1	Filter element	0600 R...
	1.2	O-ring	59 x 3
2.		Clogging indicator or screw plug	See Point 5. Replacement clogging indicator
	2.1	Screw plug VMF	VSTI G 1/8" See Point 5. Replacement clogging indicator
3.		Seal kit (ELAST) NBR	1294508
		Seal kit (ELAST) FKM	1294509
	3.1	O-ring (element)	59 x 3
	3.2	O-ring (lid)	123.19 x 5.33
	3.3	O-ring (head)	
	3.4	O-ring (tank seal)	135.89 x 5.33
4.		Bowl Assembly	Consult HYDAC
	4.1	Bowl	
	4.2	O-ring (bowl)	

Other spare parts on request - O-Ring durometer can range from 70-80Sh. Seal material is nitrile rubber (NBR). EPR Seal Kits available on request.
 - Lid assembly kits on request - kits include complete lid with seals.
 - Bolts not included.

FILTER MAINTENANCE

4. Replacement Element 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, 50, 100, 200 = 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 = 14.5 psid (1 bar)
B1.7 = 25 psid (1.7 bar) B6 = 87 psid (6 bar)
KB = no bypass

Supplementary Details

SO263 = Modification of elements for Skydrol or HYJET phosphate ester fluids
SFREE = Element specially designed to minimize electrostatic charge generation

5. Replacement Clogging Indicator

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
BM = Pop-up indicator (manual reset)
C = Electric switch - SPDT
D = Electric switch and LED light - 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)

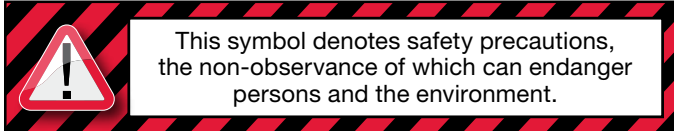
(For additional details and options, see Section G - Clogging Indicators of the HYDAC Filter catalog.)

6. Maintenance Instructions

6.1 User Instructions for Filters



- This pressure equipment must only be put into operation in conjunction with a machine or system.
- The pressure equipment must only be used as stipulated in the operating instructions of the machine or system.
- This pressure equipment must only be operated using hydraulic or lubricating fluid.
- It is the responsibility of the operator to comply with the water regulations of the country concerned.



CAUTION

- The user must take appropriate action (e.g. venting) to prevent the formation of air pockets.
- Repairs, maintenance work and commissioning must only be carried out by trained personnel.
- Allow the pressure equipment to cool before handling.
- The stipulations of the operating instructions of the machine or the system must be followed.
- Statutory accident prevention regulations, safety regulations and safety data sheets for fluids must be observed.
- Filter housing must be grounded.
- When working on, or in the vicinity of, hydraulic systems, open flames, sparks and smoking are forbidden.
- Hydraulic oils and water-polluting fluids must not be allowed to enter the soil or watercourses or sewer systems. Please ensure safe and environmentally friendly disposal of hydraulic oils. The relevant regulations in the country concerned with regard to ground water pollution, used oil and waste must be complied with.
- Whenever work is carried out on the filter, be prepared for hot oil to escape which can cause injury or scalding as a result of its high pressure or temperature.

DANGER!

- Caution: pressure equipment! Before any work is carried out on the pressure equipment, ensure the pressure chamber concerned (filter housing) is depressurized.
- On no account must any modifications (welding, drilling, opening by force...) be carried out on the pressure equipment.
- When using electrical clogging indicators, the electrical power supply to the system must be switched off before removing the clogging indicator connector.

6.2 Maintenance, General

This section describes maintenance work which must be carried out periodically. The operational safety and life expectancy of the filter, and whether it is ready for use, depend to a large extent on regular and careful maintenance.

6.3 Maintenance Measures

- Spare parts must fulfil the technical requirements specified by the manufacturer.
This is always ensured when using original HYDAC spare parts.
- Keep tools, working area and equipment clean.
- After disassembling the filter, clean all parts, check for damage or wear and replace parts if necessary.
- When changing a filter element, a high level of cleanliness must be observed.

6.4 Interval Between Element Changes

In principle we recommend that the filter element is changed every 6 months or upon indication, whichever occurs first.

We recommend installing the filter with a clogging indicator (visual and/or electrical or electronic) to monitor the filter element.

When no clogging indicator has been installed, we recommend changing the elements at specific intervals. *(The frequency of changing the filter elements depends on the filter design and the conditions under which the filter is operated).* When filter elements are subject to high dynamic loading it may prove necessary to change them more frequently. The same applies when the hydraulic system is commissioned, repaired or when the oil is changed

The standard clogging indicators only respond when fluid is flowing through the filter. With electrical indicators the signal can also be converted into a continuous display on the control panel. In this case the continuous display must be switched off during a cold start or after changing the element.

If the clogging indicator responds during a cold start only, it is possible that the element does not yet need to be changed.

Customer Information in respect of Machinery Directive 2006/42/EC

Hydraulic filters are defined as fluid power parts / components and are therefore excluded from the scope of the Machinery Directive, sections 1.4.1 - 1.4.3. They do not bear the CE mark.

Before using these components, ensure compliance with the specifications provided by HYDAC Technology Corporation. The specifications also contain information on the relevant essential health and safety requirements (based on Machinery Directive 2006/42/EC).

We hereby declare that the filters are intended to be incorporated into machinery within the terms of the Directive 2006/42/EC. It is prohibited to put the filters into service until the machinery as a whole is in conformity with the provisions of the Machinery Directive.

Service address

HYDAC Technology Corporation Filter Division

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NOTE

The information in this brochure relates to the operating conditions and applications described.

For applications or operating conditions not described, please contact the relevant technical department.

Subject to technical modifications.



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