



Filters . Accumulators

Return Line Filters

10 FRE 0005-0270, 10 FREN 0040-1000
16 FRE 0190-1350, 16 FREN 1260-2000



Filters for return line installation

Filters for tank top mounting

Optimised flow characteristics

Low pressure drop

High efficient filter media

Available with breather

*Operating pressure : 10/16 bar
Connection up to DN 300*



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10 FRE 0005-0270
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 16 FRE 0190-1350
 16 FREN 1260-2000

Operating pressure 10/16 bar
 Operating temperature - 10° C to+ 100° C

Application

Filtering hydraulic fluids, lubrication oils and liquids generally.
 Direct tank mounting, direct installation in return pipes. Effective protection for tank and operating pumps as a result of filtering out dirt from the installation runback.

Design

Size 10 FRE 0005-0270 (10 FREN 0040-1000): Filter head of cast aluminium with screw on cap, inlet port, mounting point for bypass valve and spigot for the filter element. Filter housing with spigot for filter element and filter outlet.

Size 16 FRE 0190-1350 (16 FREN 1260-2000): Filter housing of welded steel construction with filter element and flange-mounted filter cover.

Additional material and accessories: See spare parts list in this brochure.

Filter Element

Pleated design with optimal pleat density and in various filter materials. Further detailed information can be found in our "Filter Elements" brochure.

Accessories

Maintenance Indicators

Monitors the degree of clogging of the filter elements and is available as visual/electrical or visual/electrical displays with one or two shifting points.

Bypass valve

For the protection of the filter elements during cold start and when the differential pressure is exceeded due to clogging.

Vent Valve

For venting air from the filter during start up and for safe depressurisation.

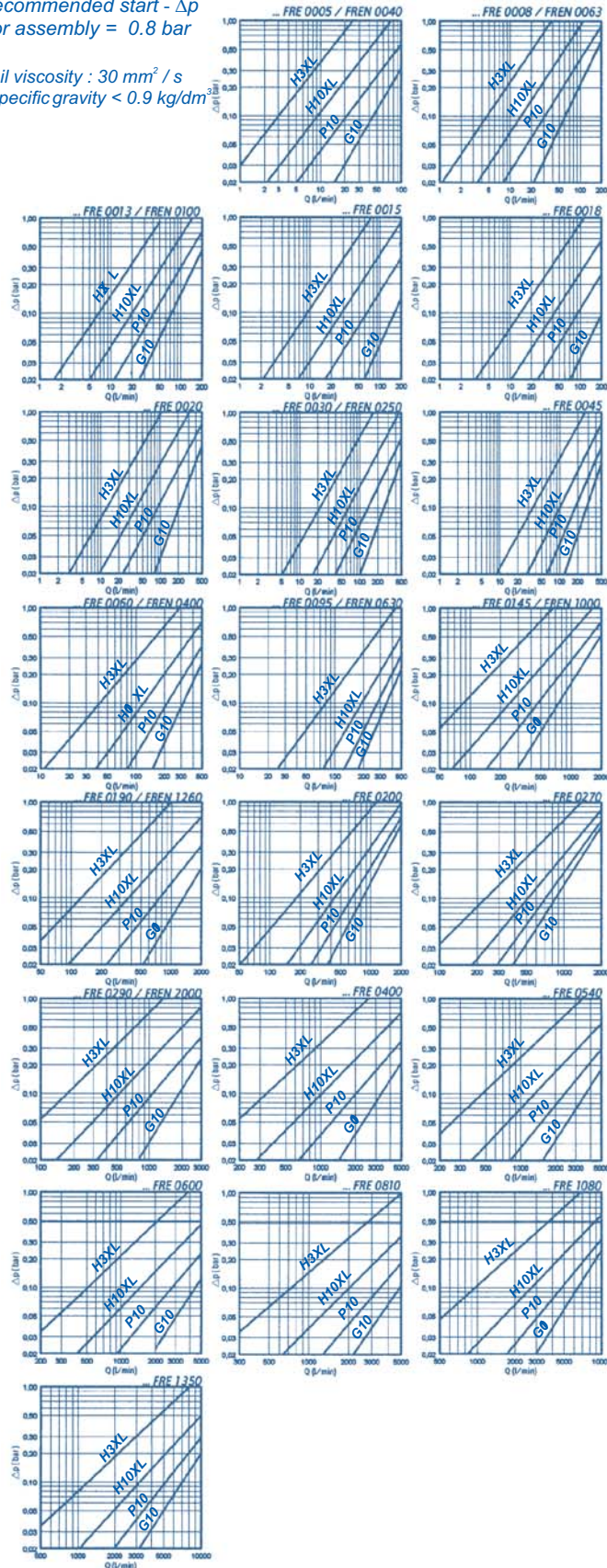
Breather

For enabling easy inflow / outflow of the air into the tank during functioning.

Pressure drop curves

Δp -Q characteristic lines for complete filters
 recommended start - Δp
 for assembly = 0.8 bar

Oil viscosity : 30 mm² / s
 Specific gravity < 0.9 kg/dm³



Ordering Information

Special models are available on request.

Filter type	Magnet	Maintenance Indicator	Connection	Material
<p>FRE = Return line filter with filter element acc.to EPE Standard</p> <p>FREN= Return line filter with filter element acc.to DIN 24550</p>	<p>0 = without</p>	<p>0 = without</p> <p>A = Manometer 0-6 bar</p> <p>B = Manometer 0-25 bar (glycerine)</p> <p>C = opt.mech.Display</p> <p>D2,5 = pressure switch closer</p> <p>F2,5 = pressure switch opener</p> <p>G2,5 = pressure switch with appliance inlet</p> <p>K2,5 = pressure switch 2 LED closer</p> <p>See illustration of servicing display for detailed ordering designation and technical data.</p>	<p>00 = standard</p> <p>S0 = SAE flange</p>	<p>0 = standard</p>

Filter → **10** **FRE** **0013** **H10SL** - **A** **00** **0** **7** **C2,5** - **00** **P** **0** **0**

Seal Kit → **D10** **FRE** **0013** - **C** - **00** **P** **0**

Pressure	Nominal Size	Filter Media & Filtration Grade	Diff. Pressure	Element Model	Bypass Valve	Seal	Addl. Info
<p>10 bar</p> <p>16 bar</p>	<p>10 FRE....</p> <p>0005 0008</p> <p>0013 0015 0018</p> <p>0020 0030 0045</p> <p>0060 0095 0145</p> <p>0200 0270</p>	<p>Nominal filtration grade in µm</p> <p>G = Stainless steel, cleanable G10 G25 G40 G60 G80 G100</p> <p>VS = bonded fabric, not cleanable VS25 VS40 VS60</p> <p>P = paper, not cleanable P5 P10 P25</p> <p>Absolute filter fineness (ISO 16889) in µm</p> <p>H...SL = Microglass not cleanable H1XL H3XL H6XL H10XL H20XL</p> <p>AS = Microglass, water-absorbent not cleanable AS1 AS3 AS6 AS10 AS20</p>	<p>Max. allowed differential pressure of the filter element</p> <p>O = 15 bar only for size 0145-0270 and 0290-1350</p> <p>A = 30 bar</p>	<p>0. = Standard adhesive T=100°C</p> <p>E. = Special adhesive T=160°C</p> <p>..0 = Standard material</p> <p>..Z = Zinc free</p>	<p>0 = without</p> <p>7 = 3,5 Bar</p> <p>For Filter Element: Bypass valve only possible with size 0003</p>	<p>P = Buna-N</p> <p>V = Viton</p> <p>E = Ethylene-Propylene</p> <p>N = Neoprene</p>	<p>0 = without</p> <p>5 = Silicon free</p> <p>F = ventilation filter for 10 FRE 0005-0018 and 10 FREN 0040-0100 only</p> <p>S = ventilation disc for 10 FRE 0005-0018 and 10 FREN 0040-0100 only</p> <p>Z = Inspection certificate</p>
<p>Filter Element</p> <p>Type</p> <p>1 = 10 FRE 0005 to 0270</p> <p>10 FREN 0040 to 1000</p> <p>16 FREN 0190 to 1350</p> <p>16 FREN 1260 to 2000</p>	<p>10 FREN....</p> <p>0045 0063 0100</p> <p>0250 0400 1000</p> <p>16 FREN....</p> <p>0190 0290 0400</p> <p>0540 0600 0810</p> <p>1080 1350</p> <p>16 FREN....</p> <p>1260 2000</p>						<p>5 = Silicon free</p> <p>Z = Inspection certificate</p>

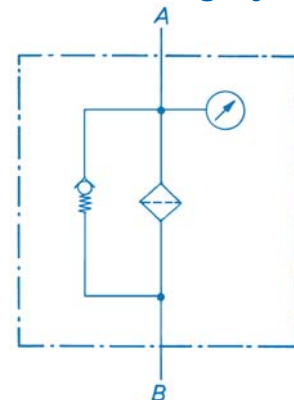
Filter Element → **1.** **0013** **H10XL** - **A** **00** - **0** - **P** **0**

Maintenance Indicator

The maintenance indicator monitors the degree of dirt of the filter elements. They are available as visual or visual/electrical displays. See "Maintenance Indicator" brochure for technical data.

A... Optical	B... Optical	C... Optical/mechanical
Ordering information A=M 010	Ordering information B=M 040	Ordering information C=P 2,5
D... electrical closer F... electrical opener	G... electrical	K... optical/electrical with 2 diodes
Ordering information D2,5=H2,5 HS 32 00P* F2,5=H2,5 HA 32 00P*	Ordering information G2,5=H2,5 GW 33 00P*	Ordering information K2,5=H2,5 GS 34 00P*
Switch symbol	Switch symbol	

Filter Switching Symbol

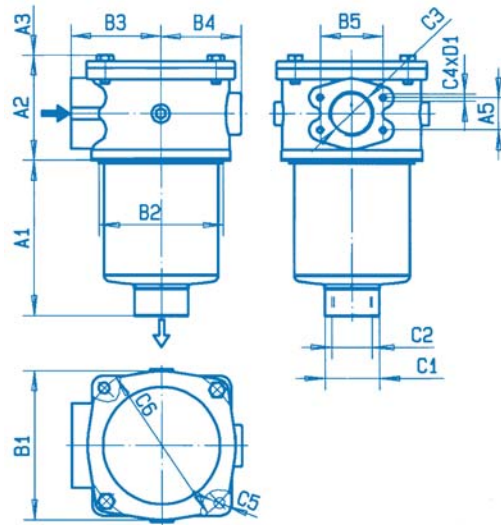
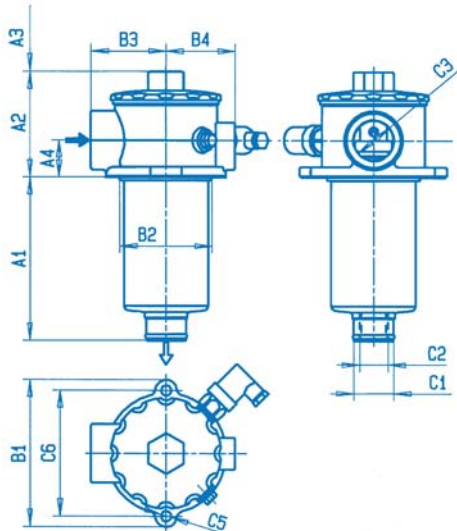


*P=Buna N; V= Viton, E= Ethylene-Propylene, N= Neoprene possible

Dimensions

10 FRE 0005, 0008, 0013, 0015, 0018
10 FREN 0040, 0063, 0100

10 FRE 0020, 0030, 0045, 0060, 0095, 0145, 0200, 0270
10 FREN 0160, 0250, 0400, 0630, 1000



Filter housing for Filter Elements in accordance with EPE Standard

Type	Capacity in l	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A6	B1	B2 Tank- Bore	B3	B4	C1	Connection						C5	C6							
													Outlet C2	Inlet C3	OO A5	SO B5	C4	D1									
10 FRE 0005	0.6	1.2	116		100																						
10 FRE 0008	0.8	1.3	176	94	160	30	10	137	Ø 87	70	65	Ø 34	Ø 24	G1												Ø 11	115
10 FRE 0013	1.2	1.6	266		250																						
10 FRE 0015	1.7	2.5	185		165	40		166	Ø 107	85	78	Ø 60	Ø 35.6	G1½													142
10 FRE 0018	2.2	3.0	275		255																						
10 FRE 0020	3.3	4.5	173	117	160		12																				
10 FRE 0030	4.3	6.5	263		250	50		165	Ø 140	100	89.5	Ø 60	G1½	G1½													Ø 185
10 FRE 0045	6.1	7.0	413		400																						
10 FRE 0060	6.6	5.6	235	138	250	60		198	Ø 178	110	108.5	Ø 68	G2	SAE 2"	42.9	77.8	M12	20							Ø 11,5	Ø 220	
10 FRE 0095	9.5	7.9	385		400																						
10 FRE 0145	15.0	15.0	381		400		14																				
10 FRE 0200	25.2	20.0	739	183	760	80		230	Ø 205	135	122.5	Ø 125	G3	DN 80	61.9	106.4	M16	26									Ø 250
10 FRE 0270	31.6	26.5	973		995																						

Filter housing for Filter Elements in accordance with DIN 24550

Type	Capacity in l	Weight in kg ¹⁾	A1	A2	A3 ²⁾	A4	A6	B1	B2 Tank- Bore	B3	B4	C1	Connection						C5	C6									
													Outlet C2	Inlet C3	OO A5	SO B5	C4	D1											
10 FREN 0040	0.6	1.2	116		100																								
10 FREN 0063	0.8	1.3	176	94	160	30	10	137	Ø 87	70	65	Ø 34	Ø 24	G½"														Ø 11	115
10 FREN 0100	1.2	1.6	266		250									G1"															
10 FREN 0160	3.3	4.5	173		165	40		166	Ø 107	85	78	Ø 60	Ø 35.6	G1¼"														Ø 185	
10 FREN 0250	4.3	6.5	263	117	250	50	12	165	Ø 140	100	89.5	Ø 60	G1½"	G1½"															
10 FREN 0400	6.6	5.6	235		250	60								G2"	42.9	77.8	M12	20									Ø 220		
10 FREN 0630	9.5	7.9	385	138	400		14	198	Ø 178	110	108.5	Ø 68	G2"	G2½"	50.8	88.9											Ø 11,5		
10 FREN 1000	15.0	15.0	381	183	400	80		230	Ø 205	135	122.5	Ø 125	G3"	G3"	61.9	106.4	M16	26									Ø 250		

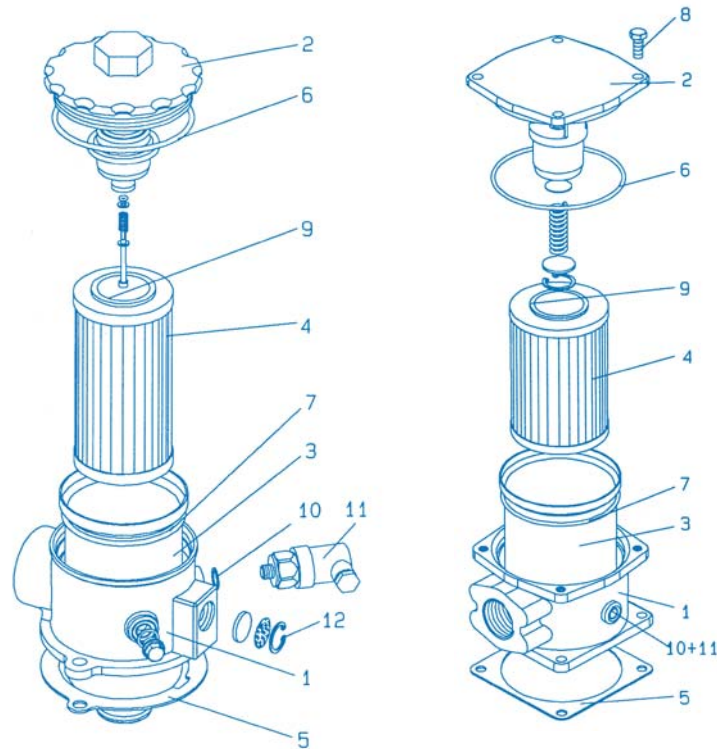
1) = weight including standard filter element and maintenance indicator
2) = Servicing height for filter element replacement

All dimensions are in mm

Spare Parts List

10 FRE 0005, 0008, 0013, 0015, 0018
10 FREN 0040, 0063, 0100

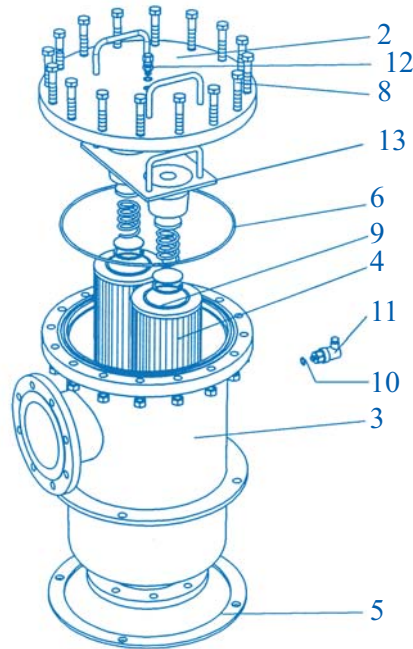
10 FRE 0020, 0030, 0045, 0060, 0095, 0145, 0200, 0270
10 FREN 0160, 0250, 0400, 0630, 1000



		Size 10 FRE Size 10 FREN		0005 0040	0008 0063	0013 0100	0015	0018	0020 0160	0030 0250	0045	0060 0400	0095 0630	0145 1000	0200	0270
Part	Quant.	Description	Material	Please indicate ordering information "Filter"												
1	1	Filter head	Aluminium	Please indicate ordering information "Filter"												
2	1	Filter cover	Plastic	Please indicate ordering information "Filter"						-						
			Aluminium	-						Please indicate ordering information "Filter"						
3	1	Filter housing	Aluminium / Plastic / CS	-												
		Filter bowl		Please indicate ordering information "Filter"												
4	1	Filter element	Various	Please indicate ordering information "Filter Element"												
5	1	Seal	Buna N/Viton	Please indicate ordering information "Seal kit"												
6	1	O-ring	Buna N/Viton													
7	1	O-ring	Buna N/Viton													
8	4	Hexagon screw	-	-						Part No. 594			Part No. 595			
9	2	O-ring	Buna N/Viton	Please indicate ordering information "Filter Element"												
10	1	Seal	Copper	Please indicate ordering information "Seal kit"												
11	1	Maintenance Indicator	Various	Please indicate ordering information "Maintenance Indicator"												
12	1	Ventilation	Various	Please indicate ordering information "Filter"						-						

Spare Parts List

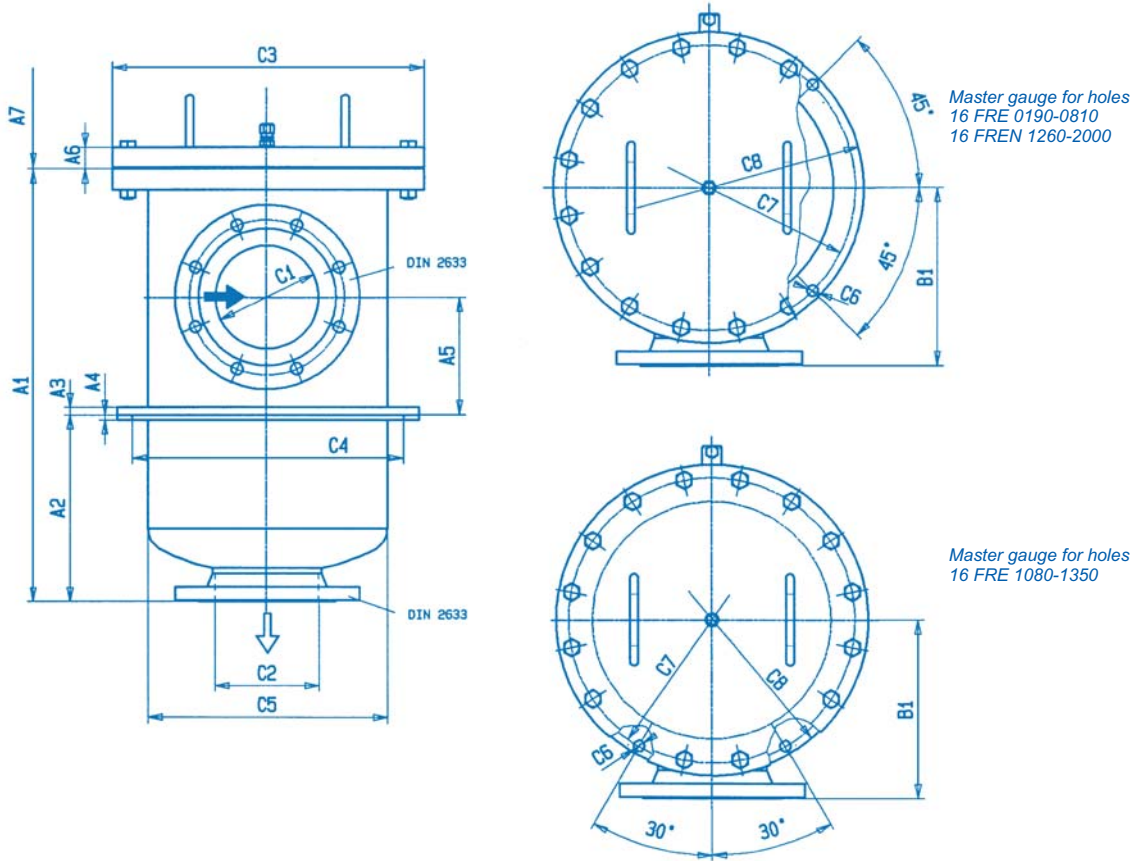
16 FRE 0190, 0290, 0400, 0540, 0600, 0810, 1080,
16 FREN 1260, 2000



		Size 16 FRE Size 16 FREN		0190 1260	0290 2000	0400	0540	0600	0810	1080	1350
Part	Quant.	Description	Material								
2	1	Filter cover	Steel	Please indicate ordering information "Filter"							
3	1	Filter housing	Steel	Please indicate ordering information "Filter"							
4	1	Filter element set (=3 single elements)	Various	Please indicate ordering information "Filter Element"			-				
	1	Filter element set (=4 single elements)	Various	-			Please indicate ordering information "Filter Element"				
	1	Filter element set (=5 single elements)	Various	-					Please indicate ordering information "Filter Element"	-	
	1	Filter element set (=6 single elements)	Various	-			-			Please indicate ordering information "Filter Element"	
5	1	Seal	Buna N/Viton	Please indicate ordering information "Seal Kit"							
6	1	O-ring	Buna N/Viton	Please indicate ordering information "Seal Kit"							
8	16	Hexagon screw	-	Part No.: 607			Part No.: 620		Part No.: 626		
9	4	O-ring	Buna N/Viton	Please indicate ordering information "Filter Element"			-				
	6			-			Please indicate ordering information "Filter Element"		-		
	8			-					Please indicate ordering information "Filter Element"	-	
	10			-			-			Please indicate ordering information "Filter Element"	
10	1	Seal	Copper	Please indicate ordering information "Seal Kit"							
11	1	Maintenance Indicator	Various	Please indicate ordering information "Maintenance Indicator"							
12	1	Ventilation valve	Various	Please indicate ordering information "Filter"							
13	1	Plate/Press-on plate	Various	Please indicate ordering information "Filter"							

Dimensions

16 FRE 0190, 0290, 0400, 0540, 0600, 0810, 1080, 1350
16 FREN 1260, 2000



Filter housing for Filter Elements in accordance with EPE Standard

Type	Capacity in l	Weight in kg ¹⁾	A1	A2	A3	A4	A5	A6	A7 ²⁾	B1	Connection Inlet C1	Connection Outlet C2	C3	C4 Tank bore	C5	C6	C7	C8	
16 FRE 0190	55	130	670	288	12	8	182	29	450	275	DN 125	DN 125	Ø480	Ø390	Ø368	4xØ20	Ø430	Ø465	
16 FRE 0290		132									DN 150	DN 150							
16 FRE 0400	102	198	1023	511	12	8	262	352	34	800	285	DN 200	DN 200	Ø565	Ø475	Ø450	6xØ23	Ø515	Ø590
16 FRE 0540	125	244	1257	745															
16 FRE 0600	157	224	1068	456															
16 FRE 0810	194	273	1302	690	15	10	365	41	1000	415	DN 250	DN 250	Ø565	Ø475	Ø450	6xØ23	Ø515	Ø590	
16 FRE 1080	355	298	1346	681															
16 FRE 1350		318																	

Filter housing for Filter Elements in accordance with DIN 24550

Type	Capacity in l	Weight in kg ¹⁾	A1	A2	A3	A4	A5	A6	A7 ²⁾	B1	Connection Inlet C1	Connection Outlet C2	C3	C4 Tank bore	C5	C6	C7	C8
16 FREN 1260	55	130	670	288	12	8	182	29	450	275	DN 125	DN 125	Ø480	Ø390	Ø368	4xØ20	Ø430	Ø465
16 FREN 2000		132																

1) = weight including standard filter element and servicing display
2) = Servicing height for filter element replacement

All dimensions are in mm



Filters . Accumulators

Installation, Starting and Maintenance

Installation

Check that the pressure rating of the filter is suitable for the system in which it is being installed. Remove the inlet & outlet plugs and locate the filter in the opening in the tank. Ensure that the gasket is correctly located and screw the filter in place, taking care to avoid any stress on the components.

Connection of electrical maintenance indicator

Connect as opener, closer or changeover using double or triple core cable. Note the capacity and voltage on the indicator plate.

Starting operation

Switch on pump.

In the case of models 16 FRE 0190-1350 (16 FREN 1260 and 2000), it may be necessary to open the vent valve (part 12) and ventilate the filter. For models 10 FRE 0020-0270 (10 FREN 0160-1000), no separate ventilation is required.

Monitor the static-up pressure on the servicing display (Part 11) of the return filter and return pipe, respectively.

If the static-up pressure before the return filter is more than 1 bar, check the volume flow of the pump and the dimensional layout of the return filter.

Maintenance

The filter element (Part 4) is clogged and must be renewed or cleaned when the visual pointer extends from the maintenance indicator at operating temperature, the monometer reading has reached the marked value and/or the switching process on the electrical indicator is triggered.

Filter element service

Switch off the pump and depressurise system.

Series 10 FRE-0018 (10 FREN 0040-0100):

Unscrew the cover (Part 2) of the return filter with the integrated bypass valve. Pull out the filter housing (Part 3) with filter element (Part 4) and detach filter element from the spigot.

Series 10 FRE 0020-0270 (10 FREN 0160-1000):

Remove the screws (Part 8) of the filter and then remove the filter cover (Part 2).

Remove the filter element (Part 4) from the spigot of the filter housing (Part 3) by slightly rotating it.

Series 16 FRE 0190-1350 (16 FREN 1260-2000):

Remove the screws (Part 8), filter cover (Part 2) and pressure plate (Part 13) with integrated bypass valve. Remove the filter element from the spigot of the filter casing (Part 3) by slightly rotating it.

Check and, if necessary clean the filter housing (Part 3).

Renew filter elements H.....-XL, P...and VS... The filter element with material G...is cleanable. The effectiveness of cleaning depends on the type of dirt and the differential pressure prior to changing the filter element. Replace element G...when the differential pressure after changing the filter element is more than 50% of the value before changing the filter element. Re-insert new or cleaned filter elements in filter casing (Part 3) and filter housing (Part 3), respectively.

Re-install pressure plate and filter pot respectively. Screw down the filter housing cover and tighten the screws.

Put back into operation as described above.

Technical Specifications are subject to change

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