

UFI FILTERS

Filtri Oleodinamici

Filtri su ritorno



 HYDRAULIC
COMPONENTS
& FLUID CONTAMINATION
CONTROL



FRA

RETURN FILTERS

DESCRIPTION

Tank top return line filter

MATERIALS

Head and cover: Aluminum alloy

Bowl: Polyamide for FRA21-31-32-33-41

Zinc plated steel for FRA11-42-51-52- 53-5D

Bypass valve: Polyamide

Seals: NBR Nitrile - FKM Fluoroelastomer on request

Indicator housing: Brass

PRESSURE

Max. working: 300 kPa (3 bar)

Collapse, differential for the filter element (ISO 2941): 300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 700 l/min

WORKING TEMPERATURE

From -25° to +110° C

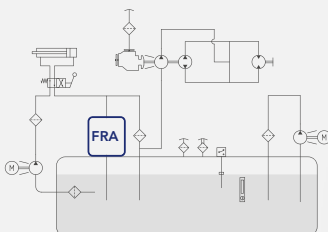
COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG

(according to ISO 6743/4)

For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website



FRA





RETURN FILTERS

ORDERING AND OPTION CHART

F	R	A	COMPLETE FILTER FAMILY														FILTER ELEMENT FAMILY	E	R	A		
			SIZE & LENGTH	11	21	31	32	33	41	42	51	5A	52	5B	5C	53	5D	SIZE & LENGTH				
			PORT TYPE																			
			B = BSP thread	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
			N = NPT thread	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
			S = SAE thread	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
			F = SAE flange 3000 psi	-	-	-	-	-	-	-	F	F	F	F	F	F	F	F				
			PORT SIZE																			
			03 = 3/8"	03	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			04 = 1/2"	-	04	04	-	-	-	-	-	-	-	-	-	-	-	-				
			06 = 3/4"	-	-	06	06	06	-	-	-	-	-	-	-	-	-	-				
			08 = 1"	-	-	-	08	08	08	08	-	-	-	-	-	-	-	-				
			10 = 1" 1/4 (F10 not available)	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-				
			12 = 1" 1/2 (* F12 available only for FRA4+ only)	-	-	-	-	-	(*)	(*)	12	12	12	-	-	-	-	-				
			16 = 2" (F16 not available)	-	-	-	-	-	-	-	16	16	16	16	16	16	16	16				
			20 = 2" 1/2 (F20 only)	-	-	-	-	-	-	-	20	20	20	20	20	20	20	20				
			BYPASS VALVE																			
			B = 170 kPa (1,7 bar)	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
			SEALS																			
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				
			FormulaUFI MEDIA																			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME				
			CLOGGING INDICATOR																			
			01 = 1/8" port, plugged	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01				
			30 = pressure gauge, rear connection	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
			32 = pressure gauge, cottom connection	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32				
			P1 = SPDT pressure switch	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1				
			ACCESSORIES																			
			W = without	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W				
			P = with filling plug	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
		X	ACCESSORIES																			
			X= no other accessory available	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				



SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR	ACCESSORIES																																			
																																						
<table border="1"> <tr> <td>B</td><td>R</td><td>A</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>B</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> <td>X</td> </tr> </table>	B	R	A								B										X	<table border="1"> <tr> <td>E</td><td>R</td><td>A</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	E	R	A								<table border="1"> <tr> <td></td><td></td> </tr> </table>			<table border="1"> <tr> <td></td><td>X</td> </tr> </table>		X
B	R	A								B										X																		
E	R	A																																				
	X																																					

SPARE SEAL KIT

	NBR	FKM
FRA11	521.0032.2	521.0039.2
FRA21	521.0012.2	521.0040.2
FRA31-32-33	521.0013.2	521.0041.2
FRA41-42	521.0014.2	521.0043.2
FRA51-5A-52-5B-5C-53-5C	521.0015.2	521.0044.2

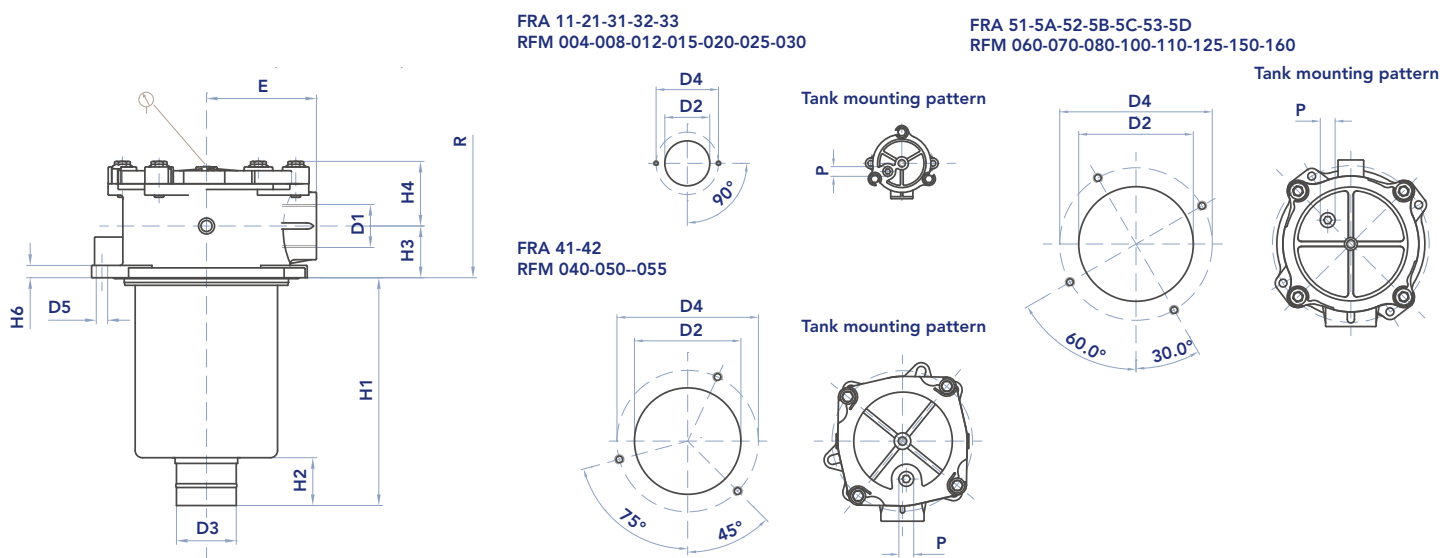
SPARE SPRING

FRA11	008.0032.1
FRA21	008.0149.1
FRA31-32-33	008.0003.1
FRA41-42	008.0151.1
FRA51-5A-52-5B-5C-53-5C	008.0028.1

FRA

RETURN FILTERS

INSTALLATION DRAWING



FILTER HOUSING

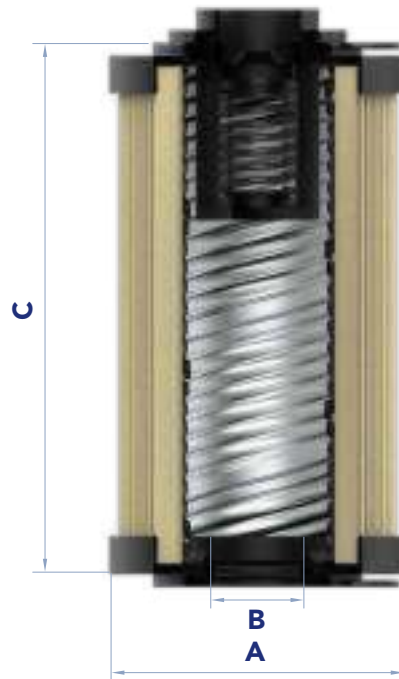
	D1	min D2	max D2	D3	D4	D5	E	H1	H2	H3	H4	H6	P	R	Kg
FRA11	3/8"	50	50	12	80	6,5	40	59	16	12	33	9	1/8"	90	0,30
FRA21	1/2"	67	68	24	90	6,5	50	85	20	22	33	9	3/8"	120	0,45
FRA31	1/2"-3/4"	89	90	28	115	9	67	107	25	28	47	10	3/8"	150	0,80
FRA32	3/4" - 1"	89	90	28	115	9	67	150	25	28	47	10	3/8"	190	0,95
FRA33	3/4" - 1"	89	90	40	115	9	67	234	30	28	47	10	3/8"	270	1,10
FRA41	1" - 1"1/4 - 1"1/2	126	131	40	175	10,5	95	248	50	35	56	13	1/2"	289	2,10
FRA42	1" - 1"1/4 - 1"1/2	126	131	40	175	10,5	95	268	30	35	56	13	1/2"	306	2,30
FRA51	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	50	220	10,5	115	178	50	55	69	13	1/2"	250	3,10
FRA5A	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	50	220	10,5	115	240	50	55	69	13	1/2"	315	3,50
FRA52	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	315	3,60
FRA5B	2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	315	3,65
FRA5C	2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	250	3,65
FRA53	2" - 2"1/2	174	180	63,5	220	10,5	115	285	50	55	69	13	1/2"	355	4,10
FRA5D	2" - 2"1/2	174	180	63,5	220	10,5	115	300	50	55	69	13	1/2"	370	4,30



FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)		
					Media F+	Media C+	Media M+
ERA11	38	13	50	0,05	270	345	200
ERA21	52	24	70	0,10	310	380	240
ERA31	70	28	85	0,20	620	990	460
ERA32	70	28	130	0,25	1.000	1.600	740
ERA33	70	40	210	0,40	1.660	2.670	1.220
ERA41	99	40	211	0,75	3.800	4.280	1.900
ERA42	99	40	250	0,90	4.550	5.100	2.270
ERA51	130	51	140	1,00	4.140	4.360	1.800
ERA5A	130	51	200	1,10	5.840	6.460	2.730
ERA52	130	63	200	1,35	5.840	6.460	2.700
ERA5B	130	63	200	1,45	7.070	7.070	2.700
ERA5C	130	63	232	1,50	7.280	7.600	3.040
ERA53	130	63	251	1,55	7.500	8.350	3.450
ERA5D	130	63	266	1,60	8.000	8.800	3.730

* Connection dimension



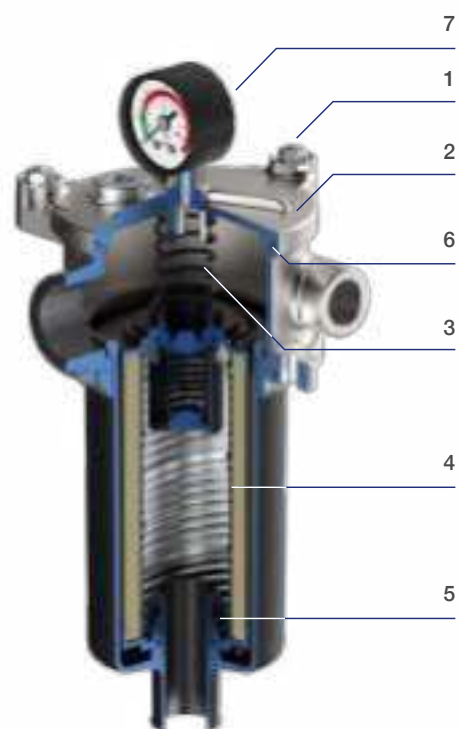
MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
 - 2) Loosen the screws (1) until the cover (2) is free to rotate clockwise.
 - 3) Remove the cover (2) and the spring (3) below. N.B. Handle with care the clogging indicator (7) when present.
 - 4) Remove the dirty filter element (4) using its handle.
- N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
 - 6) Lubricate the element o-ring gasket (5) with oil.
 - 7) Insert the clean element into its seat with care.
 - 8) Re-assembly the spring (3).
 - 9) Check the cover o-ring condition (6) and lubricate with oil.
- If damaged, check the seal kit part number in the spare seal kit table
- 10) Re-assembly the cover (2) and tighten the screws (1)

Accessories:

Clogging indicator (7).

If damaged, unscrew and replace it (check the part number in the ordering and option chart). Apply a thread-sealing and screw until tight. N.B. overtightening can damage the thread.



FRA

RETURN FILTERS

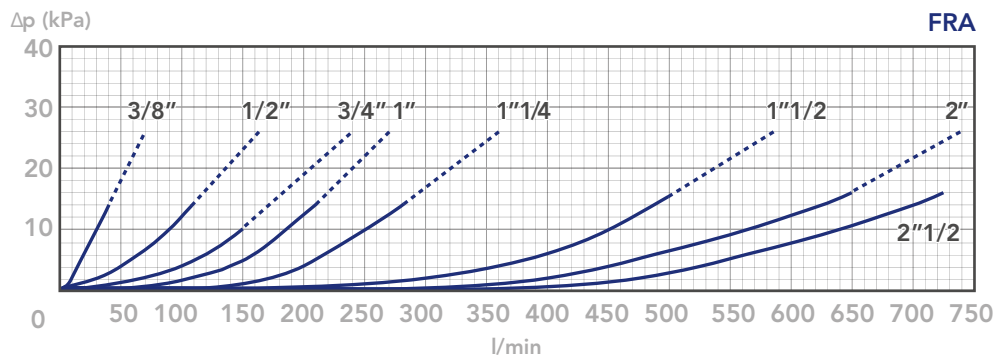


PRESSURE DROP CURVES (ΔP)

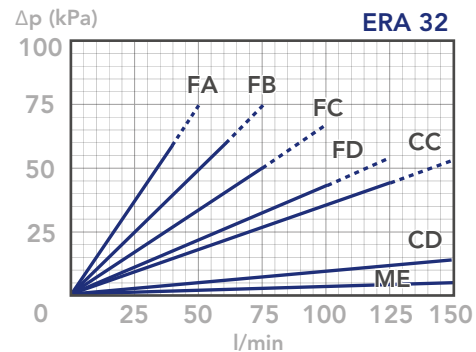
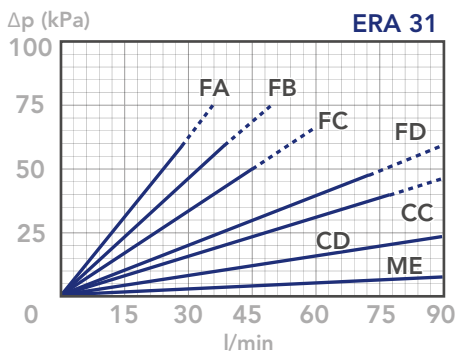
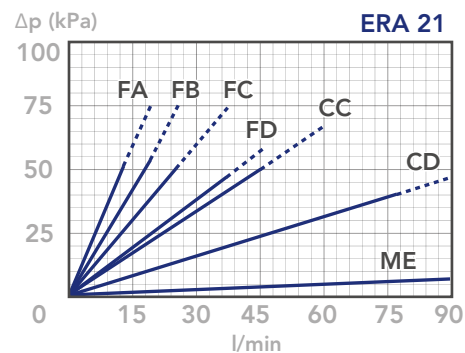
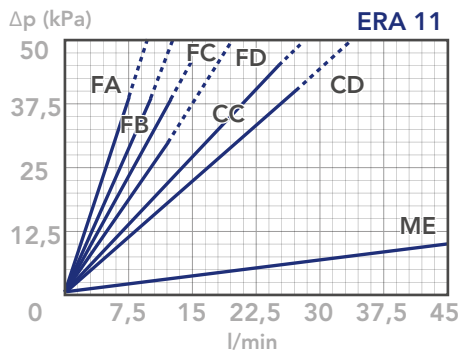
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

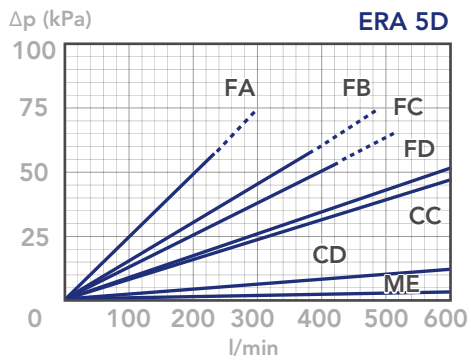
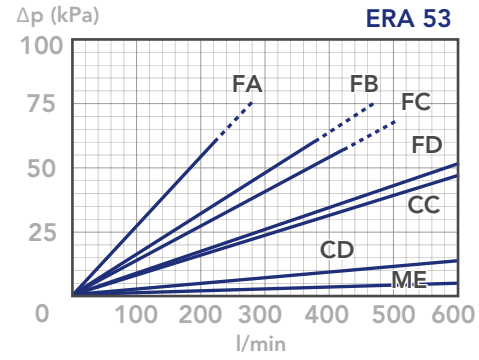
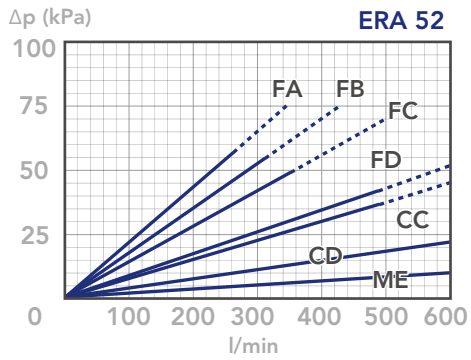
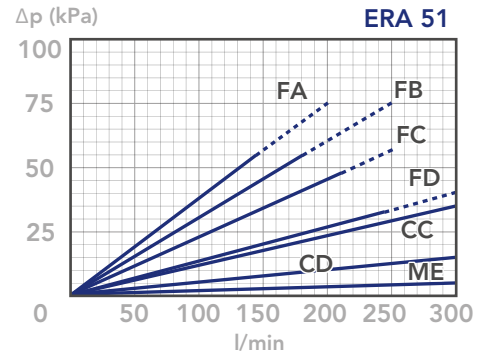
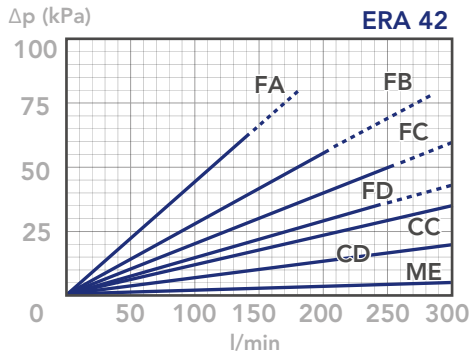
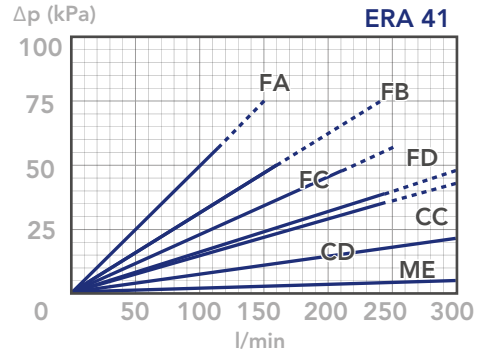
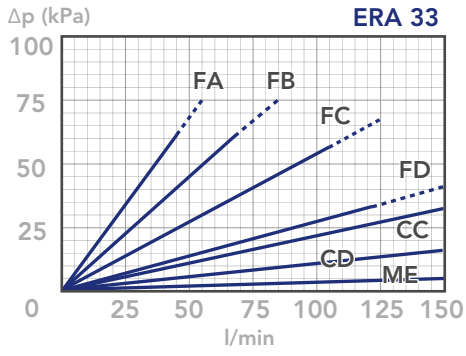
be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



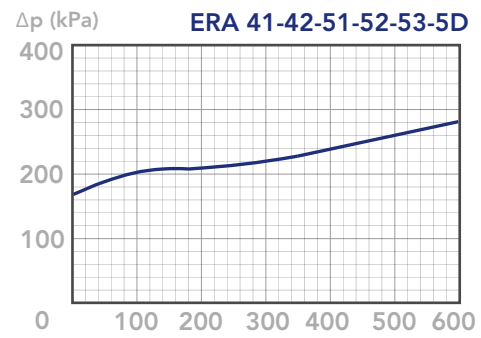
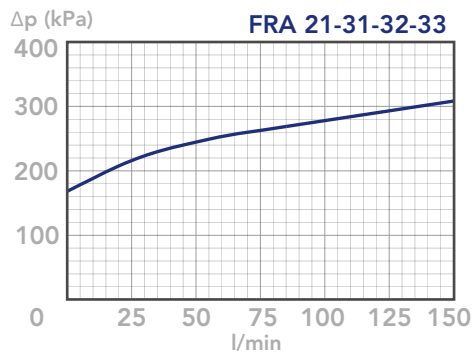


FRA

RETURN FILTERS

BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRB

RETURN FILTERS



DESCRIPTION

Tank top return line filter, inbuilt breather

MATERIALS

Head: Aluminum alloy
Cover and Bowl: Polyamide
Bypass valve: Polyamide
Seals: NBR Nitrile
Indicator housing: Brass

PRESSURE

Max. working: 700 kPa (7 bar)
Collapse, differential for the filter element (ISO 2941):
300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%
250 kPa (2,5 bar) \pm 10%

FLOW RATE

Qmax 140 l/min

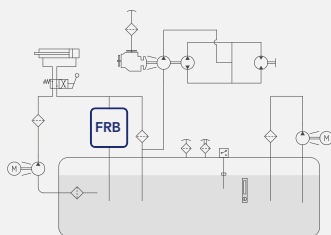
WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.
please contact our Customer Service.

HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website



FRB
















RETURN FILTERS



ORDERING AND OPTION CHART

F	R	B	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	B
			SIZE & LENGTH	11	21	22	23	SIZE & LENGTH			
			PORT TYPE								
			B = BSP thread	B	B	B	B				
			N = NPT thread	N	N	N	N				
			S = SAE thread	S	S	S	S				
			PORT SIZE								
			04 = 1/2"	04	-	-	-				
			06 = 3/4"	06	06	06	06				
			08 = 1"	-	08	08	08				
		B	BYPASS VALVE								
			B = 170 kPa (1,7 bar) - 250 kPa (2,5 bar) for F+ media	B	B	B	B				
		N	SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD				
			CLOGGING INDICATOR								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = pressure gauge, rear connection	30	30	30	30				
			P4 = SPDT pressure switch	P4	P4	P4	P4				
			P6 = SPDT pressure switch	P6	P6	P6	P6				
			ACCESSORIES								
			W = without	W	W	W	W				
			C = with polyester air breather	C	C	C	C				
			D = with metal air filter	D	D	D	D				
			ACCESSORIES								
			W = without	W	W	W	W				
			H = with dipstick	H	H	H	H				

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR				ACCESSORIES			
															
B	R	B		B	N										
				E	R	B	N								

SPARE SEAL KIT

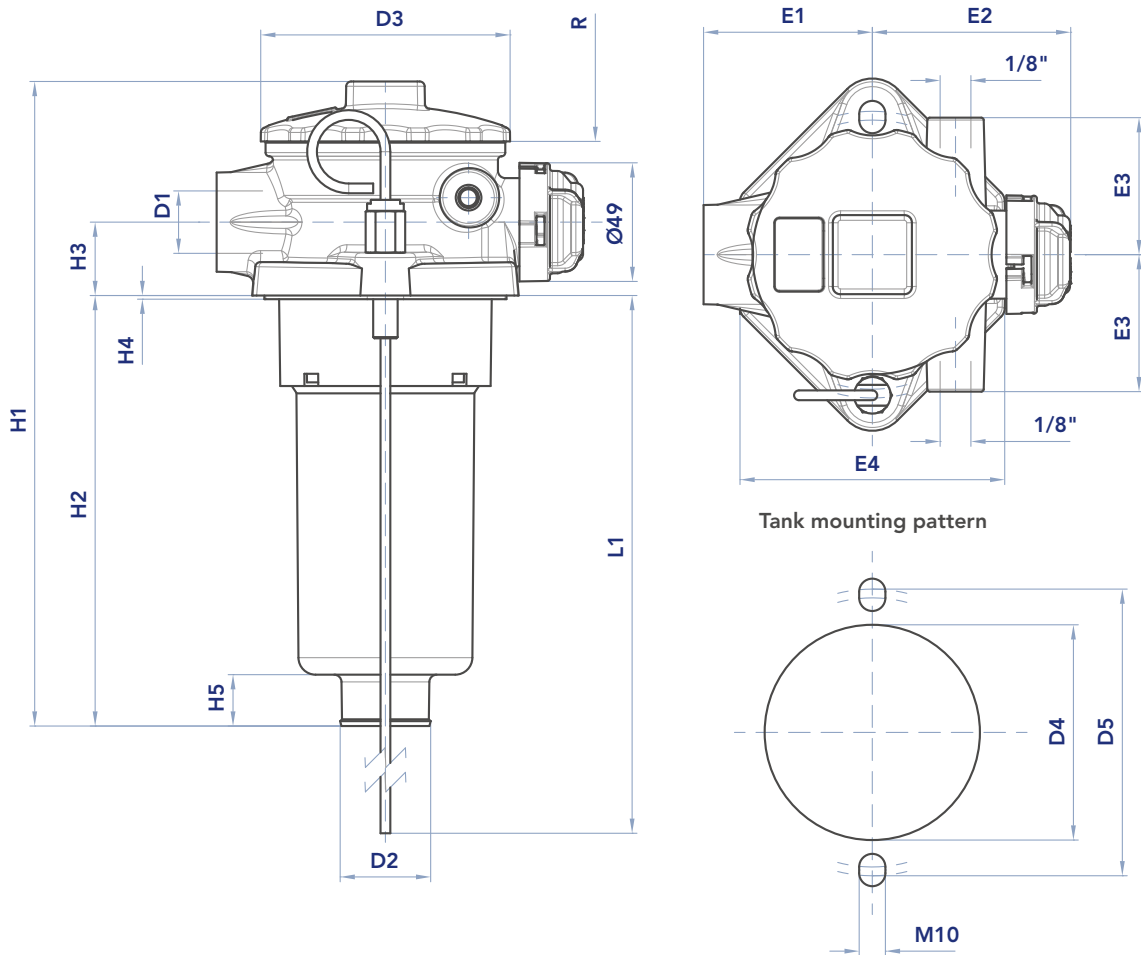
NRB

FRB11	521.0016.2
FRB21	521.0017.2

SPARE SPRING

FRB11	008.0208.1
FRB21	008.3014.1

INSTALLATION DRAWING



FILTER HOUSING

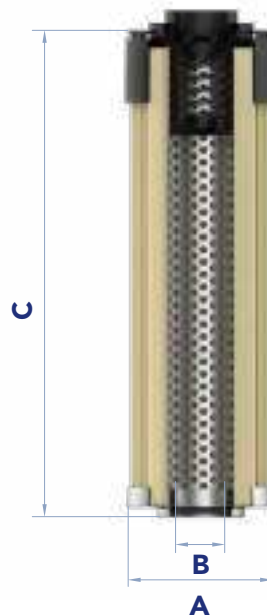
	D1	D2	D3	D4	D5	E1	E2	E3	E4	H1	H2	H3	H4	H5	L1	R	Kg
FRB11	1/2"-3/4"	28	75	60÷63	82÷88	50	70	28	77	243	178	24	2	16	380	220	0,40
FRB21	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	200	110	30	1,5	22	370	190	0,84
FRB22	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	265	175	30	1,5	22	370	240	0,87
FRB23	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	365	275	30	1,5	22	370	350	0,92

FRB

RETURN FILTERS

FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)	
					Media F+	MediaC+
ERB11	43	20	200	0,20	1.030	1.225
ERB21	59	28	134	0,30	1.140	1.430
ERB22	59	28	200	0,40	1.760	2.200
ERB23	59	28	300	0,50	2.380	3.400



MAINTENANCE

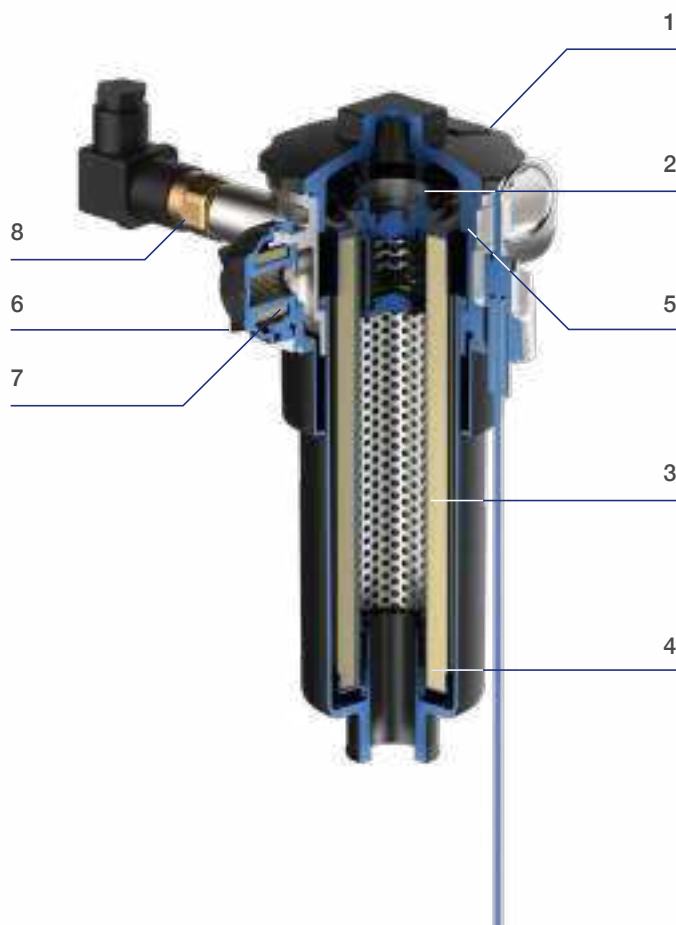
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the the cover (1) and remove the spring (2) below.
- 3) Remove the dirty filter element (3) using its handle.
- N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 6) Lubricate the element o-ring gasket (4) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Re-assembly the spring (2).
- 9) Check the cover o-ring condition (6) and lubricate with oil. If damaged, check the seal kit part number in the spare seal kit table.
- 10) Re-screw the cover (1).

Accessories:

Air breather filter element (7). If necessary, unscrew the cover (6) and replace the air breather element with a new one (please contact our Customer Service for additional information).

Clogging indicator (8).

If damaged, unscrew and replace it (check the part number in the ordering and option chart). Lubricate the o-ring gaskets with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.



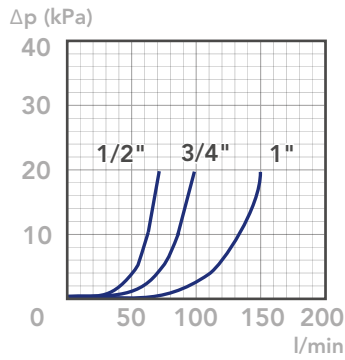


PRESSURE DROP CURVES (Δp)

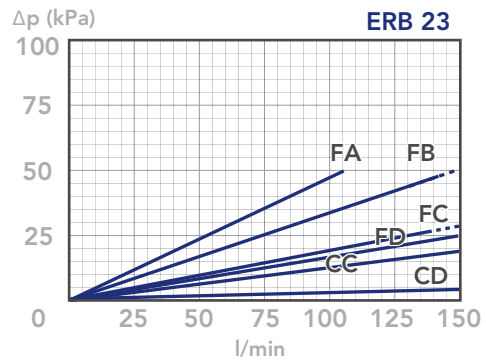
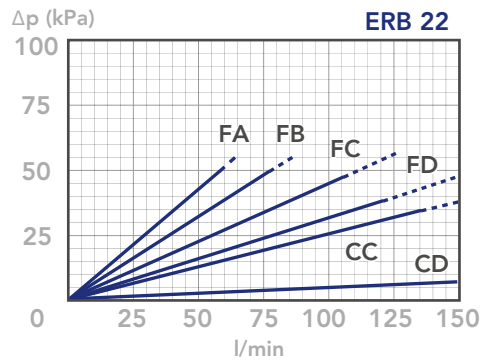
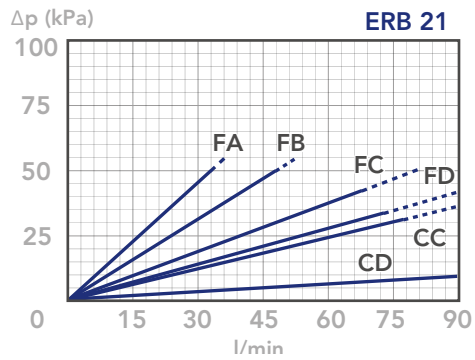
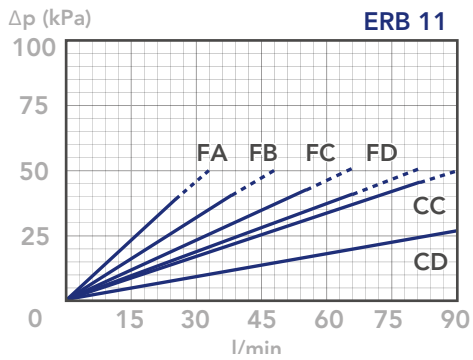
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)

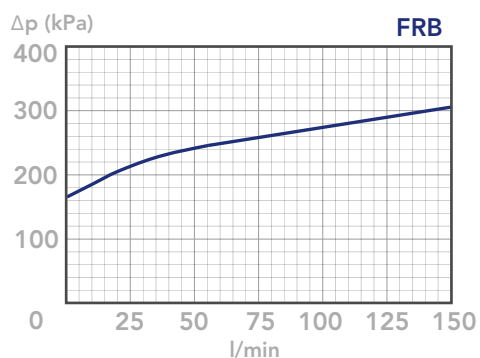


FRB

RETURN FILTERS

BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRC

RETURN FILTERS



DESCRIPTION

Tank top return spin-on filter

MATERIALS

Head: Aluminum alloy
Spin-on cartridge: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile
Indicator housing: Brass

PRESSURE

Max. working: 700 kPa (7 bar)
Collapse, differential for the filter element (ISO 2941):
300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 200 l/min

WORKING TEMPERATURE

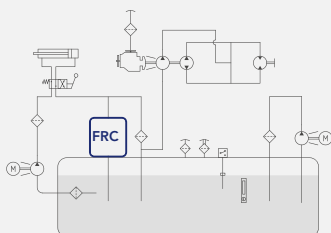
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.



HYDRAULIC DIAGRAM



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FRC

RETURN FILTERS

ORDERING AND OPTION CHART

F	R	C	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	C
			SIZE & LENGTH	11	12	21	22	SIZE & LENGTH			
		B	PORT TYPE								
			B = BSP thread	B	B	B	B				
			PORT SIZE								
			06 = 3/4"	06	06	-	-				
			12 = 1"1/2"	-	-	12	12				
		B	BYPASS VALVE								
			B = 170 kPa (1,7 bar) with anti-drain membrane	B	B	B	B				
		N	SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD				
			CLOGGING INDICATOR								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = pressure gauge, rear connection	30	30	30	30				
			P1 = SPDT pressure switch	P1	P1	P1	P1				
X	X		ACCESSORIES								
			XX = no accessory available	XX	XX	XX	XX				

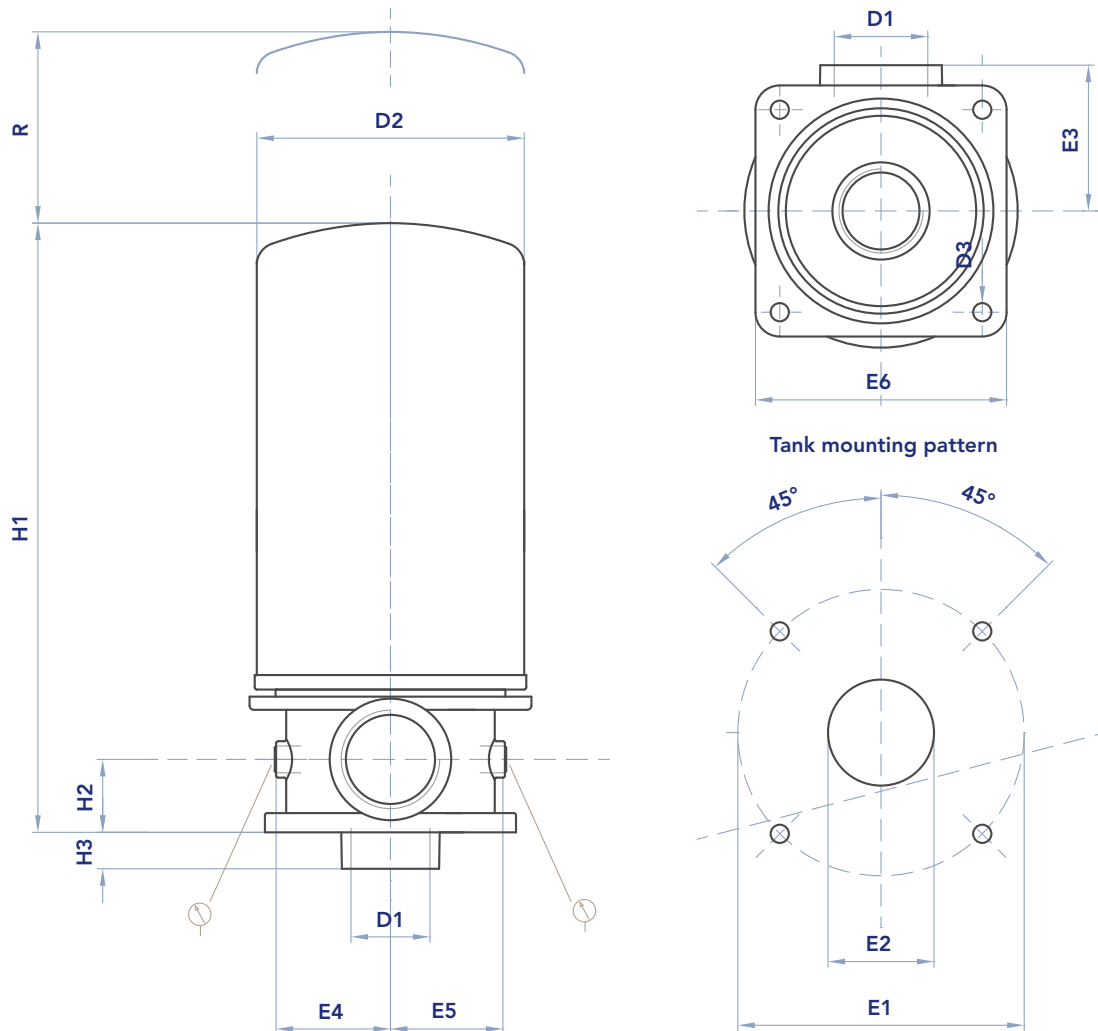
SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR					
													
B	R	C		B		B	N					X	X
				E	R	C		N					

SPARE SEAL KIT

NBR		NBR	
FRC11 - 12	521.0018.2	FRC21 - 22	521.0036.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	H1	H2	H3	E1	E2	E3	E4	E5	E6	R	Kg
FRC11	3/4"	96	7	196	25	18	99	40÷45	50	38	38	90	15	1,3
FRC12	3/4"	96	7	241	25	18	99	40÷45	50	38	38	90	15	1,6
FRC21	1"1/2	129	9	252	36	18	141	65÷70	72	56	56	124	30	2,1
FRC22	1"1/2	129	9	297	36	18	141	65÷70	72	56	56	124	30	2,2

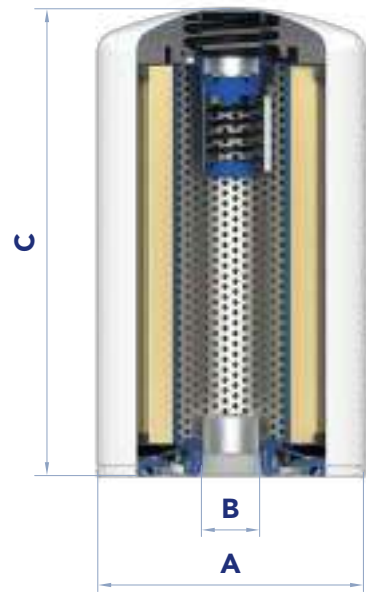
FRC

RETURN FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)	
					Media F+	Media C+
ERC11	96,5	3/4" BSP	146	1,00	2.600	3.100
ERC12	96,5	3/4" BSP	191	1,20	3.630	4.745
ERC21	129	1"1/4 BSP	181	1,40	4.450	5.560
ERC22	129	1"1/4 BSP	226	1,50	5.088	7.360



MAINTENANCE

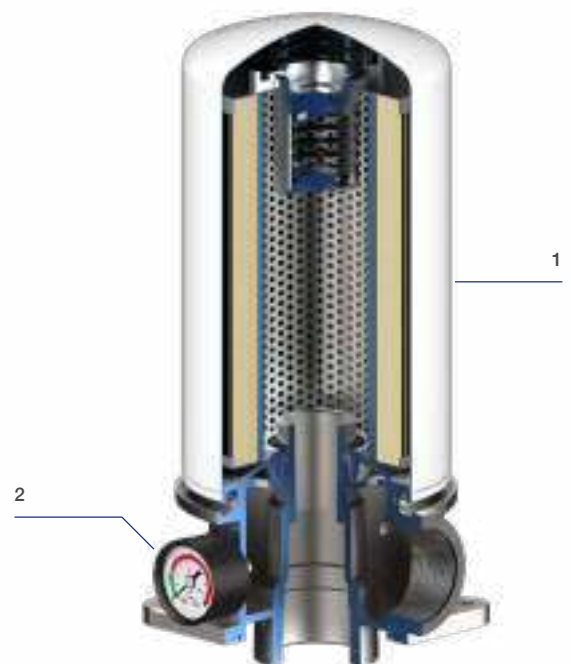
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the dirty filter element (1).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 4) Check the filter element part number on the silk-screen printing or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the element o-ring gasket with oil.
- 6) Screw the clean filter element until the first contact of the gasket with the flange.
- 7) Tighten strongly for 3/4 of a turn (indicative tightening torque of 18 Nm).

Accessories:

Clogging indicator.

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Apply a thread-sealing and screw until tight. N.B. An over-tightening can damage the thread.



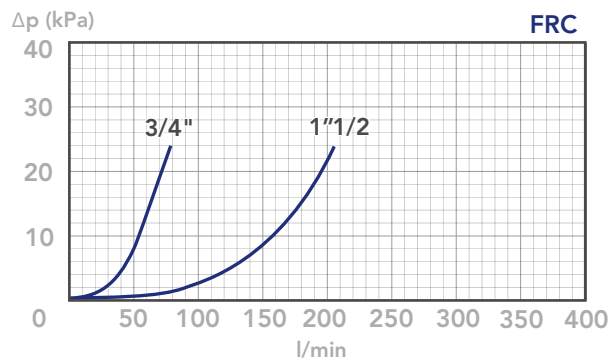


PRESSURE DROP CURVES (ΔP)

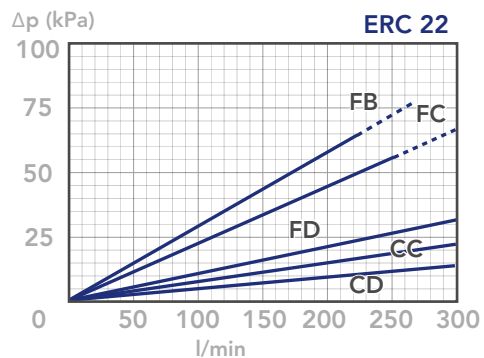
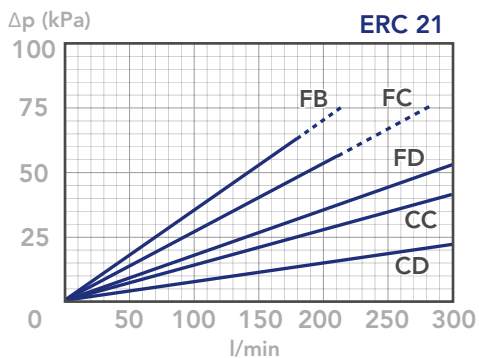
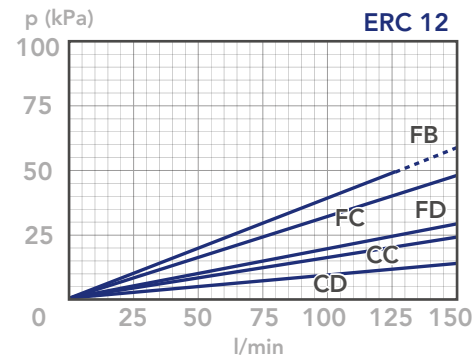
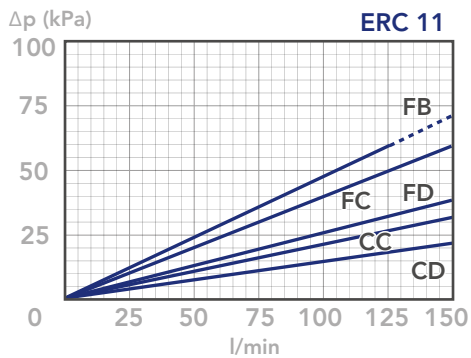
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)

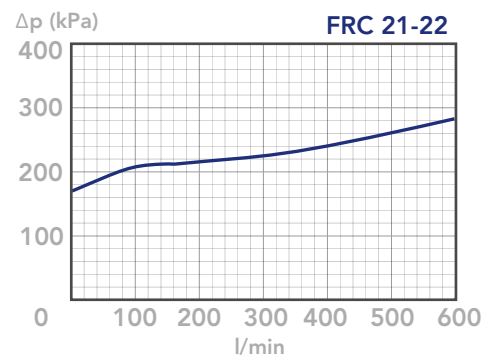
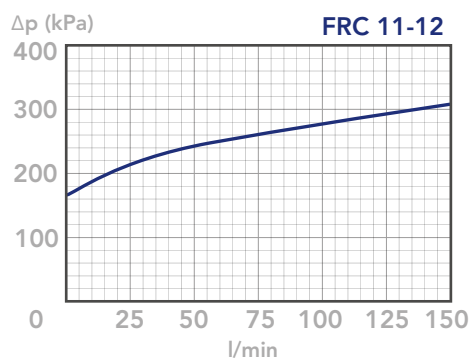


FRC

RETURN FILTERS

BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRD

RETURN FILTERS

DESCRIPTION

Tank top or external mounting return line filter

MATERIALS

Cover & housing: Anodized aluminum alloy
For 61&62 only:
Cover: Anodized aluminum alloy
Housing: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 2 MPa (20 bar)
Collapse, differential for the filter element (ISO 2941): 1 MPa (10 bar)

BYPASS VALVE

Setting: 300 kPa (3 bar) \pm 10%

FLOW RATE

Qmax 1500 l/min

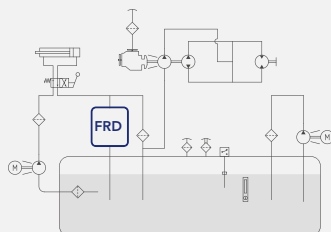
WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



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FRD

RETURN FILTERS

ORDERING AND OPTION CHART

F	R	D	COMPLETE FILTER FAMILY									FILTER ELEMENT FAMILY	E	R	D
			SIZE & LENGTH	11	21	31	41	51	61	62	SIZE & LENGTH				
			PORT TYPE												
			B = BSP thread	B	B	B	B	B	-	-					
			N = NPT thread	N	N	N	N	N	-	-					
			S = SAE thread	S	S	S	S	S	-	-					
			F = SAE flange 3000 psi, metric screw	-	-	F	F	F	F	F					
			PORT SIZE												
			04 = 1/2"	04	-	-	-	-	-	-					
			06 = 3/4"	-	06	-	-	-	-	-					
			08 = 1"	-	-	08	-	-	-	-					
			12 = 1" 1/2	-	-	-	12	-	-	-					
			20 = 2" 1/2	-	-	-	-	20	-	-					
			28 = 3" 1/2	-	-	-	-	-	28	-					
			32 = 4"	-	-	-	-	-	-	32					
			BYPASS VALVE												
			W = without	W	W	W	W	W	W	W					
			D = 300 kPa (3 bar)	D	D	D	D	D	D	D					
			SEALS									SEALS			
			N = NBR Nitrile	N	N	N	N	N	N	N					
			G = Treatment for water-glycol	G	G	G	G	G	G	G					
			FormulaUFI MEDIA									FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA	FA	FA					
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB	FB	FB					
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC	FC	FC					
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD	FD	FD					
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC					
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD	CD	CD	CD					
			MD = FormulaUFI.WEB 25 μm	MD	MD	MD	MD	MD	MD	MD					
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME	ME	ME					
			WR = FormulaUFI.H2O (*)	-	-	WR	WR	WR	WR	WR					
			CLOGGING INDICATOR (**)												
			03 = port, plugged	03	03	03	03	03	03	03					
			5C = visual differential 200 kPa (2 bar)	5C	5C	5C	5C	5C	5C	5C					
			6C = electrical differential 200 kPa (2 bar)	6C	6C	6C	6C	6C	6C	6C					
			7C = indicator 6C with LED	7C	7C	7C	7C	7C	7C	7C					
			T1 = elect. diff. 200 kPa (2 bar) with thermostat 30°C	T1	T1	T1	T1	T1	T1	T1					
X	X		ACCESSORIES												
			XX= no other accessory available	XX	XX	XX	XX	XX	XX	XX					

* FormulaUFI.H2O: water removal media - see "hydro dry" brochure

** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

SPARE SEAL KIT

NBR		NBR		NBR	
FRD11	521.0045.2	FRD41	521.0031.2	FRD61	521.0049.2
FRD21	521.0046.2	FRD51	521.0048.2	FRD62	521.0049.2
FRD31	521.0047.2				

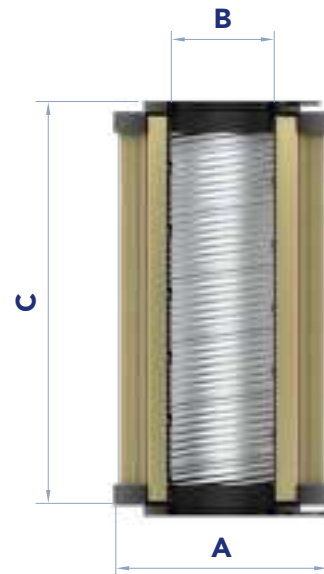
FRD

RETURN FILTERS



FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)			
					Media F+	Media C+	Media M+	Media WR
ERD11	52	28/24	70	0,10	310	380	245	-
ERD21	70	34	85	0,20	620	990	460	-
ERD31	70	34	130	0,25	1.000	1.600	740	1.006
ERD41	99	51	211	0,70	3.800	4.280	1.900	3.801
ERD51	130	74	251	1,50	7.500	8.300	3.600	7.493
ERD61	130	74/85	505	2,00	13.600	13.600	7.350	13.634
ERD62	143	96	896	3,80	37.800	37.700	32.100	34.650



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Unscrew the screws (1)
- 3) Remove the cover (2).
N.B. Don't touch the by-pass valve as its setting must not be changed.
Collect the oil inside the filter with a suitable container.
- 4) Remove the dirty filter element (3) using the handle.
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorised Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart.
Use only original spare parts.
- 6) Lubricate the element O-ring gasket (4) with oil.
- 7) Insert the clean element into its seat (5) with care.
- 8) Check the cover O-ring condition (6) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table
- 9) Re-assembly the cover (2) and tighten the screws (1).



Accessories:

Clogging indicator.

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Apply a thread-sealing and screw until tight. N.B. an over-tightening can damage the thread.

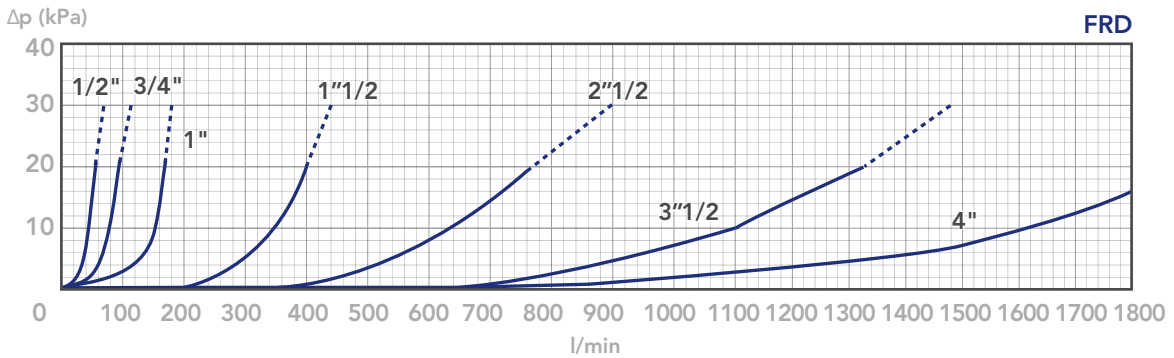


PRESSURE DROP CURVES (ΔP)

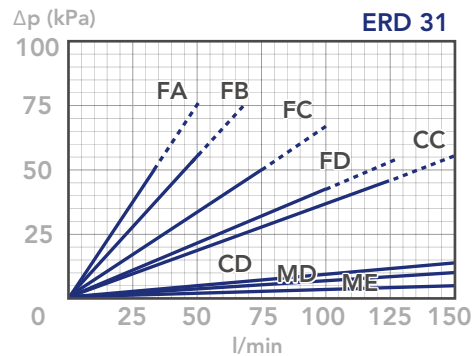
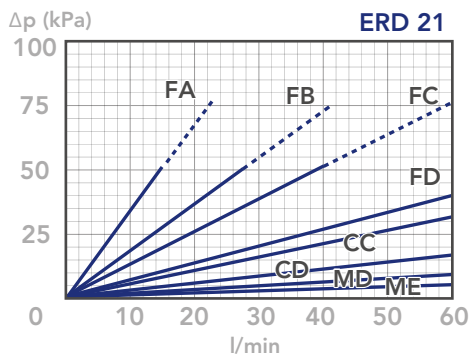
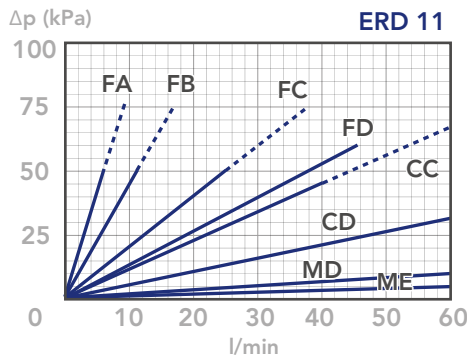
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

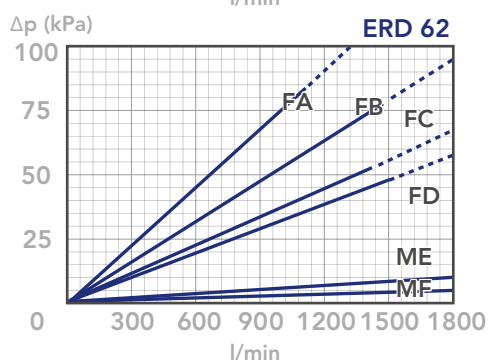
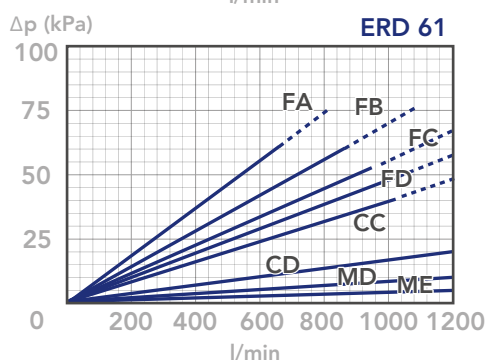
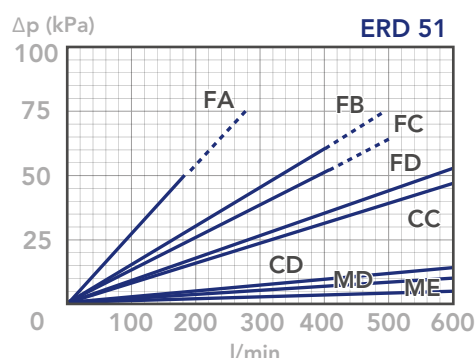
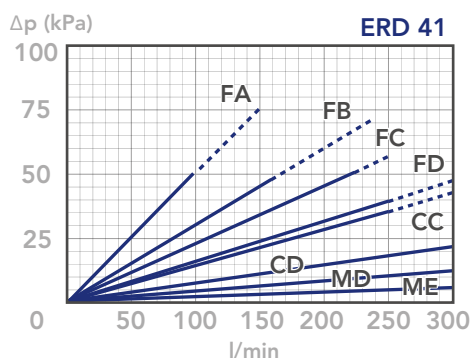


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND M+ MEDIA
(depending both on the internal diameter of the element and on the filter media)



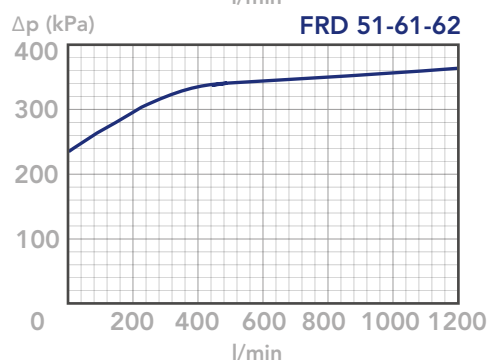
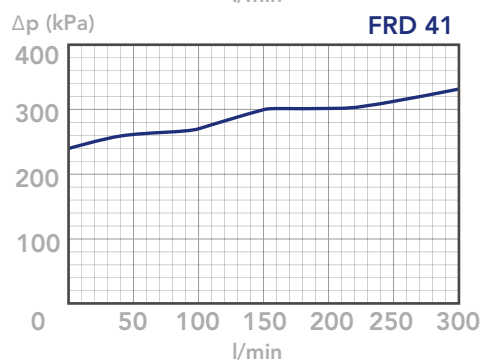
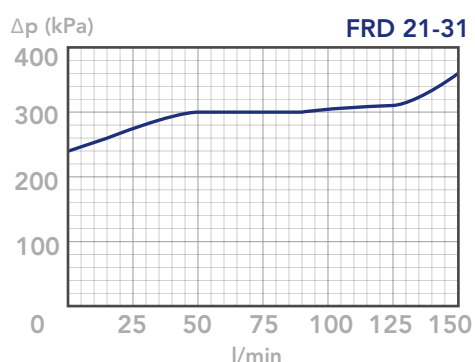
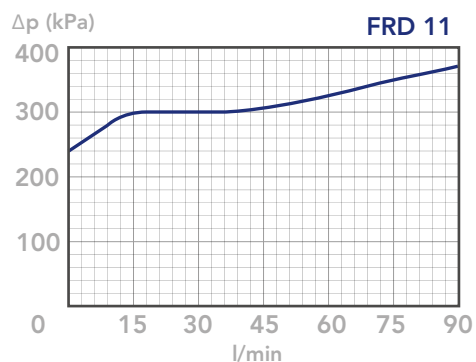
FRD

RETURN FILTERS



BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRF

RETURN FILTERS



DESCRIPTION

In-out tank top return line filter

MATERIALS

Head and cover: Aluminum alloy
Diffusor: Zinc plated steel
Element support: Polyamide (aluminum alloy for FRF3+ and FRF4+)
Magnetic core: Synthesized magnetic material (phosphated steel for FRF1X)
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 1 MPa (10 bar)
Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 150 kPa (1,5 bar) \pm 10%

FLOW RATE

Qmax 2200 l/min

WORKING TEMPERATURE

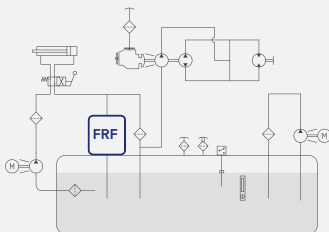
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.



HYDRAULIC DIAGRAM



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FRF1

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	11	12	13	14	1X	SIZE & LENGTH			
			PORT TYPE									
			B = BSP thread	B	B	B	B	B				
			A = BSP thread, double port (only A08)	A	A	A	A	A				
			N = NPT thread	N	N	N	N	N				
			S = SAE thread	S	S	S	S	S				
			PORT SIZE									
			06 = 3/4"	06	06	06	06	06				
			08 = 1"	08	08	08	08	08				
			10 = 1" 1/4	10	10	10	10	10				
		F	BYPASS VALVE									
			F = 150 kPa (1,5 bar)	F	F	F	F	F				
			SEALS						SEALS			
			N = NBR Nitrile	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G				
			FormulaUFI MEDIA						FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME				
			CLOGGING INDICATOR									
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4	P4				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			F = with diffusor	F	F	F	F	F				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			M = magnetic core	M	M	M	M	M				

FRF2

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	22	23	24	SIZE & LENGTH			
			PORT TYPE							
			B = BSP thread	B	B	B				
			A = BSP thread, double port (only AD1)	A	A	A				
			N = NPT thread	N	N	N				
			S = SAE thread	S	S	S				
			F = SAE flange 3000 psi	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P				
			PORT SIZE							
			12 = 1" 1/2 (P12= 1"1/2 SAE+1" 1/2 BSP)	12	12	12				
			D1 = 1" 1/2 +1" 1/4 (only AD1)	D1	D1	D1				
		F	BYPASS VALVE							
			F = 150 kPa (1,5 bar)	F	F	F				
			SEALS				SEALS			
			N = NBR Nitrile	N	N	N				
			F = FKM Fluoroelastomer	F	F	F				
			G = Treatment for water-glycol	G	G	G				
			FormulaUFI MEDIA				FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME				
			CLOGGING INDICATOR (**)							
			05 = nr. 2 x 1/8" ports, plugged	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0				
			ACCESSORIES							
			W = without accessory	W	W	W				
			F = with diffusor	F	F	F				
			ACCESSORIES							
			W = without accessory	W	W	W				
			M = magnetic core	M	M	M				

** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

FRF3

RETURN FILTERS

ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	31	32	33	34	SIZE & LENGTH			
			PORT TYPE								
			F = SAE flange 3000 psi	F	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P	P				
			PORT SIZE								
			16 = 2"	16	16	16	16				
			20 = 2" 1/2	20	20	20	20				
			DA = 2" 1/2+2"	DA	DA	DA	DA				
			D7 = 2"+1" 1/2	D7	D7	D7	D7				
		F	BYPASS VALVE								
			F = 150 kPa (1,5 bar)	F	F	F	F				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			CLOGGING INDICATOR (**)								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			F = with diffusor	F	F	F	F				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			M = magnetic core	M	M	M	M				

** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

FRF4

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	41	42	43	44	SIZE & LENGTH			
			PORT TYPE								
			F = SAE flange 3000 psi	F	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P	P				
			PORT SIZE								
			24 = 3"	24	24	24	24				
			32 = 4"	32	32	32	32				
			D9= 3"+4"	D9	D9	D9	D9				
F			BYPASS VALVE								
			F = 150 kPa (1,5 bar)	F	F	F	F				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			CLOGGING INDICATOR (**)								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			F = with diffusor	F	F	F	F				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			M = magnetic core	M	M	M	M				





** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

FRF

RETURN FILTERS



SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR	ACCESSORIES	
				
B R F <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> F <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	E R F <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

SPARE SEAL KIT

	NBR	FKM
FRF11-12-13-14-1X	521.0055.2	521.0056.2
FRF22-23-24	521.0020.2	521.0057.2
FRF31-32-33-34	521.0021.2	521.0058.2
FRF41-42-43-44	521.0095.2	521.0096.2

SPARE SPRING

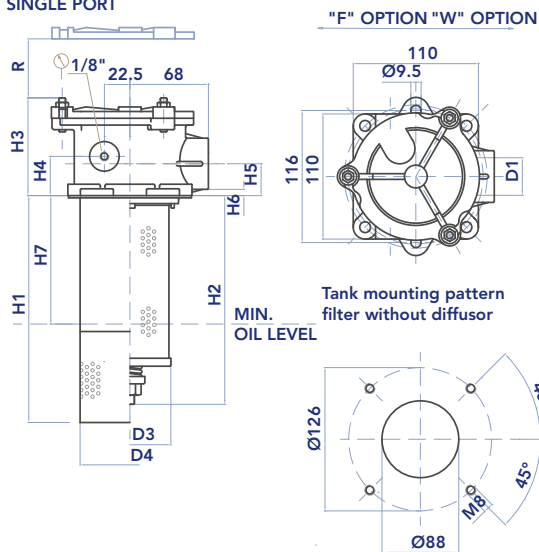
FRF11-12-13-14-1X	008.0282.1
FRF22-23-24	008.0269.1
FRF31-32-33-34	008.0275.1
FRF41-42-43-44	008.0283.1

FRF1

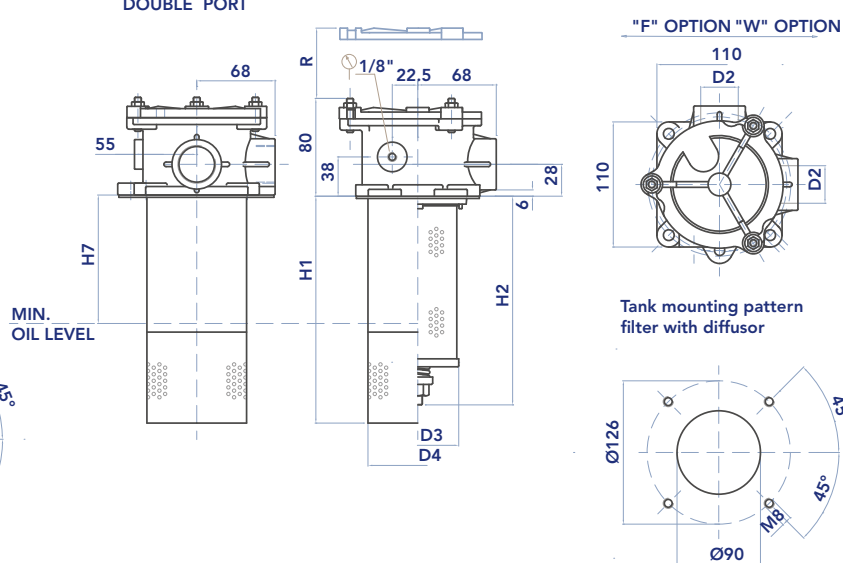
RETURN FILTERS

INSTALLATION DRAWING

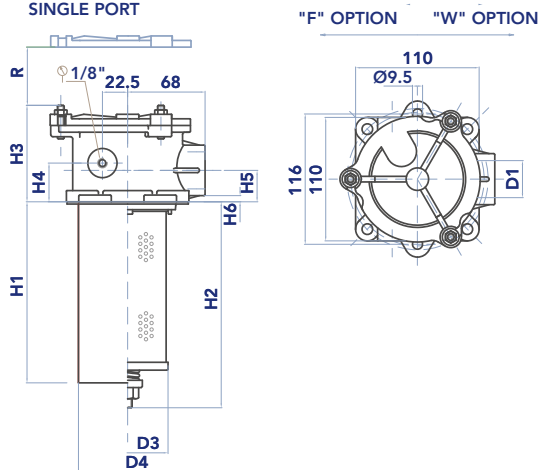
FRF 11-12-13-14
SINGLE PORT



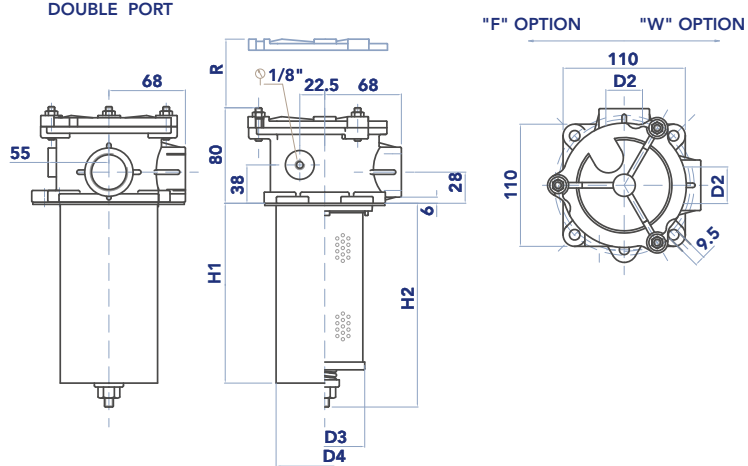
FRF 11-12-13-14
DOUBLE PORT



FRF 1X
SINGLE PORT



FRF 1X
DOUBLE PORT



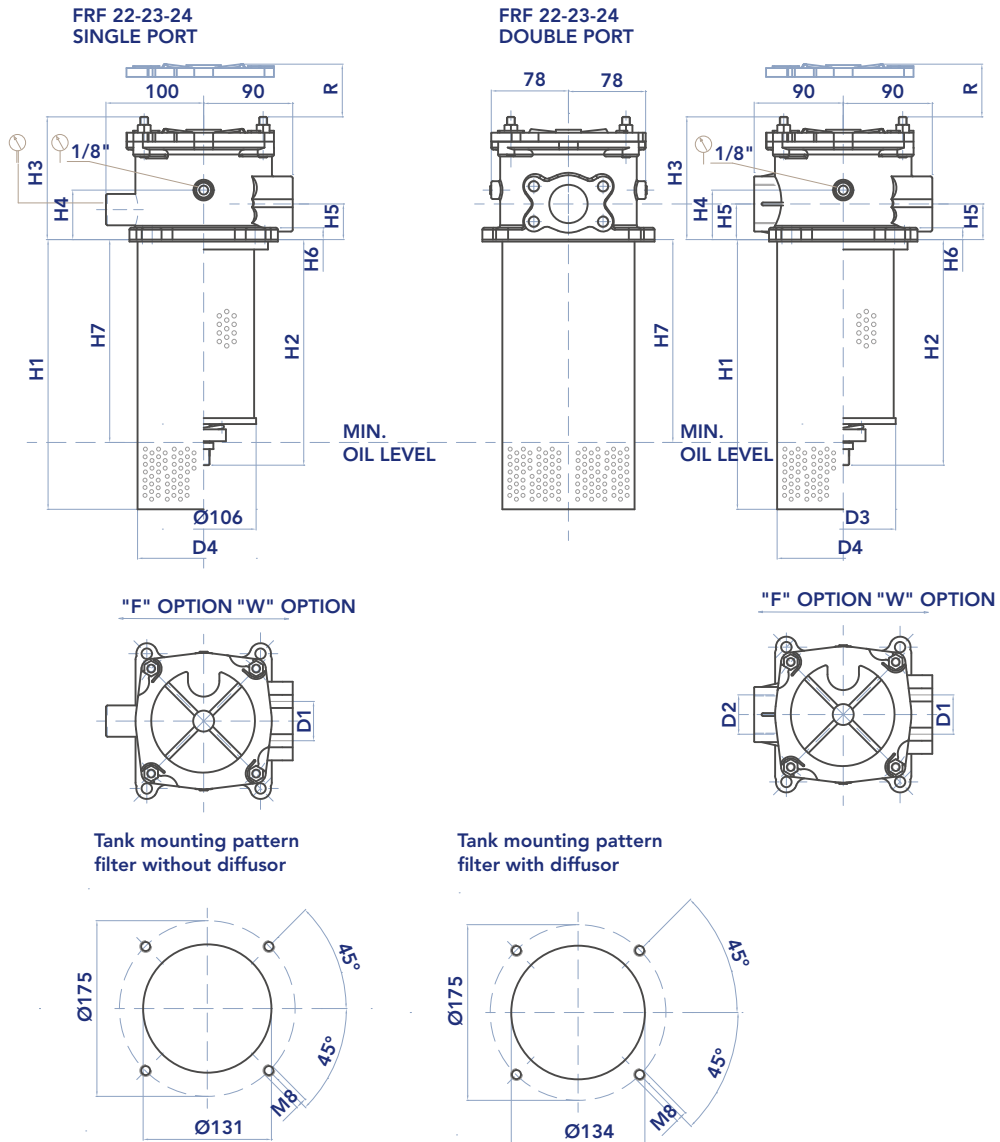
FILTER HOUSING

	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	H6	H7	R	Kg
FRF11	3/4" - 1" - 1" 1/4	1"	72	89	9	198	140	90	38	28÷32	6	118	230	1,20
FRF12	3/4" - 1" - 1" 1/4	1"	72	89	9	198	185	90	38	28÷32	6	118	275	1,40
FRF13	3/4" - 1" - 1" 1/4	1"	72	89	9	250	235	90	38	28÷32	6	170	325	1,50
FRF14	3/4" - 1" - 1" 1/4	1"	72	89	9	350	335	90	38	28÷32	6	270	445	1,70
FRF1X	3/4" - 1" - 1" 1/4	1"	72	89	9	500	535	90	38	28÷32	6	270	625	2,00

FRF2

RETURN FILTERS

INSTALLATION DRAWING



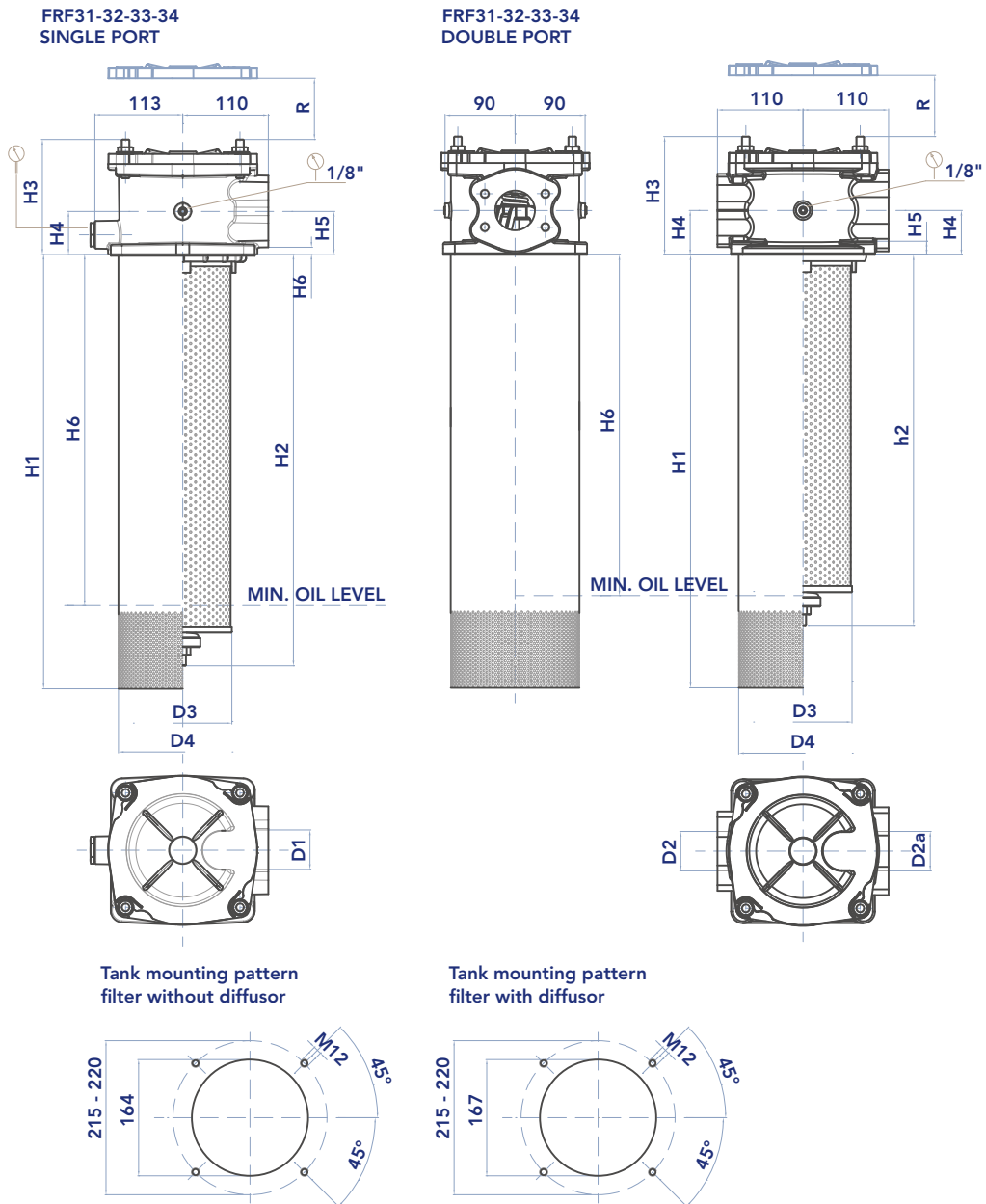
FILTER HOUSING

	D1	D2	D3	D4	H1	H2	H3	H4	H5	H6	H7	R	Kg
FRF22	1" 1/2	1"1/4 ÷ 1"1/2	106	133	250	225	129	50	36	12	150	310	4,20
FRF23	1" 1/2	1"1/4 ÷ 1"1/2	106	133	320	295	129	50	36	12	220	380	4,70
FRF24	1" 1/2	1"1/4 ÷ 1"1/2	106	133	525	500	129	50	36	12	425	580	5,00

FRF3

RETURN FILTERS

INSTALLATION DRAWING



FILTER HOUSING

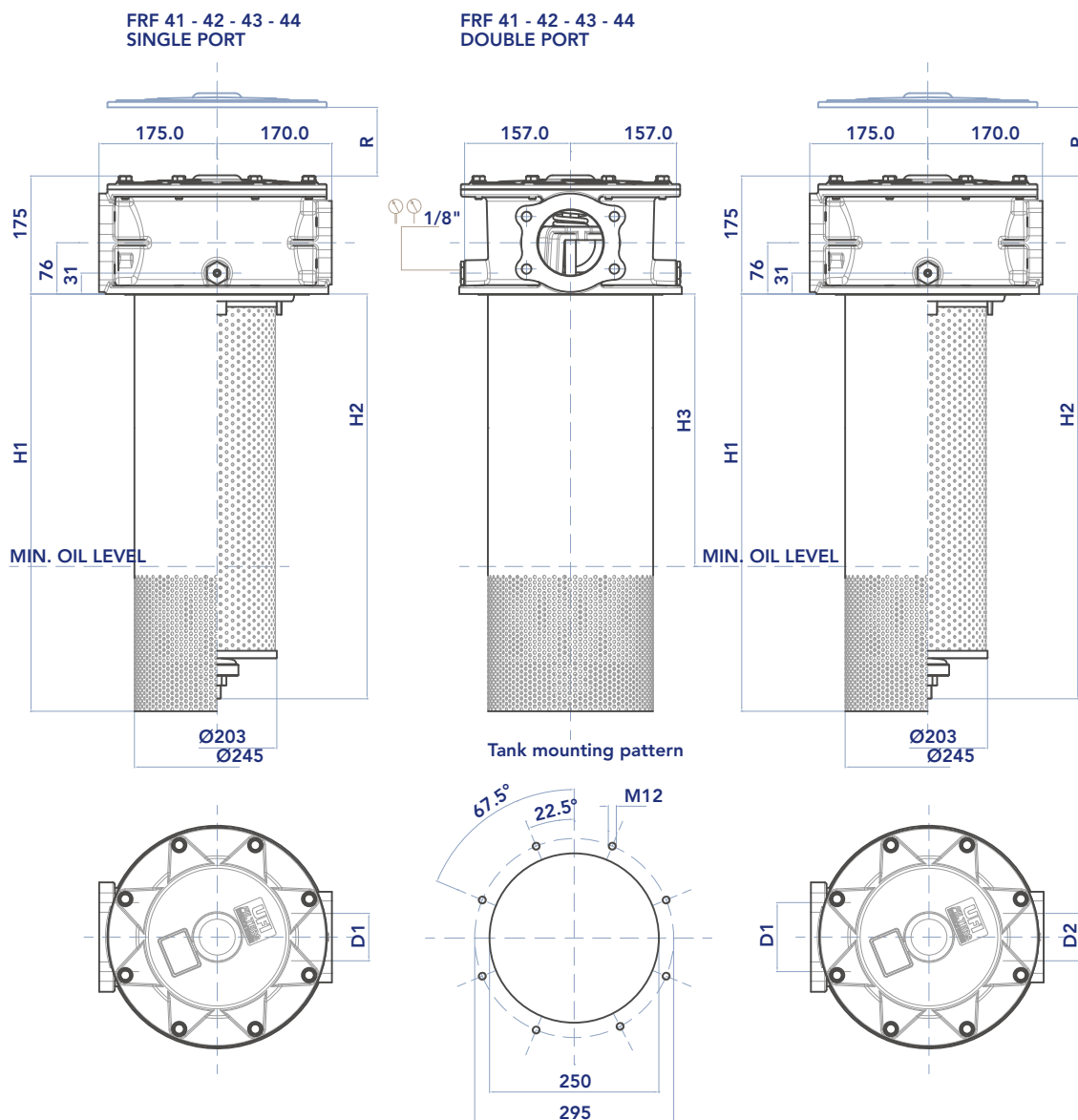
	D1	D2	D2a	D3	D4	H1	H2	H3	H4	H5	H6	R	Kg
FRF31	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	290	260	155	55	14	190	350	8,00
FRF32	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	370	340	155	55	14	270	430	8,40
FRF33	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	470	440	155	55	14	370	580	8,60
FRF34	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	560	530	155	55	14	460	620	9,10

FRF4

RETURN FILTERS



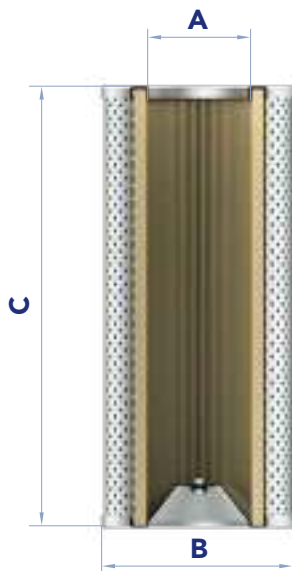
INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	H1	H2	H3	R
FRF41	3"	4"	405	396	205	600
FRF42	3"	4"	620	611	420	810
FRF43	3"	4"	900	891	700	1.090
FRF44	3"	4"	1165	1156	965	1.360

FILTER ELEMENT



FRF1

	A	B	C	Kg	AREA (cm ²)		
					Media F+	Media C+	Media M+
ERF11	45	72	106	0,25	770	1.250	460
ERF12	45	72	150	0,35	1.170	1.800	650
ERF13	45	72	200	0,45	1.570	2.450	880
ERF14	45	72	300	0,60	2.370	3.600	1.320
ERF1X	45	72	500	1,00	3.950	6.000	2.200

FRF2

ERF22	72	106	190	0,75	3.900	4.600	1.500
ERF23	72	106	260	1,00	5.400	6.400	2.050
ERF24	72	106	465	1,50	9.700	11.800	3.670

FRF3

ERF31	92	126	210	1,15	5.500	6.650	2.250
ERF32	92	126	290	1,50	7.700	9.200	3.150
ERF33	92	126	290	1,90	10.400	12.400	4.250
ERF34	92	126	480	2,20	12.800	15.400	5.250

FRF4

ERF41	157	203	330	3,90	17.900	22.100	6.400
ERF42	157	203	545	5,20	30.000	37.000	10.800
ERF43	157	203	825	9,00	45.200	55.500	16.200
ERF44	157	203	1.090	13,00	60.000	74.000	21.800

FRF

RETURN FILTERS

MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the nuts (1) on the cover (2). N.B. it is not necessary to disassemble the nuts, use the slots on the cover. FRF4: Unscrew the screws (1).
- 3) Turn the cover (2) clockwise and remove it. FRF4: remove the cover (2).
- 4) Extract the filter element using the handle (3).
- 5) At the bottom of the element, unscrew the nut (4) from the tie-rod (5) locking the nut (6) with a wrench to prevent rotation of the tie-rod. Remove the spring holder washer (7) and the spring (8).
- 6) Remove the dirty filter element (3) using the handle.
- N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 7) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 8) Check the correct positioning and the condition of the O-ring (10) between the handle and the element. Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 9) Insert the clean element (9) on the tie-rod (5) handling with care.
- 10) Assembly the spring (8), the spring holder (7) and screw the nut (4) on the tie-rod (5) until it stops.
- 11) Check the correct position and the condition of handle O-ring gasket (11). Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 12) Replace the filter element assembly (with the handle) into the housing with the upper spring (12).
- 13) Check the correct positioning and the condition of the O-ring gasket (13) of the cover (2) and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 14) Position the cover (2) and tighten the nuts (1) until it stops.
FRF4: Position the cover (2) and tighten the screws (1) until it stops.

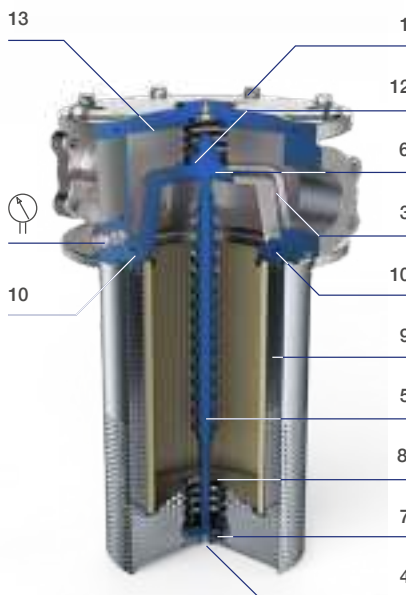
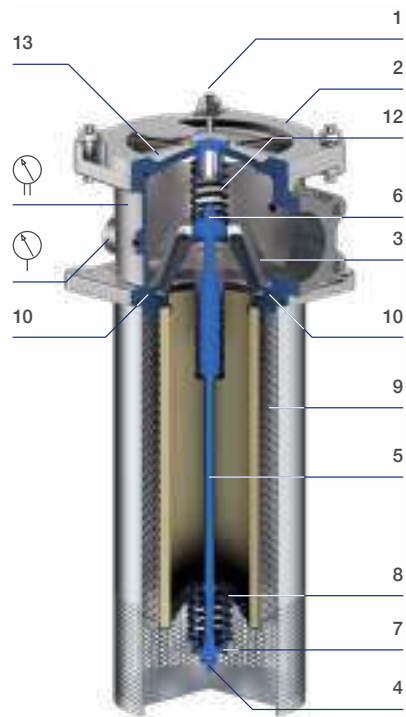
Accessories:

Clogging indicator.

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Indicators with thread M20x1,5: Lubricate the O-ring gaskets and tighten until it stops, with a tightening torque of 40 Nm +5/0.

Indicators with conical thread 1/8": Apply a thread-sealing and screw until tight. N.B. Over-tightening can damage the thread.



FRF

RETURN FILTERS

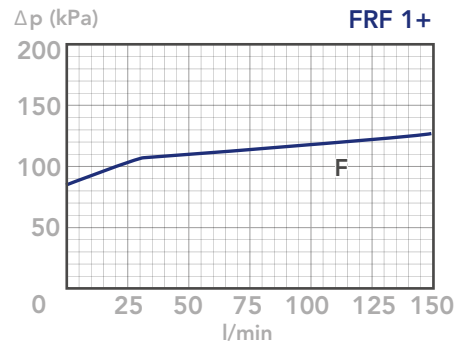
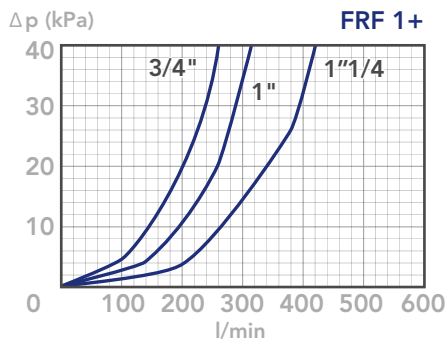
PRESSURE DROP CURVES (ΔP) 1+

The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

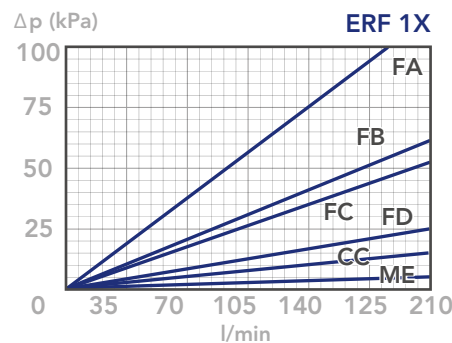
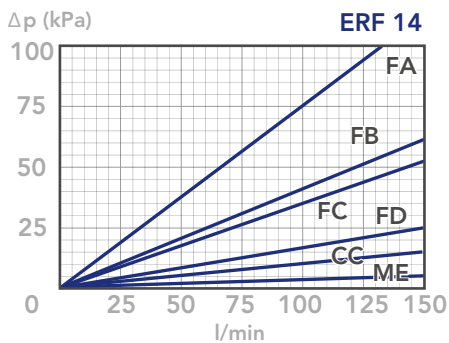
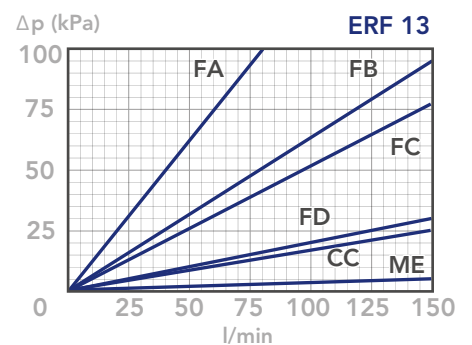
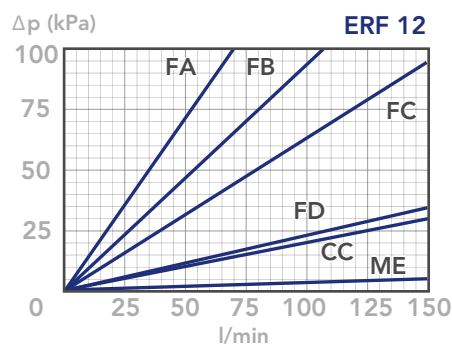
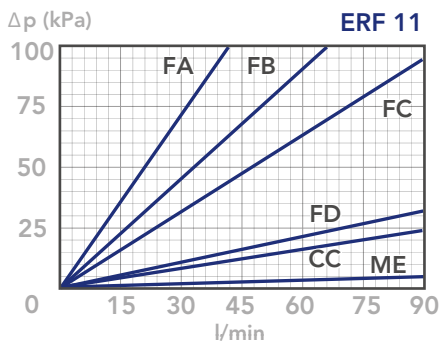
be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

BYPASS VALVE PRESSURE DROP
When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.

FRF

RETURN FILTERS

PRESSURE DROP CURVES (ΔP) 2+

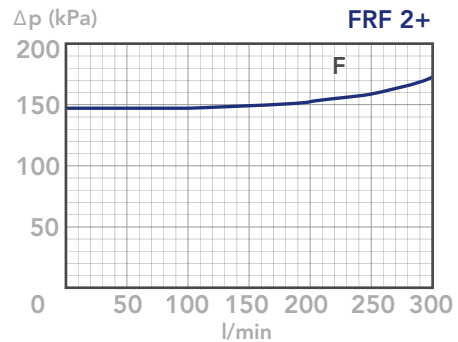
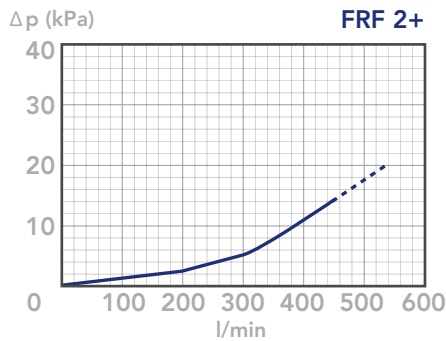
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

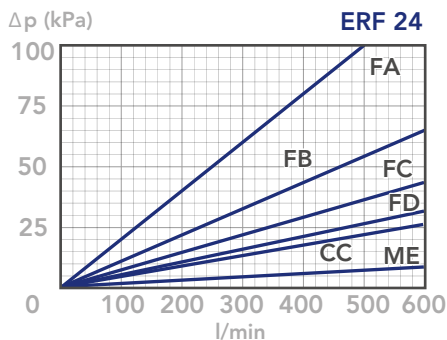
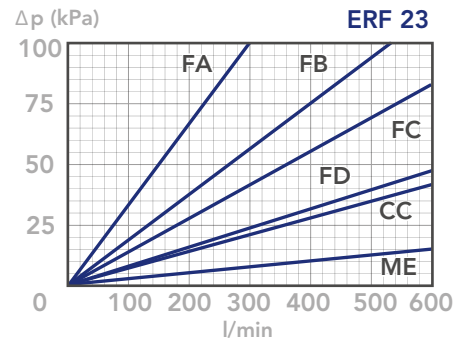
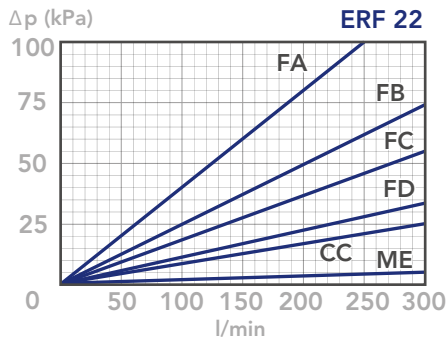
FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.

FRF

RETURN FILTERS

PRESSURE DROP CURVES (ΔP) 3+

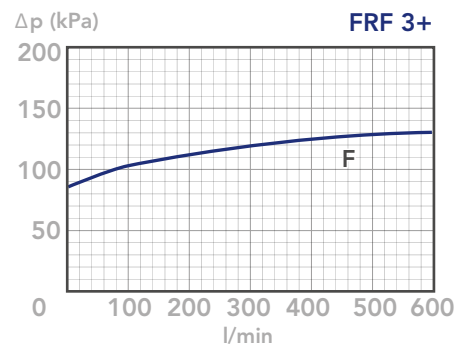
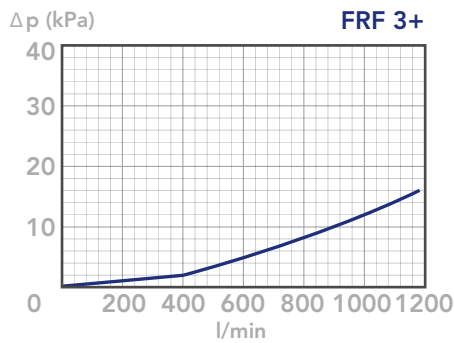
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

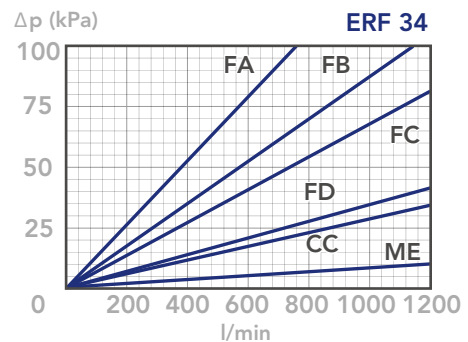
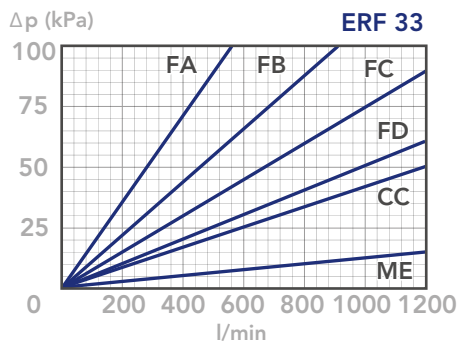
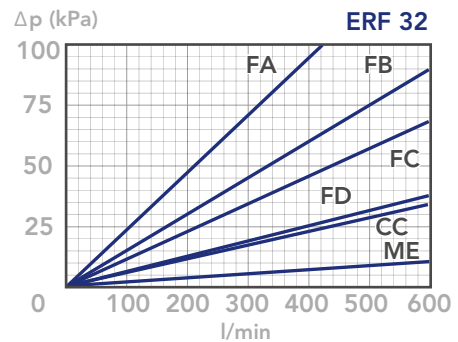
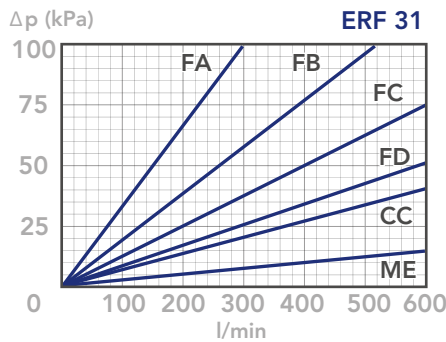
FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.

FRF

RETURN FILTERS



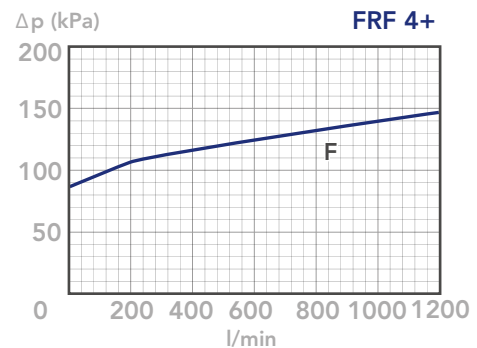
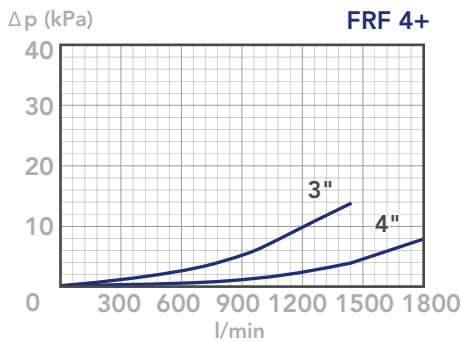
PRESSURE DROP CURVES (ΔP) 4+

The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

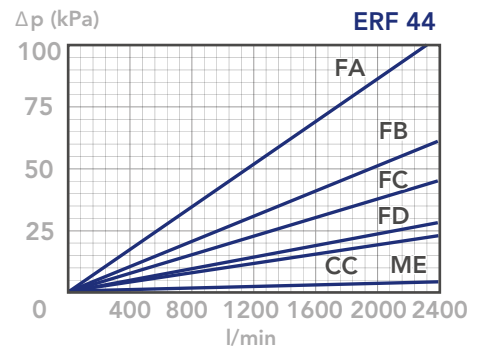
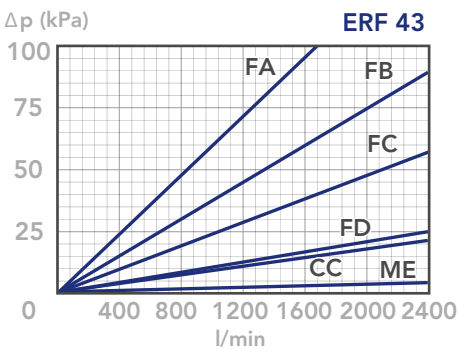
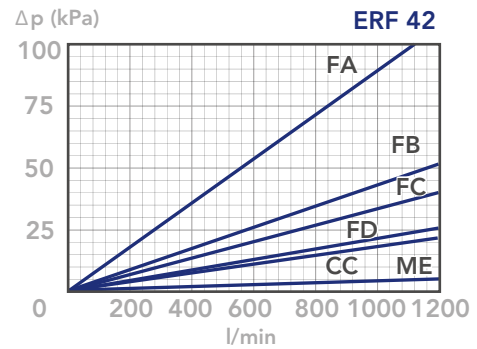
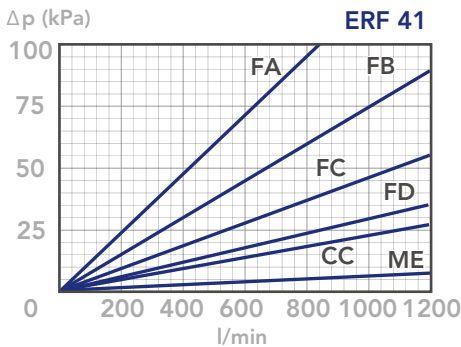
be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

BYPASS VALVE PRESSURE DROP
When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRG

RETURN FILTERS

DESCRIPTION

Tank insert return line filter, inside to outside filtration

MATERIALS

Diffusor: Zinc plated steel
Element support: Polyamide
(aluminum alloy for FRG3+ & 4+)
Magnetic core: Synthesized magnetic material
Seals: NBR Nitrile
FKM Fluoroelastomer on request

PRESSURE

Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 150 kPa (1,5 bar) \pm 10%

FLOW RATE

Qmax 2400 l/min

WORKING TEMPERATURE

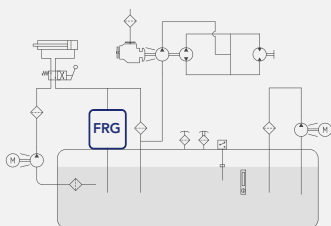
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.



HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website

FRG

RETURN FILTERS



ORDERING AND OPTION CHART

FRG	COMPLETE FILTER FAMILY															FILTER ELEMENT FAMILY	E	R	F	
	SIZE & LENGTH	11	12	13	14	22	23	24	31	32	33	34	41	42	43	44	SIZE & LENGTH			
	T PORT TYPE																			
	T = in the tank	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T	
00	PORT SIZE																			
	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	
	F BYPASS VALVE																			
	F = 150 kPa (1,5 bar)	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
	SEALS															SEALS				
	N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
	F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
	FormulaUFI MEDIA															FormulaUFI MEDIA				
	FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	
	FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	
	FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	
	FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	
	CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	
	ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	
XX	CLOGGING INDICATOR																			
	XX = not applicable	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	
	ACCESSORIES																			
	W = without diffusor	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	
	F = with diffusor	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	
X	ACCESSORIES																			
	W = without magnetic core	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W	
	M = with magnetic core	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	

SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	ACCESSORIES	
			
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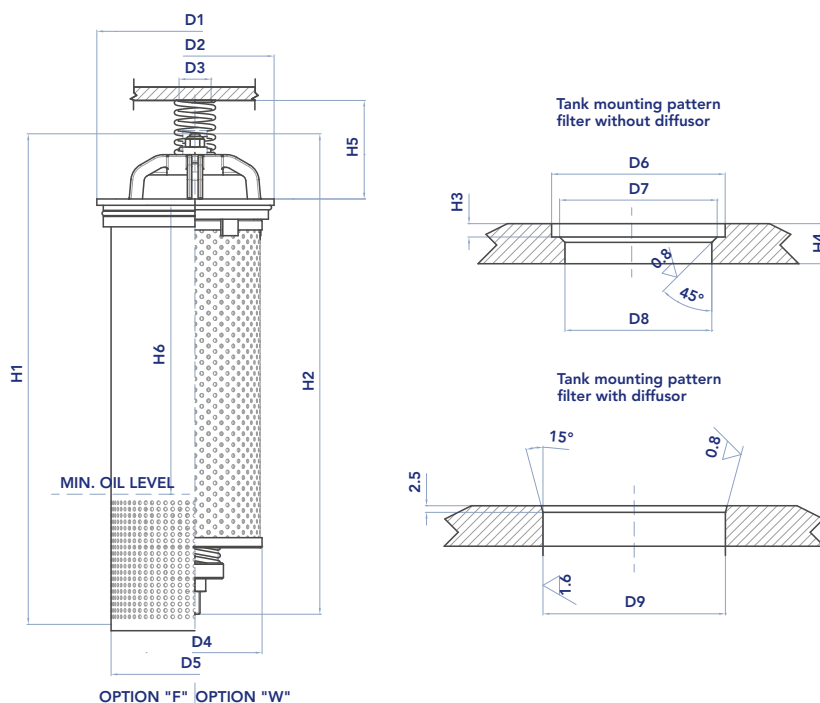
SPARE SEAL KIT

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FRG22-23-24	521.0064.2	521.0068.2
FRG31-32-33-34	521.0065.2	521.0069.2
FRG41-42-43-44	521.0066.2	521.0070.2

SPARE SPRING

FRG11-12-13-14	008.0282.1
FRG22-23-24	008.0269.1
FRG31-32-33-34	008.0275.1
FRG41-42-43-44	008.0283.1

INSTALLATION DRAWING



FILTER HOUSING

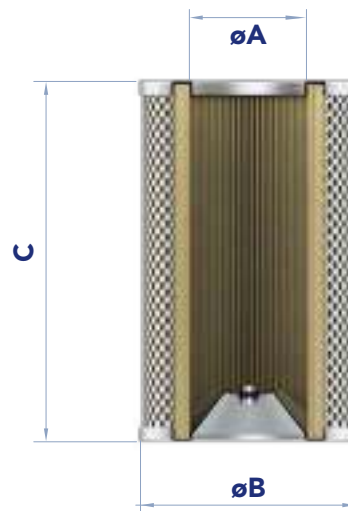
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FRG11	120	87	20	72	89	88	82,5	76	110	245	180	4	12	45	118	1,25	0,70
FRG12	120	87	20	72	89	88	82,5	76	110	245	224	4	12	45	118	1,45	0,90
FRG13	120	87	20	72	89	88	82,5	76	110	295	274	4	12	45	170	1,65	1,00
FRG14	120	87	20	72	89	88	82,5	76	110	395	374	4	12	45	270	2,10	1,30
FRG22	155	125,5	25	106	132	126	123,5	117	145	312	305	5	15	78	150	2,75	1,65
FRG23	155	125,5	25	106	132	126	123,5	117	145	382	375	5	15	78	220	3,20	1,90
FRG24	155	125,5	25	106	132	126	123,5	117	145	587	580	5	15	78	425	4,40	2,50
FRG31	185	150	25	126	165	151	149	139	178	365	351	5	18	100	190	3,85	2,25
FRG32	185	150	25	126	165	151	149	139	178	455	431	5	18	100	270	4,70	2,80
FRG33	185	150	25	126	165	151	149	139	178	555	531	5	18	100	370	5,60	3,20
FRG34	185	150	25	126	165	151	149	139	178	645	619	5	18	100	460	6,20	3,50
FRG41	260	230	40	203	235	231	227	217	250,5	530,5	515	6	20	140	205	10,20	7,20
FRG42	260	230	40	203	235	231	227	217	250,5	745,5	730	6	20	140	420	14,00	9,50
FRG43	260	230	40	203	235	231	227	217	250,5	1025,5	1010	6	20	140	700	20,00	14,00
FRG44	260	230	40	203	235	231	227	217	250,5	1290,5	1275	6	20	140	965	26,00	19,00

FRG

RETURN FILTERS

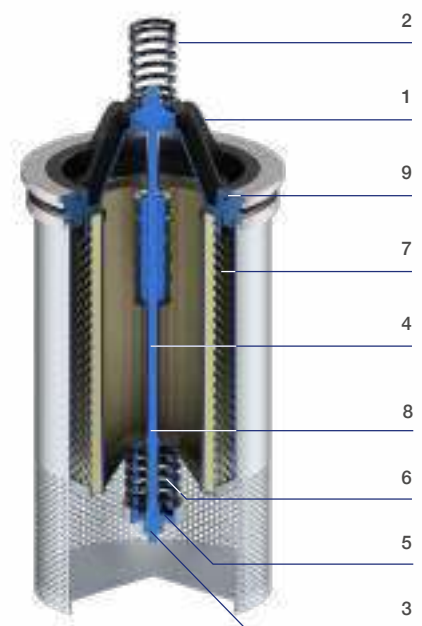
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)		
					Media F+	MediaH+	Media C+
ERF11	45	72	106	0,25	770	1.250	460
ERF12	45	72	150	0,35	1.170	1.800	650
ERF13	45	72	200	0,45	1.570	2.450	880
ERF14	45	72	300	0,60	2.370	3.600	1.320
ERF22	72	106	190	0,75	3.900	4.600	1.500
ERF23	72	106	260	1,00	5.400	6.400	2.050
ERF24	72	106	465	1,50	9.700	11.800	3.670
ERF31	92	126	210	1,15	5.500	6.650	2.250
ERF32	92	126	290	1,50	7.700	9.200	3.150
ERF33	92	126	390	1,90	10.400	12.400	4.250
ERF34	92	126	480	2,20	12.800	15.400	5.250
ERF41	157	203	330	3,90	17.900	22.100	6.400
ERF42	157	203	545	5,20	30.000	37.000	10.800
ERF43	157	203	825	9,00	45.200	55.500	16.200
ERF44	157	203	1090	13,00	60.000	74.000	21.800



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Remove the complete filter by upper handle (1) and if necessary remove the spring (2). Remove the cover (2).
- 3) Unscrew the nut (3) from tie-rod (4) and remove the spring holder (5) and the spring (6).
- 4) Remove the dirty filter element (7).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 6) Lubricate the element O-ring gasket (8) with oil.
- 7) Insert the clean element on the tie-rod (4) with care.
- 8) Assembly the spring (6), spring holder (5) and tighten the nut (3) on the tie-rod (4) until it stops, with a tightening torque of 15 Nm +3/0.
- 9) Check the handle O-ring (9) condition and lubricate with oil. If damaged, check the catalogue or contact the customer care service.
- 10) Insert the complete filter into its seat.



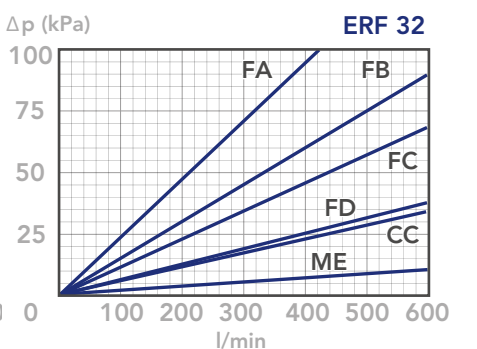
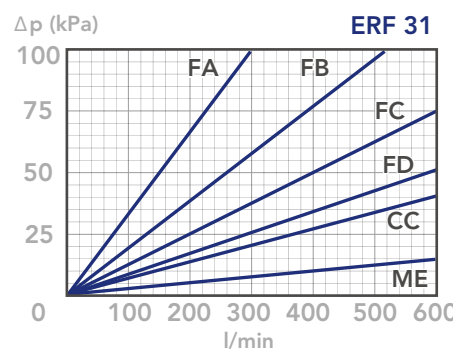
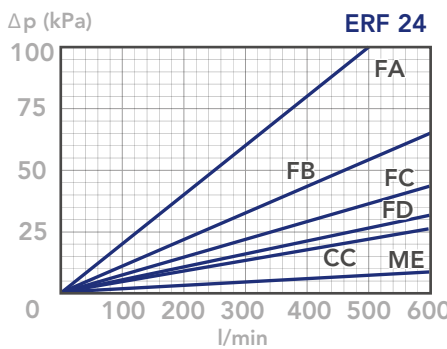
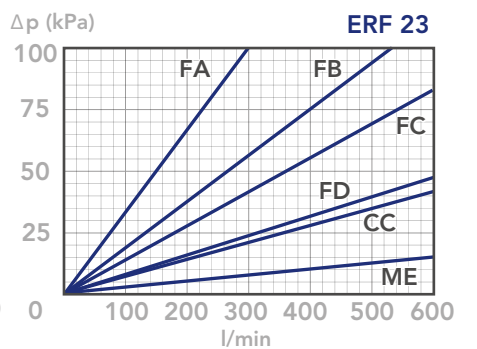
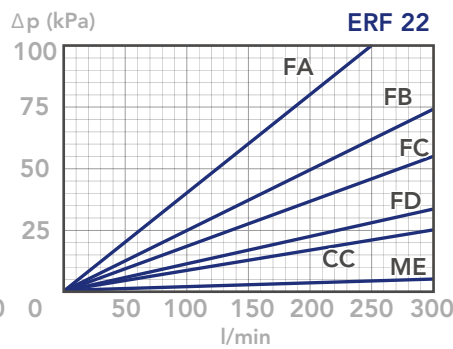
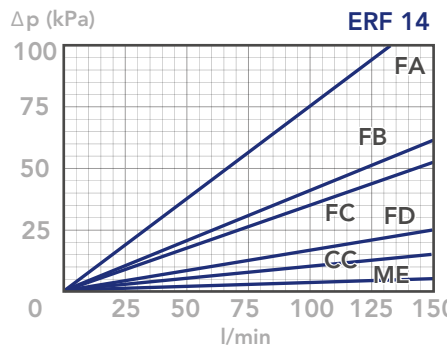
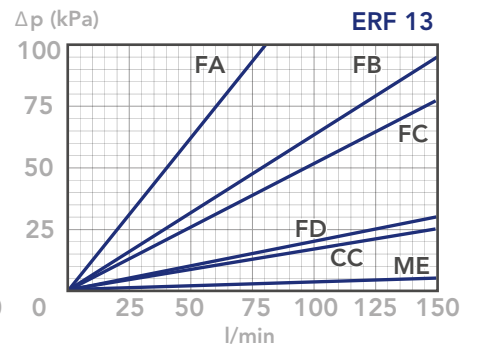
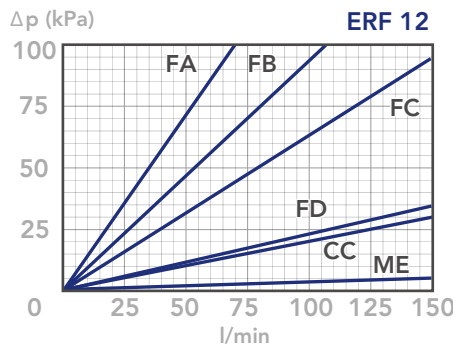
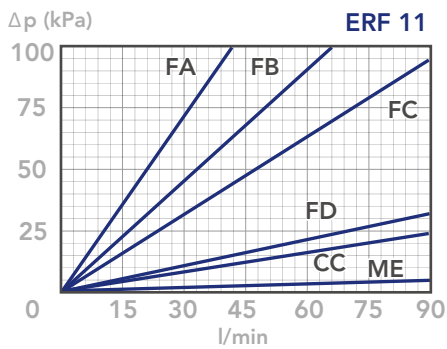


PRESSURE DROP CURVES (Δp)

The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow

Rate and it must be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

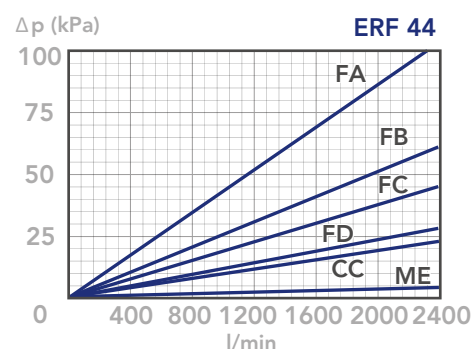
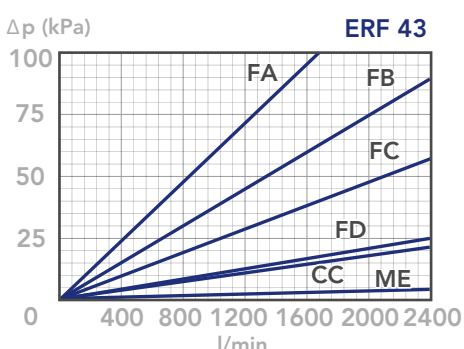
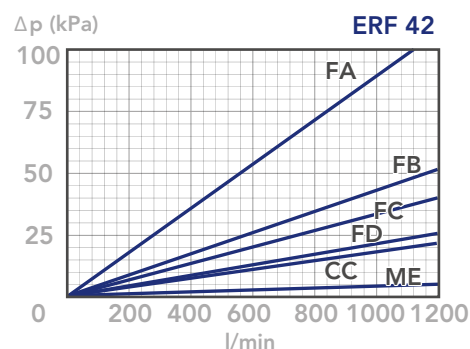
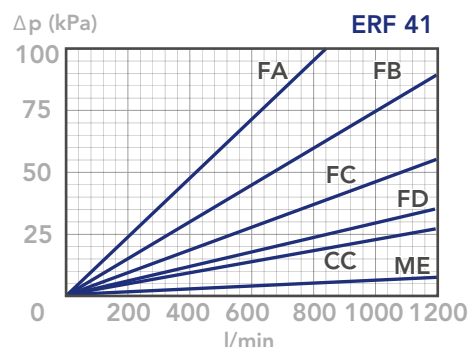
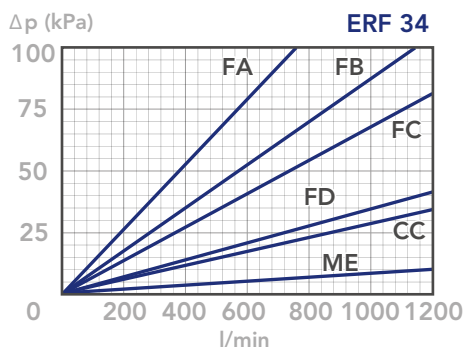
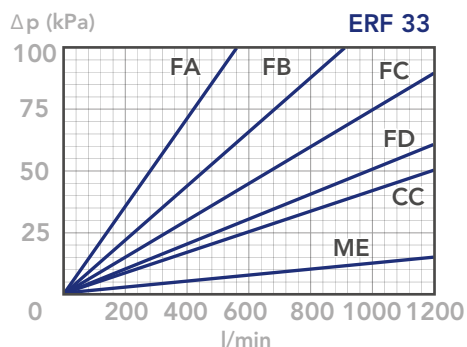
CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, CC AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



FRG

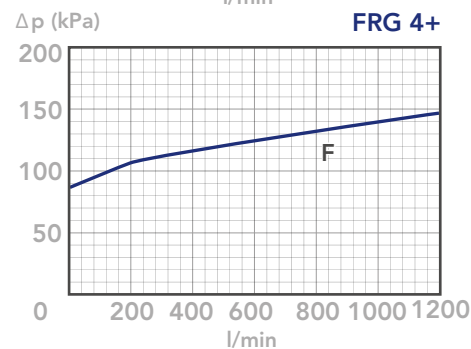
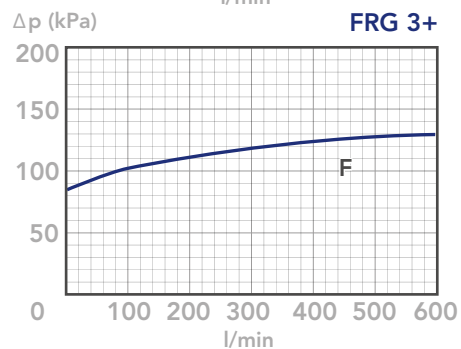
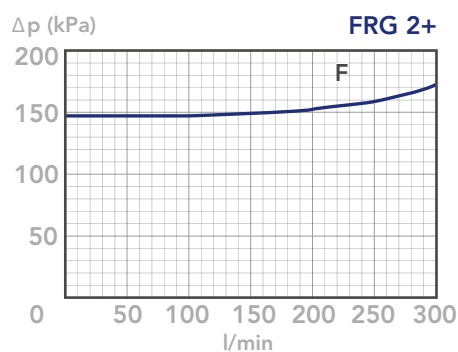
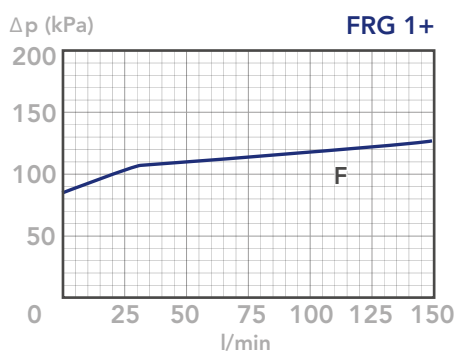
RETURN FILTERS

CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, CC AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FRH

RETURN FILTERS



DESCRIPTION

Tank top return filter

MATERIALS

Head and cover: Aluminum alloy
Bowl: Polyamide
Bypass valve: Polyamide
Seals: NBR Nitrile
FKM Fluoroelastomer on request
Indicator housing: Brass

PRESSURE

Max working: 300 kPa (3 bar)
Collapse, differential for the filter element (ISO 2941):
300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 200 l/min

WORKING TEMPERATURE

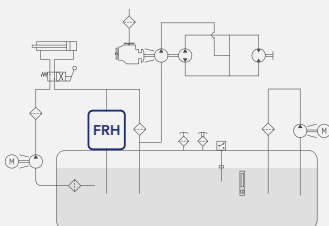
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned, please contact
our Customer Service.



HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website



ORDERING AND OPTION CHART

F	R	H	COMPLETE FILTER FAMILY			FILTER ELEMENT FAMILY	E	R	A
			SIZE & LENGTH	41	42	SIZE & LENGTH			
		P	PORT TYPE						
			P = SAE flange 3000 psi, double port	P	P				
12			PORT SIZE						
			12 = 1"1/2	12	12				
		B	BYPASS VALVE						
			B = 170 kPa (1,7 bar)	B	B				
			SEALS			SEALS			
			N = NBR Nitrile	N	N				
			F = FKM Fluoroelastomer	F	F				
			FormulaUFI MEDIA			FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD				
			ME = FormulaUFI.WEB 60 μm	ME	ME				
			CLOGGING INDICATOR (**)						
			05 = nr. 2 x 1/8" ports, plugged	05	05				
			30 = pressure gauge, rear connection	30	30				
			P1 = SPDT, pressure switch	P1	P1				
			ACCESSORIES						
			W = without	W	W				
			P = with filling plug	P	P				
		X	ACCESSORIES						
			X = no other accessory available	X	X				

SPARE SEAL KIT

	NBR	FKM
FRH31 - 32 - 33 - 41 - 42	521.0022.2	521.0059.2

SPARE SPRING

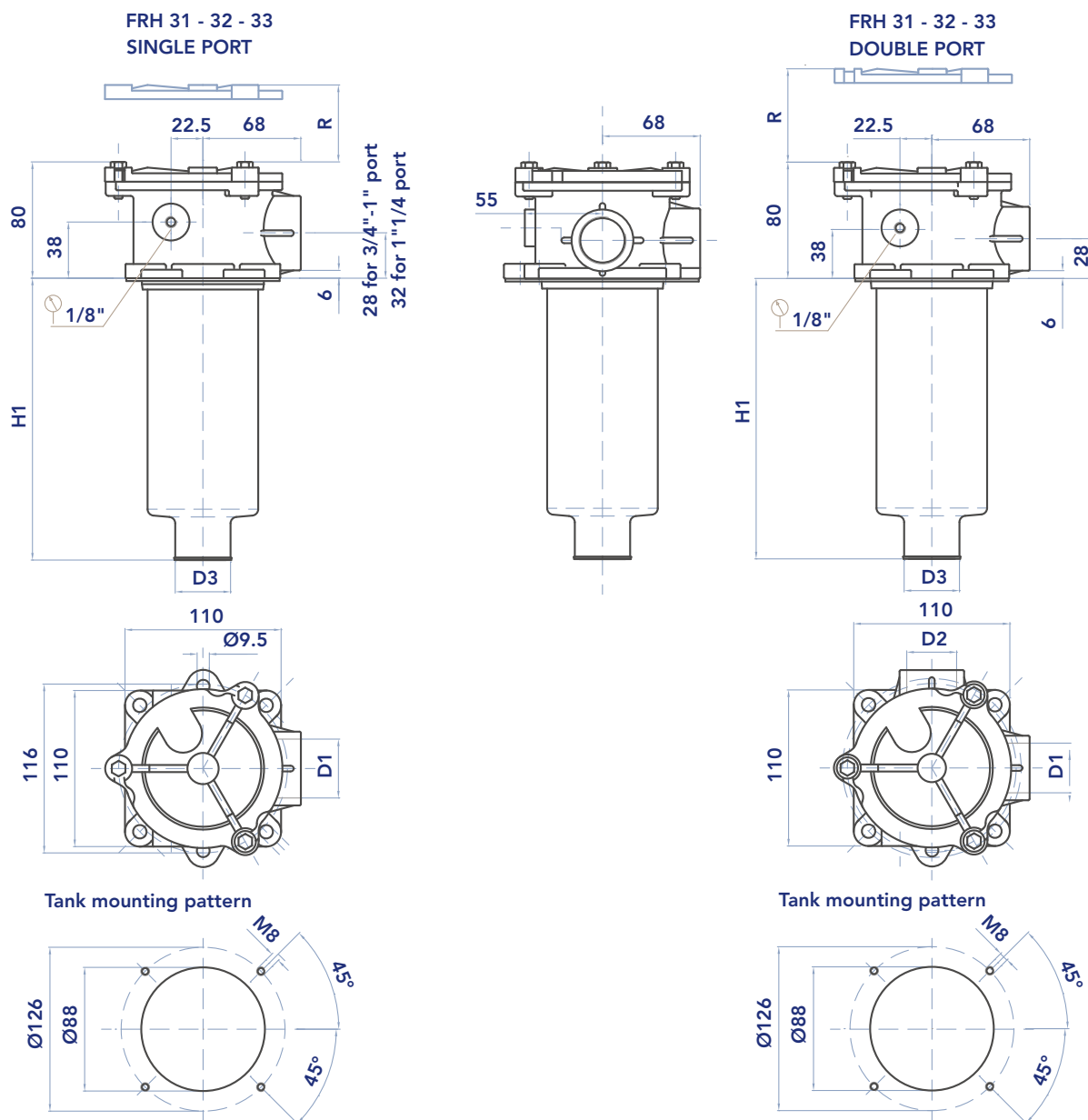
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FRH

RETURN FILTERS



INSTALLATION DRAWING



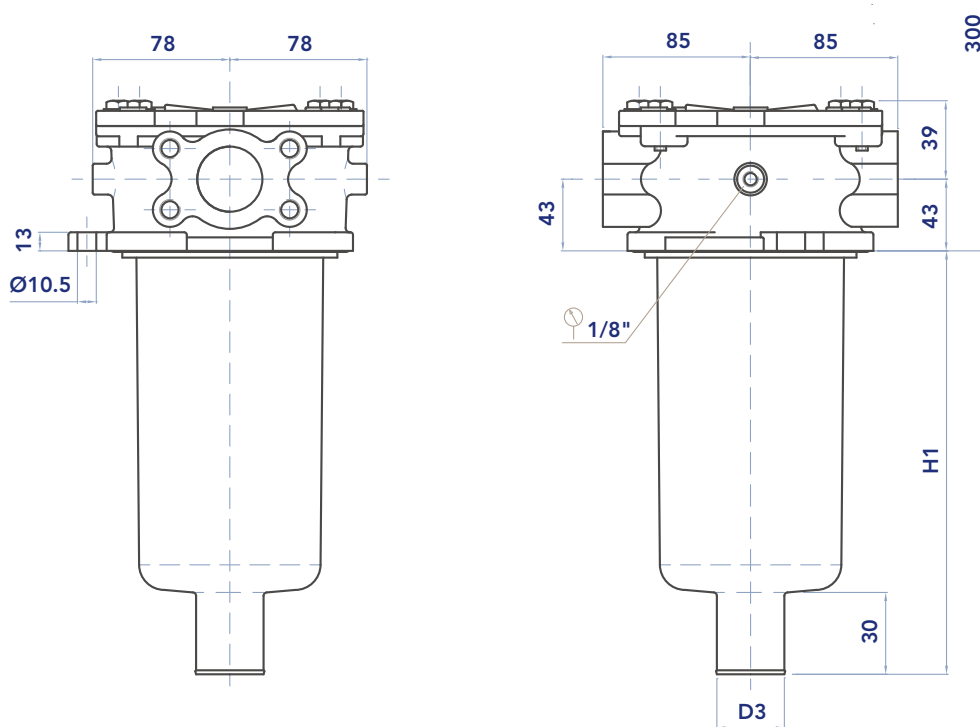
FILTER HOUSING

	D1	D2	D3	H1	R	Kg
FRH31	3/4" - 1" - 1" / 4	1"	27	106	165	0,95
FRH32	3/4" - 1" - 1" / 4	1"	27	152	205	1,10
FRH33	3/4" - 1" - 1" / 4	1"	40	235	285	1,25

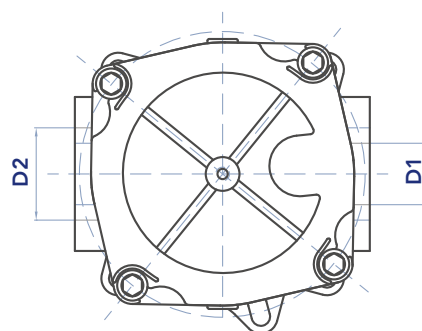
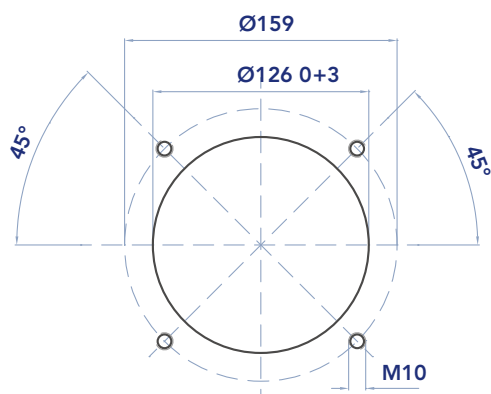


INSTALLATION DRAWING

FRH 41 - 42



Tank mounting pattern



FILTER HOUSING

	D1	D2	D3	H1	R	Kg
FRH41	1"1/2	1"1/2	40	248	289	2,40
FRH42	1"1/2	1"1/2	40	265	306	2,60

FRH

RETURN FILTERS



FILTER ELEMENT

	AREA (cm ²)			Kg	Media F+	Media C+	Media M+
	A	B	C				
ERA31	70	28	85	0,20	620	990	460
ERA32	70	28	130	0,25	1.000	1.600	740
ERA33	70	40	210	0,40	1.660	2.670	1.220
ERA41	99	40	211	0,75	3.800	4.280	1.900
ERA42	99	40	250	0,90	4.550	5.100	2.270



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
 - 2) Loosen the nuts (1) until the cover (2) is free to rotate clockwise.
 - 3) Remove the cover (2) and the spring (3) below.
 - 4) Extract the filter element using the handle (3).
Remove the dirty filter element (4) using the handle.
- N.B. The exhausted filter elements and the dirty filter components are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorised Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
 - 6) Lubricate the new element O-ring gasket (5) with oil.
 - 7) Place the clean element into its seat, handling with care.
 - 8) Re-assembly the spring (3).
 - 9) Check the cover O-ring condition (6) and lubricate with oil. If damaged, check the part number of the seal kit in the catalogue or contact the customer care service.
 - 10) Re-assembly the cover (2) and tighten the screws (1).

Accessories:

Clogging indicator.

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Apply a thread-sealing and screw until tight. N.B. An overtightening can damage the thread.



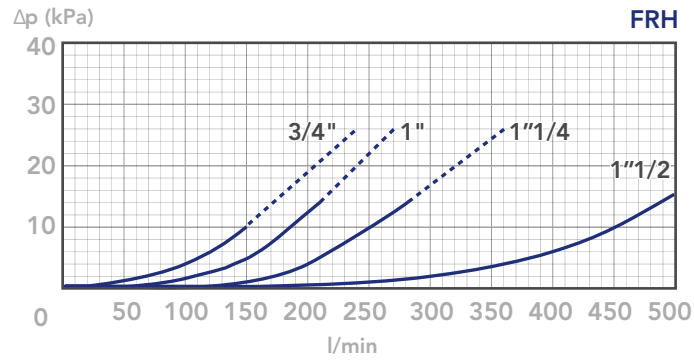


PRESSURE DROP CURVES (Δp)

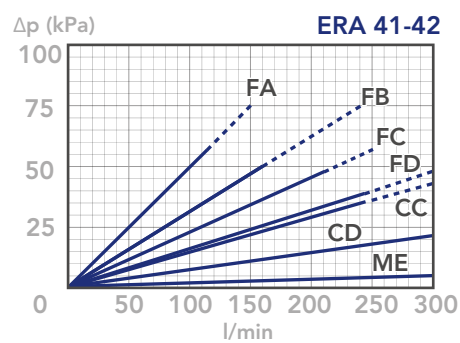
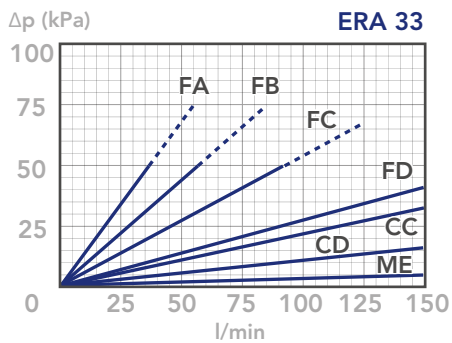
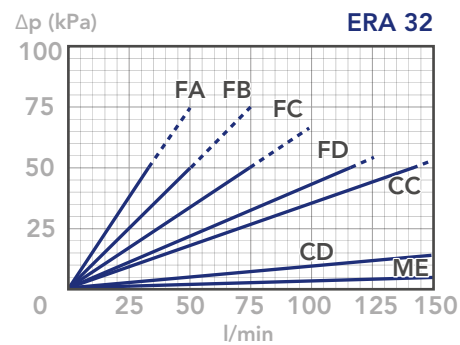
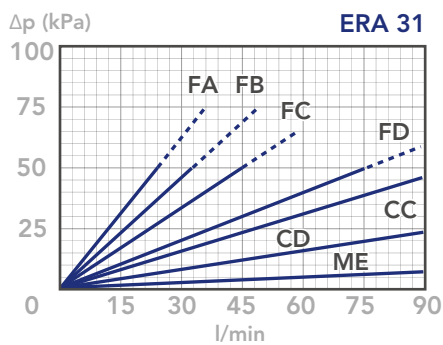
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



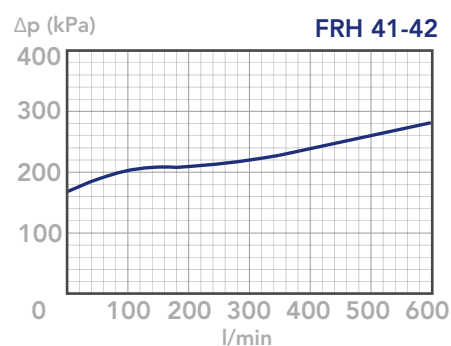
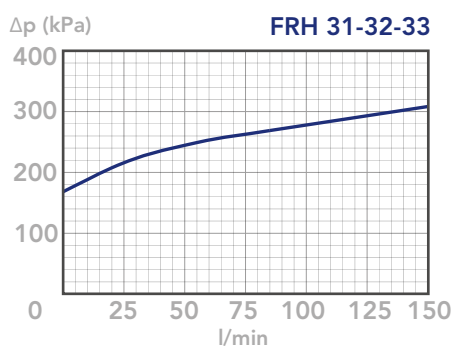
FRH

RETURN FILTERS



BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



GRF

RETURN FILTERS



DESCRIPTION

Ecofriendly in-out tank top return filter

MATERIALS

Head and cover: Aluminum alloy
Diffusor: Zinc plated steel
Element support: Aluminum alloy
Magnetic core: Syntherized magnetic material
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 1 MPa (10 bar)
Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 1200 l/min

WORKING TEMPERATURE

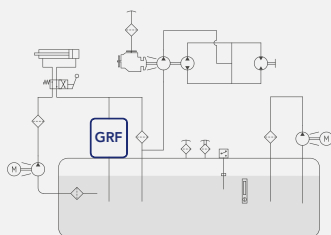
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned, please contact
our Customer Service.



HYDRAULIC DIAGRAM



Is this datasheet the latest release? Please check on our website

GRF

RETURN FILTERS

ORDERING AND OPTION CHART

G	R	F	COMPLETE FILTER FAMILY		FILTER ELEMENT FAMILY	I	R	F
			SIZE & LENGTH	34	SIZE & LENGTH			
			PORT TYPE					
			F = SAE flange 3000 psi	F				
			PORT SIZE					
			16 = 2"	16				
			20 = 2"1/2	20				
		F	BYPASS VALVE					
			F = 170 kPa (1,7 bar)	F				
			SEALS		SEALS			
			N = NBR Nitrile	N				
			F = FKM Fluoroelastomer	F				
			FormulaUFI MEDIA		FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD				
			CLOGGING INDICATOR (**)					
			05 = nr. 2 x 1/8" ports, plugged	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30				
			P4 = SPDT, pressure switch	P4				
			03 = port for differential indicator, plugged	03				
			5B = visual differential 130 kPa (1,3 bar)	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B				
			7B = indicator 6B with LED	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0				
			ACCESSORIES					
			W = without accessory	W				
			F = with diffusor	F				
			ACCESSORIES					
			W = without accessory	W				
			M = magnetic core	M				

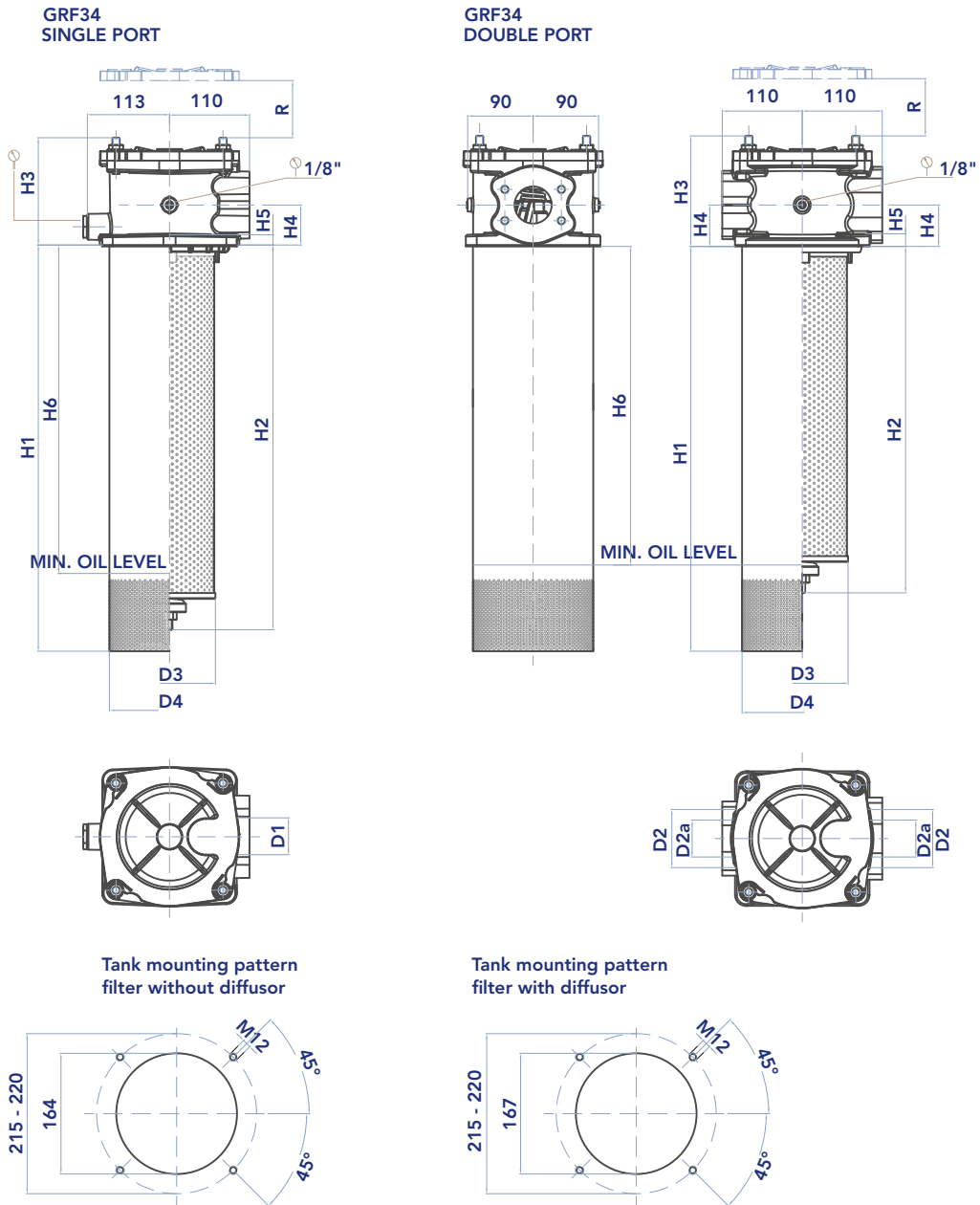
** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR				ACCESSORY							
																			
G	R	F		B				X				I	R	F					



INSTALLATION DRAWING



FILTER HOUSING

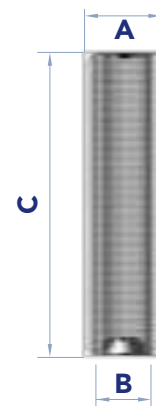
	D1	D2	D2a	D3	D4	H1	H2	H3	H4	H5	H6	R	Kg
GRF34	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	543	530	155	55	14	460	620	9,10

GRF

RETURN FILTERS

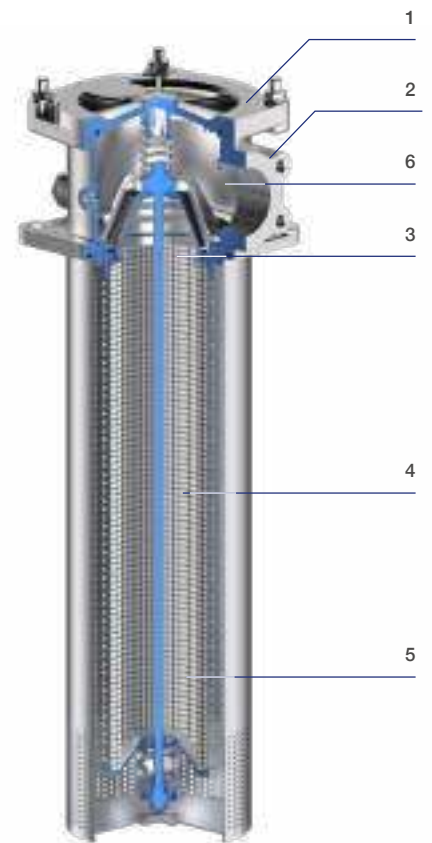
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)
					Media F+
IRF34	90	120,8	480	0,75	10.810



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the nuts (1) on the cover (2). N.B. it is not necessary to disassemble the nuts, use the slots on the cover.
- 3) Turn the cover (2) clockwise and remove it.
- 4) Extract the filter element using the handle (3).
- 5) At the bottom of the element, unscrew the nut (4) from the tie-rod (5) locking the nut (6) with a wrench to prevent rotation of the tie-rod. Remove the spring holder washer (7) and the spring (8).
- 6) Remove the dirty filter element (9).
N.B. The exhausted filter elements and the dirty filter components are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 7) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 8) Insert the clean element (9) in the perforated pipe (10) until it stops on lower cap (10a).
- 9) Assembly the spring (8), the spring holder (7) and screw the nut (4) on the tie-rod (5) until it stops.
- 10) Check the correct position and the condition of handle O-ring gasket (11). Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 11) Replace the filter element assembly (with the handle) into the housing with the upper spring (12).
- 12) Check the correct positioning and the condition of the O-ring gasket (13) of the cover (2) and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 13) Position the cover (2) and tighten the nuts (1) until it stops.



Accessories:

Clogging indicator

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Indicators with thread M20x1,5: Lubricate the O-ring gaskets and tighten until it stops, with a tightening torque of 40 Nm +5/0.

Indicators with conical thread 1/8": Apply a thread-sealing and screw until tight. N.B. An over-tightening can damage the thread.



PRESSURE DROP CURVES (ΔP)

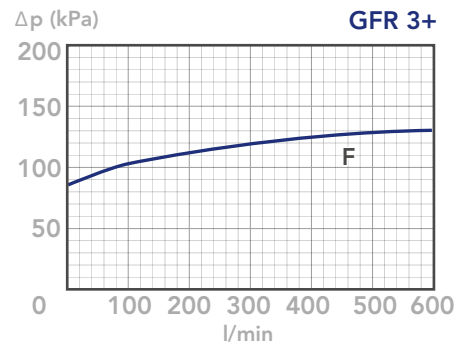
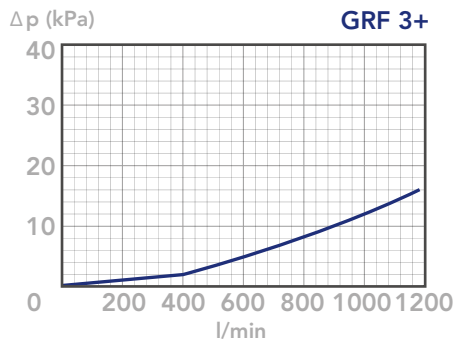
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

Rate and it must be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

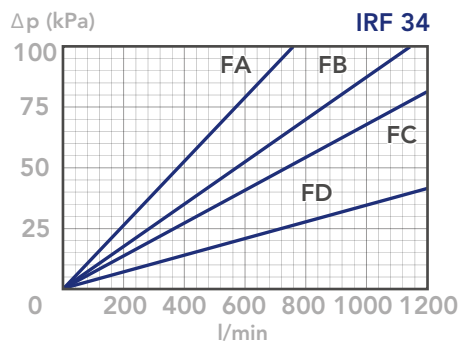
BYPASS VALVE PRESSURE DROP

When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ MEDIA

(depending both on the internal diameter of the element and on the filter media)



N.B.

All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.

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