



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

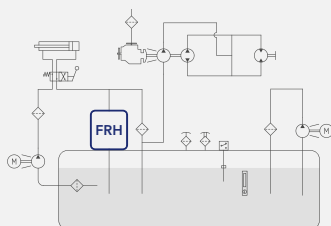
From -25° to +110° C

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.



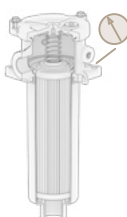
HYDRAULIC DIAGRAM



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

FRH
RETURN FILTERS

F	R	H	COMPLETE FILTER FAMILY	FILTER ELEMENT FAMILY			E	R	A
			SIZE & LENGTH	31	32	33	SIZE & LENGTH		
			PORT TYPE						
			B = BSP thread	B	B	B			
			A = BSP thread (double port A08 only)	A	A	A			
			N = NPT thread	N	N	N			
			S = SAE thread	S	S	S			
			PORT SIZE						
			06 = 3/4"	06	06	06			
			08 = 1"	08	08	08			
			10 = 1"1/4	10	10	10			
		B	BYPASS VALVE						
			B = 170 kPa (1,7 bar)	B	B	B			
			SEALS				SEALS		
			N = NBR Nitrile	N	N	N			
			F = FKM Fluoroelastomer	F	F	F			
			FormulaUFI MEDIA				FormulaUFI MEDIA		
			FA = FormulaUFI.MICRON 5 µm _(c) β>1.000	FA	FA	FA			
			FB = FormulaUFI.MICRON 7 µm _(c) β>1.000	FB	FB	FB			
			FC = FormulaUFI.MICRON 12 µm _(c) β>1.000	FC	FC	FC			
			FD = FormulaUFI.MICRON 21 µm _(c) β>1.000	FD	FD	FD			
			CC = FormulaUFI.CELL 10 µm β>2	CC	CC	CC			
			CD = FormulaUFI.CELL 25 µm β>2	CD	CD	CD			
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME			
			CLOGGING INDICATOR						
			05 = nr. 2 x 1/8"ports, plugged	05	05	05			
			30 = pressure gauge, rear connection	30	30	30			
			P1 = SPDT, pressure switch	P1	P1	P1			
			ACCESSORIES						
			W = without	W	W	W			
			P = with filling plug	P	P	P			
		X	ACCESSORIES						
			X = no other accessory available	X	X	X			

FILTER HOUSING										FILTER ELEMENT										CLOGGING INDICATOR										ACCESSORY																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
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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						
			A = BSP thread, double port (A10 only)	A	A				
			R = NPT flange, double port (R10 only)	R	R				
			P = SAE flange 3000 psi, double port (P12 only)	P	P				
			PORT SIZE						
			10 = 1" 1/4 (only A and R option)	10	10				
			12 = 1" 1/2 (only P option)	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
FRH3	521.0022.2	521.0059.2
FRH4	521.0060.2	521.0061.2

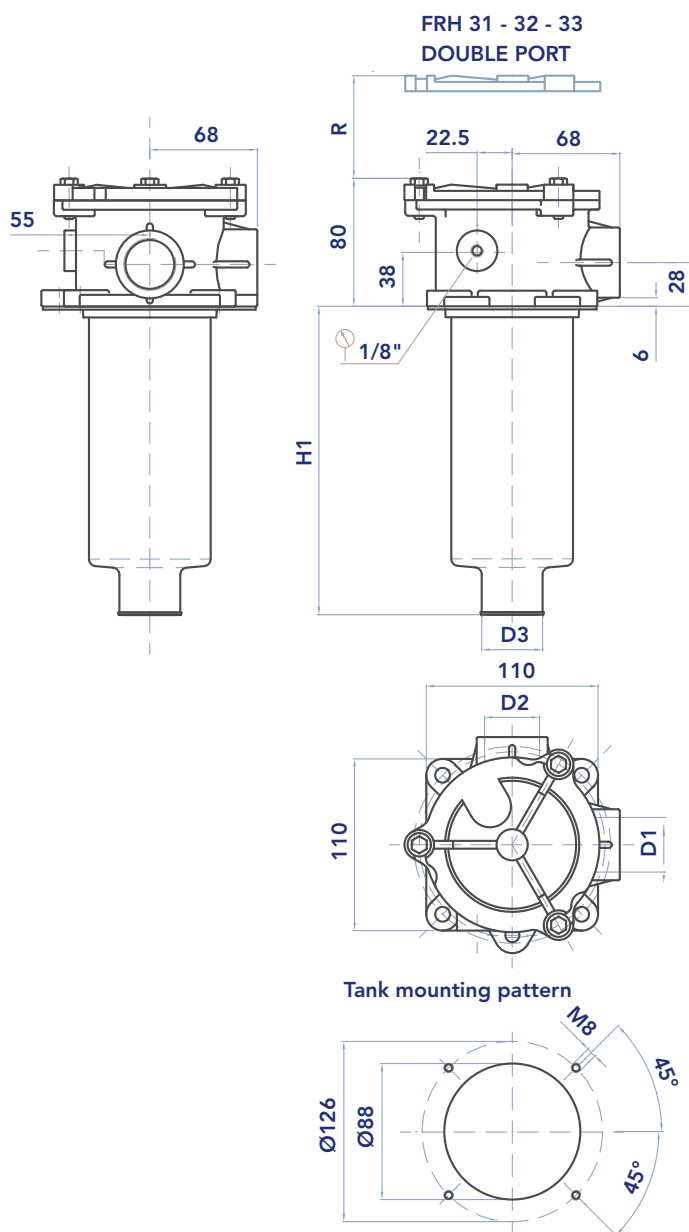
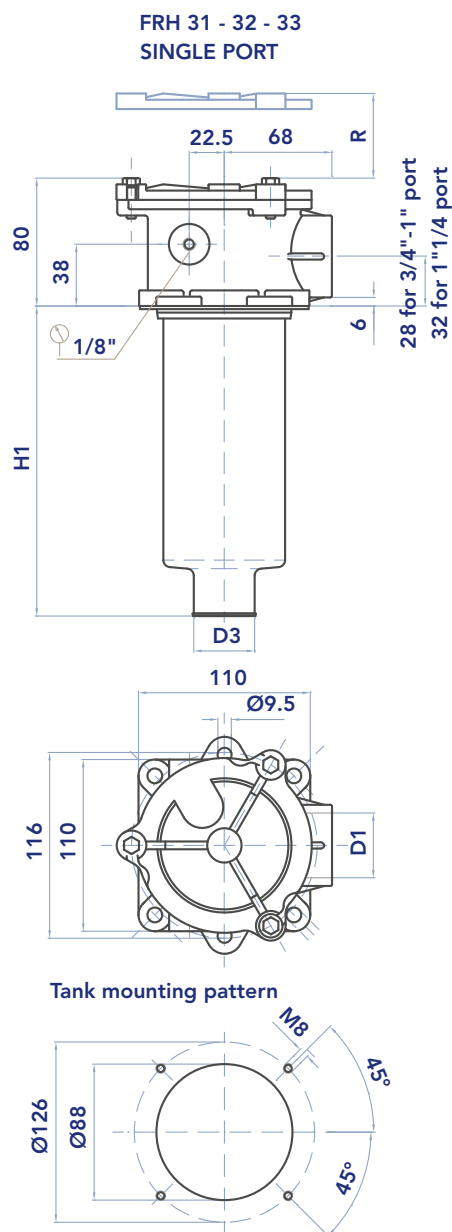
SPARE SPRING

FRH3	522.0002.2
FRH4	522.0003.2

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RETURN FILTERS

INSTALLATION DRAWING



FILTER HOUSING

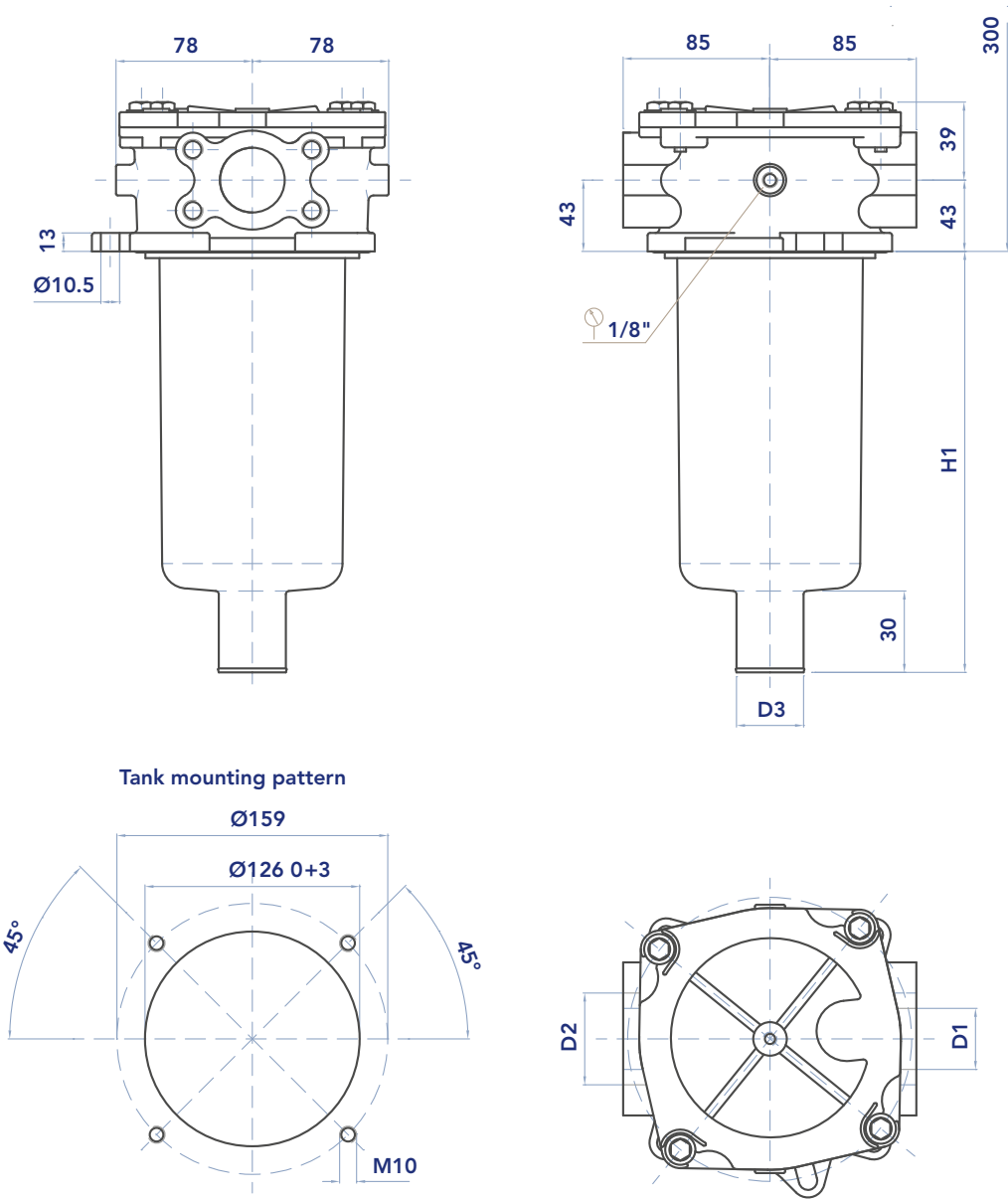
	D1	D2	D3	H1	R	Kg
FRH31	3/4" - 1" - 1" / 4	1"	27	106	165	0,95
FRH32	3/4" - 1" - 1" / 4	1"	27	152	205	1,10
FRH33	3/4" - 1" - 1" / 4	1"	40	235	285	1,25

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RETURN FILTERS

INSTALLATION DRAWING

FRH 41 - 42



FILTER HOUSING

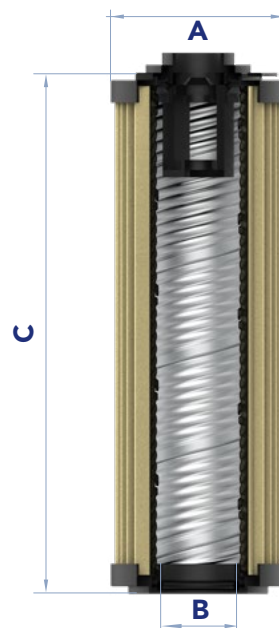
	D1	D2	D3	H1	R	Kg
FRH41	BSP thread - NPT flange 1"1/4 SAE flange 3000 psi 1"1/2	BSP thread - NPT flange 1"1/4 SAE flange 3000 psi 1"1/2	40	248	289	2,40
FRH42	BSP thread - NPT flange 1"1/4 SAE flange 3000 psi 1"1/2	BSP thread - NPT flange 1"1/4 SAE flange 3000 psi 1"1/2	40	265	306	2,60

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FILTER ELEMENT

	AREA (cm ²)						
	A	B	C	Kg	Media F+	Media C+	Media M+
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

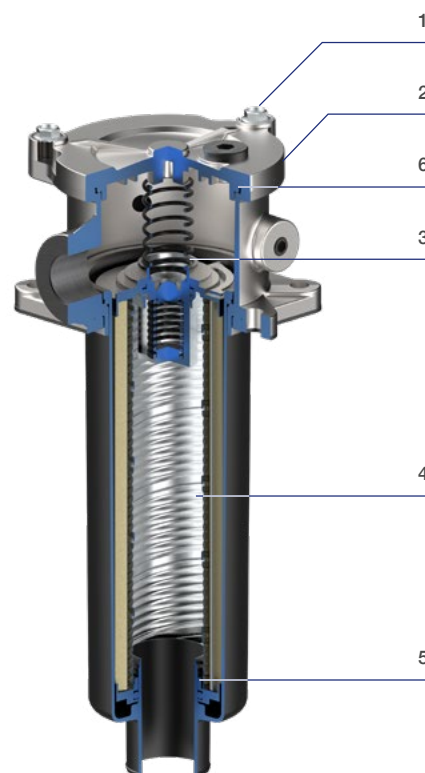
- 1) Stop the system and verify there is no pressure in the filter.
 - 2) Loosen the nuts (1) until the cover (2) is free to rotate clockwise.
 - 3) Remove the cover (2) and the spring (3) below.
 - 4) Extract the filter element using the handle (3).
- Remove the dirty filter element (4) using the handle.
- 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.



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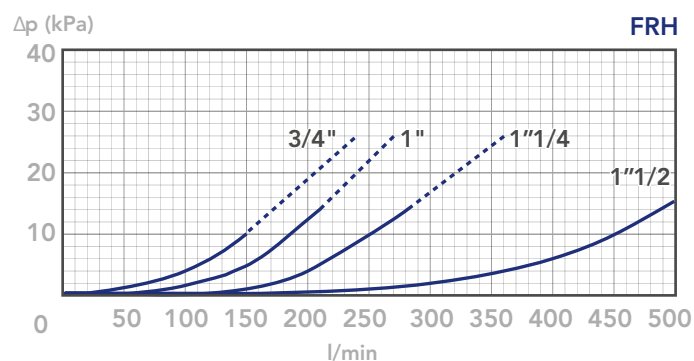
RETURN FILTERS

PRESSURE DROP CURVES (ΔP)

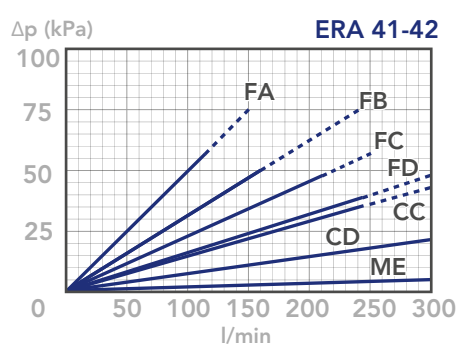
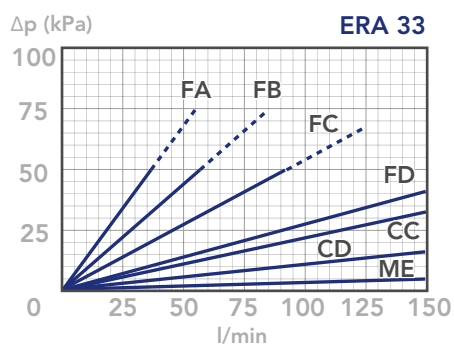
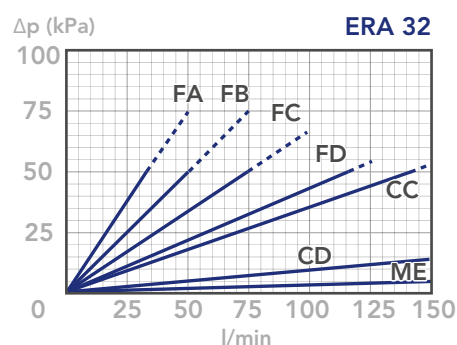
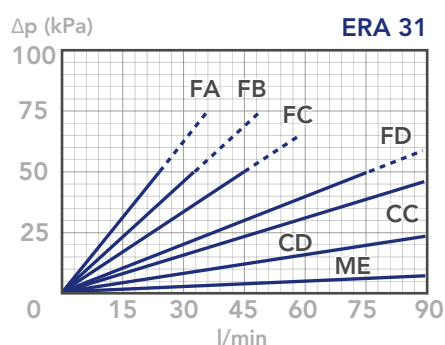
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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)



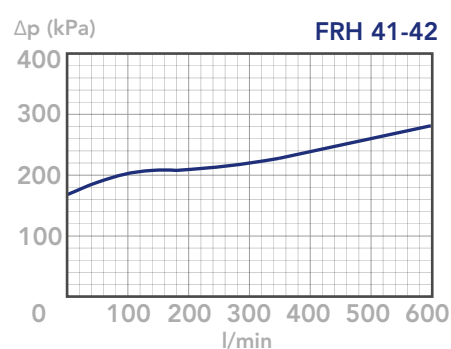
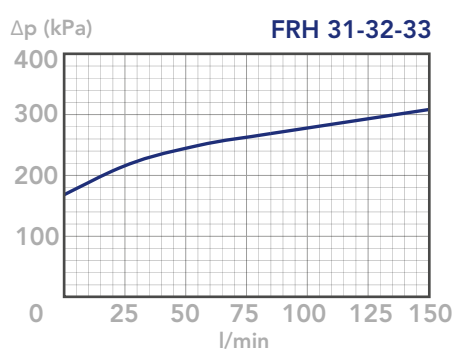
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BYPASS VALVE PRESSURE DROP

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.