



# 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

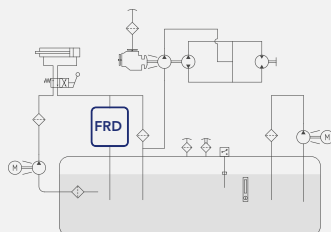
From -25° to +110° C

### 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



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

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### ORDERING AND OPTION CHART

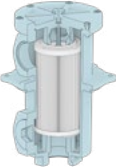
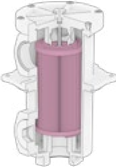
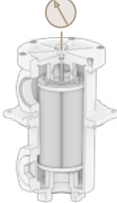
F	R	D	COMPLETE FILTER FAMILY	11	21	31	41	51	61	62	FILTER ELEMENT FAMILY	E	R	D
			<b>SIZE &amp; LENGTH</b>								<b>SIZE &amp; LENGTH</b>			
			<b>PORT TYPE</b>											
			B = BSP thread	B	B	B	B	B	-	-				
			N = NPT thread	N	N	N	N	N	-	-				
			S = SAE thread	S	S	S	S	S	-	-				
			F = SAE flange 3000 psi, metric screw	-	-	F	F	F	F	F				
			<b>PORT SIZE</b>											
			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				
			<b>BYPASS VALVE</b>											
			W = without	W	W	W	W	W	W	W				
			D = 300 kPa (3 bar)	D	D	D	D	D	D	D				
			<b>SEALS</b>								<b>SEALS</b>			
			N = NBR Nitrile	N	N	N	N	N	N	N				
			G = Treatment for water-glycol	G	G	G	G	G	G	G				
			<b>FormulaUFI MEDIA</b>								<b>FormulaUFI MEDIA</b>			
			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 $\mu\text{m}$ $\beta > 2$	CC	CC	CC	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 $\mu\text{m}$ $\beta > 2$	CD	CD	CD	CD	CD	CD	CD				
			MD = FormulaUFI.WEB 25 $\mu\text{m}$	MD	MD	MD	MD	MD	MD	MD				
			ME = FormulaUFI.WEB 60 $\mu\text{m}$	ME	ME	ME	ME	ME	ME	ME				
			WR = FormulaUFI.H2O (*)	-	-	WR	WR	WR	WR	WR				
			<b>CLOGGING INDICATOR (**)</b>											
			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		<b>ACCESSORIES</b>											
			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)

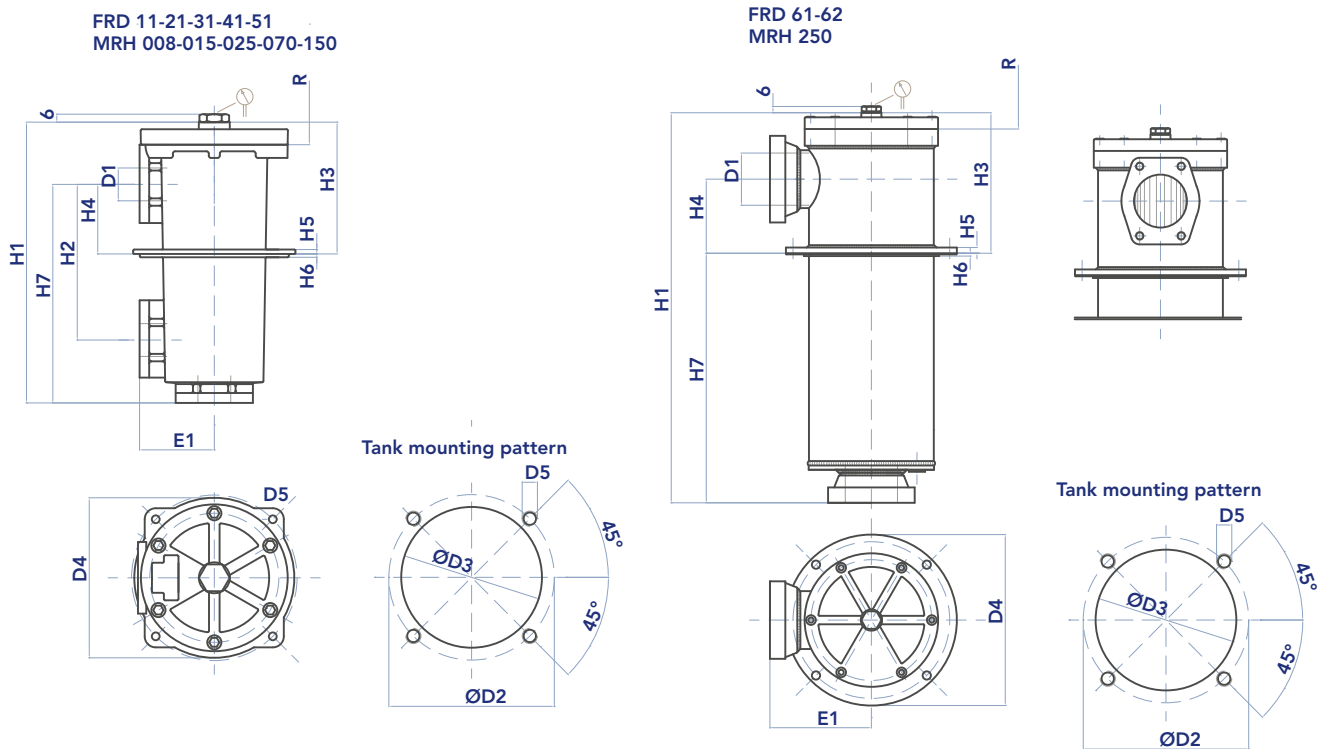
### SPARE SEAL KIT

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				

## SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR
		
B R D <span style="background-color: black; color: black;"> </span> <span style="background-color: black; color: black;"> </span> X X	E R D <span style="background-color: black; color: black;"> </span> <span style="background-color: black; color: black;"> </span> <span style="background-color: black; color: black;"> </span> <span style="background-color: black; color: black;"> </span>	<span style="background-color: black; color: black;"> </span> <span style="background-color: black; color: black;"> </span>

## INSTALLATION DRAWING



## FILTER HOUSING

	D1	D2	D3	D4	D5	E1	H1	H2	H3	H4	H5	H6	H7	R	Kg
<b>FRD11</b>	1/2"	95	85	90	M5	43	160	62,5	96	31,5	4	3	96	105	1,30
<b>FRD21</b>	3/4"	138	123	128	M6	57	191	105	100	52	6	3	145	110	2,6
<b>FRD31</b>	1"	154	137	147	M6	67	250	140	117	63	8	4	197	155	3,7
<b>FRD41</b>	1 1/2"	180	164	174	M8	82	343	177	155	82	8	4	269	240	6,5
<b>FRD51</b>	2 1/2"	275	239	254	M10	117,5	420	218	192	91	10	8	320	275	14,2
<b>FRD61</b>	3 1/2"	275	239	300	M12	178	673	-	248	130	10	5	-	525	49,0
<b>FRD62</b>	4"	275	239	300	M12	178	1.108	-	423*	255	10	5	950	1.020	70,0

(\*)Adjustable for RD62 only - loose flange (to be welded)

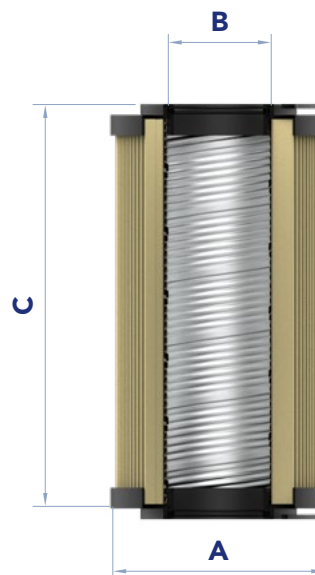
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### FILTER ELEMENT

	A	B*	C	Kg	AREA (cm <sup>2</sup> )			
					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.

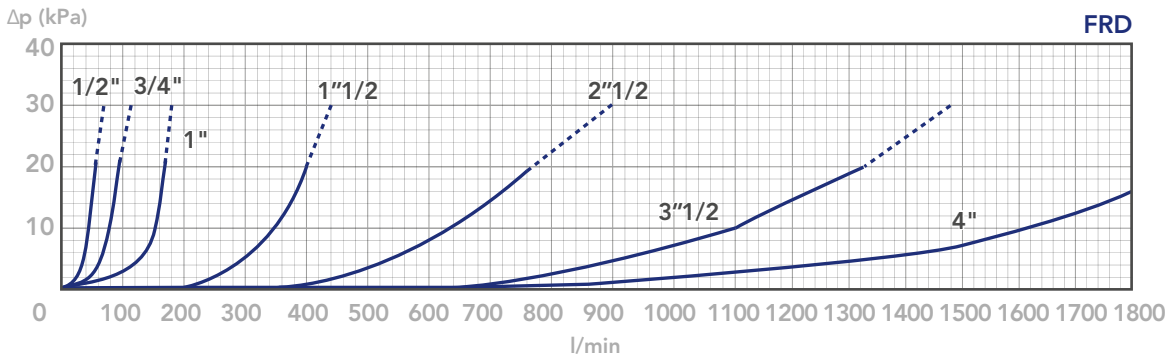


## PRESSURE DROP CURVES ( $\Delta P$ )

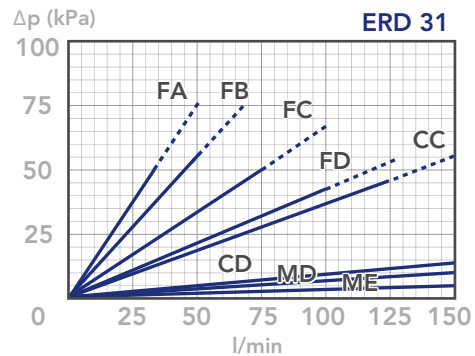
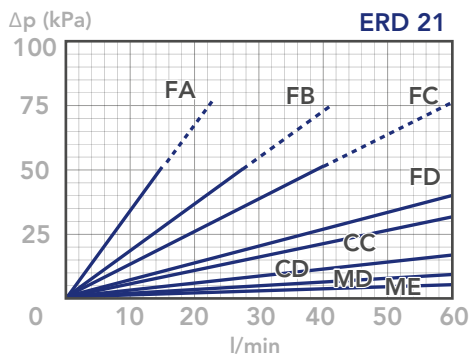
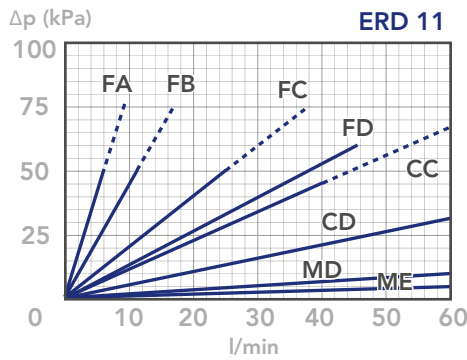
The “Assembly Pressure Drop ( $\Delta p$ )” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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)

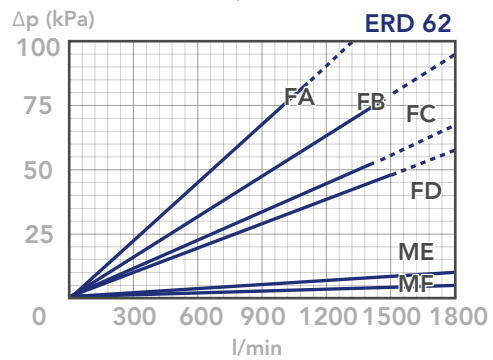
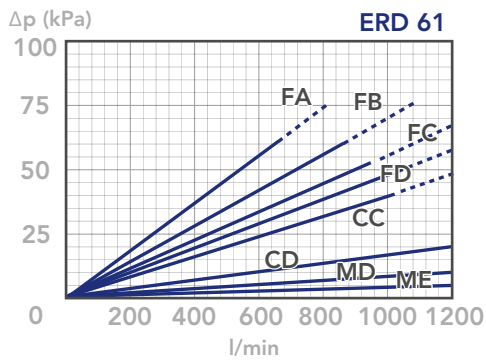
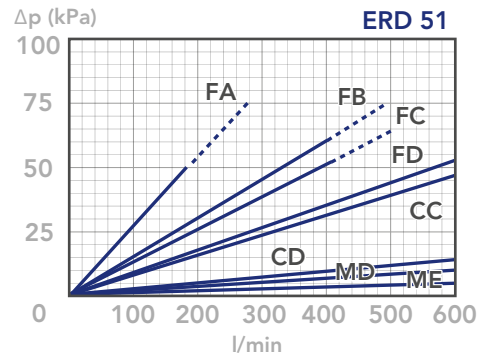
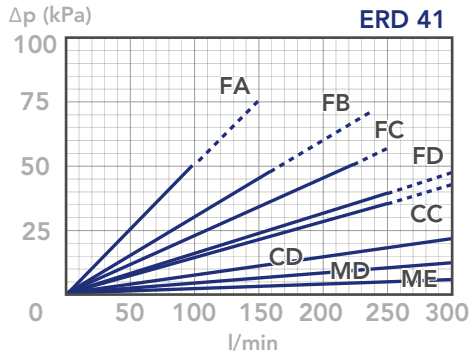


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND M+ MEDIA  
(depending both on the internal diameter of the element and on the filter media)



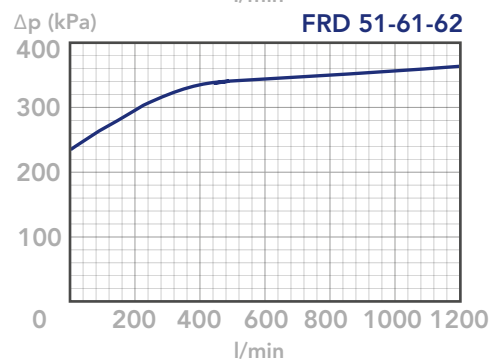
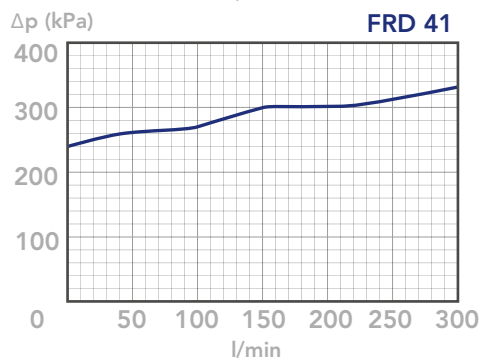
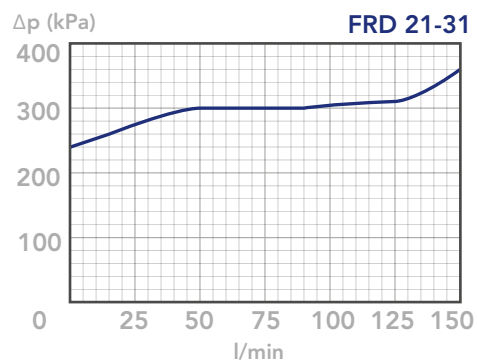
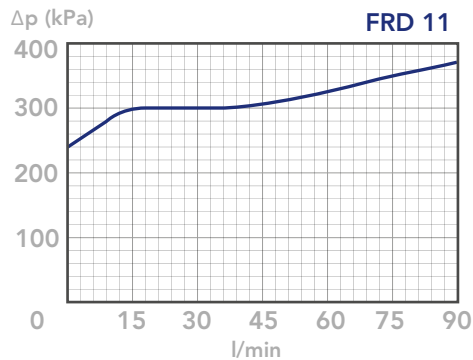
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### BYPASS VALVE PRESSURE DROP

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/dm<sup>3</sup>; 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.