



DIPLOMATIC
HYDRAULICS

95 160/102 ED



FRC

RETURN LINE FILTER FOR TANK TOP OR LINE MOUNTING

SERIES 10

p max 7 bar

Q max (see performance ratings table)

OPERATING PRINCIPLE

- FRC filters can be mounted both on the tank cover by using a 4-hole flange fixing system with a direct bottom discharge, or on the return line.
- The filter element with a screw on cartridge allows easy and practical replacement; a suitable membrane inside the cartridge prevents the residual oil from coming out.
- The filter element is made of high efficiency filtering materials and is able to accumulate high quantities of contamination material. It is available with three different filtration degrees:
 F25 = 25 μm: absolute ($\beta_{25} > 100$) - NAS 1638 class 8
 P10 = 10 μm: nominal ($\beta_{10} > 2$) - NAS 1638 class 10
 P25 = 25 μm: nominal ($\beta_{25} > 2$) - NAS 1638 class 14
- FRC filters are always supplied with a by-pass valve.
- All the FRC filters are designed to incorporate an electric or visual clogging indicator, to be ordered separately (see par. 5).

TECHNICAL SPECIFICATIONS

Filter code	BSP port dimensions	Mass [kg]	Rated flow (indicative) [l/min]				
			F25L	P10S	P10L	P25S	P25L
FRC-TB034	3/4"	1.6	65	65	70	70	75
FRC-TB112	1 1/2"	2.2	180	150	200	200	220

NOTE 1: The flow rates stated in the table correspond to a 0.5 bar pressure drop measured with mineral oil of viscosity 36 cSt at 50°C.
 As for a different viscosity range, see NOTE 2 - par. 2.2.

Maximum pressure	bar	7
Collapsing differential pressure of the filter element	bar	3.0
Differential pressure for the opening of the by-pass valve (+/- 10 %)	bar	1.7
Ambient temperature range	°C	-25 ÷ +50
Fluid temperature range	°C	-25 ÷ +110
Fluid viscosity range	cSt	2.8 ÷ 380

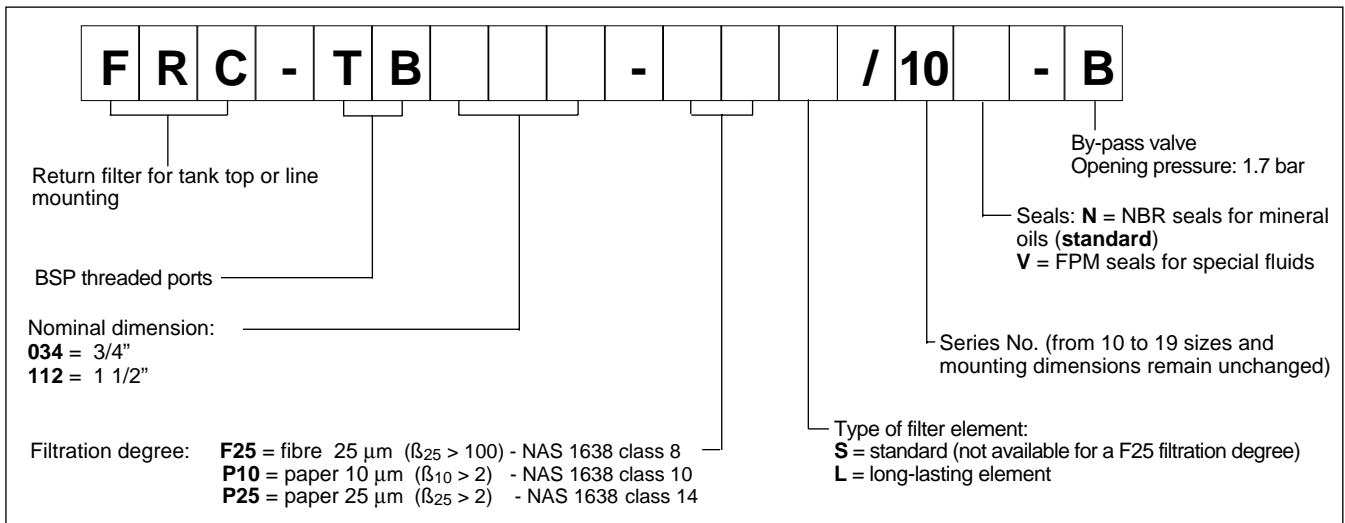
HYDRAULIC SYMBOL

Filter with indicator VR type

Filter with indicator ER type

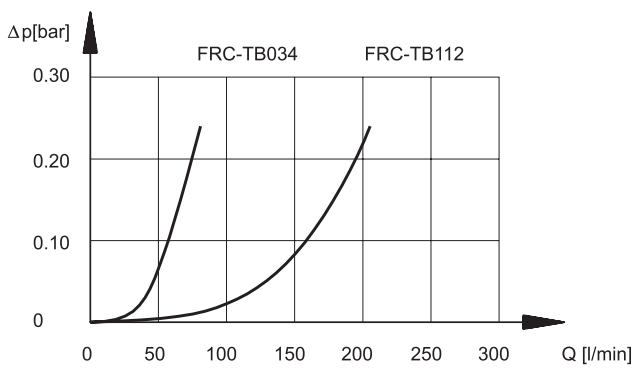


1 - IDENTIFICATION CODE

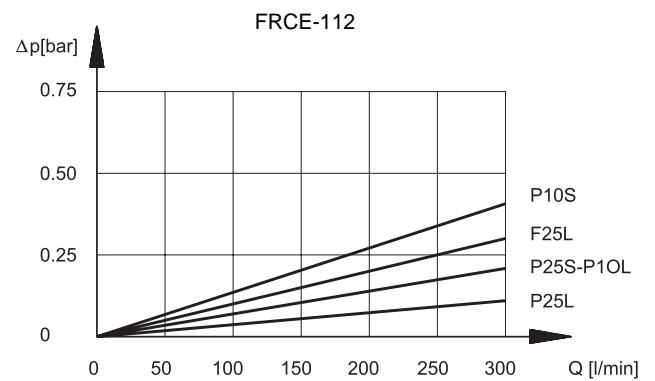
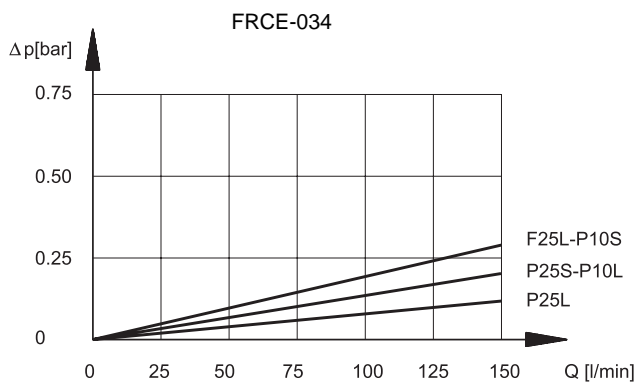


2 - CHARACTERISTIC CURVES (values measured with viscosity of 36 cSt at 50°C)

2.1 - Pressure drops through the filter body



2.2 - Pressure drops through the FRCE filter element





NOTE 2: The filter size has to be selected so that with the nominal flow rate the pressure drop is lower than 0.5 bar.

The total pressure drop through the filter is given by adding the body pressure drop values to those of the filter element.

As for fluids whose viscosity degree at a specific operating pressure is different from 36 cSt, the filter total pressure drop has to be changed according to the following ratio:

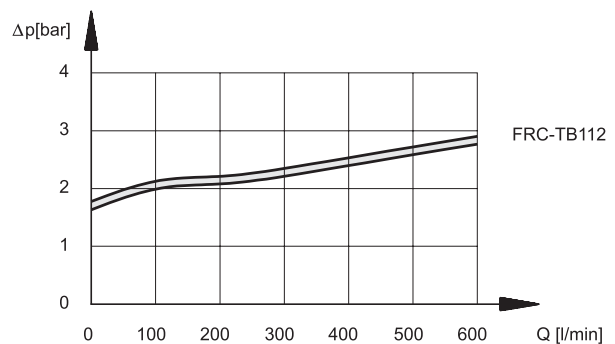
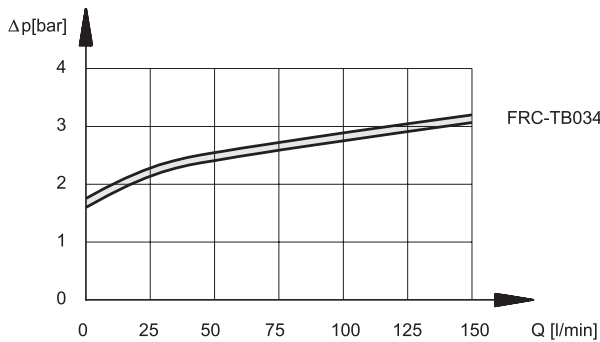
$$\text{total } \Delta p \text{ value} = \text{body } \Delta p \text{ value} + (\text{real } \Delta p \text{ value of the filter element} \times \text{real viscosity value (cSt)} / 36)$$

$$\text{real } \Delta p \text{ value of the filter element} = \text{value obtainable through the diagrams in par. 2.2}$$

Such ratio is valid for a viscosity value up to 200 cSt.

For a higher viscosity please consult our technical department.

2.3 - Pressure drops through the by-pass valve



3 - HYDRAULIC FLUIDS

Use mineral oil-based hydraulic fluids type HL and HLP according to ISO 6743/4.

For use with other types of fluids such as HFA, HFB, HFC, HFD, please consult our technical department.

4 - OVERALL AND MOUNTING DIMENSIONS

dimensions in mm

Filter code	Filter element	D1 (BSP)	D2	D3	H1	H2	H3	H4	E1	E2	E3	E4	E5	E6	R*
FRC-TB034	S	3/4"	95	7	196	25	18	146	70	70	50	38	38	108	211
	L				241			191							256
FRC-TB112	S	1 1/2"	130	9	252	36	18	181	100	100	72	56	56	140	282
	L				297			226							327

R* = Filter element removal space above the tank surface

Clogging indicator ports:
1/8" BSP
usually plugged

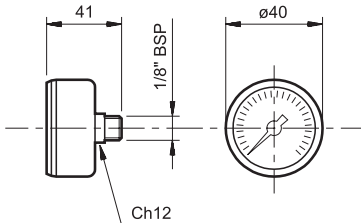


5 - CLOGGING INDICATORS

The filters are all designed to incorporate clogging indicators, which have to be ordered separately.

5.1 - Visual indicator for return filters

Identification code: VR/10

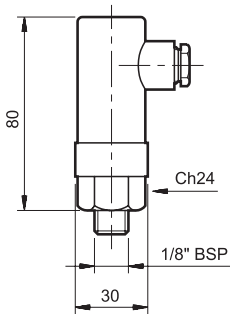


This indicator is a pressure gauge sensitive to the filter input pressure. The indicator is supplied with a 0 ÷ 6 bar graduated scale and with a two-colour reading scale, which informs you about the clogging condition of the filter element:

GREEN: efficient filter element (0 ÷ 1.7 bar)
RED: the filter element has to be replaced (> 1.7 bar)

5.2 - Electric indicator for return filters

Identification code: ER/10



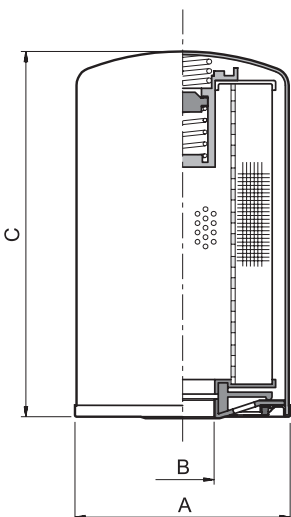
This indicator is a pressure switch sensitive to the filter input pressure, which switches an electric contact when the filter element has reached the clogging limit.

With an efficient filter, the contact is normally closed.

TECHNICAL SPECIFICATIONS

Operating pressure	bar	1.5
Max. operating voltage	V	220 50/60 Hz
Max. load on the contacts	resistive	0.5
	inductive	0.25
Max. commutable power	VA	100
Class of protection according to IEC 144		IP65
Atmospheric agents		

6 - FILTERING ELEMENTS



FILTER ELEMENT IDENTIFICATION CODE

F R C E - [] - [] / 10 []

Cartridge filter element for FRC filters

Nominal dimension
034 = 3/4" 112 = 1 1/2"

Filtration degree : F25 = fibre 25 µm
P10 = paper 10 µm
P25 = paper 25 µm

Type of filter element:
S = standard (not available with a F25 filtration degree)
L = long-lasting element

N = NBR seals for mineral oils (standard)
V = FPM seals for special fluids upon request

Series No. (from 10 to 19 sizes and mounting dimensions remain unchanged)

Filter element code	ØA	B	C	Average filter surface [cm ²]
FRCE-034-P*S	96.5	3/4" BSP	146	3305
FRCE-034-P*L	96.5	3/4" BSP	191	4745
FRCE-034-F25L	96.5	3/4" BSP	191	3630
FRCE-112-P*S	129	1 1/4" BSP	181	5560
FRCE-112-P*L	129	1 1/4" BSP	226	7360
FRCE-112-F25L	129	1 1/4" BSP	226	5890

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