DUPLOMATIC
HYDRAULICS

FRT

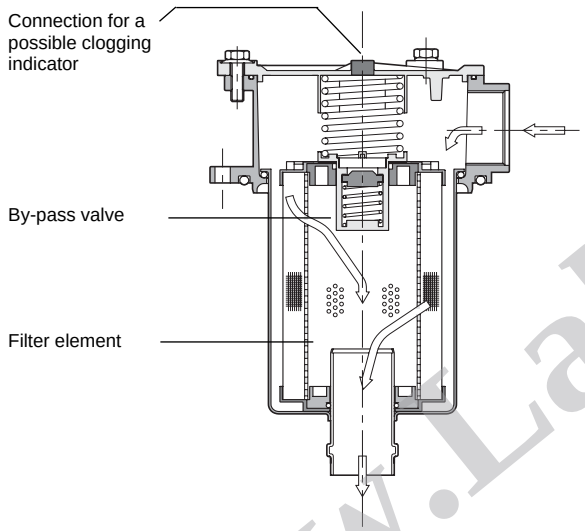
RETURN FILTER FOR FLANGE MOUNTING ON THE TANK

SERIES 10

p max **3** bar

Q max (see performance ratings table)

OPERATING PRINCIPLE



— FRT filters are designed to be flange-mounted on the tank cover; the BSP threaded port for the input connection is positioned on the filter head and is therefore very accessible.

— The inspection cover fixed with three or four screws allows easy maintenance; the filter element is supplied with a screw, which makes its removal together with the container easier. In this way, by replacing the filter element, it is possible to clean the contamination present in the bowl of the filter.

— The filter element is made of high efficiency filtering materials and is able to hold high quantities of contamination material. It is available with three different filtration degrees:
F10 = 10 µm: absolute ($ß_{10}$ > 100) - NAS 1638 class 7
F25 = 25 µm: absolute ($ß_{25}$ > 100) - NAS 1638 class 8
P10 = 10 µm: nominal ($ß_{10}$ > 2) - NAS 1638 class 10

— FRT filters are always supplied with a by-pass valve.

— All the FRT filters are designed to incorporate an electric or visual clogging indicator, to be ordered separately (see par. 5).

TECHNICAL SPECIFICATIONS

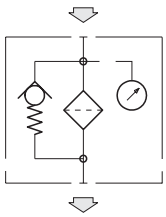
Filter code	BSP port dimensions	Mass [kg]	Rated flow (indicative) [l/min]		
			F10	F25	P10
FRT-TB012	1/2”	0.45	18	25	30
FRT-TB034	3/4”	0.80	50	70	85
FRT-TB100	1”	1.1	65	110	130
FRT-TB114	1 1/4”	2.1	150	190	210
FRT-TB112	1 1/2”	3.1	160	250	290
FRT-TB200	2”	4.1	280	400	430

Maximum pressure	bar	3
Collapsing differential pressure of the filter element	bar	3
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

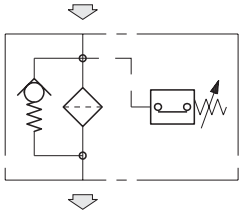
NOTE 1: The flow rates stated in the table correspond to a 0.5 bar pressure drop measured with mineral oil of viscosity 36 cSt at 50°C.
As for a different viscosity range, see NOTE 2 - par. 2.2.

HYDRAULIC SYMBOL

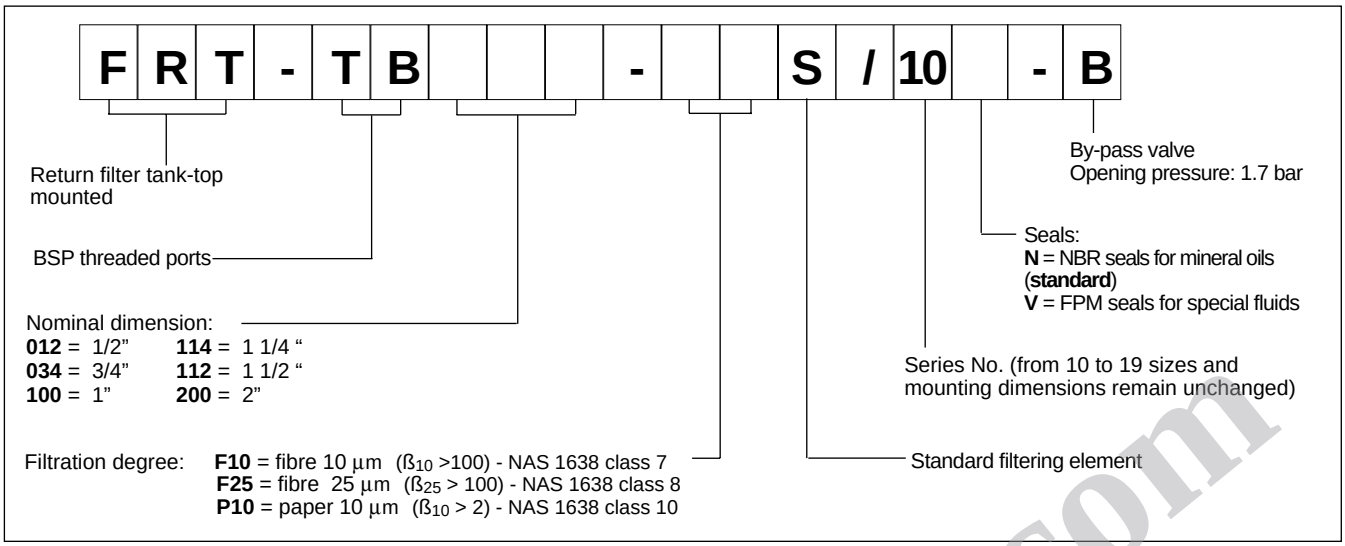
Filter with indicator VR type



Filter with indicator ER type

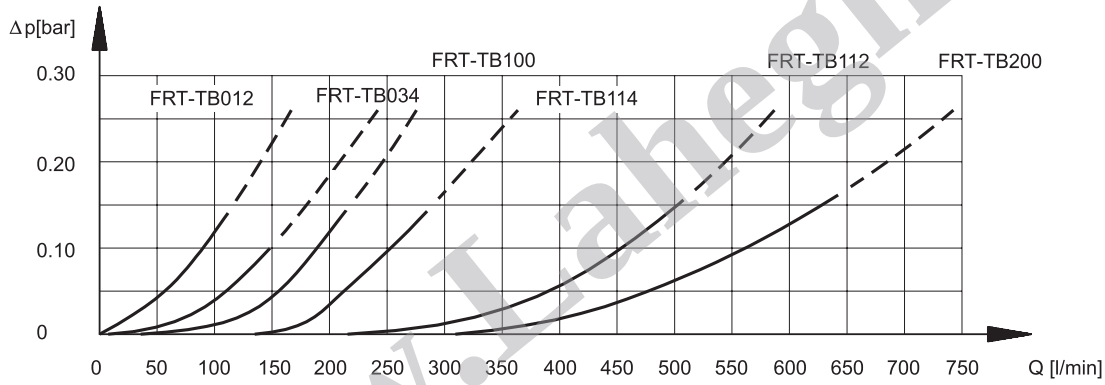


1 - IDENTIFICATION CODE



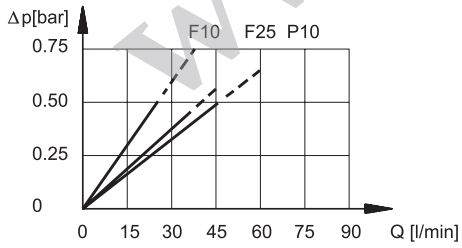
2 - CHARACTERISTIC CURVES (values measured with viscosity of 36 cSt at 50°C)

2.1 - Pressure drops through the filter body

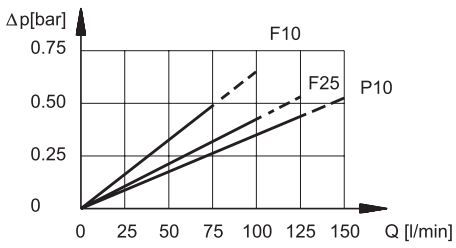


2.2 - Pressure drops through the FRTE filtering element

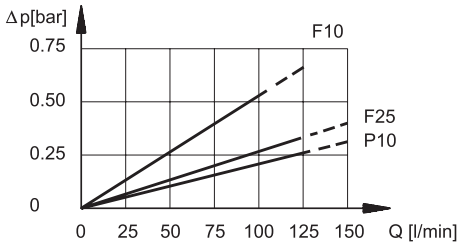
FRTE-012



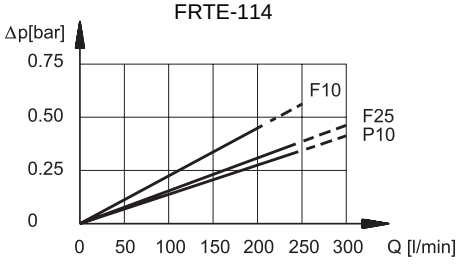
FRTE-034



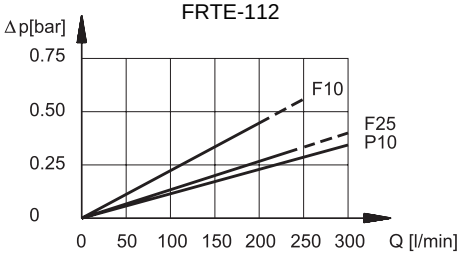
FRTE-100



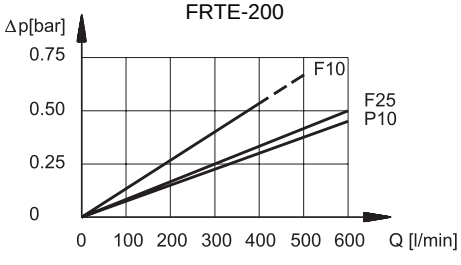
FRTE-114



FRTE-112



FRTE-200



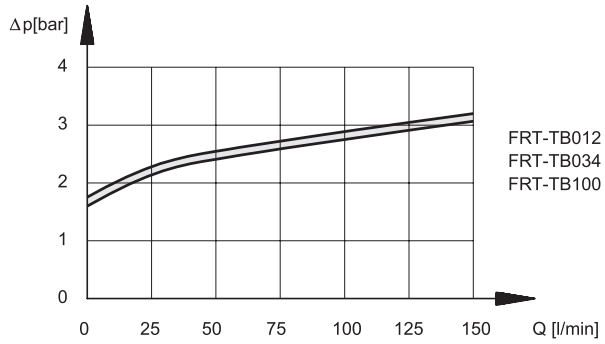
NOTE 2: The filter size has to be calculated so that with the nominal flow rate the pressure drop is lower than 0.5 bar.
The total pressure drop through the filter is given by adding the body pressure drop values to those of the filter element.
As for fluids whose viscosity degree at a specific operating pressure is different from 36 cSt, the filter total pressure drop has to be changed according to the following ratio:

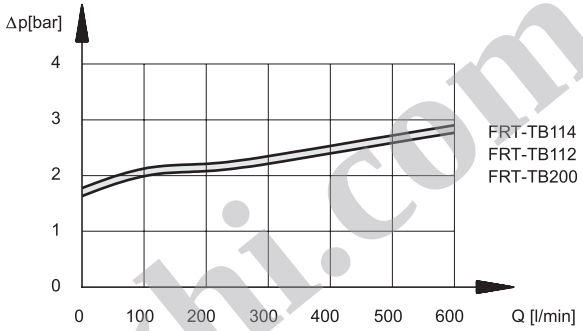
total Δpl value = body Δp value + (realΔp value of the filter element x real viscosity value (cSt) / 36)

real Δp value of the filter element = 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



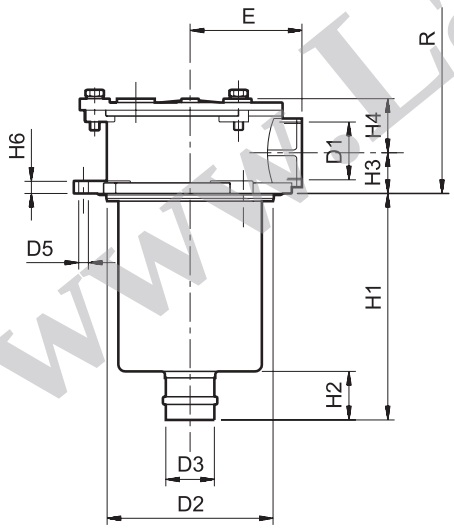


3 - HYDRAULIC FLUIDS

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

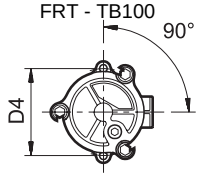


Filter code	D1	D2	D3	D4	D5	E	H1	H2	H3	H4	H6	R*
FRT-TB012	1/2”	66	24	90	6.5	50	80	25	22	33	9	120
FRT-TB034	3/4”	89	27	115	9	67	147	30	28	47	10	190
FRT-TB100	1”	89	40	115	9	67	223	30	28	47	10	270
FRT-TB114	1 1/4”	126	40	175	9	95	248	30	35	47	13	300
FRT-TB112	1 1/2”	173.5	50	220	10.5	115	178	50	55	69	13	235
FRT-TB200	2”	173.5	63.5	220	10.5	115	285	50	55	69	13	340

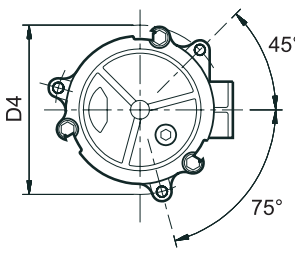
R * = Filter element removal space starting from the tank surface

1	Clogging indicator port: 1/8” BSP usually plugged

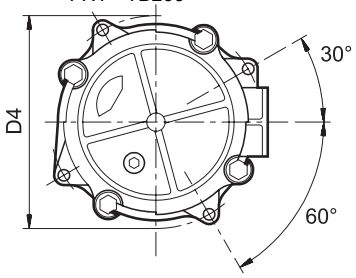
FRT - TB012
FRT - TB034
FRT - TB100



FRT - TB114



FRT - TB112
FRT - TB200

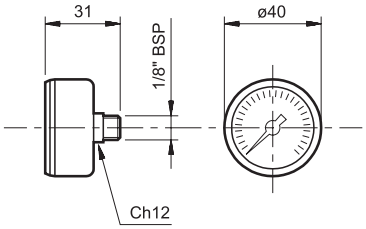


5 - CLOGGING INDICATORS

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

5.1 - Visual indicator for return filters

Identification code: VR/10

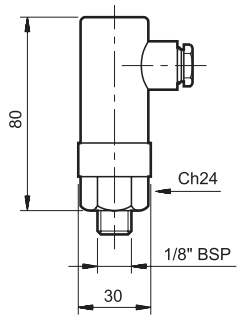


This indicator is a pressure gauge sensitive to the filter input pressure. The indicator is supplied with a 0 ÷ 6 bar graduated scale and with a two-colour reading scale, which informs you about the clogging condition of the filter element:

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

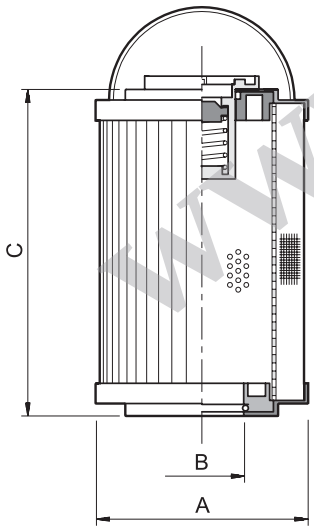


This indicator is a pressure switch sensitive to the filter input pressure, which switches an electrical contact when the filter element has reached the clogging limit.
With an efficient filter, the contact is normally closed.

TECHNICAL SPECIFICATIONS

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

6 - FILTER ELEMENTS



FILTER ELEMENT IDENTIFICATION CODE

F R T E - | | | - | | S / 10 |

Filter element for a FRT filter

Nominal dimension
012 = 1/2” **114** = 1 1/4”
034 = 3/4 “ **112** = 1 1/2”
100 = 1 “ **200** = 2”

Filtration degree: **F10** = fibre 10 µm
F25 = fibre 25 µm
P10 = paper 10 µm

Standard filter element

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

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

Filter. element code	ØA	ØB	C	Average filtering surface [cm²] P10	F12/F25
FRTE - 012	52	24	70	310	380
FRTE - 034	70	28	130	1000	1600
FRTE - 100	70	40	210	1660	2670
FRTE - 114	99	40	211	3800	4280
FRTE - 112	130	51	140	4140	4360
FRTE - 200	130	63	251	7930	8350

DUPLOMATIC HYDRAULICS

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