FVR-7 series

Return filter inserts, inside-to-outside filtration

Technical Information

Housing

Pressure: **Max working** 8 bar (116 psi) (acc. to NFPA T 3.10.5.1)
Burst 10 bar (145 psi) (acc. to NFPA T 3.10.5.1)

Materials: insert holder: aluminium alloy
seal: Buna-N (FKM on request)

By-pass: 1,7 bar (24.6 psi)

Element

Filter Media: Microglass fiber 4,5 - 7 - 12 - 27 μm(c) (acc. to ISO 16889)

Cellulose 10 - 25 μm(c) (acc. to ISO 16889)

Wire mesh 60 μm

Differential burst pressure: 10 bar (145 psi) (acc. to ISO 2941)

Filtrec elements are tested also according to ISO 2942, ISO 23181 and ISO3968

Common

Working temperature: -25°C +120°C (-13°F +248°F)

Fluid compatibility (acc. to ISO 2943):
Full with HH-HL-HM-HV (acc. to ISO 6743/4).
For use with other fluid applications please contact Filtrec Customer Service (info@filtrec.it).

Ordering information

MEDIA	
000	no element
G03	microglass fiber $ß_{4,5\ \mu m\ (c)} \geq 1000$
G06	microglass fiber $ß_{7\ \mu m\ (c)} \geq 1000$
G10	microglass fiber $ß_{12\ \mu m\ (c)} \geq 1000$
G25	microglass fiber $ß_{27 \mu m\ (c)} \geq 1000$
C10	cellulose $ß_{10\ \mu m\ (c)} \geq 2$
C25	cellulose $ß_{25\ \mu m\ (c)} \geq 2$
T60	wire mesh 60 μm

	NOMINAL SIZE	MEDIA	SEALS	BY-PASS	MAGNETS
Filter assembly **FVR-7**	**20**	**C10**	**B**	**B**	**M**
Filter element **R-7**	**20**	**C10**			

SEALS	
B	NBR (omit for spare element)
V	FKM

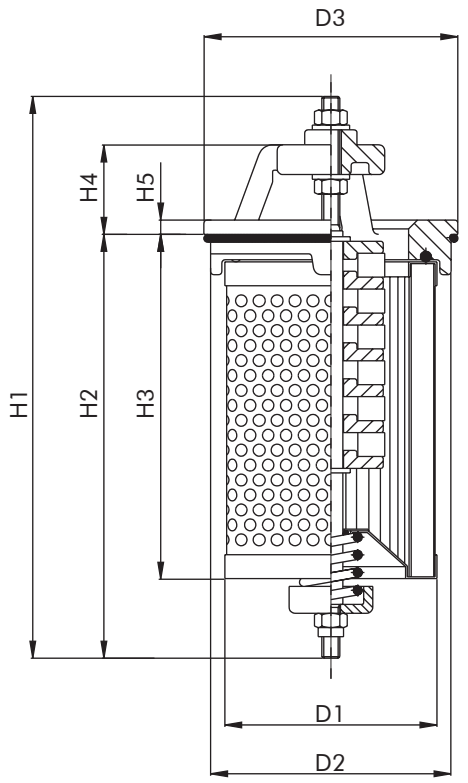
BY-PASS	
B	1,7 bar / 24,6 psi

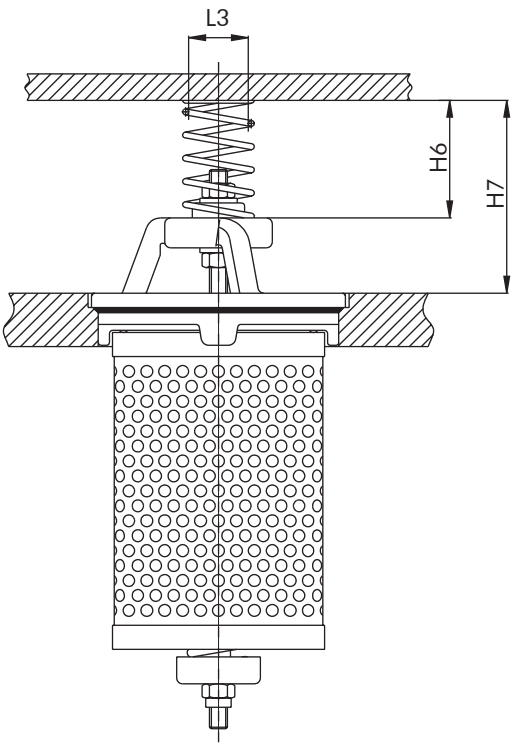
MAGNETS	
0	no magnet
M	with magnets

CLOGGING INDICATOR

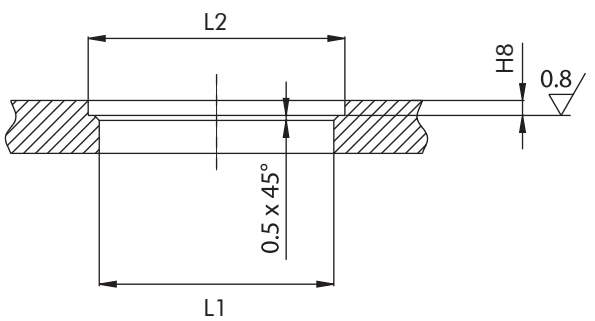
The use of a clogging indicator is always recommended, to know when the filter element must be replaced. A simple 1/8" threaded hole (in the area of the tank cover where the insert is located – see page 10) allows to fit a clogging indicator (see page 9) that must be ordered separately.

Overall dimensions





HOLE ON THE TANK



Nominal size

CODE	D1	D2	D3	H1	H2	H3	H4	H5	H6	H7	H8	L1	L2	L3	WEIGHT
FVR-7-11	72	80,5	85	196	145	113	30	4,8	39,5	64,5	7,5	81,5	86,5	20	1,5 Kg
FVR-7-12				240	190	158									1,7 Kg
FVR-7-13				290	240	208									1,9 Kg
FVR-7-14				390	340	308									2,3 Kg
FVR-7-20	106	111	118	314	246	200	40,5	5,5	45	80	9	112	119,5	31	4,1 Kg
FVR-7-21				384	316	270									4,4 Kg
FVR-7-22				589	521	475									5,7 Kg
FVR-7-30	126	138	150	358	275	225	57,5	7	49	100	12,5	139	151,5		4,9 Kg
FVR-7-31				438	355	305									5,2 Kg
FVR-7-32				628	545	495									6,8 Kg
FVR-7-33				538	455	405									7,5 Kg

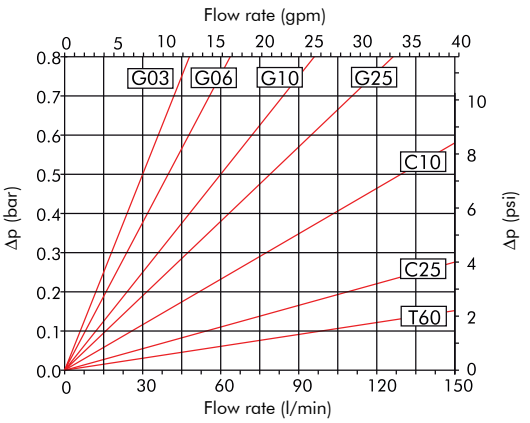
Pressure drop diagrams

The Pressure Drop (Δp) ideally should not exceed 0,5 bar (7,3 psi) and should never exceed 1/3 of the set value of the by-pass valve.

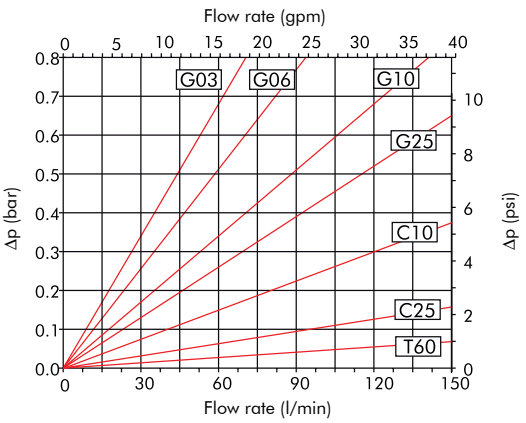
PRESSURE DROP THROUGH THE CLEAN FILTER ELEMENT

The Pressure Drop through the filter element is related both to the internal diameter of the filter element and to the filter media; this value is affected by the oil viscosity in a roughly proportional way: e.g. when the Dp value from the curve is 0,2 bar and a 46 cSt oil is used, the corresponding value is 0,31 (=0,2 x 46/30) bar.

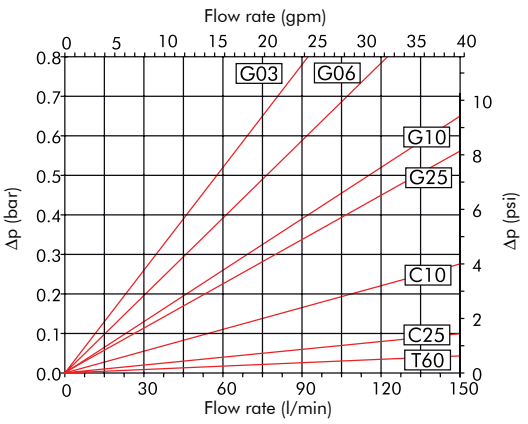
Element R-7-11



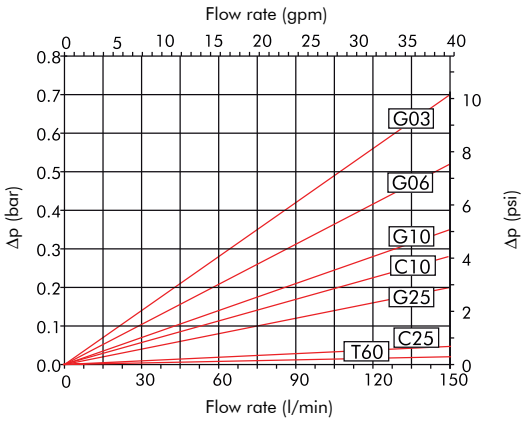
Element R-7-12



Element R-7-13



Element R-7-14

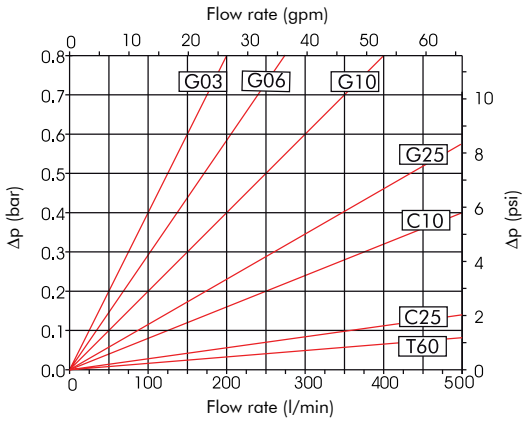


Pressure drop diagrams

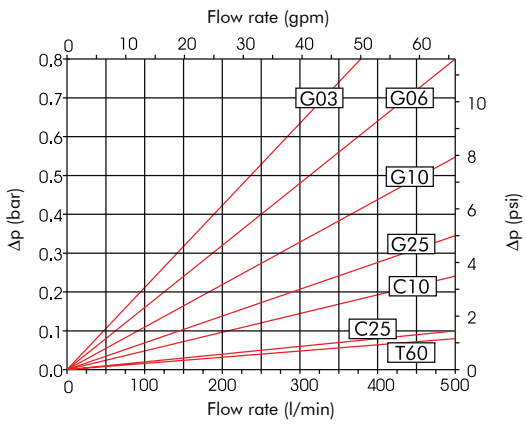
PRESSURE DROP THROUGH THE CLEAN FILTER ELEMENT

The Pressure Drop through the filter element is related both to the internal diameter of the filter element and to the filter media; this value is affected by the oil viscosity in a roughly proportional way: e.g. when the Dp value from the curve is 0,2 bar and a 46 cSt oil is used, the corresponding value is 0,31 (=0,2 x 46/30) bar.

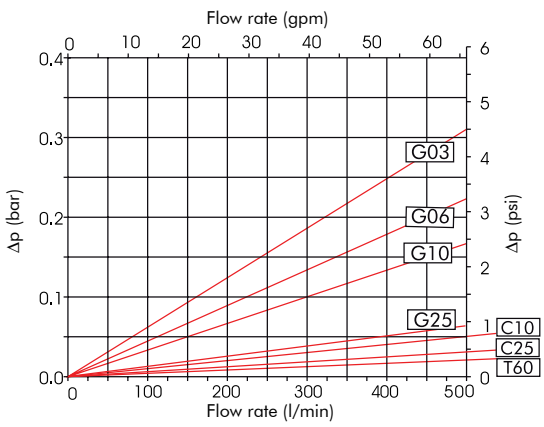
Element R-7-20



Element R-7-21



Element R-7-22

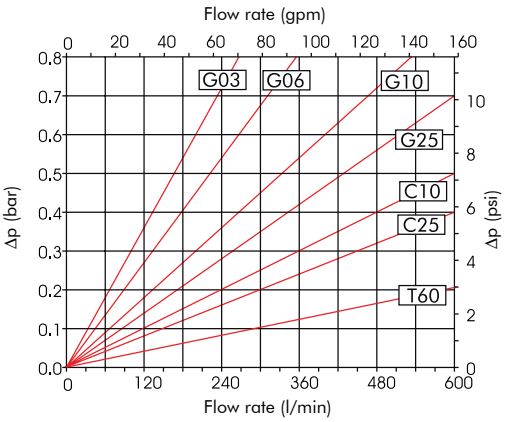


Pressure drop diagrams

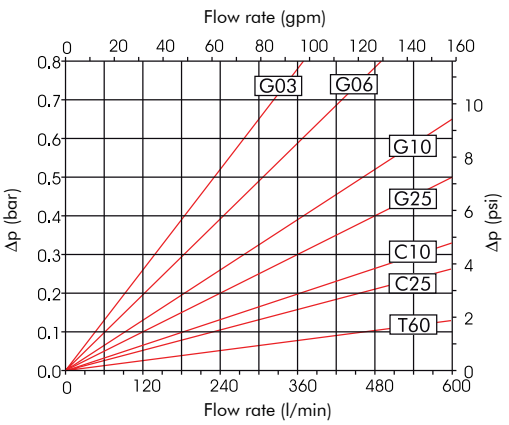
PRESSURE DROP THROUGH THE CLEAN FILTER ELEMENT

The Pressure Drop through the filter element is related both to the internal diameter of the filter element and to the filter media; this value is affected by the oil viscosity in a roughly proportional way: e.g. when the Dp value from the curve is 0,2 bar and a 46 cSt oil is used, the corresponding value is 0,31 (=0,2 x 46/30) bar.

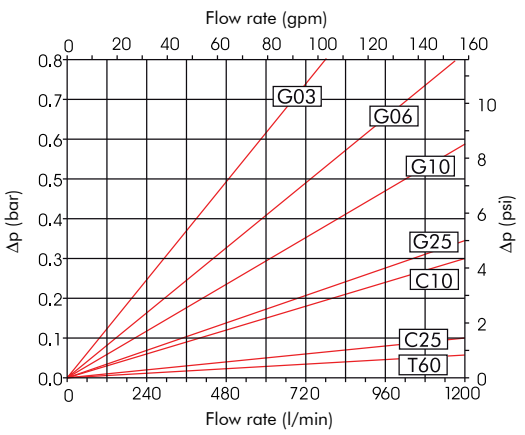
Element R-7-30



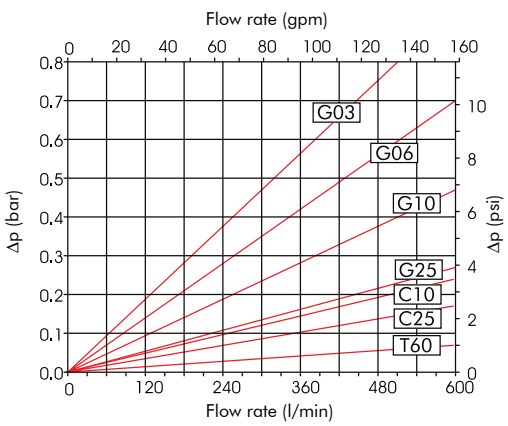
Element R-7-31



Element R-7-32



Element R-7-33

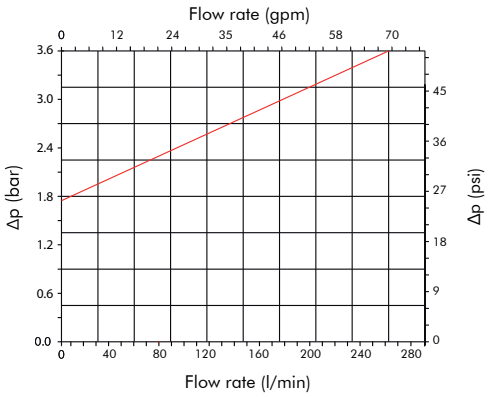


Pressure drop diagrams

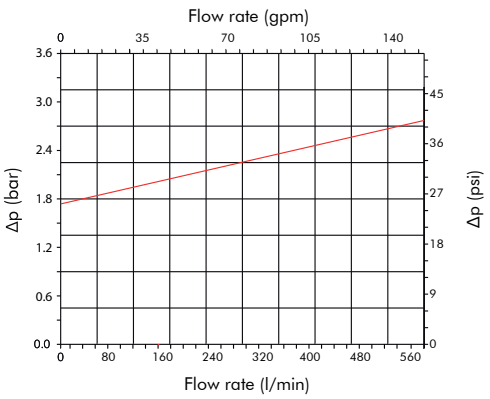
PRESSURE DROP THROUGH THE BY-PASS VALVE

The by-pass valve is a safety device to prevent element collapse in case of differential pressure peaks due to flow peaks, cold start conditions or when the clogged element is not replaced in a timely manner.

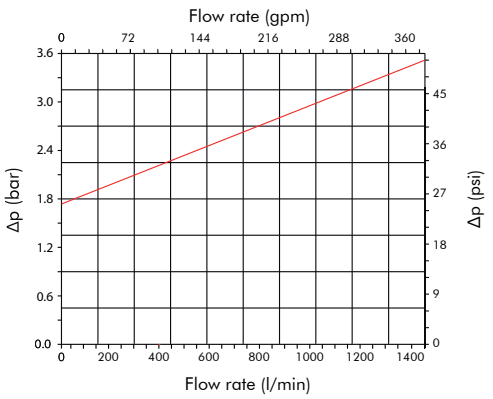
By-pass FVR-7- 11/12/13/14



By-pass FVR-7- 20/21/22



By-pass FVR-7- 30/31/32/33



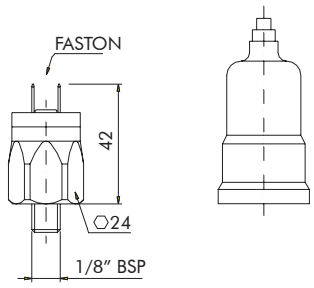
The above diagrams have been obtained at the FILTREC laboratory, according to the ISO 3968 specification, with mineral oil having 30 cSt viscosity and 0,86 Kg/dm3 density.
In case of discrepancy, please check contamination level, viscosity and features of the oil in use and the sampling points of the differential pressure.

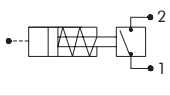
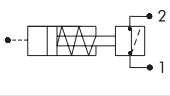
Clogging indicator

The Pressure Drop (Δp) through the filter increases during the system operation due to the contaminant retained by the filter element.
The filter element must be replaced when the indicator shows and before the Δp reaches the by-pass value setting.
N.B. in cold start conditions a false alarm can be caused by higher oil viscosity due to low temperature; the indicator alarm must be considered at normal working temperature only.

The clogging indicator registers the pressure upstream the filter element:
•in the VISUAL indicator the red area shows the need for element replacement.
•in the ELECTRIC indicator an electrical switch is activated.

PRESSURE SWITCH

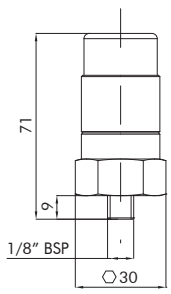


SYMBOL - R2	SYMBOL - R3
	

CODE	SETTING
R2	1,3 bar (18,9 psi) N.O.
R3	1,3 bar (18,9 psi) N.C.

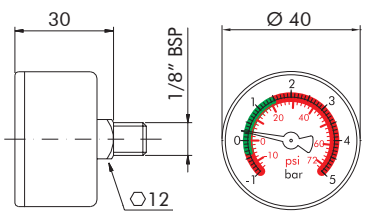
- Current: 0,5 A resistive/ 0,2 A inductive
- Max voltage: 30-48 V DC
- Protection: IP54 as per DIN 40050

VISUAL PRESSURE GAUGE



SYMBOL	CODE	SETTING
	R6	1,3 bar (18,9 psi)

PRESSURE/ VACUUM GAUGE

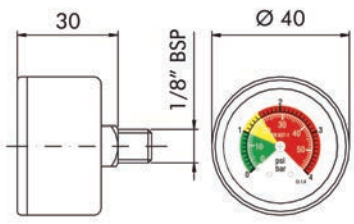


SYMBOL	CODE	SCALE
	R7	0 ÷1,4 bar (0 ÷20 psi) green sector
		1,4÷5 bar (20 ÷72,5 psi) red sector

Housing in black ABS material

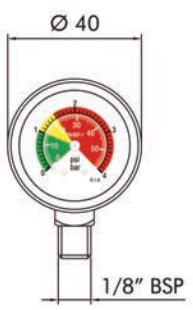
N.B. Multipurpose product: this gauge can also be used as vacuum gauge on suction filters.

PRESSURE GAUGE



SYMBOL	CODE	SCALE
	**R9**	0 ÷1 bar (0 ÷14,5 psi) green sector
		1 ÷1,5 bar (14,5 ÷22 psi) yellow sector
		1,5÷4 bar (22 ÷58 psi) red sector

Housing in black ABS material

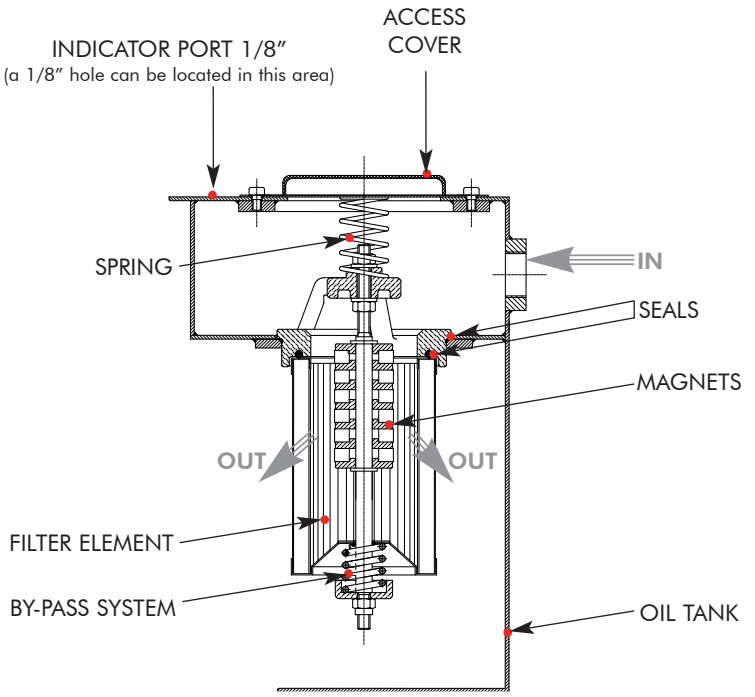


SYMBOL	CODE	SCALE
	**R10**	0 ÷1 bar (0 ÷14,5 psi) green sector
		1 ÷1,5 bar (14,5 ÷22 psi) yellow sector
		1,5÷4 bar (22 ÷58 psi) red sector

Housing in black ABS material

Preferential option

User Tips



FVR-7 are the insert assemblies usually mounted within the FCR-7 filters; they can be mounted directly on a frame obtained within the oil tank. Dimension "H7" (distance between the frame and the tank access cover) must be respected to ensure the correct load of the positioning spring.

Installation

Make sure that the insert assembly is properly located as well as the positioning spring between the insert support and the access cover.
Make sure that enough space is available for filter element replacement.
We recommend the stocking of a spare FILTREC filter element for timely replacement when required.

Operation

Make sure that the filter works within the conditions of pressure, temperature and fluid compatibility given in the first page of this data sheet. If no clogging indicator is mounted, make sure that the cartridge is replaced according to the system manufacturer's recommendations.

Maintenance

Before removing the access cover, ensure that the system is switched off and there is no residual pressure in the tank.
Remove the access cover by unscrewing the fixing bolts. Remove the positioning spring and extract the insert assembly (warning : a certain quantity of oil can be retained within the filter element, provide to have a proper container available for it); unscrew the nut at the bottom of the insert and slip the dirty filter element carefully . Clean the tie rod (and the magnets if present) and check the support gaskets conditions, replace them if necessary. Fit a new FILTREC element (verify first the part number, particularly concerning the micron rating; open the plastic protection of the element from the the top and fit the element over the tie rod, then remove completely the plastic protection) and block it by tightening the bottom nut. Put the insert assembly into its seat within the tank, put the spring in its position over the insert support, then mount the access cover and tighten properly the fixing bolts .
N.B. The used filter elements cannot be cleaned and reused.

PED Compliance

FVR-7 filters conform to PED 97/23/CE norm, article 3 section 3, and so they can be used with fluids of group 2 (liquids with steam pressure < 0,5 bar at the maximum allowable temperature, article 3, section 1.1(b) – sub-section II).

WARNING
Make sure that Personal Protective Equipment (PPE) is worn during installation and maintenance operation.

Disposal of filter elements

The used filter elements and the filter parts dirty of oil are classified as "Dangerous waste material": they must be disposed according to the local laws by authorized Companies.

notes