

UFI FILTERS HYDRAULICS CATALOGUE



www.ufihyd.com



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SUCTION FILTERS

Series	Element	Pmax MPa	Qmax l/min	Pag
CAL	-	-	100	23
ESA-ESB	-	-	600	25
FAM	-	-	600	31
FMA	EMA	0,7	600	35
FSC	ESC	-	500	41
FSD	ERD	-	700	47
FSE	ESE	-	75	53
FSG	ESG	-	70	59
MSZ	-	-	600	63



PRESSURE FILTERS

Series	Element	Pmax MPa	Qmax l/min	Pag
FLA	ELA	21	35	69
FPA	EPA	11	60	75
FPB	EPB	42	600	81
FPC	EPC	35	150	91
FPD	EPB	31,5	400	97
FPE	ESE	1,2	300	105
FPG	EPG	5	400	113
FPH	ERA	2	400	119
FPL	EPB	31,5	400	125
FPM	EPB	21	120	135
FPO	EPO	3,5	250	141

INDEX



RETURN FILTERS

Series	Element	Pmax MPa	Qmax l/min	Pag
FRA	ERA	0,3	700	149
FRB	ERB	0,7	140	157
FRC	ERC	0,7	200	163
FRD	ERD	2	1500	169
FRF	ERF	1	2200	175
FRG	ERF	1	2400	191
FRH	ERA	0,3	200	197
GRF	IRF	1	1200	205



OFF-LINE FILTERS

Series	Element	Pmax MPa	Qmax l/min	Pag
FOF	ERF	1	1500	211
UOW	ERF	-	40	219
HYDRO-DRY	-	-	80	223



TRANSMISSION FILTERS

Series	Element	Pmax MPa	Qmax l/min	Pag
FTA-FTB	ETA	1	240	227

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AIR FILTERS

Series	Element	Pag
CBA	-	235
CBB	EBB	237
CBC	EBC	239
CBD	EBD	241
CBE	EBE	243
CBF	EBF	245
CBS	ASE	247
CSE	ASE	249
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ACCESSORIES

Series	Pag
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CLOGGING INDICATORS

Series	Pag
FOR PRESSURE FILTERS	267
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ABOUT US



ENGINEERED HYDRAULICS FILTRATION SOLUTIONS

UFI Filters Hydraulics is the branch of the UFI Filters Group dedicated to hydraulic filtration, specialised in the design, manufacturing and marketing of a comprehensive line of reliable, high efficiency hydraulic filters for mobile and industrial applications. UFI Filters

Hydraulics' mission is to create innovative and sustainable solutions in filtration for mobile and stationary applications. UFI Filters puts customers first and aims to provide them with exceptional quality products to enhance the efficiency of their hydraulic systems.

UFI HYDRAULICS IN NUMBERS



Founded in 1992, it's now a world leader in hydraulic technology.

1992



7 application sectors: from heavy duty, industry and power generation to special applications.

7



4 production plants and over 170 employees in 6 countries worldwide.

170



6 lines of filter supplied: suction, return, pressure, off-line, transmissions, air.

6

APPLICATION SECTORS

MOBILE HYDRAULICS APPLICATIONS

The supply of reliable hydraulic power to vehicles serving the arduous requirements of the construction industry safeguards the system utilisation and the productivity levels thus avoiding the expensive, time-consuming issues associated with un-planned downtime, maintenance and repair. UFI Filters Hydraulics has the knowledge and the engineering technology to master these issues with a proven range of filtration products for the mobile customers. Many well-known construction vehicle manufacturers and end users have placed their trust in UFI Filters Hydraulics' ability for many years, both in Original Equipment and in Aftermarket.



HEAVY DUTY

Trucks, buses, road building machines etc.



CONSTRUCTION

Excavators, backhoe loaders, dumpers, telehandlers etc.



MATERIAL HANDLING

Forklifts, port machining, vertical lifts etc.



PROTECTIVE EQUIPMENT

Medical and FFP2 masks, media for health protection devices.

STATIONARY HYDRAULICS APPLICATIONS

UFI Filters Hydraulics has earned a solid reputation for quality and cost-efficient products also for CNC machines, presses, wind power applications and industrial hydraulic systems. High-performance microfibers filtration media, with high voids-volume, warrant validated levels of dirt-holding capacity, coherent with the economic extended machine-life and service-intervals demanded by the market. There is no limit for oil cleanliness and therefore filtration quality should be as efficient as layout, costs and pressure-drop will allow.



AGRICULTURAL

Tractors, combined harvesters, mixers, sprayers etc.



POWER GENERATION

Wind power generation, genset, oil & gas etc.



INDUSTRIAL

Primary metal, ceramic presses, plastic presses, etc.

GLOBAL PRESENCE



- Headquarter
- Hydraulic Production & Sales
- Hydraulic Sales

UFI GROUP

HEADQUARTER

- UFI Filters S.p.A.
Nogarole Rocca (IT)

20 PRODUCTION SITES

- UFI Filters S.p.A. (Nogarole Rocca, IT)
- UFI Filters S.p.A. (Marcaria, IT)
- UFI Filters Hydraulics S.p.A. (IT)
- Plastic Technology S.p.A. (IT)
- Friedrich Filtersysteme GmbH (DE)
- UFI Filters Czech s.r.o. (CZ)
- UFI Filters Poland Sp Zoo (PL)
- Sofima Filters S.A (TN)

- UFI Filters do Brasil LTDA (BR)
- UFI Filters México, S de RL de CV (MX)
- UFI Filters India Pvt. Ltd (Bawal, IN)
- UFI Filters India Pvt. Ltd (Belgaum, IN)
- Sofima Filters India Pvt. Ltd (Bahadurgarh, IN)
- Sofima Automotive Filter Shanghai Co, Ltd (CN)
- UFI Filters Shanghai Co, Ltd. (CN)
- Sofima Industrial Filter Shanghai Co, Ltd (CN)
- Sofima Automotive Filter Changchun Co, Ltd (CN)
- Sofima Trading Shanghai Co, Ltd (CN)
- Sofima Automotive Filters Chongqing (CN)
- UFI Filters Korea Co, Ltd. (KR)

OPENING SOON

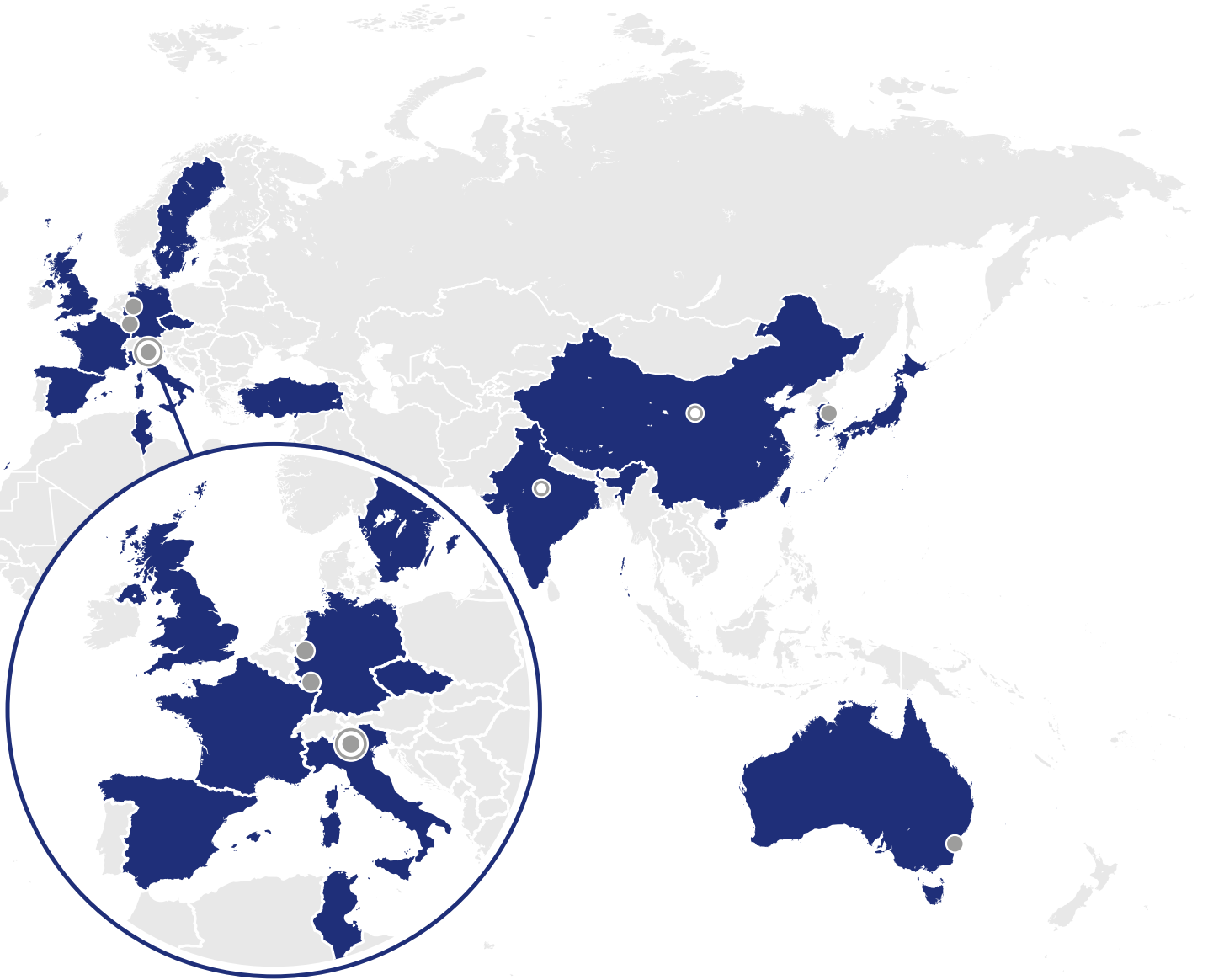
1 PRODUCTION SITES

- UFI Filters Aftermarket India (IN)

3 INNOVATION CENTERS

- UFI Innovation Center S.r.l. (IT)
- UFI Innovation Center India Pvt. Ltd (IN)
- UFI Filters Shanghai Co, Ltd (CN)

57 COMMERCIAL OFFICES



HYDRAULICS DIVISION

HEADQUARTER

- UFI Filters S.p.A.
Nogarole Rocca (IT)

4 PRODUCTION SITES & SALES

- UFI Filters Hydraulics S.p.A. (IT)
- Friedrich Filtersysteme GmbH (DE)
- UFI Filters India (IN)
- Sofima Industrial Filter Shanghai Co, Ltd (CN)

1 INNOVATION CENTER

- UFI Innovation Center S.r.l. (IT)

5 COMMERCIAL OFFICES

- Saarbrücken (DE)
- UFI Filters United States (US)
- UFI Filters do Brasil LTDA (BR)
- UFI Filters Korea Co, Ltd. (KR)
- UFI FILTERS Australia Pty Ltd (NSW)

FILTRATION IN BRIEF



CONTAMINATION CONTROL

Contamination Control in the hydraulic system is a very wide and complex matter; the following is just a short summary.

Our Customer Service is available for any further information.

The function of the fluid in the hydraulic systems is transmitting power and motion.

For a reliable and efficient operating of the system, it is very important to select the fluid considering the requirements of the system and the specific working conditions (working pressure, operating temperature, location of the system, etc.).

Depending on the required features (viscosity, lubricant capacity, anti-wear protection, density, resistance to ageing and

to thermal variations, materials compatibility, etc.), the proper oil can be selected among a number of mineral oils, synthetic fluids, water based fluids, environmental friendly fluids, etc.

All the hydraulic fluids are classified according to international standards.

Solid contamination is recognised as the main cause of malfunction, failures and early decay in hydraulic systems. It is not possible to eliminate it completely but the contamination can be kept under control with proper devices (filters).

No matter which fluid is used, it must be kept at the contamination level required by the most sensitive component of the system.

HOW TO MEASURE THE CONTAMINATION

The contamination level is measured by counting the number of particles of a certain dimension per unit of volume of the fluid; this number is then classified in Contamination Classes, according to international standards.

The measuring is made with Automatic Particle Counters that can perform live analysis (through sampling connectors mounted

in the system for this purpose) or from sampling bottles.

The sampling and the analysis of the fluid must be carried out in compliance with the specific ISO norms.

The most popular standard for Contamination Classes in the hydraulic systems is ISO 4406; the standard NAS 1638 is also quite used.

CONTAMINATION CLASSES ACCORDING TO ISO 4406

Standard ISO 4406 defines three different levels that identify the differentiation of size and distribution of particles.

The code is expressed in three values, that identify in the following order:

- The number of the first scale represents the number of particles equal to or exceeding $4 \mu\text{m}_{(0)}$ per 1 ml of fluid
- The number of the second scale represents the number of particles equal to or exceeding $6 \mu\text{m}_{(0)}$ per 1 ml of fluid
- The number of the third scale represents the number of articles equal to or exceeding $14 \mu\text{m}_{(0)}$ per 1 ml of fluid

For example, the Contamination Class Iso Code 21/12/15 describes a fluid containing:

21 → between 10.000 and 20.000 particles $\geq 4 \mu\text{m}_{(0)}$ per 1 ml

18 → between 1.300 and 2.500 particles $\geq 6 \mu\text{m}_{(0)}$ per 1 ml

15 → between 160 and 320 particles $\geq 14 \mu\text{m}_{(0)}$ per 1 ml

ISO Code	Number of particles per 1 ml	
	more than	up to
22	20.000	40.000
21	10.000	20.000
20	5.000	10.000
19	2.500	5.000
18	1.300	2.500
17	640	1.300
16	320	640
15	160	320
14	80	160
13	40	80
12	20	40
11	10	20
10	5	10
9	2,5	5
8	1,3	2,5

HYDRAULIC FILTER MEDIA AND RATING

Since over 80% of all system failures are due to contamination, it is extremely important to have high quality hydraulic filters in place. These devices filter out contamination from the fluid, keeping the system running smoothly.

The filter element can be considered as the processor within the filtration computer, that is why extensive knowledge and many years of manufacturing expertise make significant difference in the design and development of filter element performances and reliability.

Depending on the materials and construction, the filters may be able to capture surface and/or depth contamination, with different filtration efficiency.

Hydraulic filter elements normally use one of three different types of media:

- Metal wire mesh: it is a surface filter and it gives a geometrical filtration. Its rating is determined as “Largest diameter of hard spherical particle that will pass through the media”;
- Cellulose (paper impregnated with resin): it is a depth filter

media with an irregular structure. It’s classified on average pore dimension.

- Microfiber (inorganic fiber impregnated with resin): it is a depth filter media with regular structure. It’s classified on average pore dimension and it consists of multiple layers. Thanks to the multilayer structure with differential porosity the microfiber media retains even smaller particle sizes than the reference filtration ratio of each filter media.

The last section of this introduction is be dedicated to the filter materials that have been selected and developed in the UFI Innovation Centers worldwide: FormulaUFI.

The best and most commonly used rating in industry is the beta rating. The beta rating comes from the Multipass Method for Evaluating Filtration Performance of a Fine Filter Element (ISO 16889).

BETA RATIO

$$\beta_x = (n_{in} = X \mu m) : (n_{out} = X \mu m)$$

where “n” is the number of particles = x μm upstream and downstream from the filter.

E.g. if you have 100.000 particles = 10μm upstream and 1.000 particles downstream:

$$\beta_{10} = 100.000 : 1.000 = 100$$

FILTRATION EFFICIENCY $\eta(\%)$:

$$\eta = 100 - (100 : \beta)$$

i.e.

$$\beta_x = 2 \text{ means } = 50,00 \%$$

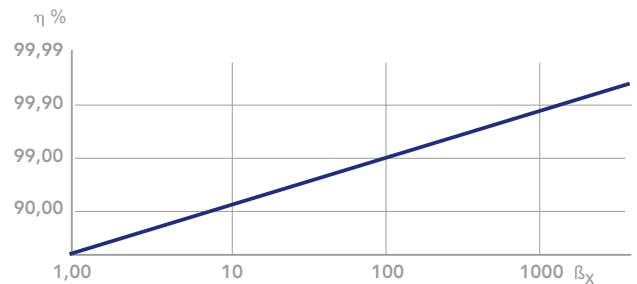
$$\beta_x = 20 \text{ means } = 95,00 \%$$

$$\beta_x = 75 \text{ means } = 98,67 \%$$

$$\beta_x = 100 \text{ means } = 99,00 \%$$

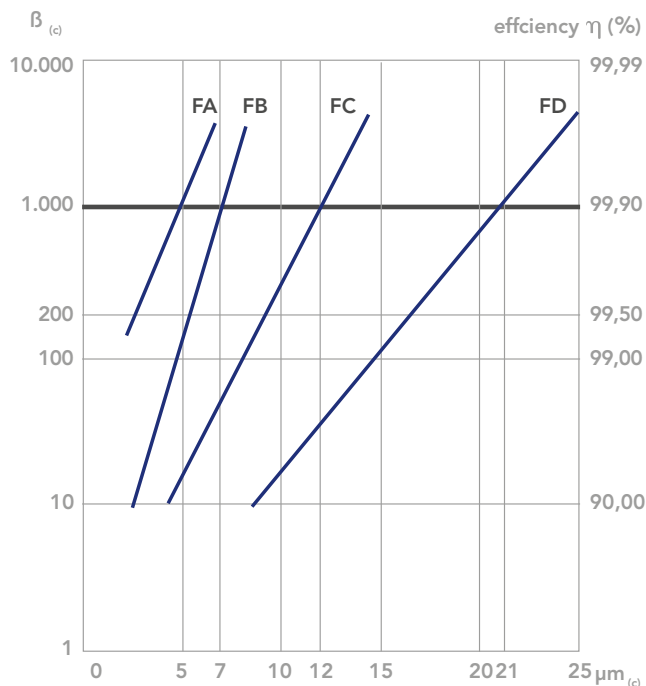
$$\beta_x = 200 \text{ means } = 99,50 \%$$

$$\beta_x = 1.000 \text{ means } = 99,90 \%$$



FILTRATION IN BRIEF

The actual retention capacity behaviour is described in the graph here below:



REFERENCES FOR THE "BETA" RATIO

The standard ISO 16889 has replaced the former ISO 4572 concerning the Multi-Pass test, stating the Beta value of a filter element, since 1999. The current standard prescribes the test dust ISO MTD instead of the formerly used ACFTD, both in Multi-Pass test rigs as well as the calibration of the automatic particle counters.

According to the ISO 16889 the particles sizes are measured with a different method than according to the ISO 4572.

To avoid any confusion, when microns are measured according to the current specification, they are identified as μm(c).

REAL FLOW RATE THROUGH THE FILTER

In order to properly size the filter, it is essential to calculate the REAL flow rate of the oil passing through it:

- In **SUCTION AND PRESSURE FILTERS** the flow rate is usually the same as the pump delivery (with the exception of the FPD01 and 12 series, where the flow rate is just the one required by the pilot valve)
- In **RETURN FILTERS** it is necessary to calculate the maximum possible flow rate, taking into account any potential additional return line, cylinder and accumulator. If such data are unknown,

as a good rule a flow rate at least 2 ÷ 2,5 times the pump delivery should be considered.

Filter element life is significantly affected by the pollution level at the machine location and by the maintenance level of the machine. Considering these parameters the actual flow rate should be multiplied by the following "Environmental Factor".



ENVIRONMENTAL FACTOR

System maintenance level	Environment contamination level		
	LOW	MEDIUM	HIGH
<ul style="list-style-type: none"> • tank with good protection, efficient air breathers • few actuators, with very good protection from contaminant ingress • frequent monitoring of filter conditions 	1	1	1,3
<ul style="list-style-type: none"> • tank with protection, good air breathers • many actuators, with good protection from contaminant ingress • scheduled monitoring of filter conditions 	1	1,5	1,7
<ul style="list-style-type: none"> • tank with poor protection • many actuators, with low protection from contaminant ingresses • random monitoring of filter conditions 	1,3	2	2,3
	F. i. system located in climatized room	F. i. system located in industrial building	F. i. system located in hostile environment (foudry, wood workingmachines, mobile machines)

FILTER SIZING AND PRESSURE DROP (Δp)

The filter sizing is based on the total pressure drop, that depends on the application, the selected filter media, in order to obtain the required oil cleanliness level, and the REAL flow rate.

The pressure drop calculation ("assembly Δp ") is performed by adding together the value of the housing (Δp filter housing) with the value of the filter element (Δp filter element) and should respect the following guidelines:

- 3 kPa (0,03 bar) max for suction filters
- 35 ÷ 50 kPa (0,35 ÷ 0,5 bar) max for return filters
- 35 ÷ 50 kPa (0,35 ÷ 0,5 bar) max for pressure filters < 11 MPa (110 bar)
- 80 ÷ 120 kPa (0,80 ÷ 1,2 bar) max for pressure filters > 11 MPa (110 bar)

Lower initial pressure drop provides better filter efficiency and longer filter element service life.

N.B. The flow rate values given in the tables are referred to mineral oil with kinematic viscosity "V" of 30 cSt and density "ps" = 0,86 Kg/dm³. When using oils with different features, the following correction factors must be applied at the Δp_0 values obtained on the curves:

FILTER HOUSING

the pressure drop is directly proportional to the oil density "ps", so in case you have $ps_1 \neq 0,86$ ► $\Delta p_1 = (\Delta p_0 \times ps_1) : 0,86$

FILTER ELEMENT

the pressure drop through the filter element varies in function of the kinematic oil viscosity, so in case you have a kinematic viscosity V_1 (cSt) different from cSt:

- for kinematic oil viscosity ≤ 150 cSt ► $\Delta p_1 = \Delta p_0 \times (V_1 : 30)$
- for kinematic oil viscosity > 150 cSt ► $\Delta p_1 = \Delta p_0 \times [V_1 : 30 + \sqrt{(V_1 : 30)}] : 2$

(for more details about kinematic oil viscosity see the diagram on the next page)

Some fluids have **filterability problems** (difficulty in passing through a "multilayer" (glassfiber) filter media).

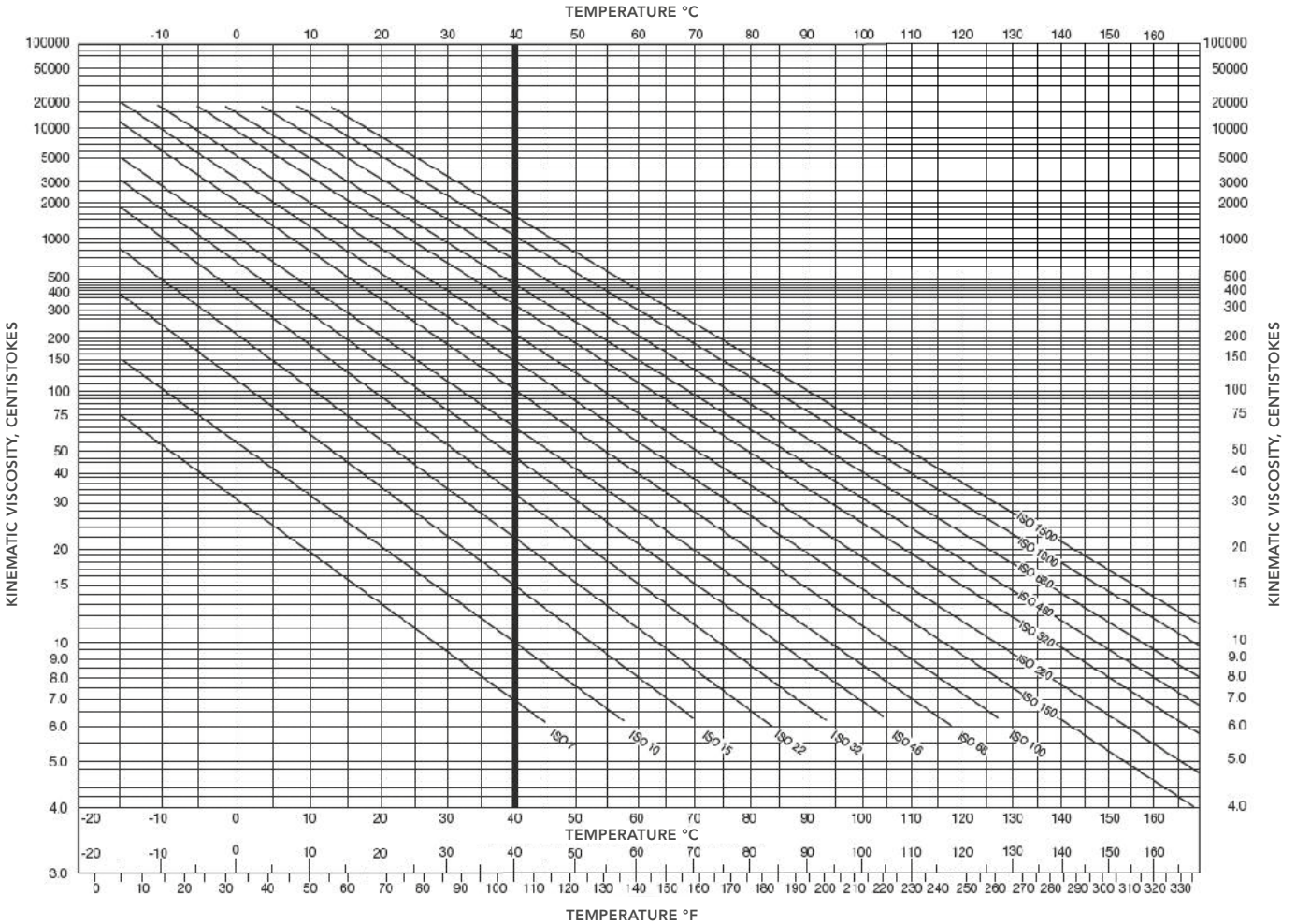
In such cases a **correction factor** must be considered when sizing the filter: this factor must be verified with the filter manufacturing, specifying all the features of the fluid.

It is a good rule, when sizing the filter, to consider also the max recommended fluid speed:

in suction lines $0,1 < v < 1$ m/s | in return lines $1,5 < v < 4$ m/s | in pressure lines $5 < v < 10$ m/s

FILTRATION IN BRIEF

VISCOSITY VS TEMPERATURE



Lines shown refer to oils of ISO preferred grades and V.I. = 100.
Lower V.I. oils will show steeper slopes.
Higher V.I. oils will show flatter slopes.



ISO FLUIDS CLASSIFICATION AND COMPATIBILITY WITH MATERIALS

The below table resume some general indication of fluid classification (ref. ISO 6743) and their compatibility; we recommend to verify the exact features of the fluid with the supplier.

ISO ref.	Type of fluid	Features	Compatibility (10th digit in ordering pn)
HH	Mineral base fluid	No additives	N
HL	Mineral base fluid	Anticorrosion, antioxidation add.	N
HM	Mineral base fluid	Antiwear additives	N
HV	Mineral base fluid	Viscosity improver additives	N
HFA	Fire extinguishing fluid	Oil in water emulsion (water >90%)	G (aluminum and zinc not compatible)
HFB	Fire extinguishing fluid	Water in oil emulsion (water >40%)	G (aluminum and zinc not compatible)
HFC	Fire extinguishing fluid	Water glycol	G (aluminum and zinc not compatible)
HFD	Fire extinguishing fluid	Synthetic fluid (phosforic ester)	F (NBR not compatible)
HTG	Environmentally accepted fluid	Vegetal base fluid	N
HPG	Environmentally accepted fluid	Glycol base synthetic fluid	G (aluminum and zinc not compatible)
HE	Environmentally accepted fluid	Esther base synthetic fluid	F (NBR not compatible)

FILTERS AND FILTER MEDIA

All the hydraulic systems have an initial solid contamination, tending to increase during operation due to component wear, ingresson from the external environment, etc. For this reason it is necessary to use filters that retain the contaminant and allow the fluid to reach and maintain the required contamination class.

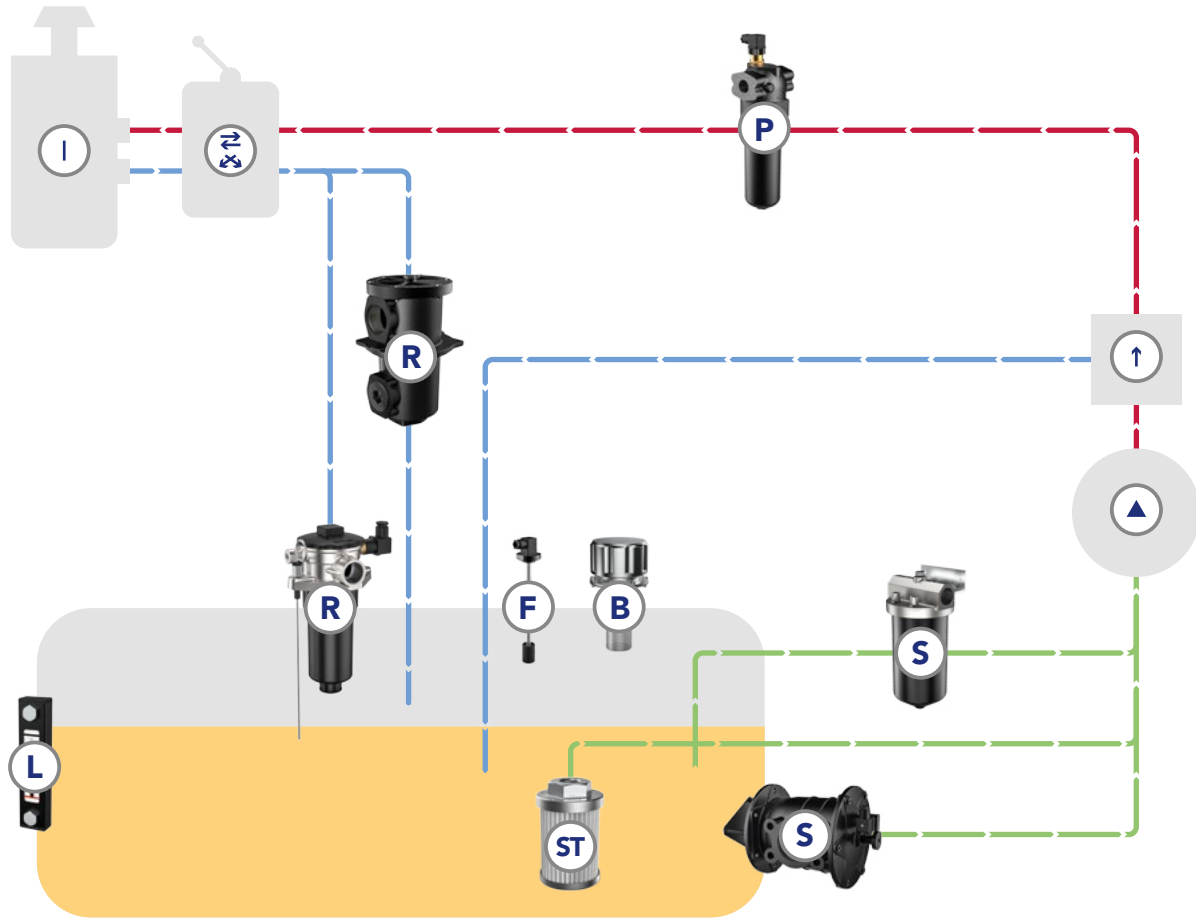
Depending on their location into the system, the most common filter types are:

- **RETURN LINE FILTERS**, downstream from all the components, filtering the oil before it returns into the tank. Their function is keeping the required contamination level inside the tank (indirect protection of the components) and must be sized to have a high dirt holding capacity (i.e. a long life). They usually have filter elements by glassfiber (absolute filtration, $\beta_x \geq 75$) or by cellulose (nominal filtration, $\beta_x \geq 2$).
- **PRESSURE FILTERS**, on the pressure line, protecting directly one or more components, ensuring they are fed with oil with the proper contamination class. They usually have filter elements made from glassfiber (absolute filtration, $\beta_x \geq 75$) or sometimes from cellulose (nominal filtration, $\beta_x \geq 2$).
- **SUCTION FILTERS**, on the suction line, protecting the pump from possible coarse contamination. They usually have filter elements by metal wire mesh (geometric filtration) and must be sized properly, to avoid any possible pump cavitation.
- **OFF-LINE FILTERS**, generally used when a very low contamination class is required (i.e. very good cleanliness). These filters operate with constant flow rate and pressure, thus resulting in the highest filtration efficiency. Even fresh oil presents a certain contamination, so it is a good rule to make any filling or refilling of the system using an OFF-LINE FILTRATION UNIT.
- **AIR FILTERS** (breathers), filtering the air drawn into the tank when the oil goes to the actuators, must be used to avoid contaminant ingresson from the environment.

FILTRATION IN BRIEF



HYDRAULIC CIRCUIT



KEY

- | | |
|----------------------------|------------------------------------|
| L Level indicator | ▲ Pump |
| R Return filter | ↑ Pressure regulator |
| F Float switch | ↔ Directional control valve |
| B Breather | I Double acting cylinder |
| ST Suction strainer | — Suction |
| P Pressure filter | — Return |
| S Suction filter | — Pressure |
| | ● Oil |



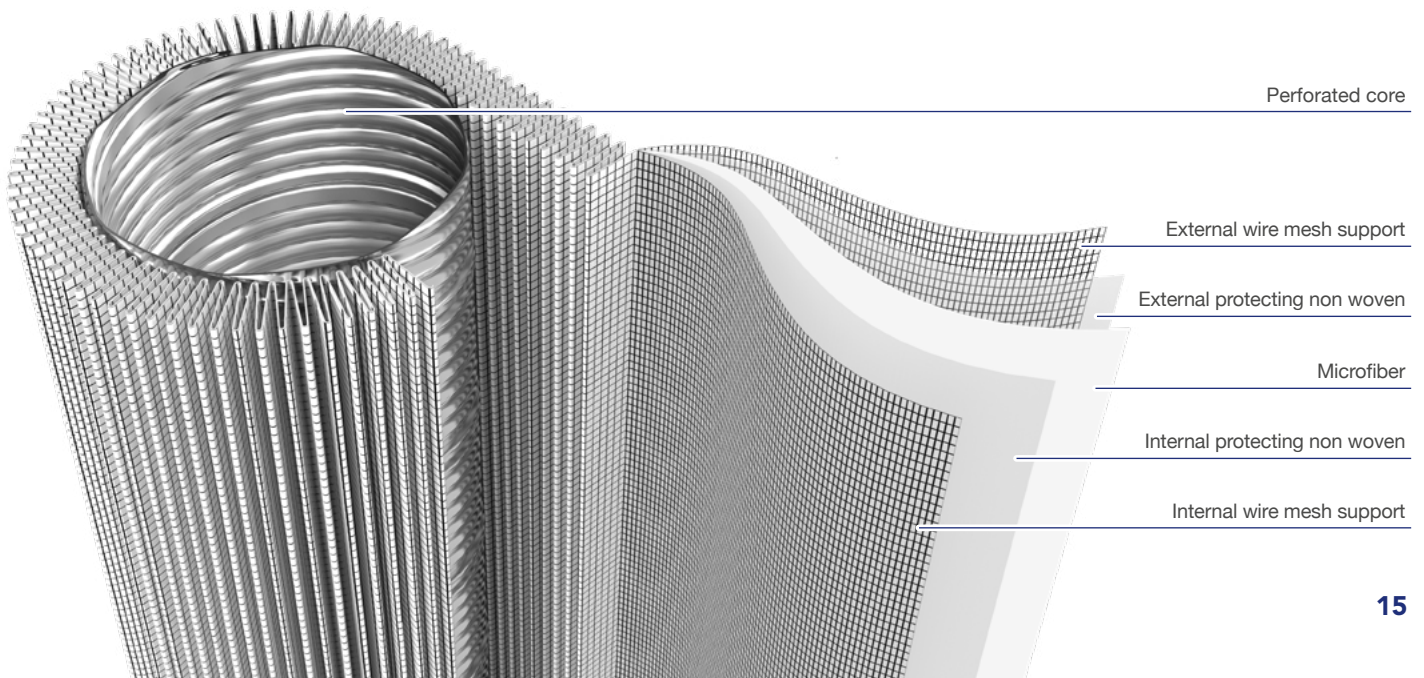
FILTER MEDIA AND CONTAMINATION CLASSES

Each hydraulic component manufacturer specifies the contamination class required for the best performance and life of their components.

To achieve the required contamination class, the proper UFI filter media must be chosen according to this table:

Typical application	Aeronautic, test rigs.	Aeronautic, ind. Robotics	Ind. robotics, precision machine tools	High reliability ind. machines, Hydrostatic transmissions	Industrial machines, earth moving machines	Mobile machines	Machines for heavy industry	Machines for agriculture systems not continuous service
Pumps and/or motors	-	Piston, variable > 21 Mpa	Piston, variable < 21 MPa Vane, variable > 14 Mpa	Pist./vane, variable < 14 MPa Pist./vane, fixed > 14 Mpa	Pistons, fixed < 14 MPa Vane, fixed > 14 Mpa	Vane, fixed gear > 14 Mpa	Vane, fixed gear < 14 Mpa	Vane, fixed gear < 14 Mpa
Valves	Servovalves > 21 Mpa	Servovalves < 21 MPa Proportional > 21 Mpa	Proportional < 21 MPa Cartridge > 14 Mpa	Cartridge < 14 Mpa	Solenoid > 21 Mpa	Solenoid < 21 Mpa	Solenoid > 14 Mpa	Solenoid > 14 Mpa
Contamination class ISO 4406	15/13/10	16/14/11	17/15/12	18/16/13	19/17/14	20/18/15	21/19/16	22/20/17
Recommended UFI filter media	FA $\beta_{5(c)} > 1.000$	FA - FB $\beta_{5(c)} > 1.000$ $\beta_{7(c)} > 1.000$	FB $\beta_{7(c)} > 1.000$	FB - FC $\beta_{7(c)} > 1.000$ $\beta_{12(c)} > 1.000$	FC - FD $\beta_{12(c)} > 1.000$ $\beta_{21(c)} > 1.000$	FD $\beta_{21(c)} > 1.000$	FD - CC $\beta_{21(c)} > 1.000$ $\beta_{10} > 2$	CC $\beta_{10} > 2$

N.B. NAS 1638 is officially inactive for new designs after May 30, 2001.



FORMULA UFI

INNOVATIVE MEDIA SOLUTION FOR HYDRAULIC APPLICATIONS

Thanks to its Innovation centers and its wide experience, UFI Filters has developed different types of high performing media with specific Formulas.

UFI Filters Formulas meets the requirements of maximum protection for hydraulic systems, with high efficiency and constant stability, thanks to high performance materials and filtration media, according to the market and technology demand.

UFI Filters knows the basis of filtration and masters the best filtering materials to make it work at its best.

The company counts now six types of FormulaUFI:

- FormulaUFI.Extreme
- FormulaUFI.Stratiflex
- FormulaUFI.Micron
- FormulaUFI.Web
- FormulaUFI.H2O
- FormulaUFI.Cell

FORMULA UFI .EXTREME

DESCRIPTION

FormulaUFI.Extreme, that is used for example for extreme conditions in agricultural applications, is based on synthetic fibers to maximise the filter life, to reduce pressure drop keeping high filtration efficiency.

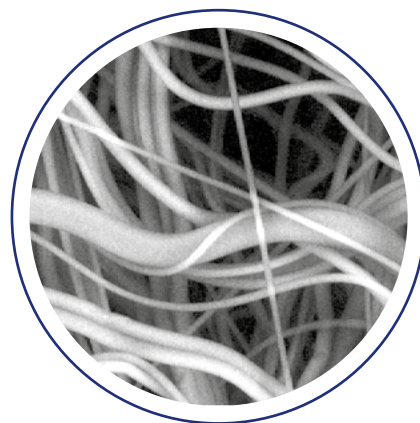
Filter efficiency is related to fibers size and distribution: these and other characteristics vary in order to optimize the performance for each specific application.

UFI has been a pioneer in the development of the FormulaUFI.Extreme.

APPLICATIONS

AGRICULTURAL
CONSTRUCTION
HEAVY DUTY
INDUSTRIAL

MATERIAL HANDLING
POWER GENERATION
PROTECTIVE EQUIP-
MENT



PLUS

- + **Fully synthetic** multilayers media
- + **High filtration efficiency** over 99,5%
- + **Improved geometrical flexibility** and filter downsizing
- + **Not affected by water**
- + **Best performances for constrained volumes**
- + Filter efficiency and life are **better than traditional media**
- + **Low pressure drop** compared to other media
- + Wide range of **tailor made solutions**



FORMULA UFI.STRATIFLEX

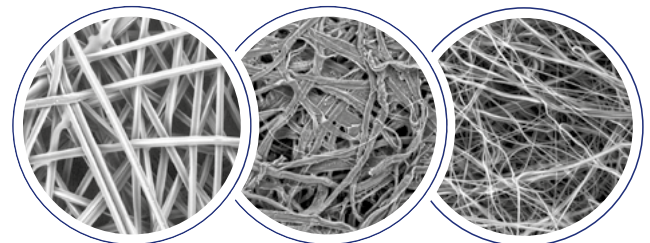
DESCRIPTION

FormulaUFI.StratiFlex, that is used for example in the CNH Cursor Engine Family, is a combination of different layers (i.e. cellulose, glass fibres and hydrophobic barrier) and it's one of the most revolutionary Formulas that UFI Group has developed in the last years.

The combination of different materials guarantees the achievement of unique filtration efficiency together with a long filter life and water separation from fluid.

APPLICATIONS

AGRICULTURAL	INDUSTRIAL
CONSTRUCTION	MATERIAL HANDLING
HEAVY DUTY	POWER GENERATION



SPUNBOND

CELLULOSE

MELTBLOWN

PLUS

- + **Combination of different layers and media**, explores new potential in demanding applications
- + FormulaUFI.StratiFlex exploits the performances of the FormulaUFI.Extreme with the combination of different components in order to achieve the **highest water in fluid separation**
- + **High customisation capacity**
- + **High performance**
- + **High filtration efficiency**

FORMULA UFI.MICRON

DESCRIPTION

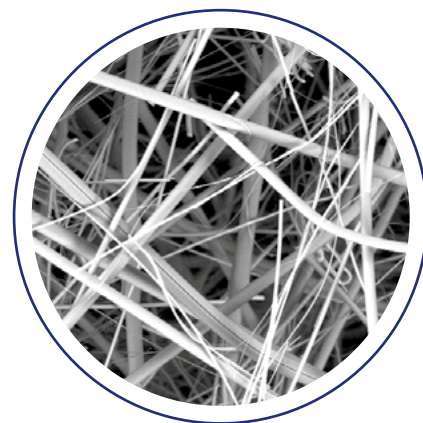
FormulaUFI.Micron, that is used e.g. in wind power generation and industry applications, is based on inorganic fiber impregnated with resins and consists of multiple layers, up to 6.

It provides first class filtration efficiency and low differential pressure drop over the whole lifetime of the element and is available in 5, 7, 12, 16 and 21 $\mu\text{m(c)}$.

FormulaUFI.Micron with multilayer structure retains even smaller particles than indicated on the reference ratio of each filter media. Absolute rated high-efficiency glass fiber media elements are the most suitable selection for achieving target ISO cleanliness codes on systems with components that are sensitive to contamination (wind turbine, servo valves, piston pumps, etc.).

APPLICATIONS

AGRICULTURAL	INDUSTRIAL
CONSTRUCTION	MATERIAL HANDLING
HEAVY DUTY	POWER GENERATION



PLUS

- + **Extended service intervals/Longer service life**
- + **High Dust Holding Capacity (DHC)**
- + **Low pressure drop and improved differential pressure stability**
- + **Optimum retention rate**

FORMULAUF1



Main FormulaUFI.Micron available options are highlighted in the following table. Additional customized options are available on request under technical evaluation of the specific application requirements.

FormulaUFI	FILTRATION RATING $\beta_x > 200$ ISO 16889 (COMPETITION)	FILTRATION RATING $\beta_{x@} > 1000$ ISO 16889 (FormulaUFI)	UFI CODIFICATION	SOFIMA CODIFICATION
FormulaUFI.MICRON	3 μm	5 $\mu\text{m}_{(c)}$	FA	FT
FormulaUFI.MICRON	6 μm	7 $\mu\text{m}_{(c)}$	FB	FC
FormulaUFI.MICRON	10 μm	12 $\mu\text{m}_{(c)}$	FC	FD
FormulaUFI.MICRON	14 μm	16 $\mu\text{m}_{(c)}$	FS	FS
FormulaUFI.MICRON	19 μm	21 $\mu\text{m}_{(c)}$	FD	FV
FormulaUFI.MICRON	26 μm	30 $\mu\text{m}_{(c)}$	FE	
FormulaUFI.MICRON High collapse version	3 μm	5 $\mu\text{m}_{(c)}$	HA	2T
FormulaUFI.MICRON High collapse version	6 μm	7 $\mu\text{m}_{(c)}$	HB	2C
FormulaUFI.MICRON High collapse version	10 μm	12 $\mu\text{m}_{(c)}$	HC	2D
FormulaUFI.MICRON High collapse version	14 μm	16 $\mu\text{m}_{(c)}$	HS	2S
FormulaUFI.MICRON High collapse version	19 μm	21 $\mu\text{m}_{(c)}$	HD	2V
FormulaUFI.MICRON Supported by inox wiremesh	3 μm	5 $\mu\text{m}_{(c)}$	GA	
FormulaUFI.MICRON Supported by inox wiremesh	6 μm	7 $\mu\text{m}_{(c)}$	GB	
FormulaUFI.MICRON Supported by inox wiremesh	14 μm	16 $\mu\text{m}_{(c)}$	GS	
FormulaUFI.MICRON Supported by inox wiremesh	19 μm	21 $\mu\text{m}_{(c)}$	GD	



FORMULA UFI.WEB

DESCRIPTION

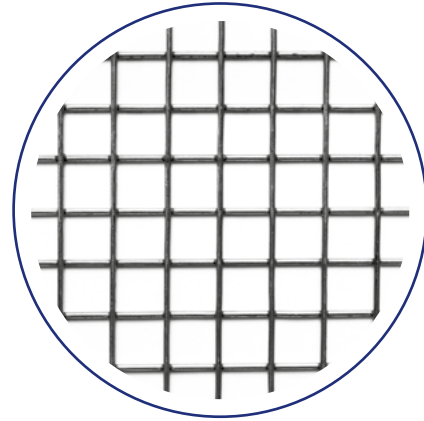
FormulaUFI.Web, that is used e.g. in the ZF Automatic Transmission Filter and in pressure line as last chance filter, provides protection to sensitive and critical components, e.g. in the Danfoss Hydraulic Integrated Circuit and in the Carraro specialty tractors as protection of the hydraulic power lift.

FormulaUFI.Web is based on stainless steel mesh having such characteristics of good strength, flexibility, wide range of fluids compatibility, high temperature resistance and extremely low pressure drop with high flow rates as required for suction applications.

APPLICATIONS

AGRICULTURAL
CONSTRUCTION
HEAVY DUTY

INDUSTRIAL
MATERIAL HANDLING
POWER GENERATION



PLUS

- + **Very robust structure** and high level of heat, chemical, corrosion, abrasion and differential pressure resistance.
- + **Geometrical structure:** precise and uniform surface area.
- + **Multiple construction layout** for multiple filtration rate requests.

Main FormulaUFI.Web available options are highlighted in the following table. Additional customized options are available on request under technical evaluation of the specific application requirements.

FormulaUFI	FILTRATION RATING	UFI CODIFICATION	SOFIMA CODIFICATION
FormulaUFI.WEB	10 µm	MC	RD
FormulaUFI.WEB	30 µm	MD	MV-RT
FormulaUFI.WEB	60 µm	ME	MS
FormulaUFI.WEB	90 µm	MF	MN
FormulaUFI.WEB	150 µm	MQ	MC
FormulaUFI.WEB	250 µm	MG	DC
FormulaUFI.WEB	400 µm	SH	QC
FormulaUFI.WEB	500 µm	SK	CQ
FormulaUFI.WEB	600 µm	SL	SC
FormulaUFI.WEB	2000 µm	SR	DM
FormulaUFI.WEB - High collapse version	10 µm	TC	TD
FormulaUFI.WEB - High collapse version	25 µm	TD	TV
FormulaUFI.WEB - High collapse version	60 µm	TE	TS
FormulaUFI.WEB - High collapse version	90 µm	TF	TN

FORMULA UFI

FORMULA UFI.H2O

DESCRIPTION

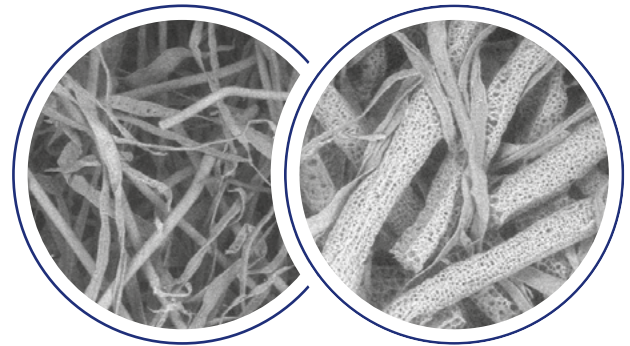
FormulaUFI.H2O, that is used for e.g. in off-line filters or in mobile filtration units, is based on super-absorbent polymer technology with a high affinity for water absorption and removes up to 80% of the free water present in the oil.

FormulaUFI.H2O works by absorption and ensures a high water retention capacity in all applications subject to water infiltration.

APPLICATIONS

AGRICULTURAL
CONSTRUCTION
HEAVY DUTY

INDUSTRIAL
MATERIAL HANDLING
POWER GENERATION



DRY

WET

PLUS

- + **High water separation performances,** in particular when used in combination with other layers
- + **Always coupled with high quality meltblown** to increase filter life
- + **Very high filtration efficiency**

Main FormulaUFI.Web available options are highlighted in the following table. Additional customized options are available on request under technical evaluation of the specific application requirements.

FormulaUFI	FILTRATION RATING $\beta_x \geq 1000$ ISO 16889	UFI CODIFICATION	SOFIMA CODIFICATION
FormulaUFI.H2O	21 μ m	WR	WR



FORMULA UFI.CELL

DESCRIPTION

FormulaUFI.Cell is based on paper fibers made from pure cellulose impregnated with resin to maximize the filter life and reduce pressure drop.

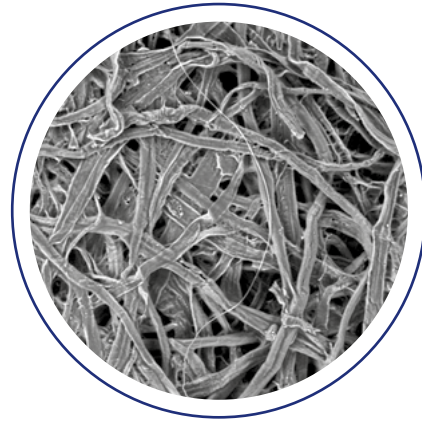
Cellulose provides effective filtration for a variety of hydraulic applications, like concrete pumps and mining vehicles. It is also used for air breathers, return line filters and spin-on cartridges, in which a good quality-price ratio should be recommended.

Cellulose presents a porous surface, so that filtering media are classified on average pore size.

APPLICATIONS

AGRICULTURAL
CONSTRUCTION
HEAVY DUTY

INDUSTRIAL
MATERIAL HANDLING
POWER GENERATION



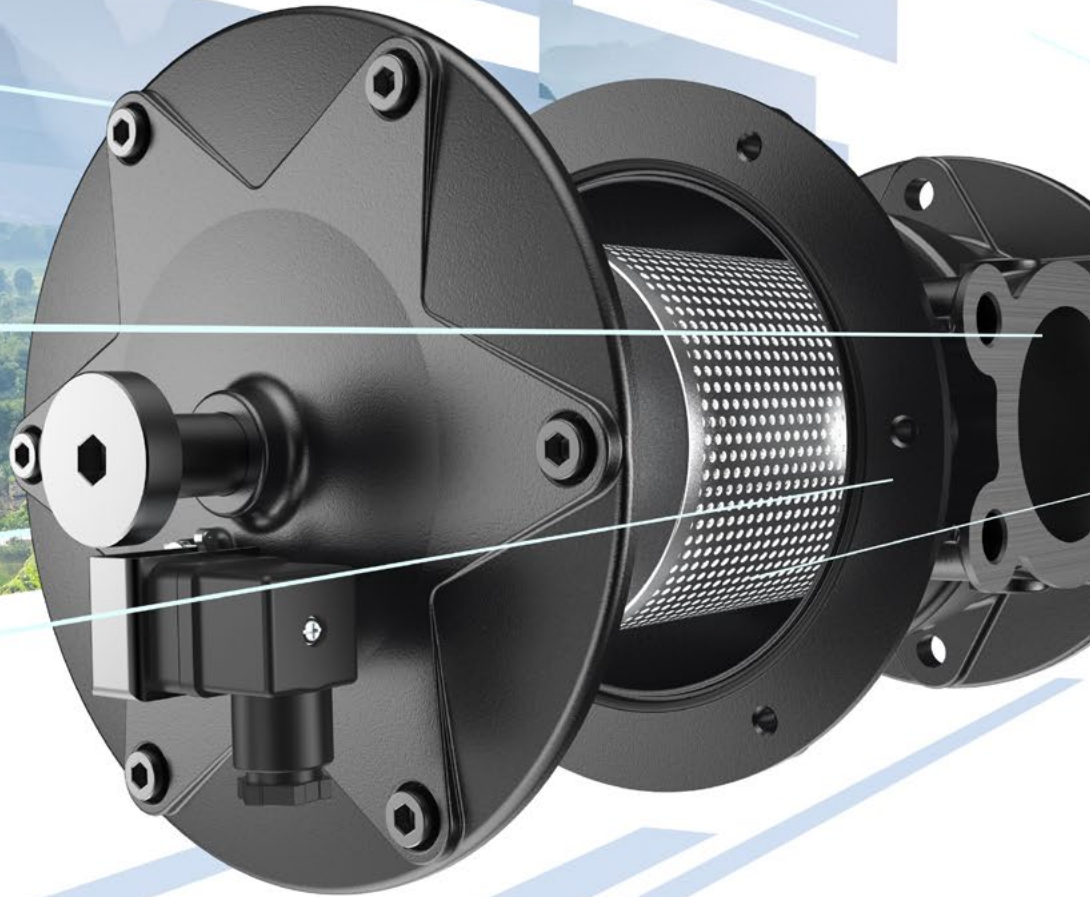
PLUS

- + **Improved performances** in mechanical stability and filter life
- + **High stiffness to retain stability** also during low temperature conditions
- + **Effective filtration** for a wide variety of petroleum-based fluids

Main FormulaUFI.Cell available options are highlighted in the following table. Additional customized options are available on request under technical evaluation of the specific application requirements.

FormulaUFI	FILTRATION RATING $\beta_x \geq 2$ ISO 16889	UFI CODIFICATION	SOFIMA CODIFICATION
FormulaUFI.CELL	10 μ m	CC	CD
FormulaUFI.CELL	25 μ m	CD	CV
FormulaUFI.CELL - Reinforced version	10 μ m	RC	DR
FormulaUFI.CELL - Reinforced version	25 μ m	RD	VR

SUCTION FILTERS



OPTIMAL PROTECTION OF YOUR PUMP

Application:

Suction filters protect the downstream hydraulic-pump from coarse contamination, mainly due to lack of initial cleaning or to an accidental ingress.

They take care of the pump, ensuring a safe and efficient operation. Suction Filters must be properly sized to avoid the cavitation of the pump. A proper filter media selection is highly recommended.

Although these filters play an important role in the hydraulic circuit, the general cleanliness level required by the system must be ensured by additional filters having that function, as Return or Pressure filters.

User Benefits:

Suction filters represent the “first-line” filtration and are used to:

- avoid the ingress of contamination into the hydraulic circuit
- prolong the lifetime of finer downstream filtration
- reduce the particulate-load on the finer filter, thus extending service life-intervals, unplanned downtime and maintenance
- avoid damage to the finer downstream filter from coarse particulate, such as rust.

The overall consequence of effective “first-line” suction filtration is a reduction in the running costs of the hydraulic-pump.



CAL

SUCTION FILTERS



DESCRIPTION

In-line suction element

MATERIALS

Housing: Zinc plated steel

FLOW RATE

Qmax 100 l/min

WORKING TEMPERATURE

From -25° to +110° C

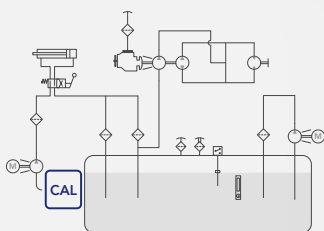
COMPATIBILITY (ISO 2943)

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

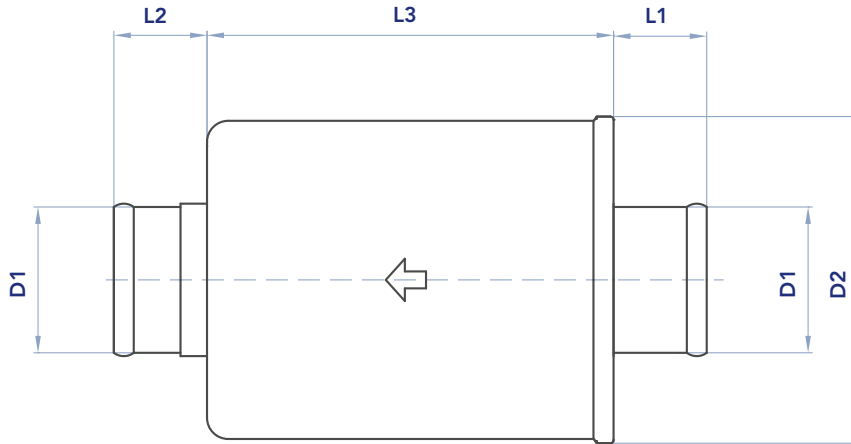


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CAL

SUCTION FILTERS

INSTALLATION DRAWING



FILTER HOUSING

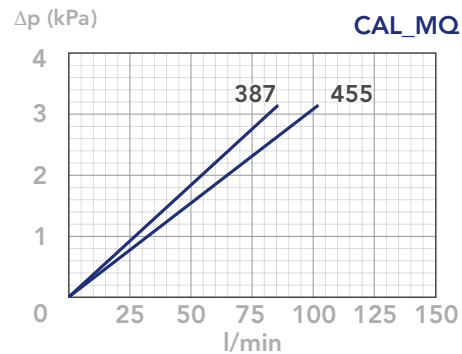
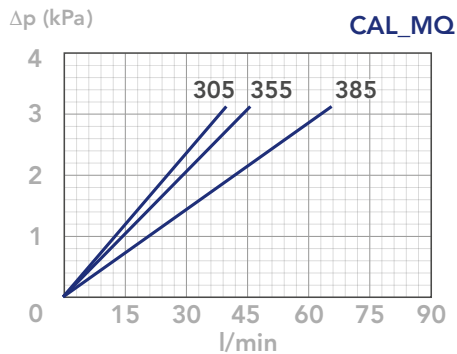
	Nominal Flow Rate l/min	Filter Media	D1	D2	L1	L2	L3	kg
CAL305MQ	40	FormulaUFI.WEB 160 µm	30	72	23	23	100	0,35
CAL355MQ	45	FormulaUFI.WEB 160 µm	35	80	22	22	96	0,35
CAL385MQ	65	FormulaUFI.WEB 160 µm	38	72	22	22	102	0,35
CAL387MQ	85	FormulaUFI.WEB 160 µm	38	72	23	23	160	0,40
CAL455MQ	100	FormulaUFI.WEB 160 µm	45	100	32	42	139	0,65

MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. When it is time to change the filter element, switch off the system before removing the element. Remove the dirty filter element and replace it with an original UFI Hydraulics element, verifying the part number on the filter can or in the ordering and option chart.

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 authorized Companies. We recommend the stocking of a spare UFI Hydraulics filter element for timely replacement when required.

PRESSURE DROP CURVES (ΔP)



N.B.

The references fluid has a kinematic viscosity 30 cSt and specific gravity 0,86 kg/dm³.

For different oil viscosity please contact our Customer Service for further information.



ESA-ESB

SUCTION FILTERS



DESCRIPTION

Suction strainer

MATERIALS

Connector: Polyamide (Aluminum for ESA & ESB 51 - 52)
End cap: Polyamide (Zinc plated steel for ESA & ESB 51 - 52)
Bypass valve: (ESA) Polyamide
Magnetic core: (ESB) Syntherized magnetic material

PRESSURE

Collapse, differential: 100 kPa (1 bar)

BYPASS VALVE

Setting: 30 kPa (0,3 bar) \pm 10%

FLOW RATE

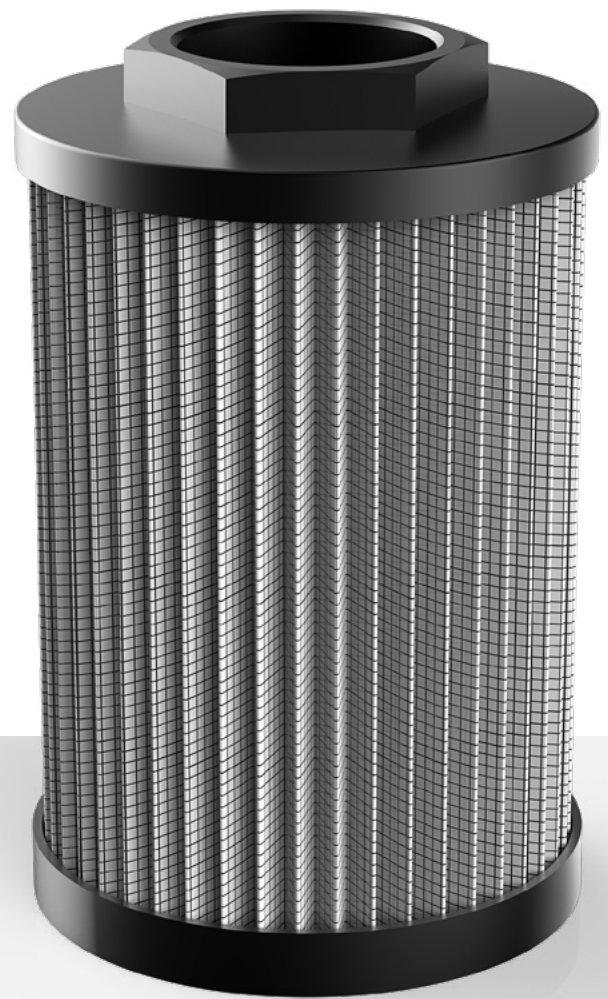
Qmax 600 l/min

WORKING TEMPERATURE

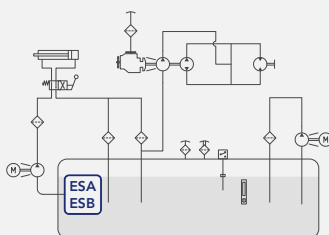
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.



HYDRAULIC DIAGRAM



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ORDERING AND OPTION CHART

E	S	A	FILTER ELEMENT FAMILY													
			SIZE & LENGTH	11	21	2A	22	30	31	32	40	41	42	43	51	52
			PORT TYPE													
			B = BSP thread	B	B	B	B	B	B	B	B	B	B	B	B	B
			N = NPT thread	N	N	N	N	N	N	N	N	N	N	N	-	-
			PORT SIZE													
			03 = 3/8"	03	-	-	-	-	-	-	-	-	-	-	-	-
			04 = 1/2"	04	04	04	-	-	-	-	-	-	-	-	-	-
			06 = 3/4"	-	06	06	-	-	-	-	-	-	-	-	-	-
			08 = 1"	-	-	-	08	-	-	-	-	-	-	-	-	-
			10 = 1" 1/4	-	-	-	-	10	10	10	-	-	-	-	-	-
			12 = 1" 1/2	-	-	-	-	12	12	12	12	12	-	-	-	-
			16 = 2"	-	-	-	-	-	-	16	16	16	16	-	-	-
			20 = 2" 1/2	-	-	-	-	-	-	-	-	-	20	-	-	-
			24 = 3"	-	-	-	-	-	-	-	-	-	24	24	-	-
			28 = 3" 1/2	-	-	-	-	-	-	-	-	-	-	-	28	-
			32 = 4"	-	-	-	-	-	-	-	-	-	-	-	-	32
			BYPASS VALVE													
			W = without	W	W	W	W	W	W	W	W	W	W	W	W	W
			A = 30 kPa (0,3 bar)	D	D	D	D	D	D	D	D	D	D	D	D	D
			FormulaUFI MEDIA													
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
			MG = FormulaUFI.WEB 250 µm	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG



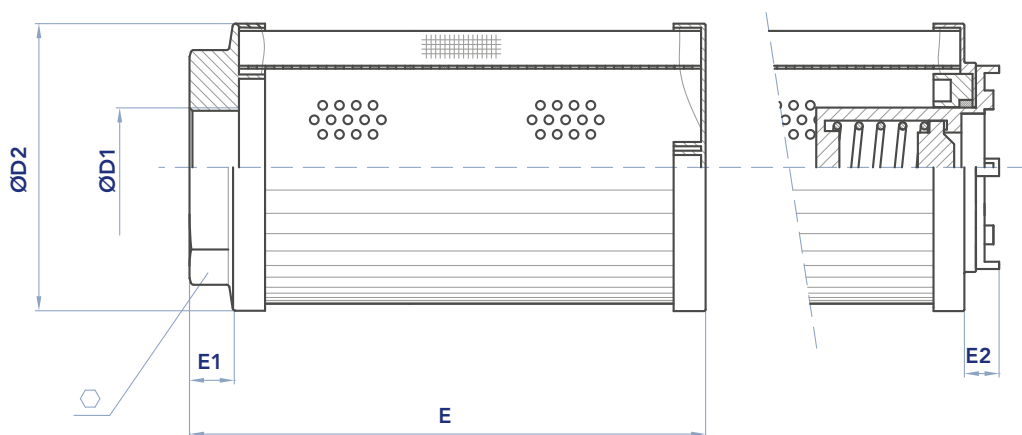
ORDERING AND OPTION CHART

E	S	B	FILTER ELEMENT FAMILY													
			SIZE & LENGTH	11	21	2A	22	30	31	32	40	41	42	43	51	52
			PORT TYPE													
			B = BSP thread	B	B	B	B	B	B	B	B	B	B	B	B	B
			N = NPT thread	N	N	N	N	N	N	N	N	N	N	N	-	-
			PORT SIZE													
			03 = 3/8"	03	-	-	-	-	-	-	-	-	-	-	-	-
			04 = 1/2"	04	04	04	-	-	-	-	-	-	-	-	-	-
			06 = 3/4"	-	06	06	-	-	-	-	-	-	-	-	-	-
			08 = 1"	-	-	-	08	-	-	-	-	-	-	-	-	-
			10 = 1" 1/4	-	-	-	-	10	10	10	-	-	-	-	-	-
			12 = 1" 1/2	-	-	-	-	12	12	12	12	12	-	-	-	-
			16 = 2"	-	-	-	-	-	-	16	16	16	16	-	-	-
			20 = 2" 1/2	-	-	-	-	-	-	-	-	-	20	-	-	-
			24 = 3"	-	-	-	-	-	-	-	-	-	24	24	-	-
			28 = 3" 1/2	-	-	-	-	-	-	-	-	-	-	-	28	-
			32 = 4"	-	-	-	-	-	-	-	-	-	-	-	-	32
			BYPASS VALVE													
			X = not available	X	X	X	X	X	X	X	X	X	X	X	X	X
			FormulaUFI MEDIA													
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF	MF
			MG = FormulaUFI.WEB 250 µm	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG	MG

ESA

SUCTION FILTERS

INSTALLATION DRAWING



FILTER HOUSING

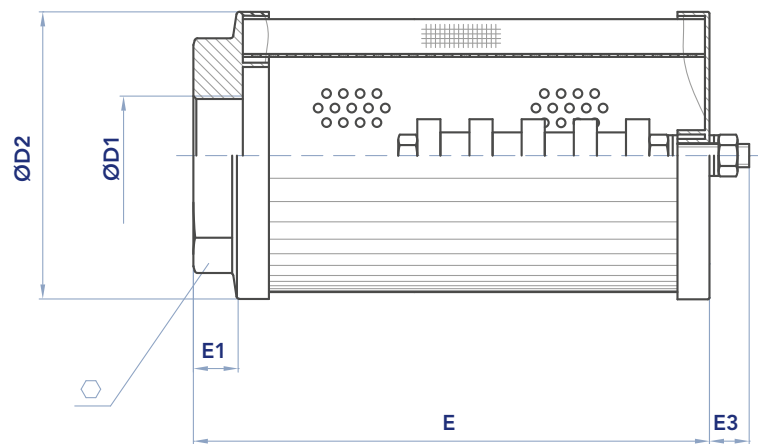
	D1	D2	E	E1	E2	⬡	Kg
ESA11	3/8" - 1/2"	52	73	12	8	30	0,05
ESA21	1/2" - 3/4"	70	92	13	11	42	0,25
ESA2A	1/2" - 3/4"	70	141	13	11	42	0,25
ESA22	1"	70	137	13	11	42	0,25
ESA30	1"1/4 - 1"1/2"	99	135	15	8	70	0,30
ESA31	1"1/4 - 1"1/2"	99	178	15	8	70	0,40
ESA32	1"1/4 - 1"1/2 - 2"	99	218	15	8	70	0,50
ESA40	1"1/2 - 2"	130	160	15	15	101	0,50
ESA41	1"1/2 - 2"	130	201	15	15	101	0,70
ESA42	2" - 2"1/2 - 3"	130	253	15	15	101	1,00
ESA43	3"	130	330	15	15	101	1,30
ESA51	3"1/2"	180	390	35	-	140	2,80
ESA52	4"	180	440	35	-	140	3,00

ESB

SUCTION FILTERS



INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	E	E1	E3	⬡	Kg
ESB11	3/8" - 1/2"	52	73	12	9	30	0,10
ESB21	1/2" - 3/4"	70	92	13	12	42	0,30
ESB2A	1/2" - 3/4"	70	141	13	12	42	0,30
ESB22	1"	70	137	13	12	42	0,30
ESB30	1"1/4 - 1"1/2	99	135	15	12	70	0,35
ESB31	1"1/4 - 1"1/2	99	178	15	12	70	0,45
ESB32	1"1/4 - 1"1/2 - 2"	99	218	15	14	70	0,60
ESB40	1"1/2 - 2"	130	160	15	14	70	0,60
ESB41	1"1/2 - 2"	130	201	15	14	70	0,80
ESB42	2" - 2"1/2 - 3"	130	253	15	14	101	1,20
ESB43	3"	130	330	15	14	101	1,50
ESB51	3"1/2	180	390	35	14	140	3,00
ESB52	4"	180	440	35	14	140	3,20

ESA-ESB

SUCTION FILTERS

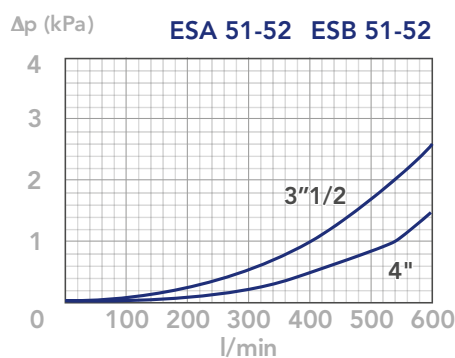
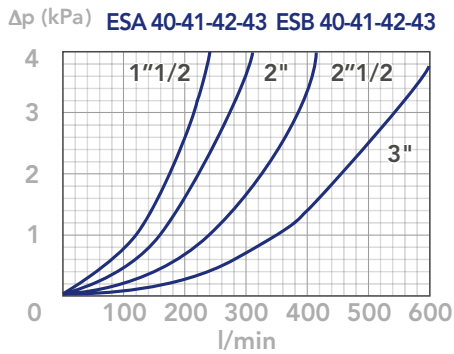
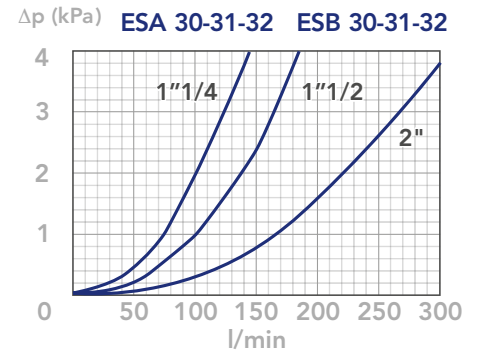
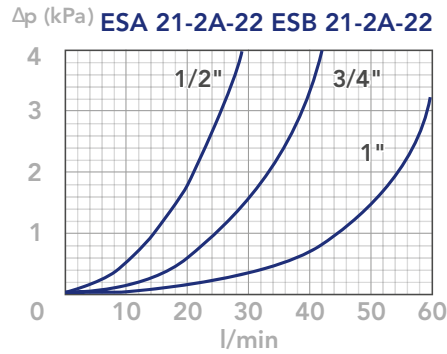
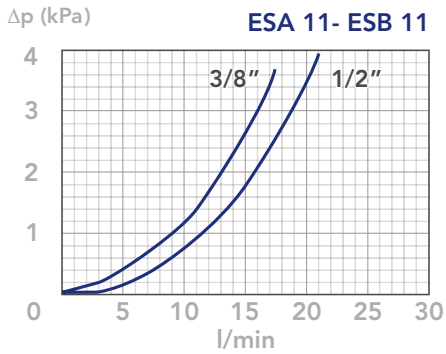
MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. When it is time to change the filter element, switch off the system before opening the tank. Remove the dirty filter element and replace it with an original UFI Hydraulics element, verifying the part number on the filter cap or in the ordering and option chart. Close the tank.

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 authorized Companies. We recommend the stocking of a spare UFI Hydraulics filter element for timely replacement when required.

PRESSURE DROP CURVES (ΔP)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).



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.



FAM

SUCTION FILTERS

DESCRIPTION

Suction strainer

MATERIALS

Connector: Aluminum
Internal core: Zinc plated steel
End cap: Zinc plated steel

PRESSURE

Collapse, differential: 100 kPa (1 bar)

BYPASS VALVE

Setting: 30 kPa (0,3 bar)
(not available for FAM130-150)

FLOW RATE

Qmax 600 l/min

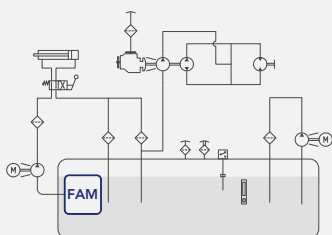
WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



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FAM

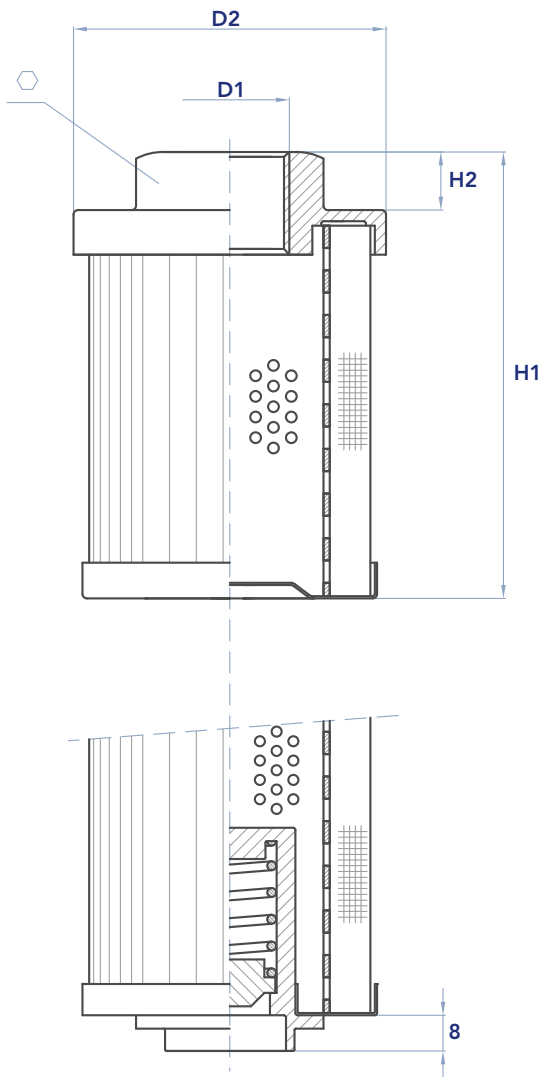
SUCTION FILTERS

ORDERING AND OPTION CHART (SOFIMA CODIFICATION)

F	A	M	FILTER ELEMENT FAMILY																					
SIZE & LENGTH			003	004	006	008	011	013	015	020	025	030	040	043	045	050	060	065	075	080	115	130	150	
			FormulaUFI MEDIA																					
			MS = FormulaUFI.WEB 60 µm	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	MS	
			MN = FormulaUFI.WEB 90 µm	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	MN	
			DC = FormulaUFI.WEB 250 µm	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	DC	
		X	SEALS																					
			X = not available	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
			BYPASS VALVE																					
			S = without	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
			A = bypass valve 300 kPa (0,3 bar)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	-	
		B	PORTS																					
			B = BSP	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
			PORT SIZE																					
			2 = 3/8"	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			3 = 1/2"	-	3	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			4 = 3/4"	-	-	-	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
			5 = 1"	-	-	-	-	-	5	5	5	-	-	-	-	-	-	-	-	-	-	-	-	
			6 = 1" 1/4	-	-	-	-	-	-	-	-	6	6	-	6	-	-	-	-	-	-	-	-	
			7 = 1" 1/2	-	-	-	-	-	-	-	-	-	-	7	-	7	7	-	-	-	-	-	-	
			8 = 2"	-	-	-	-	-	-	-	-	-	-	-	-	-	8	8	8	-	-	-	-	
			9 = 2" 1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	
			A = 3"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A	-	-	
			B = 3" 1/2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	B	-	
			C = 4"	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	
			ACCESSORIES																					
			S = without	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	S	
			QUANTITY PER BOX																					
			(only S version, without bypass)	24	24	15	15	15	15	12	6	12	6	6	6	12	6	6	6	6	6	1	1	1



INSTALLATION DRAWING



SUCTION STRAINER

	D1	D2	H1	H2	⬡	Kg	Area (cm ²) Media M+
FAM003	3/8"	52	80	10	30	0,14	240
FAM004	1/2"	52	80	10	30	0,20	285
FAM006	1/2"	71	100	13	42	0,60	495
FAM008	3/4"	71	100	13	42	0,26	495
FAM011	3/4"	71	145	13	42	0,29	770
FAM013	1"	71	145	13	42	0,23	770
FAM015	1"	96	100	13	60	0,37	590
FAM020	1"	96	135	13	60	0,54	840
FAM025	1" 1/4	96	100	13	60	0,42	590
FAM030	1" 1/4	96	220	13	60	0,65	1450
FAM040	1" 1/2	96	220	13	60	0,60	1450
FAM043	1" 1/4	96	135	13	75	0,50	840
FAM045	1" 1/2	140	115	13	75	1,44	1160
FAM050	1" 1/2	140	155	13	75	1,50	1640
FAM060	2"	140	155	13	75	1,42	1640
FAM065	2"	140	215	13	75	1,37	2360
FAM075	2"	140	265	13	75	1,33	2960
FAM080	2" 1/2	140	277	25	101	1,35	2960
FAM115	3"	140	325	25	101	1,28	3255
FAM130	3" 1/2	180	390	35	140	2,87	6600
FAM150	4"	180	440	35	140	2,79	7545

FAM

SUCTION FILTERS



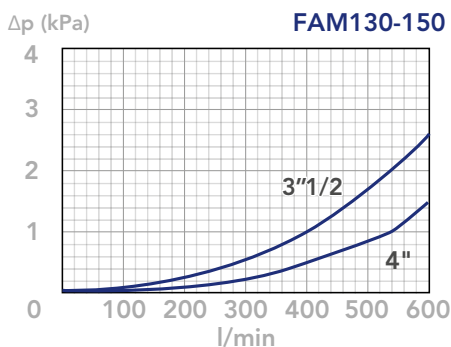
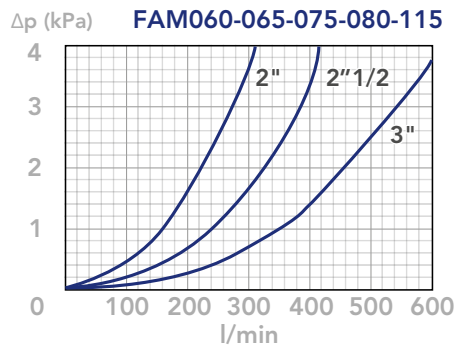
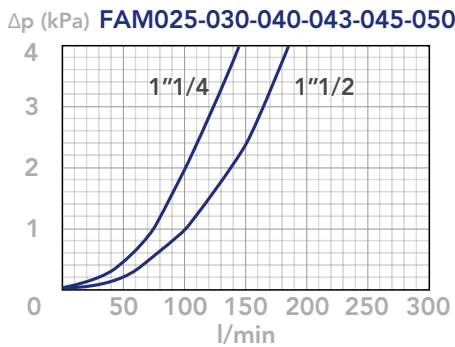
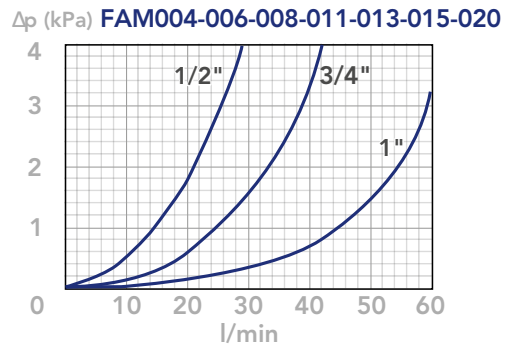
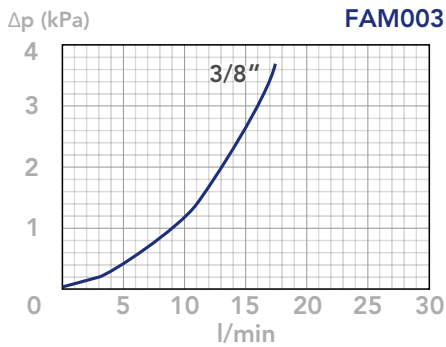
MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. When it is time to change the filter element, switch off the system before opening the tank. Remove the dirty filter element and replace it with an original UFI Hydraulics element, verifying the part number on the filter cap or in the ordering and option chart. Close the tank.

N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed according to the local laws, by authorized Companies. We recommend the stocking of a spare UFI Hydraulics filter element for timely replacement when required.

PRESSURE DROP CURVES (Δp)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).



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.



FMA

SUCTION FILTERS

DESCRIPTION

Multipurpose filter

MATERIALS

Housing: Aluminum alloy
Bowl: Cold formed steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max working: 0,7 MPa (7 bar)
Collapse, differential for the filter element (ISO 2941): 300 kPa (3 bar)

FLOW RATE

Qmax 600 l/min

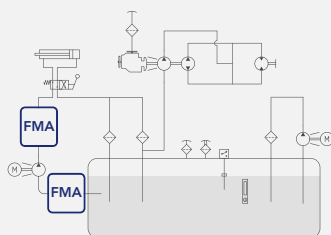
WORKING TEMPERATURE

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



FMA

SUCTION FILTERS



ORDERING AND OPTION CHART

F	M	A	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	M	A
			SIZE & LENGTH	11	21	22	31	32	SIZE & LENGTH			
		B	PORT TYPE									
			B = BSP thread	B	B	B	B	B				
			PORT SIZE									
			04 = 1/2"	04	-	-	-	-				
			06 = 3/4"	-	06	-	-	-				
			08 = 1"	-	-	08	-	-				
			10 = 1" 1/4	-	-	-	10	-				
			12 = 1" 1/2	-	-	-	-	12				
		X	BYPASS VALVE									
			X = not available	B	B	B	B	B				
			SEALS						SEALS			
			N = NBR Nitrile	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G				
			FormulaUFI MEDIA						FormulaUFI MEDIA			
			CC = FormulaUFI.CELL 10 µm β>2	CC	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 µm β>2	CD	CD	CD	CD	CD				
			MD = FormulaUFI.WEB 30 µm	MD	ME	ME	ME	ME				
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME				
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF				
			MG = FormulaUFI.WEB 250 µm	MG	MG	MG	MG	MG				
			WR = FormulaUFI.H2O*	WR	WR	WR	WR	WR				
			CLOGGING INDICATOR									
			0E = nr. 2x1/8" ports, plugged	0E	0E	0E	0E	0E				
			11 = vacuum gauge**	11	11	11	11	11				
			91 = vacuum switch**	91	91	91	91	91				
			33 = pressure gauge, rear connection***	33	33	33	33	33				
			P1 = SPDT, pressure switch***	P1	P1	P1	P1	P1				
			ACCESSORI / ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			B = mounting brackets	B	B	B	B	B				
		X	ACCESSORI / ACCESSORIES									
			X = no accessory available	X	X	X	X	X				

* Water removal media - see "Hydro Dry" or FormulaUFI chapters
 ** For Suction line
 *** For Return and Low Pressure line

SPARE PARTS

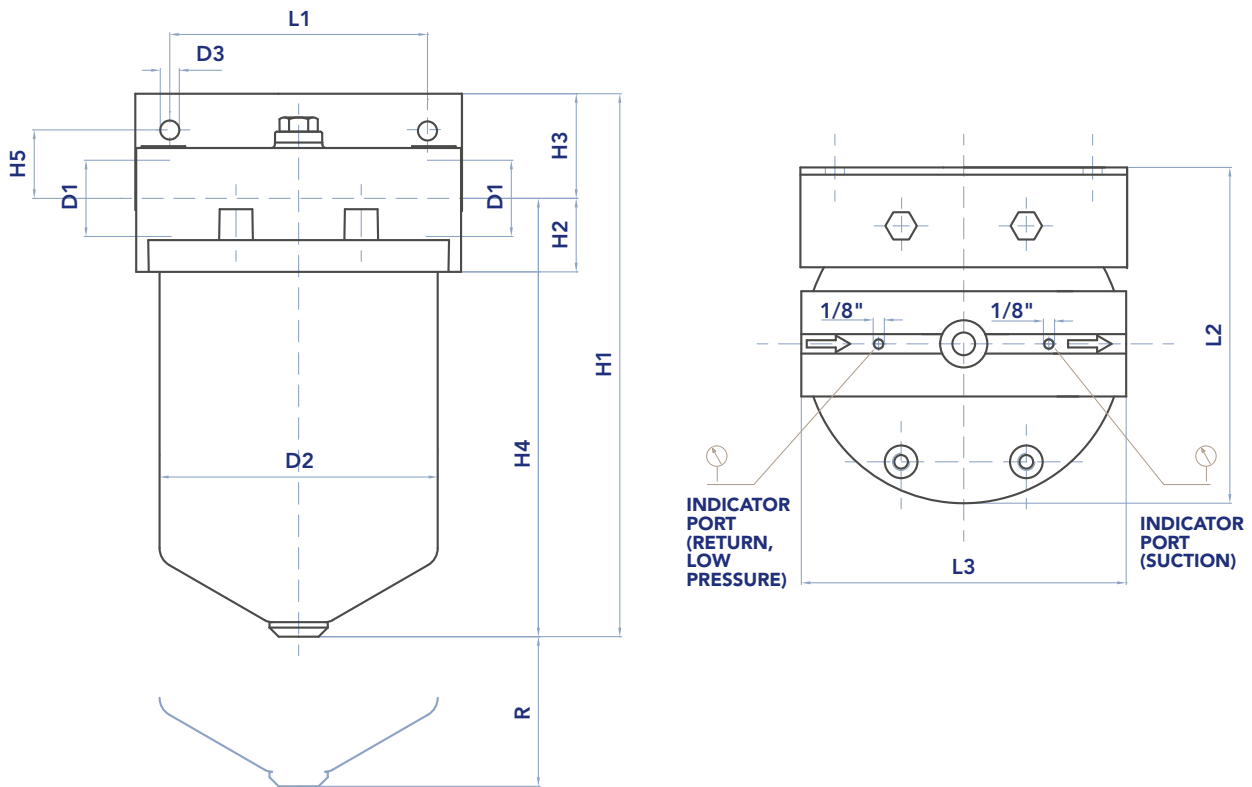
FILTER HOUSING										FILTER ELEMENT					CLOGGING INDICATOR		
B	M	A								E	M	A					



SPARE SEAL KIT

	NBR	FKM
FMA11	521.0111.2	521.0090.2
FMA21-22	521.0023.2	521.0091.2
FMA31-32	521.0089.2	521.0092.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	H1	H2	H3	L1	D2	H4	L2	D3	L3	H5	R	kg
FMA11	1/2"	170	22	38	50	81	132	95	6,5	105	26	20	1,0
FMA21	3/4"	245	37	40	100	114	205	135	8,5	140	24	25	2,0
FMA22	1"	285	37	40	100	114	245	135	8,5	140	24	25	2,5
FMA31	1"1/4	290	40	50	150	155	240	185	10,5	178	28	25	6,0
FMA32	1"1/2	350	40	50	150	155	300	185	10,5	178	28	25	6,5

FMA

SUCTION FILTERS



FILTER ELEMENT

	AREA (cm ²)					
	A	B	C	Media M+	Media C+	Media WR
EMA11	70	29,5	88	480	1.180	669
EMA21	70	29,5	134	750	1.800	1.036
EMA22	95	41	175	1.650	2.400	2.112
EMA31	140	65,5	145	1.740	4.440	3.181
EMA32	140	65,5	205	2.490	6.390	4.574



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the screw (1) to remove the bowl (2). The filter element is assembled on the bottom.
- 4) Empty the bowl (2)
- 5) Remove the dirty filter element (3).
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.
- 6) Check the filter element part number on the filter label or in the ordering and option chart.
Use only original spare parts.
- 7) Check the correct position of the gasket (4) and the spring (5) on the central pin (6) in the bowl. Insert the clean element onto the pin, in contact with the gasket
Lubricate the element o-ring gasket (3) with oil.
- 8) Keep the housing (2) and its gasket (7) against the head (8). Tighten the screw (1) with the washer (9) until the seal between bowl and head is guaranteed.

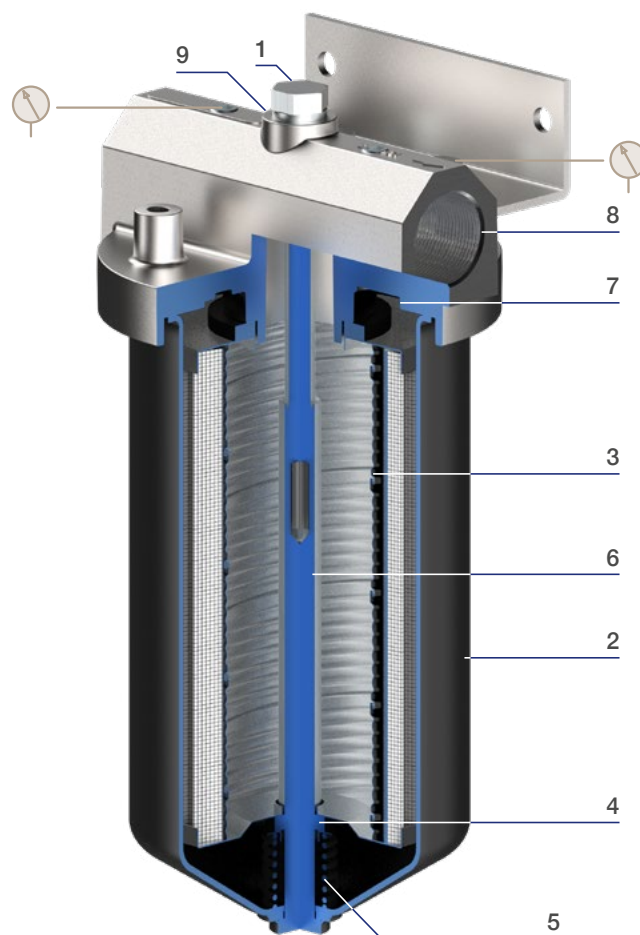
Accessories:

Clogging indicator (6).

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.

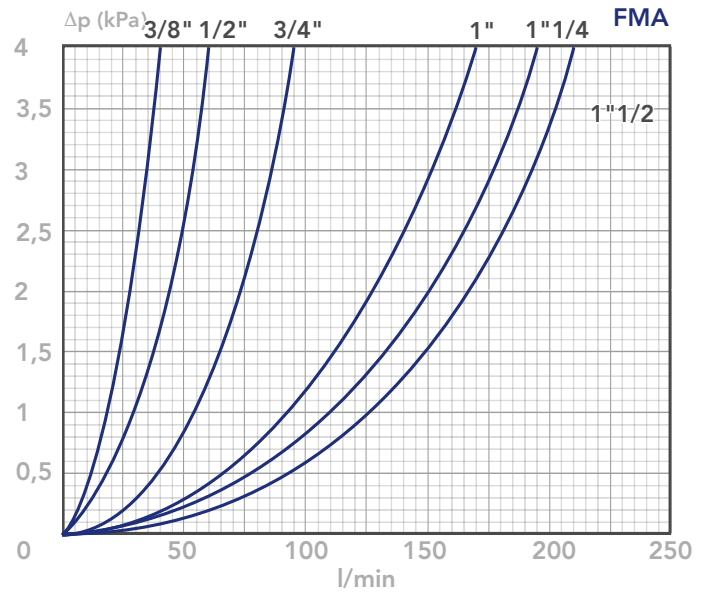




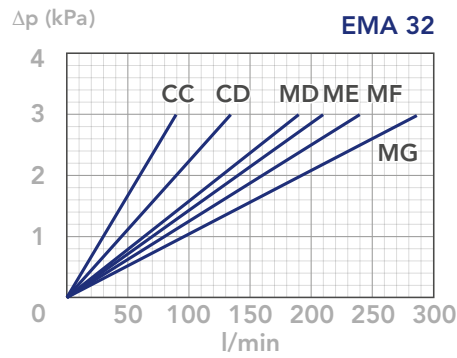
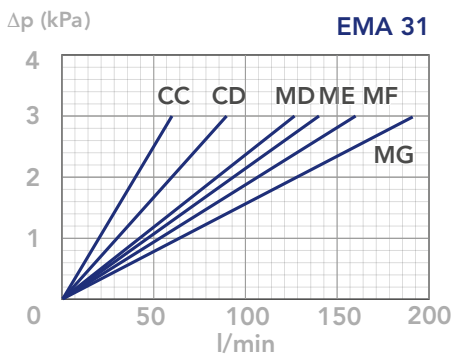
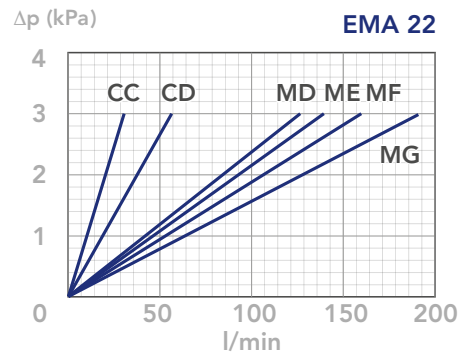
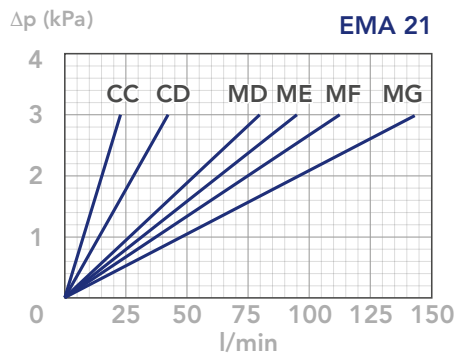
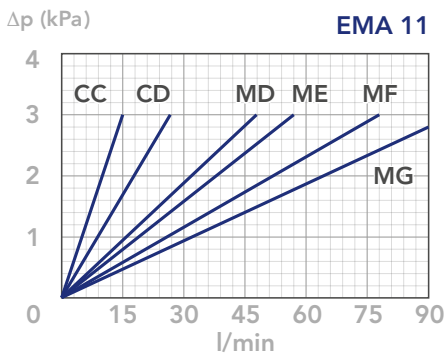
PRESSURE DROP CURVES (ΔP)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP
(depending both on the internal diameter of the element and on the filter media)



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.



www.ufihyd.com



FSC

SUCTION FILTERS

DESCRIPTION

Suction filter

MATERIALS

FSC31 & FSC41

Cover & head: Aluminum alloy

Bowl: Polyamide

FSC71 & FSC81

Cover & housing: Aluminum

FSC51 & FSC61

Housing: Steel

Cover: Aluminum

Shut-off valve: Polyamide

Seals: NBR Nitrile

(FKM fluoroelastomer on request)

Indicator housing: Brass

PRESSURE

Collapse, differential for the filter element: 100 kPa (1 bar)

FLOW RATE

Q_{max} 500 l/min

WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

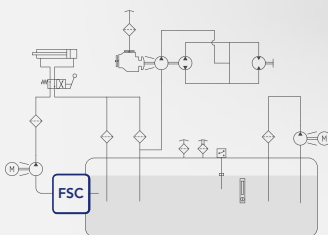
Full with fluids: HH-HL-HM-HV-HTG

(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

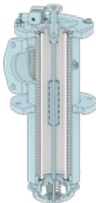
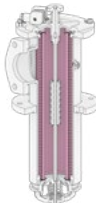
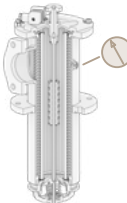

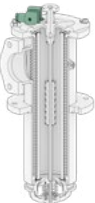
FSC

SUCTION FILTERS

ORDERING AND OPTION CHART

F	S	C	COMPLETE FILTER FAMILY							FILTER ELEMENT FAMILY	E	S	C
			SIZE & LENGTH	31	41	51	61	71	81	SIZE & LENGTH			
			PORT TYPE										
			B = BSP thread	B	B	-	-	-	-				
			F = SAE flange 3000 psi	-	F	F	F	F	F				
			PORT SIZE										
			10 = 1" 1/4	10	-	-	-	-	-				
			12 = 1" 1/2 (B12 only)	-	12	-	-	-	-				
			16 = 2" (F16 only)	-	16	-	-	-	-				
			20 = 2" 1/2 (F20 only)	-	20	-	-	-	-				
			24 = 3"	-	-	24	-	24	-				
			32 = 4"	-	-	-	32	-	32				
		W	BYPASS VALVE										
			W = no bypass	W	W	W	W	W	W				
			SEALS							SEALS			
			N = NBR Nitrile (only for complete filter)	N	N	N	N	N	N				
			F = FKM Fluoroelastomer (only for complete filter)	F	F	F	F	F	F				
			X = not applicable (only for filter element)	X	X	X	X	X	X				
			G = treatment for water-glycol (for filter and element)	G	G	G	G	G	G				
			FormulaUFI MEDIA							FormulaUFI MEDIA			
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME	ME				
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF	MF				
			MG = FormulaUFI.WEB 250 µm	MG	MG	MG	MG	MG	MG				
			CLOGGING INDICATOR										
			01 = 1/8" port, plugged	-	-	-	-	-	01				
			04 = nr.2 x 1/8" seats, plugged	04	04	04	04	04	-				
			10 = vacuum gauge, rear connection	10	10	10	10	10	10				
			91 = SPDT, vacuum switch	91	91	91	91	91	91				
			ACCESSORI / ACCESSORIES										
			W = without	W	W	W	W	W	W				
			M = magnetic core	-	M	M	M	M	M				
			ACCESSORI / ACCESSORIES										
			W = without	W	W	W	W	W	W				
			S = safety switch	-	S	S	S	S	S				

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR				ACCESSORIES							
																			
B	S	C		F	W			E	S	C		X							



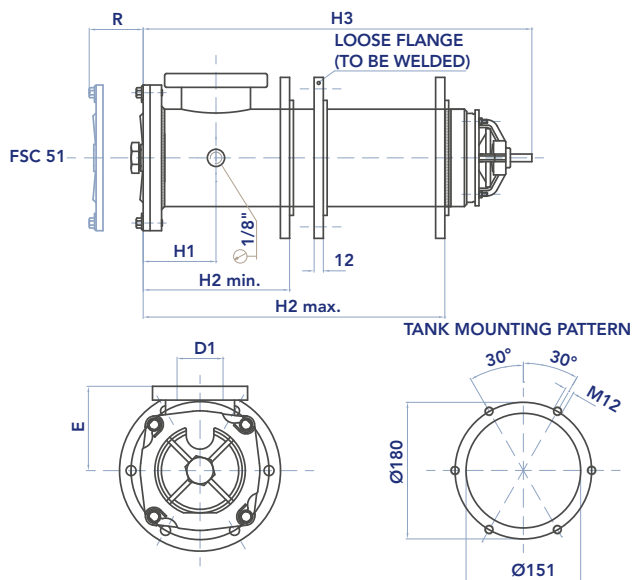
SPARE SEAL KIT

	NBR	FKM
	NBR	FKM
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FSC41	521.0023.2	521.0091.2
FSC51	521.0089.2	521.0092.2

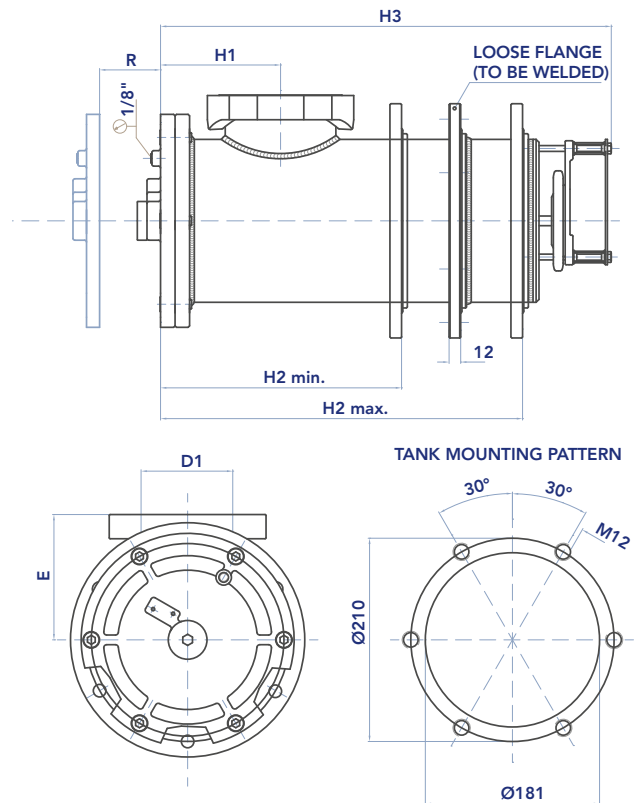
	NBR	FKM
	NBR	FKM
FSC61	521.0024.2	521.0093.2
FSC71	521.0097.2	521.0098.2
FSC81	521.0099.2	521.0100.2

INSTALLATION DRAWING

FSC51



FSC61



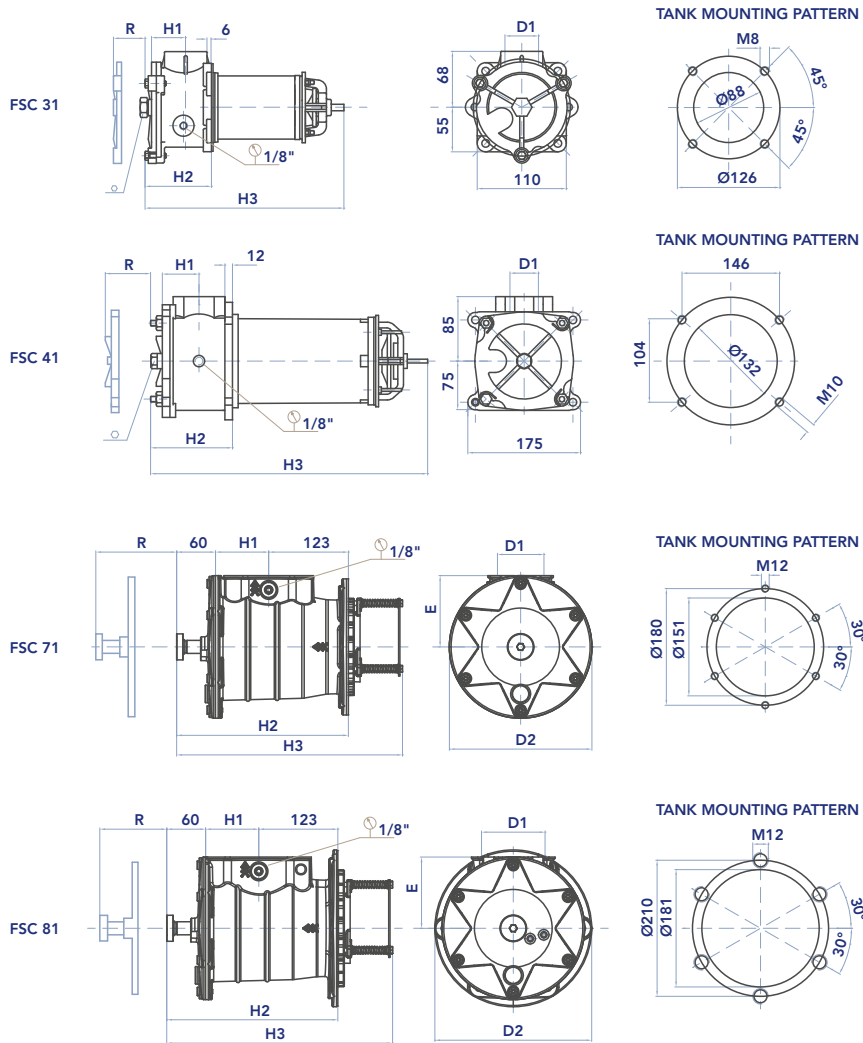
FILTER HOUSING

	D1	D2	E	H1	H2	H3	R	⬡	kg
FSC31	1"1/4	-	-	42	80	275	250	22	1,6
FSC41	1"1/2 - 2" - 1"1/2	-	-	66	120	322	300	32	3,0
FSC51	3"	210	110	95	174 ÷ 355	480	500	32	13,0
FSC61	4"	242	130	122	250 ÷ 405	470	500	32	16,0
FSC71	3"	220	110	80	265	348,5	250	10	5,5
FSC81	4"	242	110	80	264	348,5	250	10	6,0

FSC

SUCTION FILTERS

INSTALLATION DRAWING

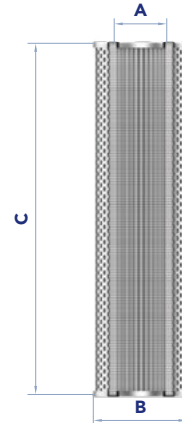


FILTER HOUSING

	D1	D2	E	H1	H2	H3	R	⬡	kg
FSC31	1"1/4	-	-	42	80	275	250	22	1,6
FSC41	1"1/2 - 2" - 1/2"	-	-	66	120	322	300	32	3,0
FSC51	3"	210	110	95	174 ÷ 355	480	500	32	13,0
FSC61	4"	242	130	122	250 ÷ 405	470	500	32	16,0
FSC71	3"	220	110	80	265	348,5	250	10	5,5
FSC81	4"	242	110	80	264	348,5	250	10	6,0

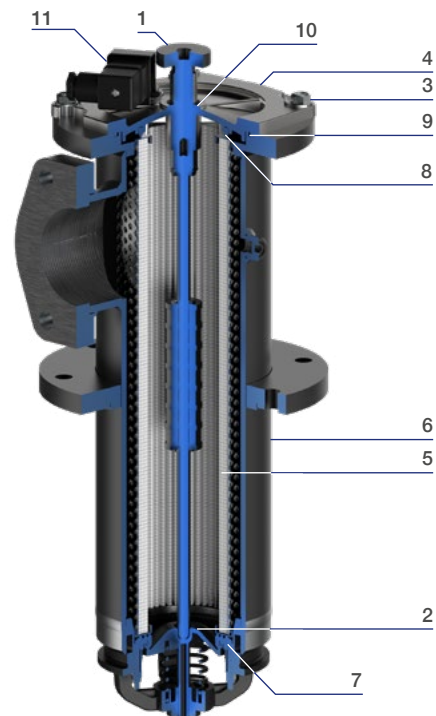
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media M+
ESC31	29,5	70	163	0,25	1.600
ESC41	65	99	198	0,50	1.845
ESC51	65	99	375	0,90	3.545
ESC61	93	136	375	1,50	5.065
ESC71	77	120	196	0,80	2.400
ESC81	93	136	196	0,90	2.600



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Unscrew the threaded pin (1) to close the bulkhead (2) on the bottom of filter housing and to prevent oil leakage from the system.
- 3) Collect the oil inside the filter with a suitable container.
- 4) FSC31-FSC41-FSC51 Loosen the nuts/screws (3) on the cover (4). N.B. it is not necessary to disassemble the nuts, use the slots on the cover. FSC61-71-81: Unscrew the screws (3).
- 5) FSC31-FSC41-FSC51 Turn the cover (4) clockwise and remove it. FSC61-71-81: remove the cover (4).
- 6) Remove the dirty filter element (2).
N.B. The used filter elements and oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorised Companies.
- 7) Check the filter element part number on the filter label or in the ordering and option chart.
Use only original spare parts.
- 8) Insert the clean element (5) in the housing (6) resting on the bottom gasket (7).
Lubricate the new element o-ring gasket (3) with oil.
- 9) Check the correct positioning and condition of the gasket (8) and o-ring (9) respectively assembled on the cover (4) and housing (6). Lubricate with oil if necessary. If damaged, check the catalogue or call the customer care service.
Insert the clean element into its seat with care.
- 10) Position the cover (4) and tighten the screws/nuts (3) until it stops.
- 11) Screw the threaded pin (1) up to the stop on the cover (4). This opens the bulkhead (2) on the bottom and allows the oil inlet from the tank. N.B. The o-Ring (10) ensures the seal between the pin and the cover.



Accessories:

Safety switch. The threaded pin (1) must be completely screwed to close the contact of microswitch (11). If the pin is unscrewed, the microswitch opens. If damaged, check the catalogue or call the customer care service.

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.

FSC

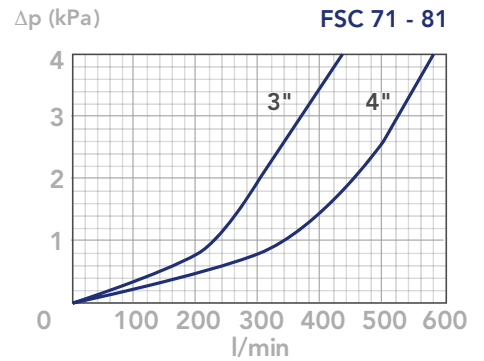
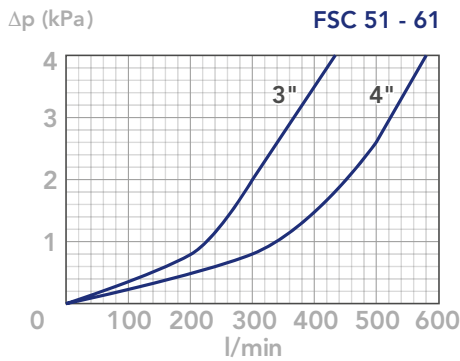
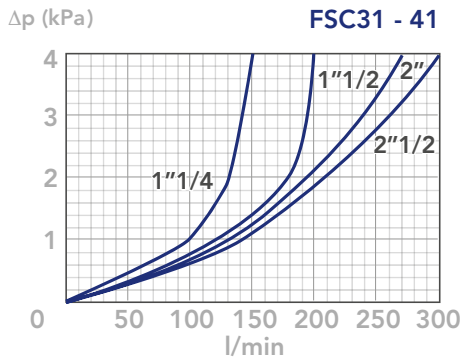
SUCTION FILTERS



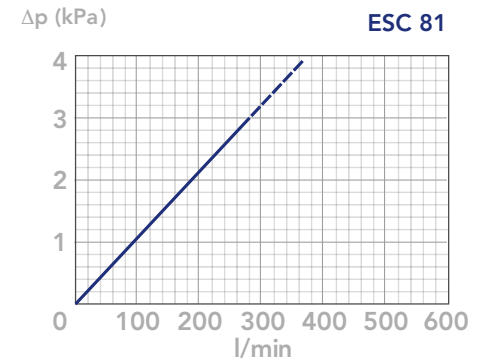
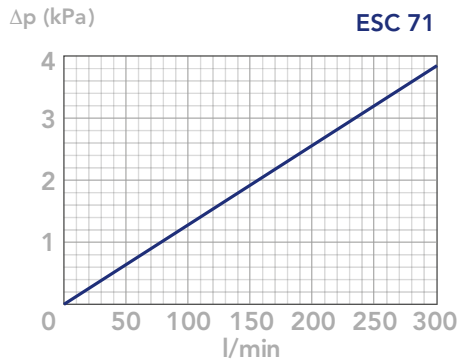
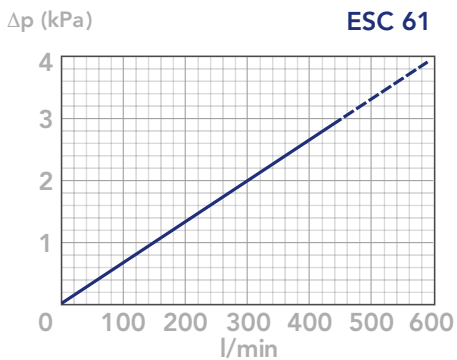
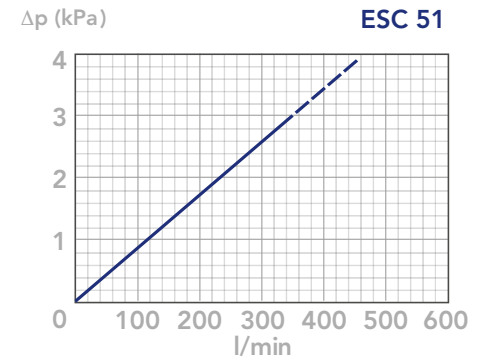
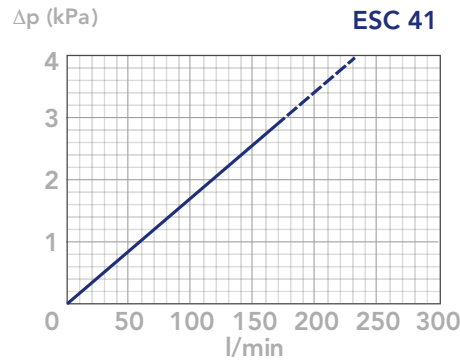
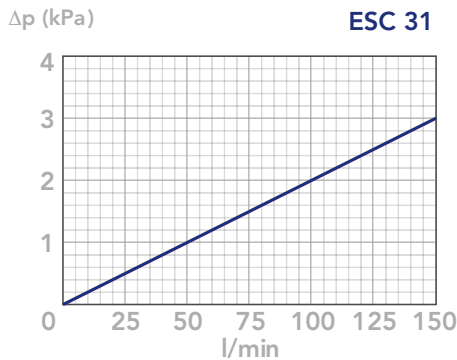
PRESSURE DROP CURVES (Δp)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP
(pressure drop values of the elements by ME - MF - MG media are very similar)



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.



FSD

SUCTION FILTERS



DESCRIPTION

Suction 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

Collapse, differential for filter element: 1 MPa (10 bar)

BYPASS VALVE

Setting: 35 kPa (0,35 bar) \pm 10%

FLOW RATE

Qmax 700 l/min

WORKING TEMPERATURE

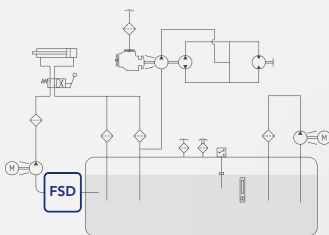
From -25° to +110° C

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

FSD

SUCTION FILTERS



ORDERING AND OPTION CHART

F	S	D	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY			E	R	D		
			SIZE & LENGTH	11	21	31	41	51	61	62	SIZE & LENGTH					
			PORT TYPE													
			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	-	-	F	F	F	F	F						
			PORT SIZE													
			04 = 1/2"	04	-	-	-	-	-	-						
			06 = 3/4"	-	06	-	-	-	-	-						
			08 = 1"	-	-	08	-	-	-	-						
			12 = 1" 1/2 (B12 only)	-	-	-	12	-	-	-						
			20 = 2" 1/2 (F20 only)	-	-	-	-	20	-	-						
			28 = 3" 1/2	-	-	-	-	-	28	-						
			32 = 4"	-	-	-	-	-	-	32						
			BYPASS VALVE													
			W = without bypass	W	W	W	W	W	W	W						
			A = 35 kPa (0,35 bar)	A	A	A	A	A	A	A						
			SEALS													
			N = NBR Nitrile	N	N	N	N	N	N	N	SEALS					
			FormulaUFI MEDIA													
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME	ME	ME	FormulaUFI MEDIA					
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF	MF	MF						
			MG = FormulaUFI.WEB 250 µm	MG	MG	MG	MG	MG	MG	MG						
			CLOGGING INDICATOR													
			08 = 1/8" seat , plugged	08	08	08	08	08	08	08						
			11 = vacuum gauge, bottom connection	11	11	11	11	11	11	11						
			91 = SPDT, vacuum switch	91	91	91	91	91	91	91						
X	X		ACCESSORI / ACCESSORIES													
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX						

SPARE PARTS

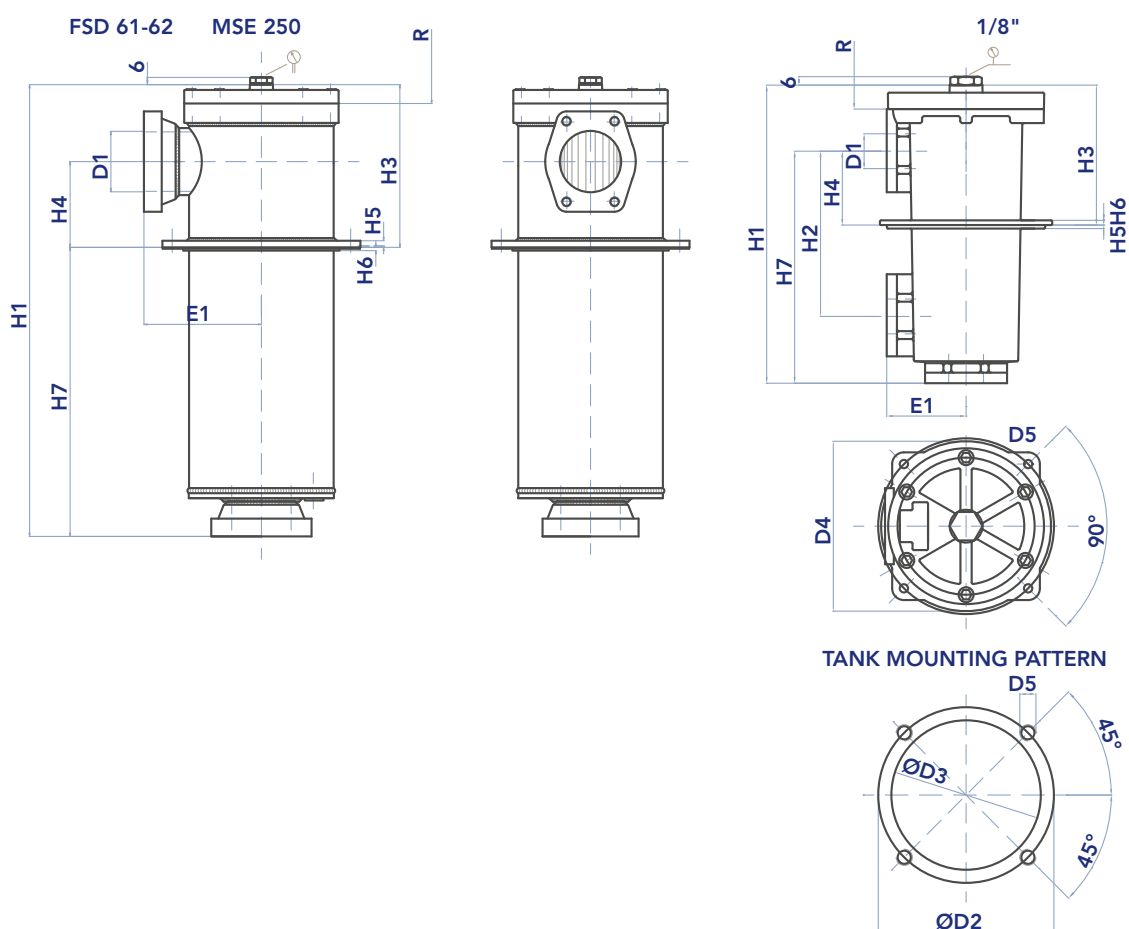
FILTER HOUSING										FILTER ELEMENT					CLOGGING INDICATOR				
																			
B	S	D									E	R	D						



SPARE SEAL KIT

NBR		NBR		NBR		NBR	
FSD11	521.0045.2	FSD31	521.0047.2	FSD51	521.0048.2	FSD62	521.0049.2
FSD21	521.0046.2	FSD41	521.0031.2	FSD61	521.0049.2		

INSTALLATION DRAWING

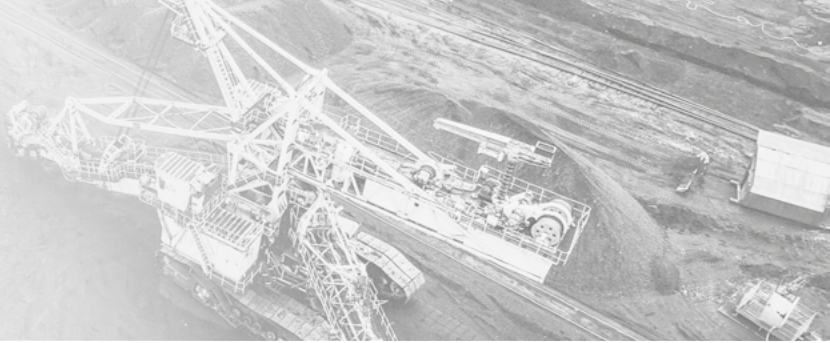


FILTER HOUSING

	D1	D2	D3	D4	D5	E1	H1	H2	H3	H4	H5	H6	R	Kg
FSD11	1/2"	95	85	90	M5	43	160	62,5	96	31,5	4	3	105	1,3
FSD21	3/4"	138	123	128	M6	57	191	105	100	52	6	3	110	2,6
FSD31	1"	154	137	147	M6	67	250	140	117	63	8	4	155	3,7
FSD41	1"1/2	180	164	174	M8	82	323	177	155	82	8	4	240	6,5
FSD51	2"1/2	275	239	254	M10	117,5	420	218	192	91	10	8	275	14,2
FSD61	3"1/2	-	-	-	-	178	1.130	200	673	457	-	-	525	49,0
FSD62	4"	-	-	-	-	178	1.590	200	1.110	480	-	-	1.020	75,0

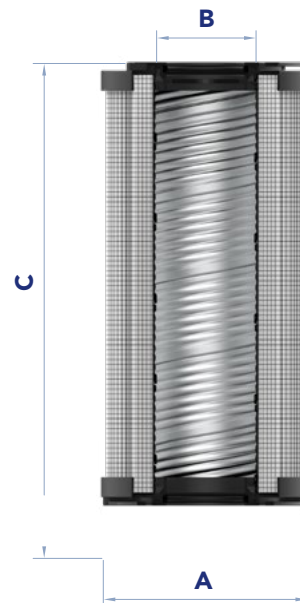
FSD

SUCTION FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)
					Media M+
ERD11	52	28/24	70	0,10	245
ERD21	70	34	85	0,20	460
ERD31	70	34	130	0,25	740
ERD41	99	51	211	0,70	2.330
ERD51	130	74	251	1,50	3.340
ERD61	130	74/85	500	2,00	9.860
ERD62	43	96,3	896	3,80	22.000



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).

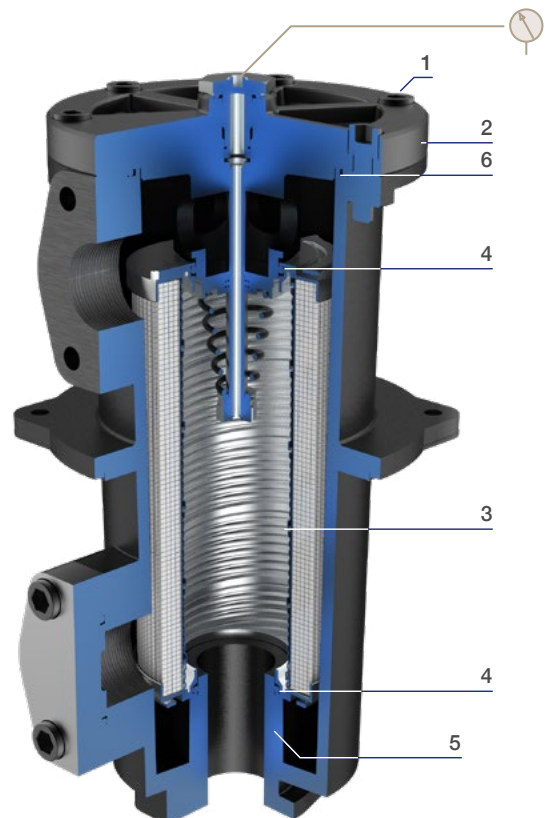
Accessories:

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.

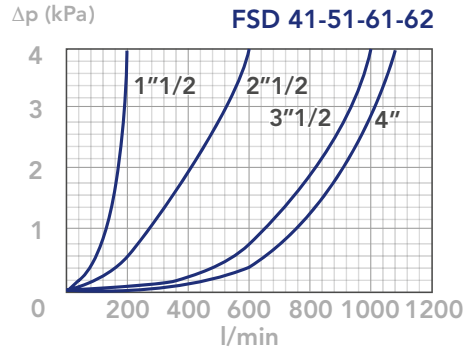
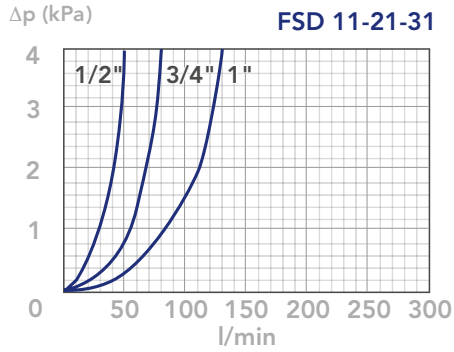




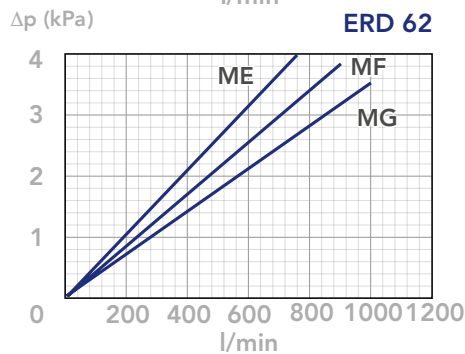
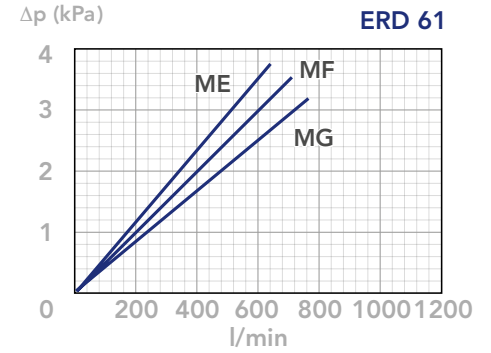
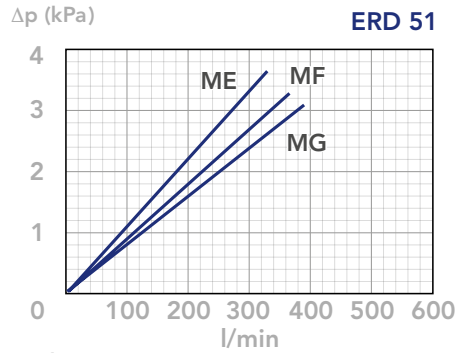
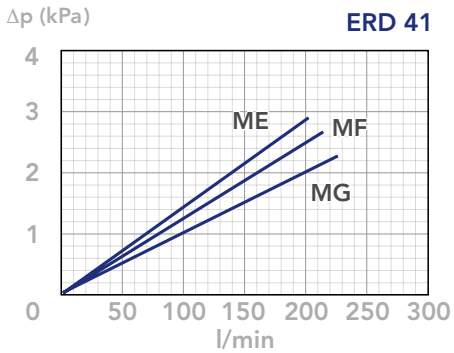
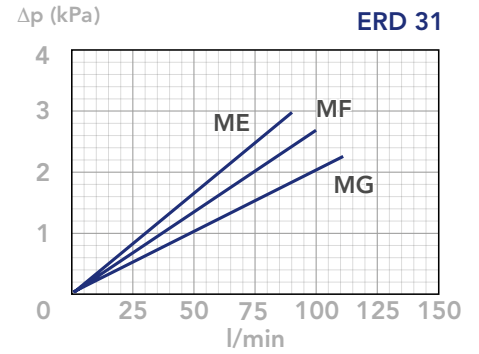
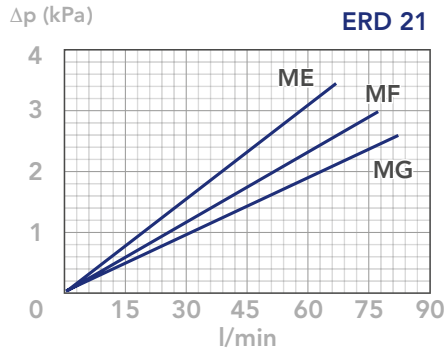
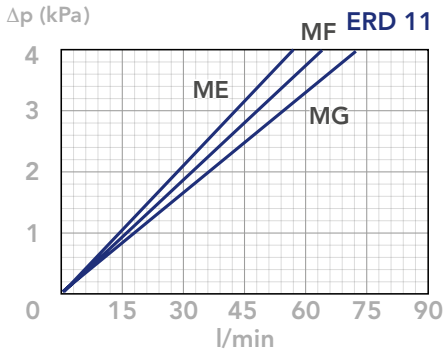
PRESSURE DROP CURVES (ΔP)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP
(depending both on the internal diameter of the element and on the filter media)

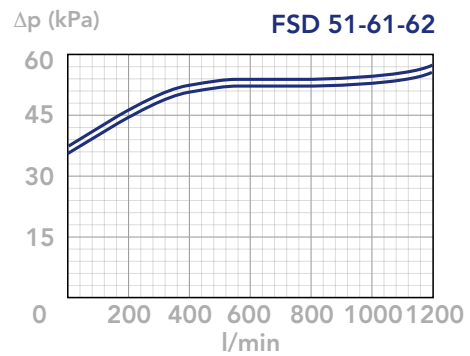
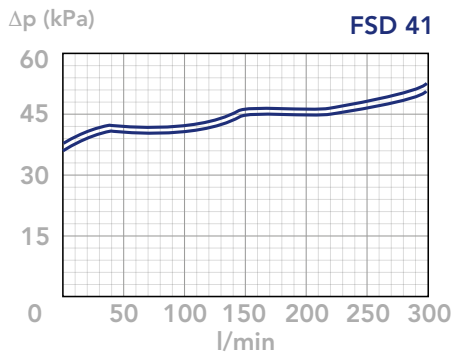
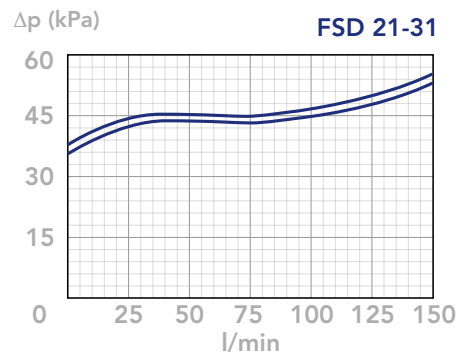
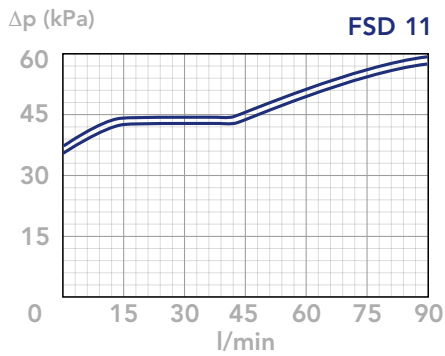


FSD

SUCTION FILTERS

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.



FSE

SUCTION FILTERS

DESCRIPTION

Suction spin-on filter

MATERIALS

Head: Aluminum alloy
Spin-on cartridge: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Collapse, differential for filter element: 400 kPa (4 bar)

BYPASS VALVE

Setting: 30 kPa (0,30 bar) \pm 10%

FLOW RATE

Qmax 75 l/min

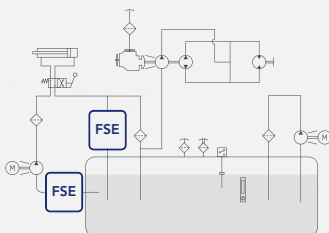
WORKING TEMPERATURE

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



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FSE

SUCTION FILTERS



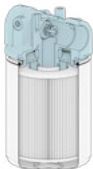
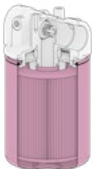
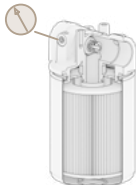
ORDERING AND OPTION CHART

F	S	E	COMPLETE FILTER FAMILY								FILTER ELEMENT FAMILY			E	S	E
			SIZE & LENGTH	11	12	21	22	31*	32*	41*	42*	SIZE & LENGTH				
			PORT TYPE													
			B = BSP thread	B	B	B	B	B	B	B	B					
			F = SAE flange 3000 psi, metric screws	-	-	-	-	-	-	F	F					
			PORT SIZE													
			06 = 3/4"	06	06	-	-	-	-	-	-					
			10 = 1" 1/4	-	-	10	10	-	-	-	-					
			12 = 1" 1/2	-	-	-	-	12	12	12	12					
			BYPASS VALVE													
			W = without bypass	W	W	W	W	W	W	W	W					
			A = 30 kPa (0,30 bar)	A	A	A	A	A	A	A	A					
			SEALS									SEALS				
			N = NBR Nitrile	N	N	N	N	N	N	N	N					
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F					
			FormulaUFI MEDIA									FormulaUFI MEDIA				
			CC = FormulaUFI.CELL 10 µm β>2	CC	CC	CC	CC	CC	CC	CC	CC					
			CD = FormulaUFI.CELL 25 µm β>2	CD	CD	CD	CD	CD	CD	CD	CD					
			ME = FormulaUFI.WEB 60 µm	ME	ME	ME	ME	ME	ME	ME	ME					
			MF = FormulaUFI.WEB 90 µm	MF	MF	MF	MF	MF	MF	MF	MF					
			CLOGGING INDICATOR													
			06 = 1/8" port, plugged	06	06	06	06	06	06	06	06					
			10 = vacuum gauge, bottom connection	10	10	10	10	10	10	10	10					
			91 = SPDT, vacuum switch	91	91	91	91	91	91	91	91					
X	X		ACCESSORI / ACCESSORIES													
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX					

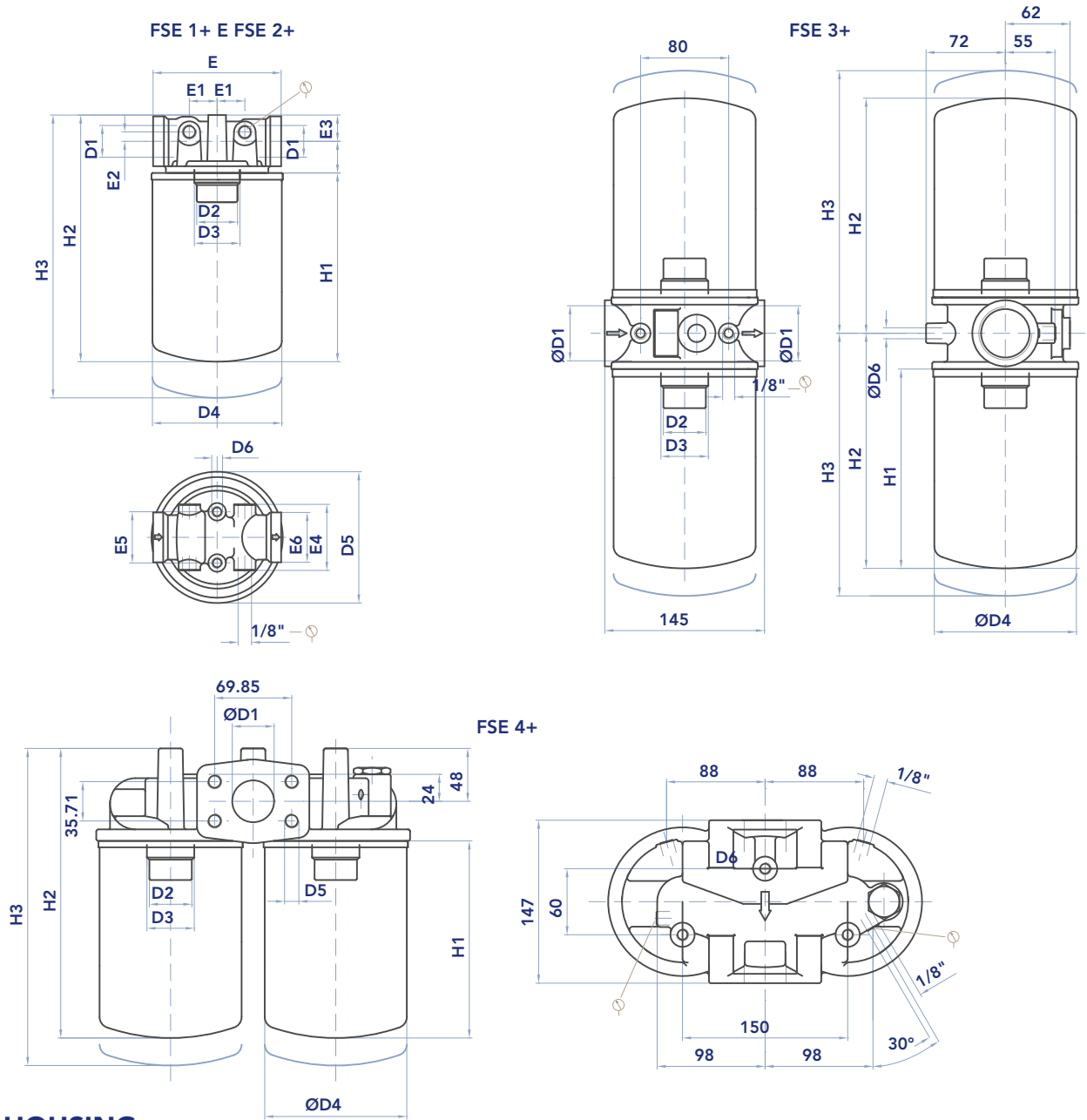
* When ordering the filter elements, please consider the following information:

- ESE31 = 2 x ESE21
- ESE32 = 2 x ESE22
- ESE41 = 2 x ESE21
- ESE42 = 2 x ESE22

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	S	E		E	S	E					

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	D4	D5	D6	E	E1	E2	E3	E4	E5	E6	H1	H2	H3	Kg
FSE11	3/4"	3/4"BSP	-	96	96	M8	95	20,5	7	20	49	38	37	145	188	208	1,2
FSE12	3/4"	3/4"BSP	-	96	96	M8	95	20,5	7	20	49	38	37	191	234	254	1,5
FSE21	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	35	10	30	64	50	57	181	248	278	1,9
FSE22	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	35	10	30	64	50	57	226	293	323	2,0
FSE31	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	181	216	246	3,6
FSE32	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	226	261	291	3,8
FSE41	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	181	269	299	4,8
FSE42	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	226	314	344	5,0

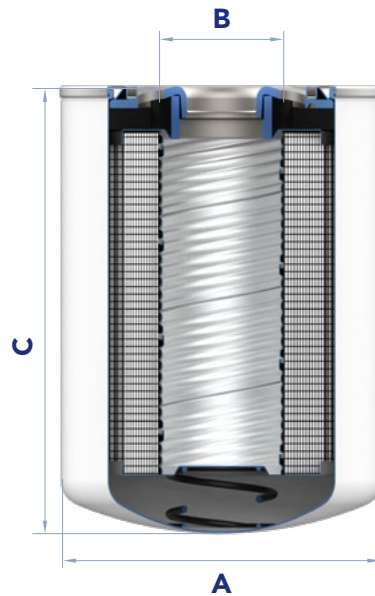
FSE

SUCTION FILTERS



FILTER ELEMENT

	A	B	C	KG	AREA (cm ²)	
					Media M+	Media C+
ESE11	96,5	3/4" BSP	146	0,70	980	3.305
ESE12	96,5	3/4" BSP	191	0,80	1.390	4.745
ESE21	129	1"1/4 BSP	181	1,20	1.940	5.560
ESE22	129	1"1/4 BSP	226	1,40	2.570	7.360



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the dirty filter element (1).
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 authorized Companies.
- 4) Check the filter element part number on the silk-screen printing or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the element o-ring gasket with oil.
- 6) Screw the clean filter element until the first contact of the gasket with the flange.
- 7) Tighten strongly for 3/4 of a turn (indicative tightening torque of 18 Nm).

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.



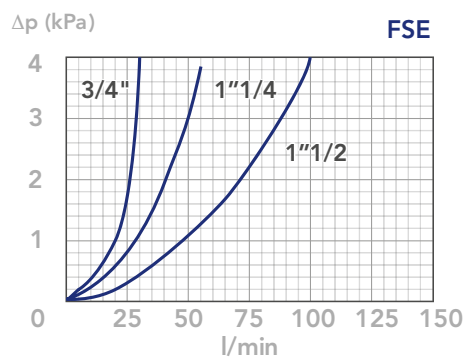


PRESSURE DROP CURVES (ΔP)

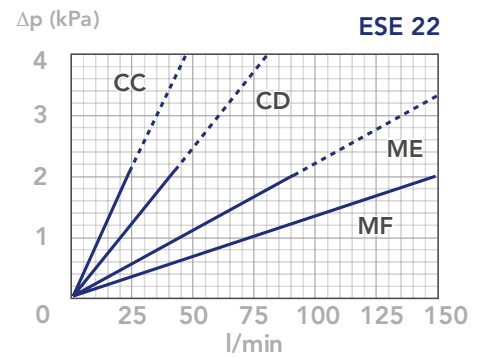
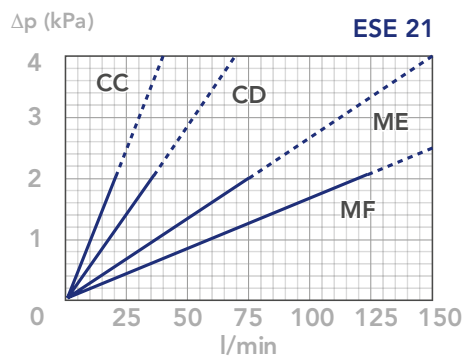
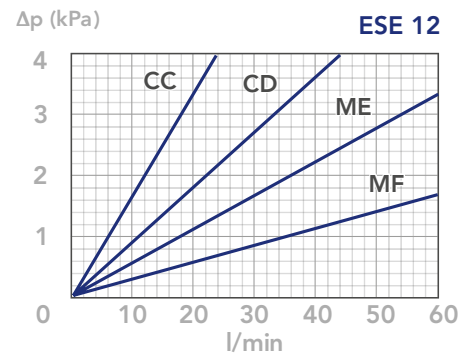
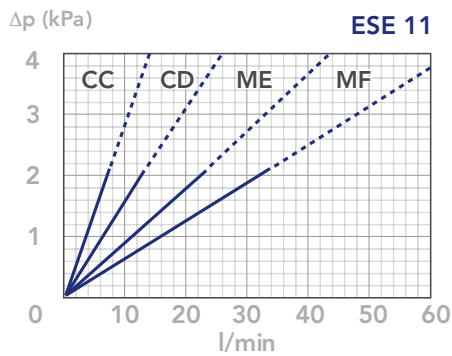
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter

Element corresponding to the considered Flow Rate and it must be lower than 3 kPa (0,03 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



CLEAN FILTER ELEMENT PRESSURE DROP
(depending both on the internal diameter of the element and on the filter media)



N.B.

FSE3+ and FSE4+ filters use double element canisters. The Assembly Pressure Drop is therefore calculated by adding the Housing Pressure Drop at the real flow rate and half the pressure drop of the ESE2+ element. E.g.

The pressure drop of a complete FSE31-----FC--- filter at a 60 l/min flow rate is obtained by adding the Housing Pressure Drop and half the ESE21NFC element pressure drop at 60 l/min

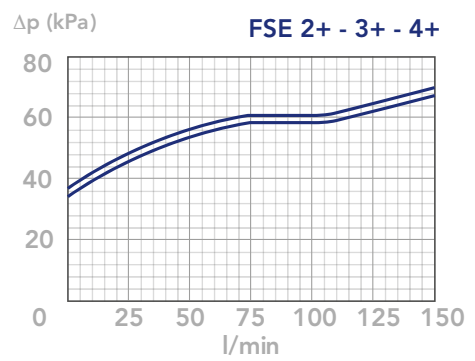
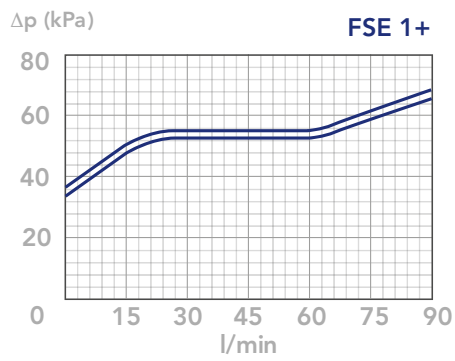
FSE

SUCTION FILTERS



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.



FSG

SUCTION FILTERS

DESCRIPTION

Tank side wall suction filter

MATERIALS

Lid: Polyamide
Housing: Aluminum alloy
Seals: NBR Nitrile

PRESSURE

Collapse, differential for filter element: 1 MPa (10 bar)

FLOW RATE

Qmax 70 l/min

WORKING TEMPERATURE

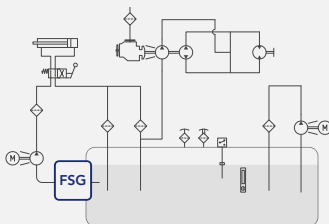
From -25° to +110° C

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

FSG

SUCTION FILTERS

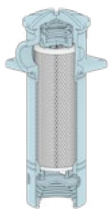

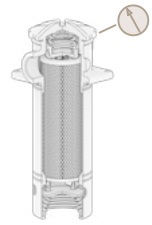


ORDERING AND OPTION CHART

F	S	G	COMPLETE FILTER FAMILY			FILTER ELEMENT FAMILY	E	S	G
			SIZE & LENGTH	11	13	SIZE & LENGTH			
			PORT TYPE						
			B = BSP thread	B	B				
			PORT SIZE*						
			10 = 1" 1/4	10	10				
		W	BYPASS VALVE						
			W = without bypass	W	W				
			SEALS			SEALS			
			N = NBR Nitrile	N	N				
			FormulaUFI MEDIA			FormulaUFI MEDIA			
			CC = FormulaUFI.CELL 10 µm	CC	CC				
			CLOGGING INDICATOR						
			01 = 1/8" port, plugged	01	01				
			10 = vacuum gauge, rear connection	10	10				
			91 = SPDT, vacuum switch	91	91				
			ACCESSORI / ACCESSORIES						
			W = without	W	W				
			ACCESSORI / ACCESSORIES						
			X = without	X	X				

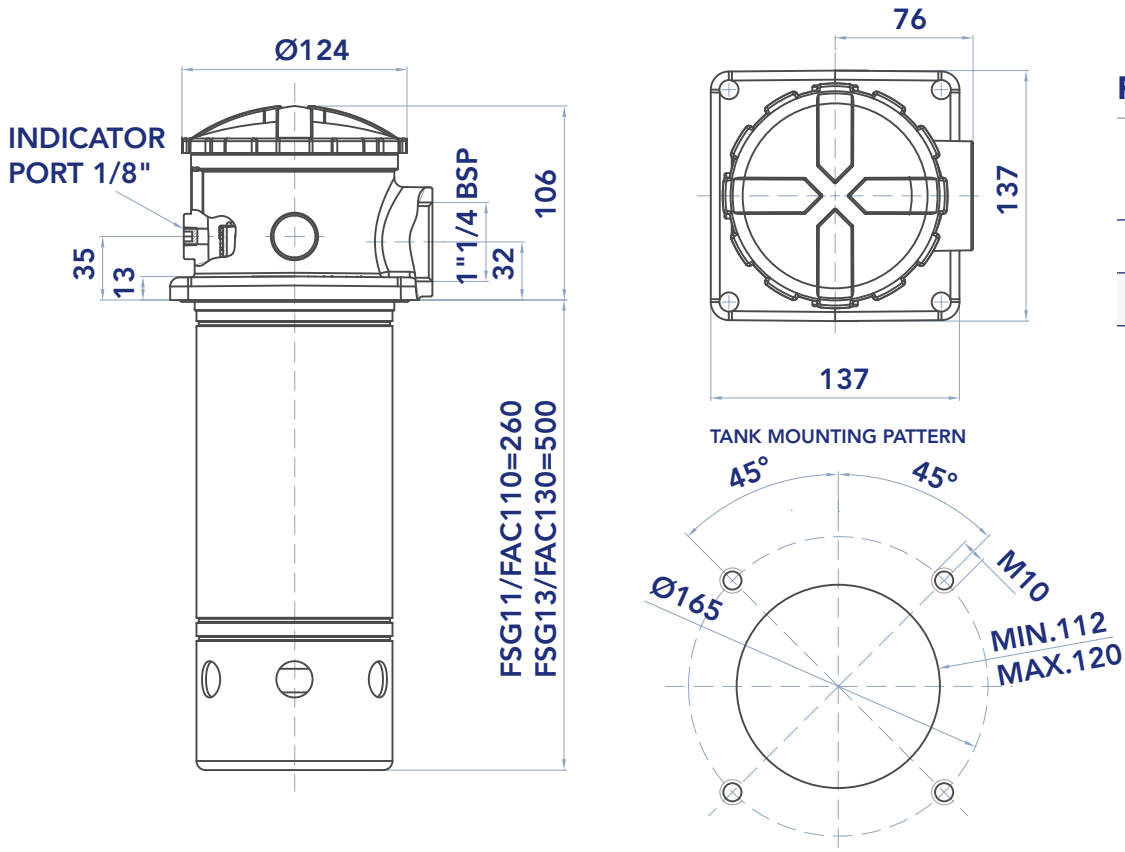
* Port size B08 (1") on request, please check availability with our Customer Service

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR					
													
B	S	G		B	1	0						X	X
				E	S	G							



INSTALLATION DRAWING

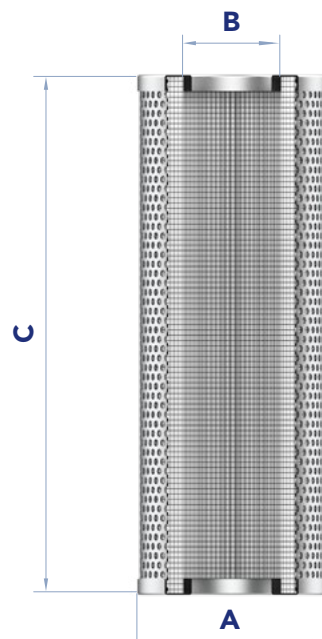


FILTER WEIGHT

	Kg
FSG11	2,8
FSG13	3,2

FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media C
ESG11	83	50	230	0,4	5.000
ESG13	83	50	472	0,5	9.300



FSG

SUCTION FILTERS

MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the cover (1).
- 3) Remove the dirty filter element (2).
N.B. The used filter elements and oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 4) Check the filter element part number on the filter label or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the new element O-ring gasket (3) with oil.
- 6) Insert the clean element into the filter housing, resting on the lower gasket (3).
- 8) Check the cover O-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table.
- 9) Screw the cover (1) up to the stop to ensure the correct locking of the filter element.

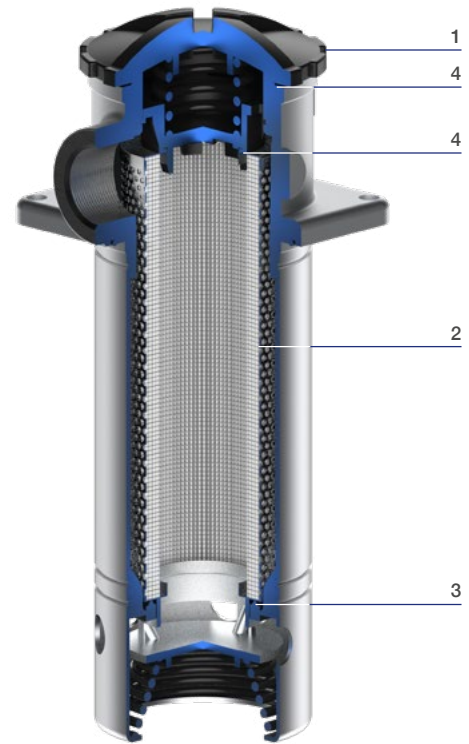
Accessories:

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.

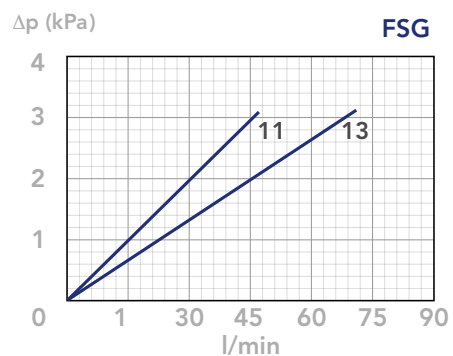
N.B. an overtightening can damage the thread.



PRESSURE DROP CURVES (ΔP)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).

COMPLETE FILTER PRESSURE DROP
(mainly depending on the port size)



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 DIVISION Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



MSZ

SUCTION FILTERS



DESCRIPTION

Suction strainer

MATERIALS

Connector: Polyamide
Internal core: Zinc plated steel
End cap: Zinc plated steel

PRESSURE

Collapse, differential: 100 kPa (1 bar)

BYPASS VALVE

Setting: 30 kPa (0,3 bar) \pm 10% on request

FLOW RATE

Qmax 600 l/min

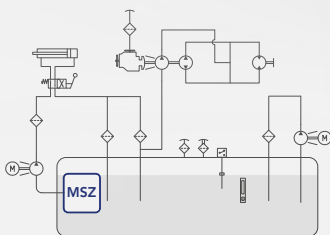
WORKING TEMPERATURE

From -25° to + 90° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-HV-HTG
(according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



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MSZ

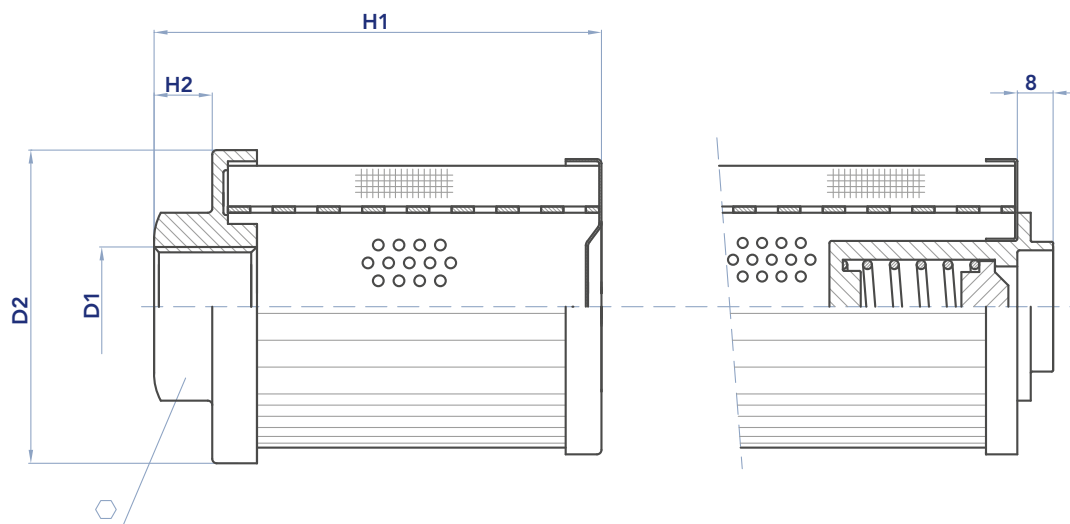
SUCTION FILTERS

ORDERING AND OPTION CHART (SOFIMA CODIFICATION)

M	S	Z	FILTER ELEMENT FAMILY									
			SIZE & LENGTH	101	201	202	301	302	303	401	402	403
			FormulaUFI MEDIA									
			MN = FormulaUFI.WEB 90 µm	MN	MN	MN	MN	MN	MN	MN	MN	MN
			DC = FormulaUFI.WEB 250 µm	DC	DC	DC	DC	DC	DC	DC	DC	DC
		X	SEALS									
			X = not available	X	X	X	X	X	X	X	X	X
			BYPASS VALVE									
			S = without	S	S	S	S	S	S	S	S	S
			A = bypass valve 300 kPa (0,3 bar)	A	A	A	A	A	A	A	A	A
		B	PORTS									
			B = BSP	B	B	B	B	B	B	B	B	B
			N = NPT	N	N	N	N	N	N	N	N	N
			PORT SIZE									
			3 = 1/2"	3	-	-	-	-	-	-	-	-
			4 = 3/4"	-	4	-	-	-	-	-	-	-
			5 = 1"	-	-	5	-	-	-	-	-	-
			7 = 1" 1/2	-	-	-	7	7	-	-	-	-
			8 = 2"	-	-	-	-	-	8	8	-	-
			9 = 2" 1/2	-	-	-	-	-	-	-	9	-
			A = 3"	-	-	-	-	-	-	-	-	A



INSTALLATION DRAWING



SUCTION STRAINER

	D1	D2	H1	H2	⬡	Kg	AREA (cm ²) Media M+
MSZ 101	1/2"	46	105,5	14	30	0,12	155
MSZ 201	3/4"	64	109,5	14	36	0,22	335
MSZ 202	1"	64	139,5	15	46	0,27	450
MSZ 301	1" 1/2	86	140	18	60	0,45	610
MSZ 302	1" 1/2	86	200	18	60	0,53	920
MSZ 303	2"	86	260	18	70	0,56	1190
MSZ 401	2"	150	150	18	70	1,20	2030
MSZ 402	2" 1/2	150	212	20	90	1,40	2900
MSZ 403	3"	150	272	20	100	1,60	3900

MSZ

SUCTION FILTERS



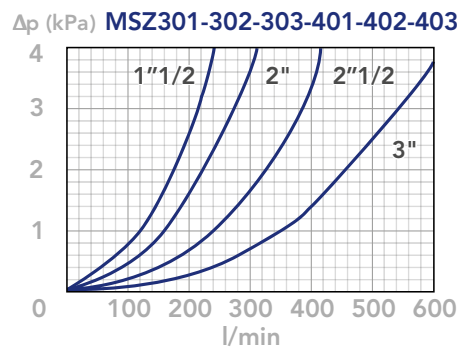
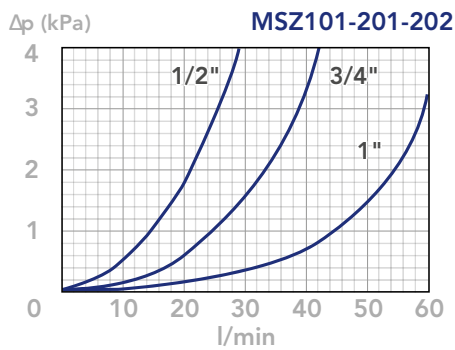
MAINTENANCE

The best time to change your filter element is just before it reaches its maximum dirt-holding capacity. When it is time to change the filter element, switch off the system before opening the tank. Remove the dirty filter element and replace it with an original UFI Hydraulics element, verifying the part number on the filter cap or in the ordering and option chart. Close the tank.

N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed according to the local laws, by authorized Companies. We recommend the stocking of a spare UFI Hydraulics filter element for timely replacement when required.

PRESSURE DROP CURVES (ΔP)

The Pressure Drop (Δp) must be lower than 3 kPa (0,03 bar).



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, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



PRESSURE FILTERS



MAIN-LINE, HIGH EFFICIENCY FILTRATION

Application:

The pressure line filter is an essential part in most hydraulic systems. Hydraulic pressure filters are located downstream from the system pump. They are designed to handle the system pressure and sized for the specific flow rate in the pressure line where they are located. Pressure filters are especially suited for protecting sensitive components downstream from the filter, such as servo valves. Located just downstream from the system pump, they help protecting the entire system from pump generated contamination.

User Benefits:

- main-line, high-efficiency, full-flow fine filtration for the protection of precision valves and fluid-power proportional controls;
- high-performance, high-dirt-holding capacity, micro-fibre filter elements keep the cost of ownership (running-costs) low between planned machine service-intervals;
- non-welded housing design for extended life and safer operation.



FLA

PRESSURE FILTERS

DESCRIPTION

Inline high pressure last chance filter

MATERIALS

Housing: Aluminum
Seals: NBR Nitrile

PRESSURE

Max. working: 21 MPa (210 bar)
Collapse, differential for the filter element:
8 MPa (80 bar)

FLOW RATE

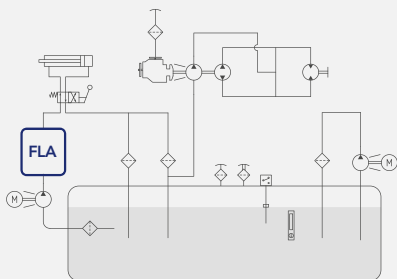
Qmax 35 l/min

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



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ORDERING AND OPTION CHART

F	L	A	COMPLETE FILTER FAMILY		FILTER ELEMENT FAMILY	E	L	A
			SIZE & LENGTH	11	SIZE & LENGTH			
		B	PORT TYPE					
			B = BSP thread	B				
			PORT SIZE					
			03 = 3/8"	03				
			04 = 1/2"	04				
		W	BYPASS VALVE					
			W = without	W				
			SEALS		SEALS			
			N = NBR Nitrile	N				
			F = FKM Fluoroelastomer	F				
			FormulaUFI MEDIA		FormulaUFI MEDIA			
			MD = FormulaUFI.WEB 30 µm	MD				
			ME = FormulaUFI.WEB 60 µm	ME				
			MF = FormulaUFI.WEB 90 µm	MF				
			MG = FormulaUFI.WEB 250 µm	MG				
0	0		CLOGGING INDICATOR					
			00 = without predisposition	00				
X	X		ACCESSORI / ACCESSORIES					
			XX = without accessories	XX				

SPARE PARTS

FILTER HOUSING	FILTER ELEMENT
----------------	----------------



B L A 1 1 B W X X 0 0 X X

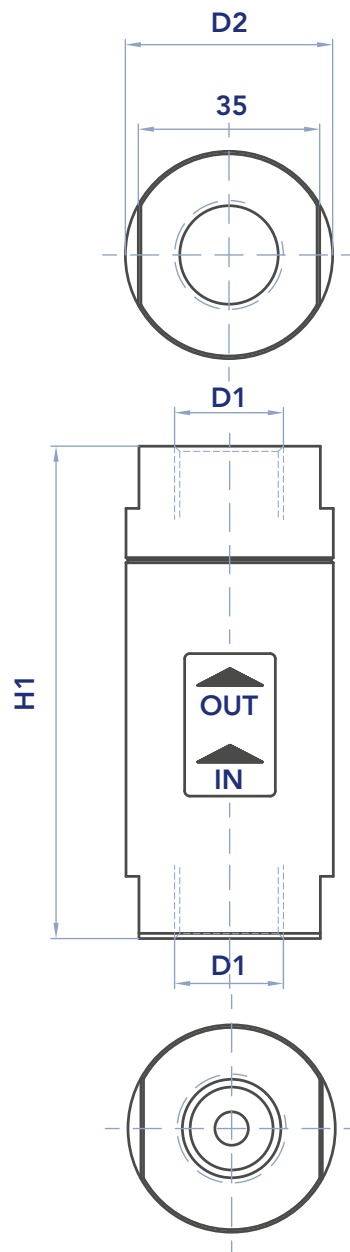
E L A

SPARE SEAL KIT

	NBR	FKM
FLA11	021.0205.2	021.0206.2



INSTALLATION DRAWING



FILTER HOUSING

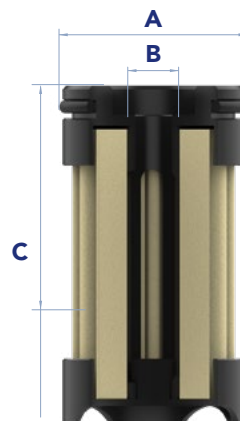
	D1	D2	H1	kg
FLA11	3/8" - 1/2" BSP	40,0	95,0	0,24

FLA

PRESSURE FILTERS

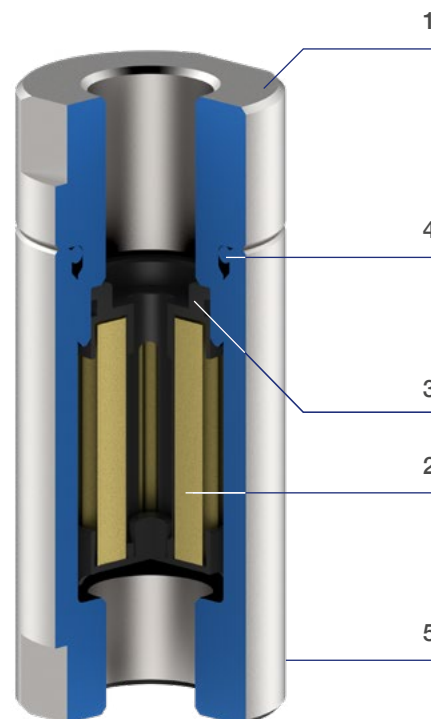
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media M+
ELA11	25	7	47	0,04	72



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the plug (1).
- 4) Remove the dirty filter element (2).
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 (3) with oil.
- 7) Insert the clean element into the plug (1) with care.
- 8) Check the housing o-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table.
- 9) Screw the plug (1) on the housing (5) it stops, with a tightening torque of 45 Nm +5/0.





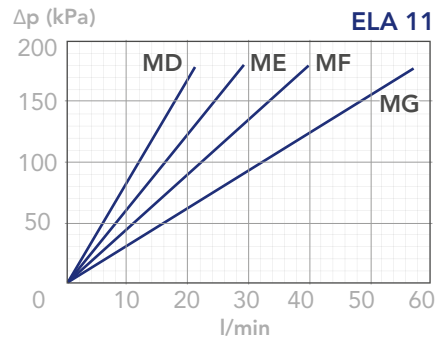
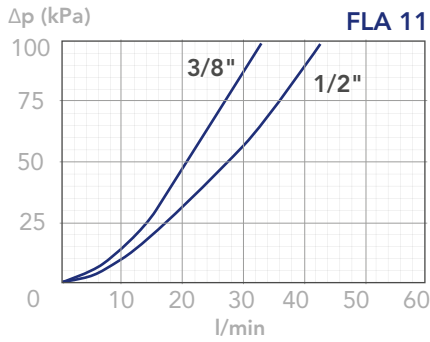
PRESSURE DROP CURVES (Δp)

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 120 kPa (1,2 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

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



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 3968:2005. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



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FPA

PRESSURE FILTERS

DESCRIPTION

Medium pressure inline filter

MATERIALS

Housing: Anodized aluminum alloy
Bypass valve: Brass
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max working: 11 MPa (110 bar)
Collapse, differential for the filter element:
8 MPa (80 bar)

BYPASS VALVE

Setting: 600 kPa (6 bar) \pm 10%

FLOW RATE

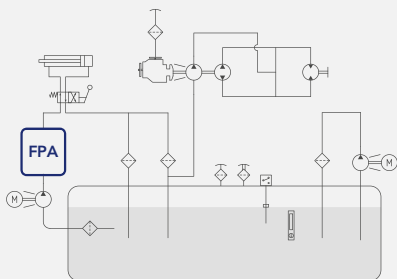
Qmax 60 l/min

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



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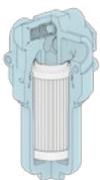
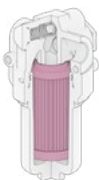
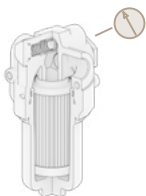
ORDERING AND OPTION CHART

F	P	A	COMPLETE FILTER FAMILY			FILTER ELEMENT FAMILY	E	P	A
			SIZE & LENGTH	11	12	SIZE & LENGTH			
			PORT TYPE						
			B = BSP thread	B	B				
			N = NPT thread *	N	N				
			S = SAE thread *	S	S				
			PORT SIZE						
			04 = 1/2" (N04 not available)	04	04				
			BYPASS VALVE						
			W = without	W	W				
			C = 600 kPa (6 bar)	C	C				
			SEALS			SEALS			
			N = NBR Nitrile	N	N				
			F = FKM Fluoroelastomer	F	F				
			G = Treatment for water-glycol	G	G				
			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				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FE	FE				
			CLOGGING INDICATOR **						
			03 = port, plugged	03	03				
			5E = visual differential 500 kPa (5 bar)	5E	5E				
			6E = electrical differential 500 kPa (5 bar)	6E	6E				
			7E = indicator 6E with LED	7E	7E				
			T2 = elect. diff. 500 kPa (5 bar) with thermostat 30°C	T2	T2				
X	X		ACCESSORI / ACCESSORIES						
			XX = no accessories available	XX	XX				

* Not standard version, please check availability with our Customer Service

**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 PARTS

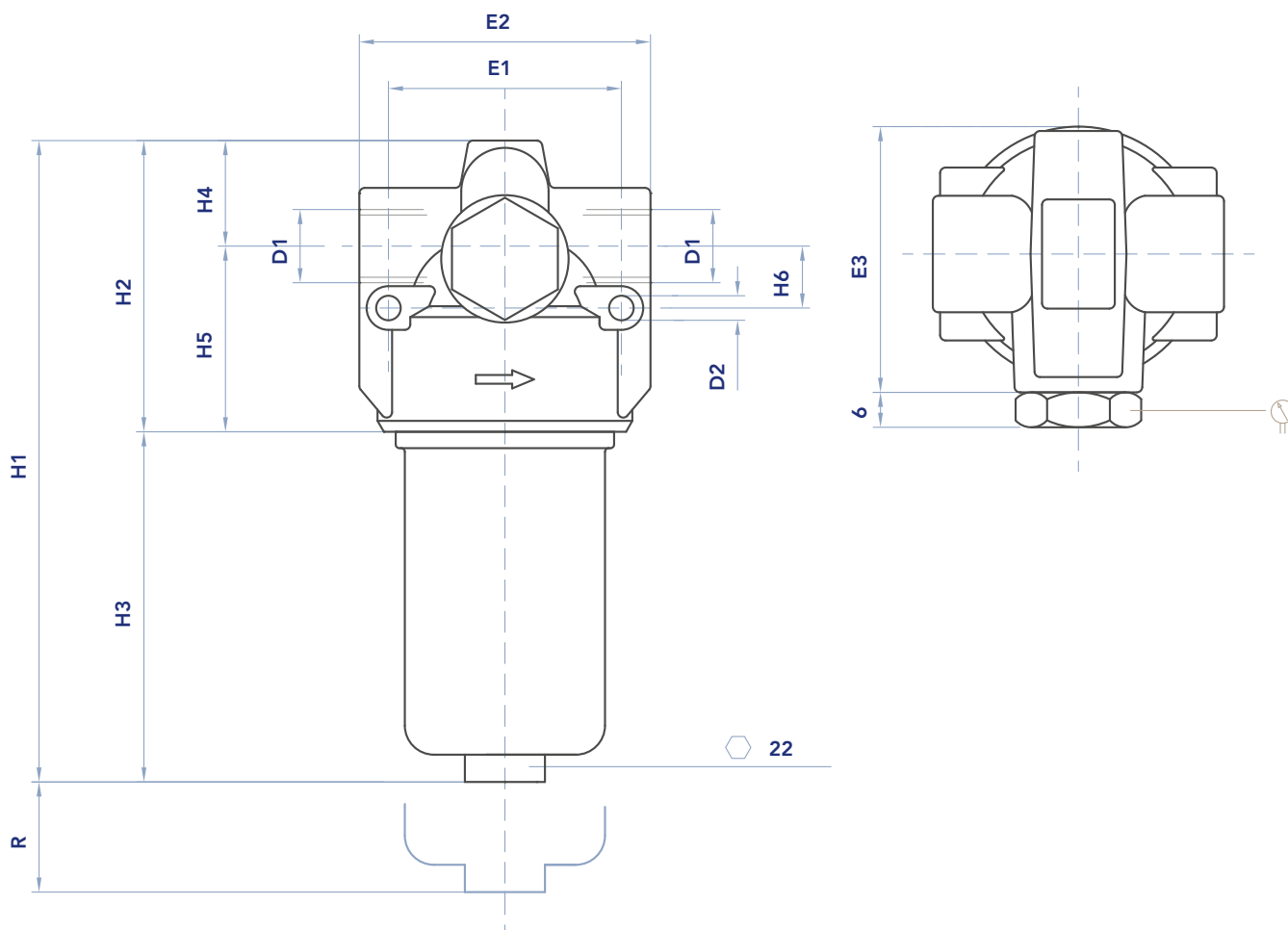
FILTER HOUSING										FILTER ELEMENT					CLOGGING INDICATOR				
																			
B	P	A				0	4												



SPARE SEAL KIT

	NBR	FKM
FPA11 - 12	521.0001.2	521.0062.2

INSTALLATION DRAWING



FILTER HOUSING

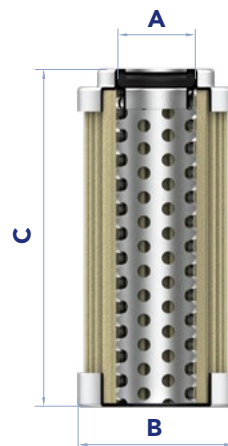
	D1	D2	H1	H2	H3	H4	H5	H6	E1	E2	E3	R	Kg
FPA11	1/2"	6,5	157	78	79	28	50	17	64	76	75	60	0,65
FPA12	1/2"	6,5	244	78	166	28	50	17	64	76	75	60	0,85

FPA

PRESSURE FILTERS

FILTER ELEMENT

	A	B	C	AREA (cm ²)	
				Kg	Media F+
EPA11	22	42	91	0,15	295
EPA12	22	42	179	0,25	600



MAINTENANCE

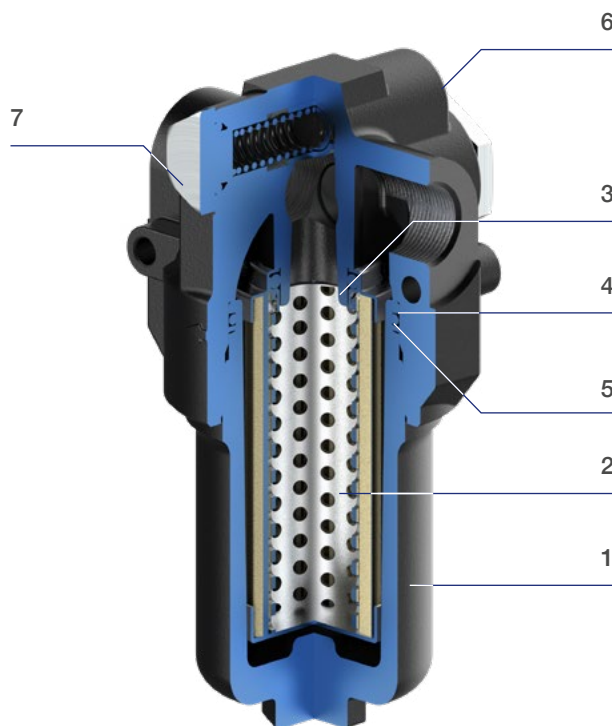
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
N.B. Never unscrew the by-pass valve (7).
- 4) Remove the dirty filter element (2).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the housing o-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion o-ring (5) must be positioned downwards (under the gasket).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 50 Nm +5/0.

Accessories:

Clogging indicator (6).

If damaged, unscrew and replace (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.





PRESSURE DROP CURVES (Δp)

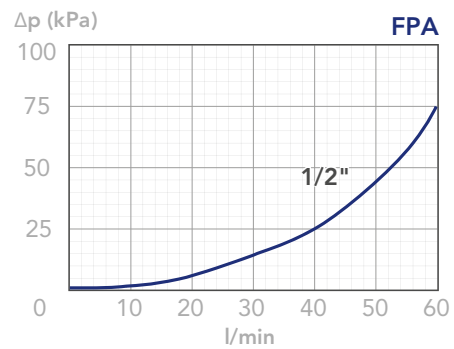
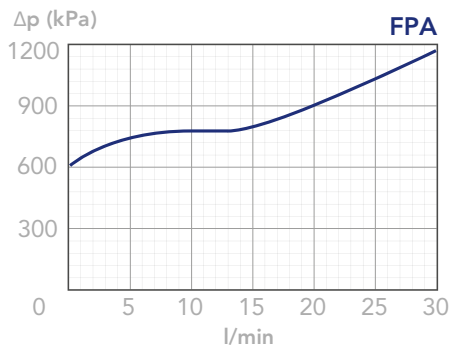
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 100 kPa (1 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

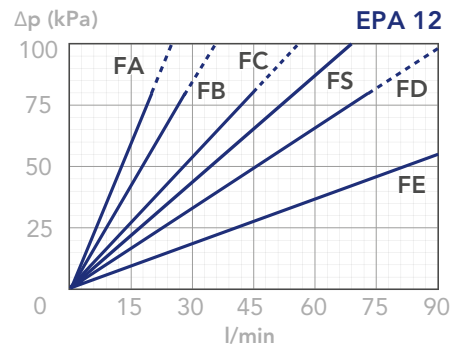
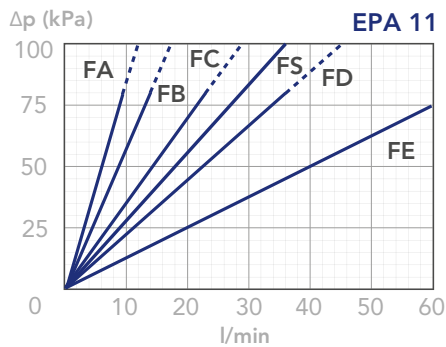
BYPASS VALVE PRESSURE DROP

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.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



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



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.

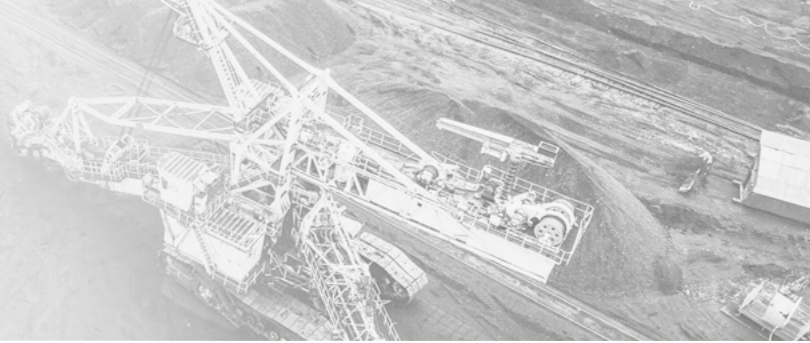


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FPB

PRESSURE FILTERS



DESCRIPTION

High pressure inline filter

MATERIALS

Head: Cast iron
Bowl: Steel
Bypass valve: Steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 42 MPa (420 bar)
Collapse, differential for the filter element series standard 2 MPa (20 bar)
series H+ 21 MPa (210 bar)

BYPASS VALVE

Setting: 600 kPa (6 bar) \pm 10%

FLOW RATE

Qmax 450 l/min

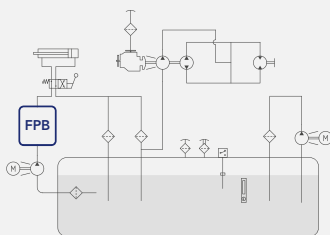
WORKING TEMPERATURE

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



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FPB

PRESSURE FILTERS



ORDERING AND OPTION CHART

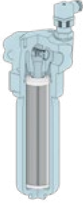
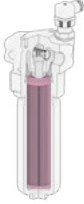
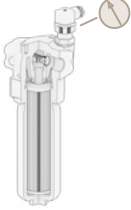
F	P	B	COMPLETE FILTER FAMILY	11	12	13	21	22	31	32	33	34	35	FILTER ELEMENT FAMILY	E	P	B
			SIZE & LENGTH											SIZE & LENGTH			
			PORT TYPE														
			B = BSP thread	B	B	B	B	B	B	B	B	B	B				
			N = NPT thread	N	N	N	N	N	N	N	N	N	N				
			S = SAE thread	S	S	S	S	S	S	S	S	S	S				
			F = SAE flange 3000 psi	-	-	-	F	F	F	F	F	F	F				
			G = SAE flange 6000 psi	-	-	-	G	G	G	G	G	G	G				
			PORT SIZE														
			04 = 1/2" (S04 not available)	04	04	04	-	-	-	-	-	-	-				
			06 = 3/4" (F06 not available)	06	06	06	06	06	-	-	-	-	-				
			08 = 1" (G08 not available; F08 for FPB2 only)	-	-	-	08	08	08	08	08	08	08				
			10 = 1" 1/4 (N10 not available)	-	-	-	-	-	10	10	10	10	10				
			12 = 1" 1/2 (G12 option not available)	-	-	-	-	-	12	12	12	12	12				
			BYPASS VALVE														
			W = without	W	W	W	W	W	W	W	W	W	W				
			C = 600 kPa (6 bar)	C	C	C	C	C	C	C	C	C	C				
			R = reverse flow valve*	-	-	-	R	R	R	R	R	R	R				
			P = reverse flow + bypass valve*	-	-	-	P	P	P	P	P	P	P				
			SEALS											SEALS			
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G	G	G	G	G	G				
			FormulaUFI MEDIA											FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	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	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FE	FE	FE	FE	FE	FE	FE	FE	FE	FE				
			HA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA				
			HB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB				
			HC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC				
			HD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	HD	HD	HD	HD	HD	HD	HD	HD	HD	HD				
			CLOGGING INDICATOR **														
			03 = port, plugged	03	03	03	03	03	03	03	03	03	03				
			5E = visual differential 500 kPa (5 bar)	5E	5E	5E	5E	5E	5E	5E	5E	5E	5E				
			5F = visual differential 800 kPa (8 bar)	5F	5F	5F	5F	5F	5F	5F	5F	5F	5F				
			6E = electrical differential 500 kPa (5 bar)	6E	6E	6E	6E	6E	6E	6E	6E	6E	6E				
			6F = electrical differential 800 kPa (8 bar)	6F	6F	6F	6F	6F	6F	6F	6F	6F	6F				
			7E = indicator 6E with LED	7E	7E	7E	7E	7E	7E	7E	7E	7E	7E				
			7F = indicator 6F with LED	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F				
			T2 = elect. diff. 500 kPa (5 bar) with thermostat 30°C	T2	T2	T2	T2	T2	T2	T2	T2	T2	T2				
			T3 = elect. diff. 800 kPa (8 bar) with thermostat 30°C	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3				
X	X		ACCESSORI / ACCESSORIES														
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX				

* On request only

** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see the Clogging Indicator Chapter for further details)



SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR																																																												
																																																														
<table border="1"> <tr> <td>B</td><td>P</td><td>B</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>X</td><td>X</td> </tr> </table>	B	P	B																X	X	<table border="1"> <tr> <td>E</td><td>P</td><td>B</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	E	P	B																		<table border="1"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>																				
B	P	B																X	X																																											
E	P	B																																																												

SPARE SEAL KIT

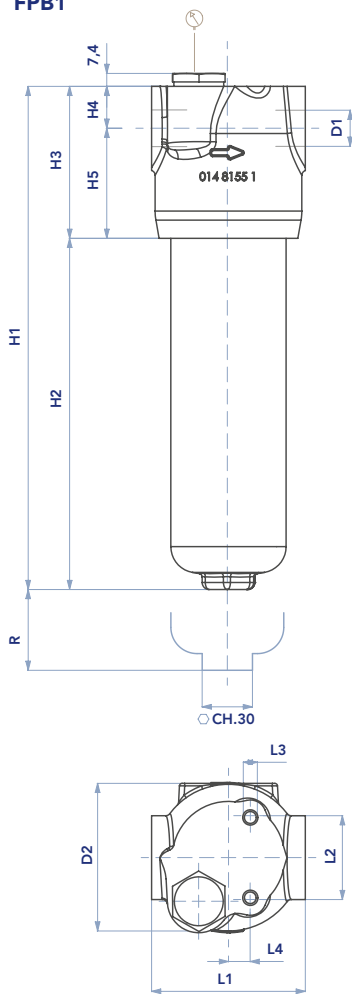
	NBR	FKM
FPB11 - 12 - 13	521.0002.2	521.0086.2
FPB21 - 22	521.0003.2	521.0030.2
FPB31 - 32 - 33 - 34 - 35	521.0004.2	521.0087.2

FPB

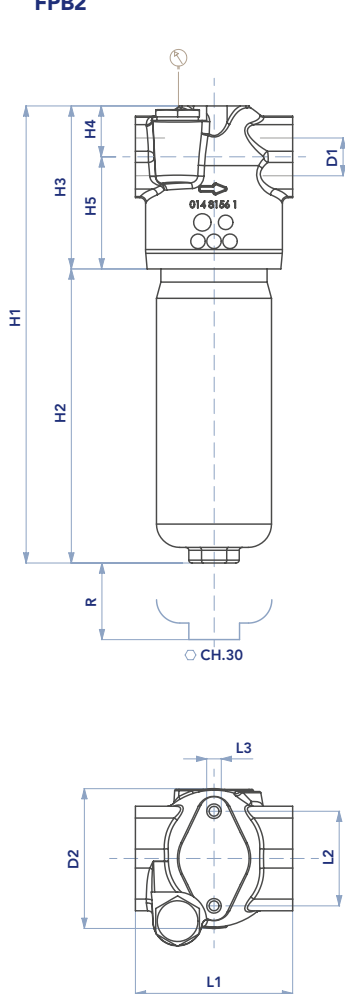
PRESSURE FILTERS

INSTALLATION DRAWING

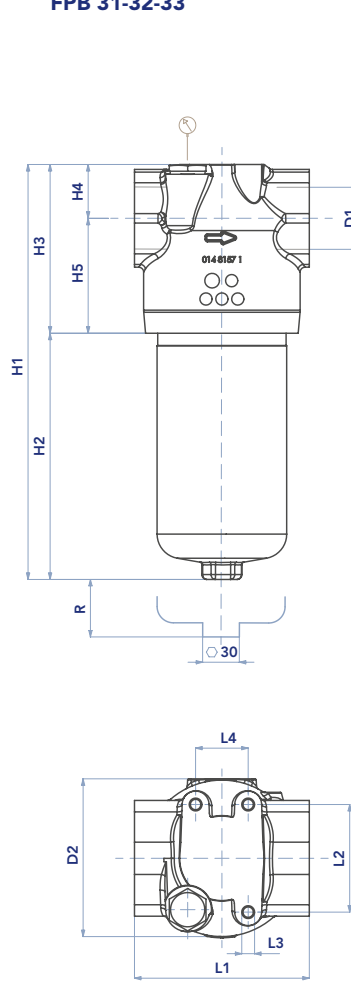
FPB1



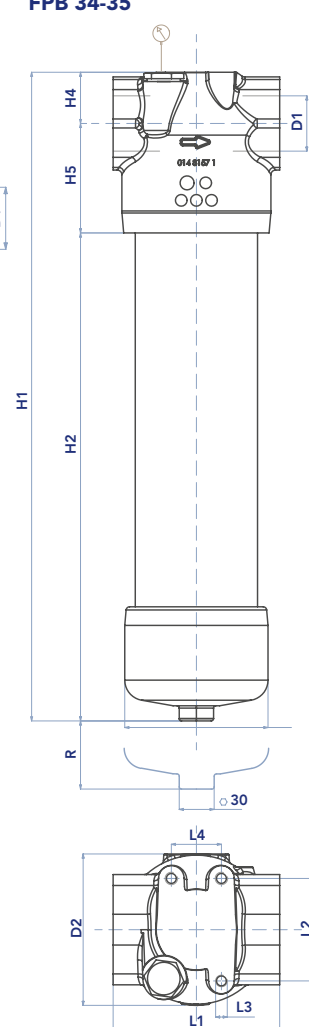
FPB2



FPB 31-32-33



FPB 34-35



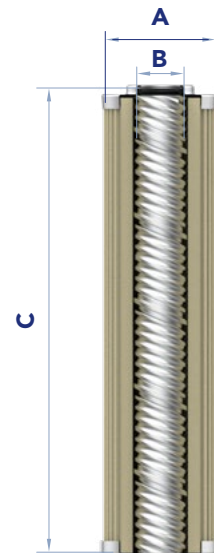
FILTER HOUSING

	D1	D2	H1	H2	H3	H4	H5	L1	L2	L3	L4	R	kg
FPB11	1/2"-3/4"	86	162	75	87	24	63	88	46	M8	12,5	100	4,4
FPB12	1/2"-3/4"	86	194	107	87	24	63	88	46	M8	12,5	100	4,6
FPB13	1/2"-3/4"	86	288	201	87	24	63	88	46	M8	12,5	100	5,2
FPB21	3/4" - 1"	96	219	107	112	35	77	108	65	M8	-	100	6,6
FPB22	3/4" - 1"	96	314	202	112	35	77	108	65	M8	-	100	8,2
FPB31	1" - 1"1/4 - 1"1/2	130	243	105	138	44	94	143	88	M10	43	100	11,0
FPB32	1" - 1"1/4 - 1"1/2	130	337	199	138	44	94	143	88	M10	43	100	13,9
FPB33	1" - 1"1/4 - 1"1/2	130	460	322	138	44	94	143	88	M10	43	100	17,2
FPB34	1" - 1"1/4 - 1"1/2	130	558	420	138	44	94	143	88	M10	43	100	22,0
FPB35	1" - 1"1/4 - 1"1/2	130	658	520	138	44	94	143	88	M10	43	100	25,0



FILTER ELEMENT

	Kg			AREA (cm ²)				
	A	B	C	Media F & C	Media H	Media F+	Media H+	Media C+
EPB11	45	25	85	0,15	0,25	355	340	310
EPB12	45	25	116	0,20	0,55	500	475	435
EPB13	45	25	211	0,30	0,45	935	915	815
EPB21	52	23,5	115	0,25	0,40	975	975	780
EPB22	52	23,5	210	0,35	0,55	1.830	1.785	1.465
EPB31	78	42,5	118	0,40	0,70	2.000	1.470	1.720
EPB32	78	42,5	210	0,80	1,30	3.695	2.695	3.170
EPB33	78	42,5	330	1,00	1,60	5.025	4.325	4.025
EPB34	78	42,5	430	1,20	1,80	6.585	5.685	6.585
EPB35	78	42,5	530	1,40	2,00	8.145	7.045	8.645



MAINTENANCE

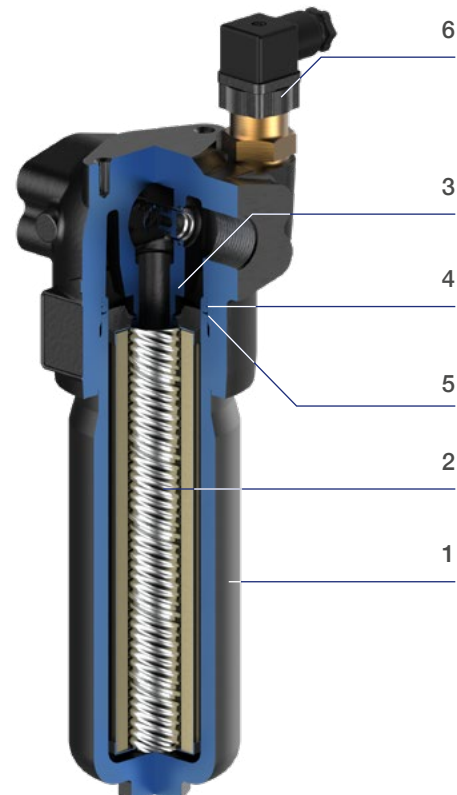
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the bowl o-ring condition (4) and lubricate with oil
If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion o-ring (5) must be positioned downwards (under the gasket).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 70 Nm + 5/0.

Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.



FPB

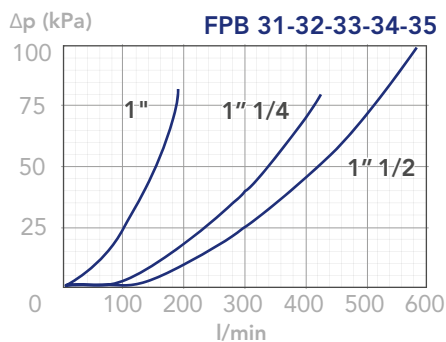
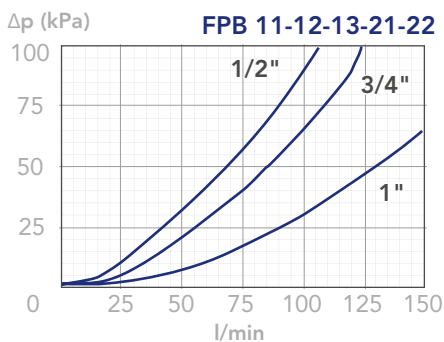
PRESSURE FILTERS

PRESSURE DROP CURVES (Δp)

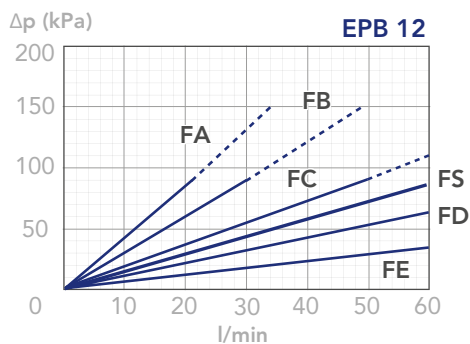
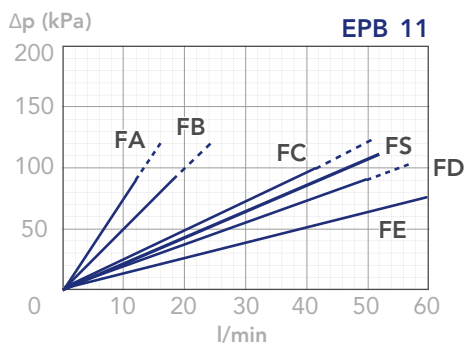
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must be

lower than 120 kPa (1,2 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)

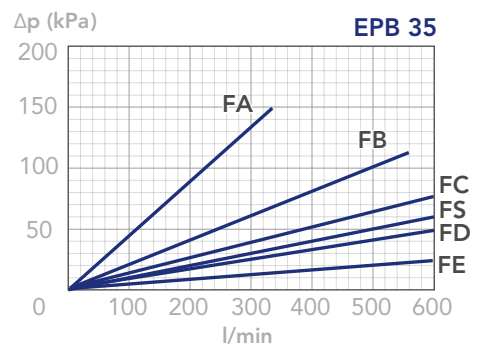
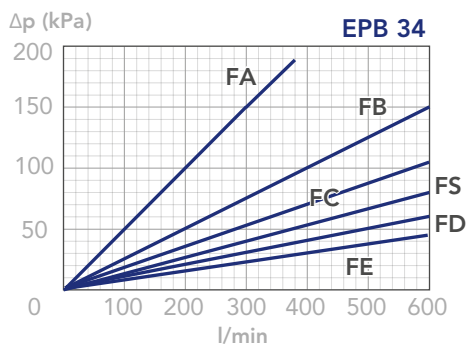
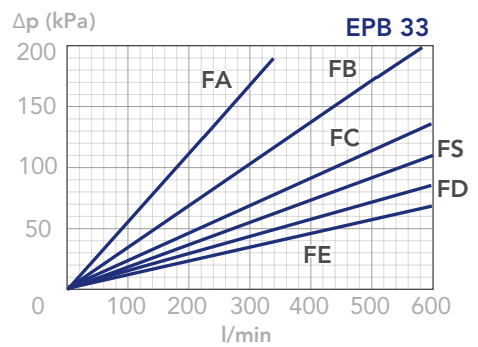
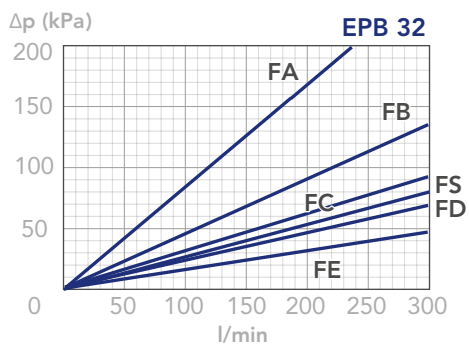
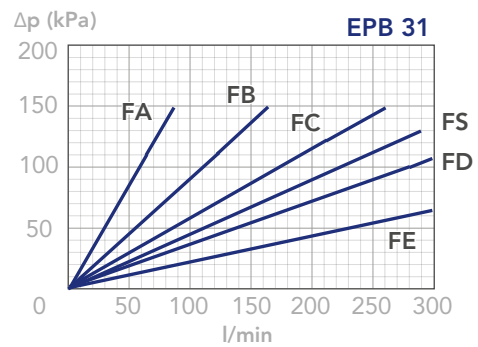
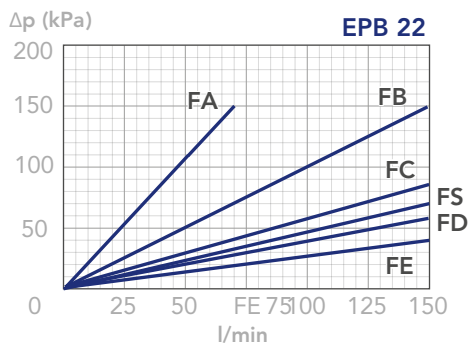
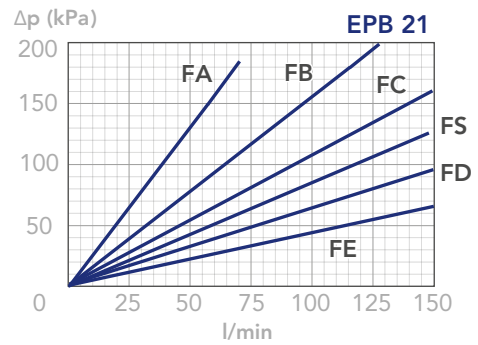
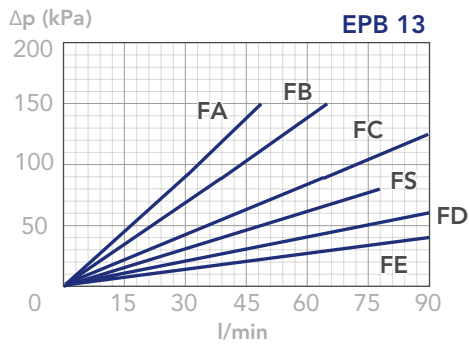


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ MEDIA
(depending both on the internal diameter of the element and on the filter media)





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



FPB

PRESSURE FILTERS

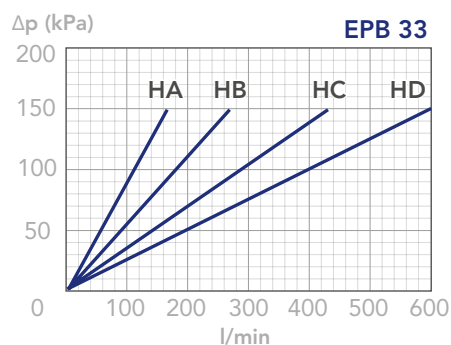
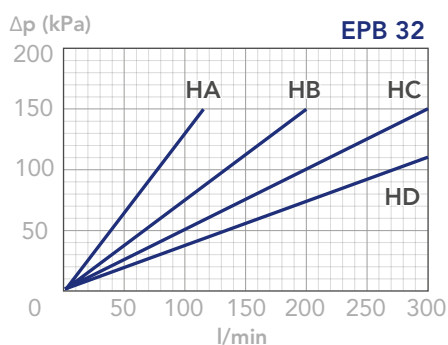
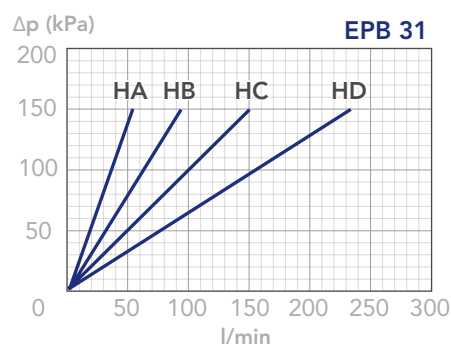
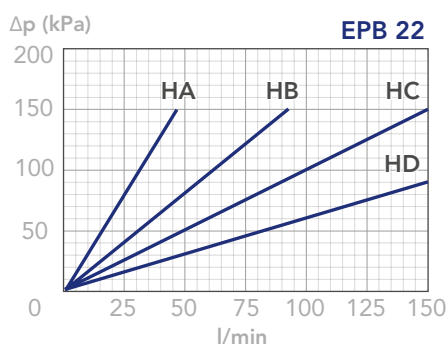
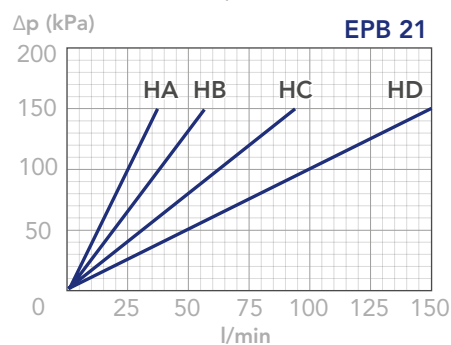
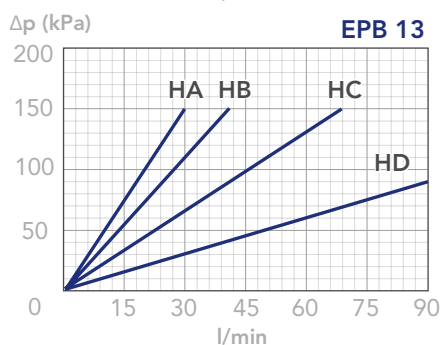
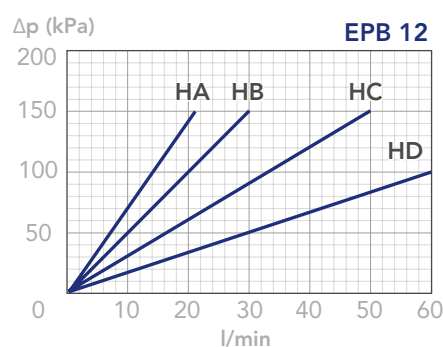
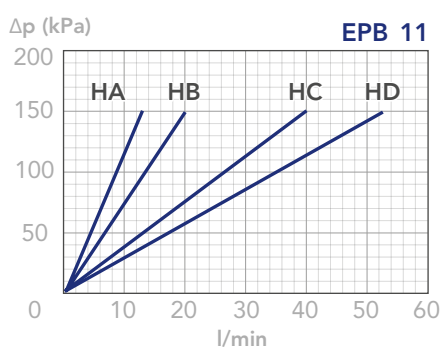


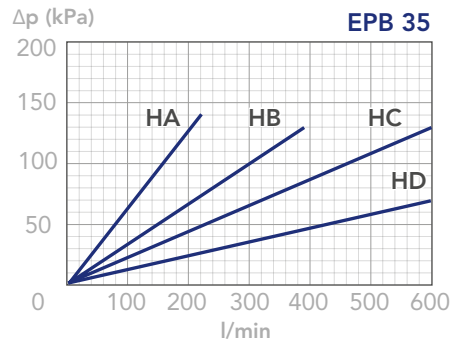
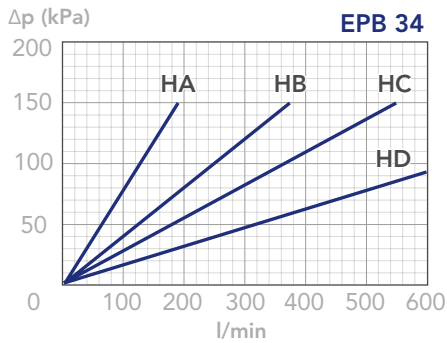
PRESSURE DROP CURVES (Δp)

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 120 kPa (1,2 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

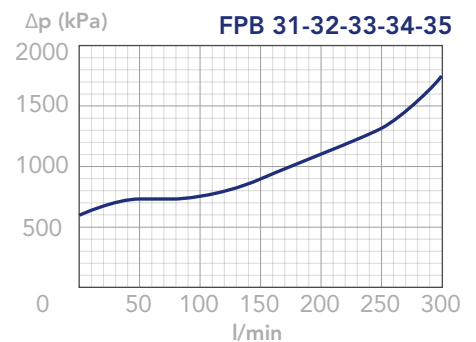
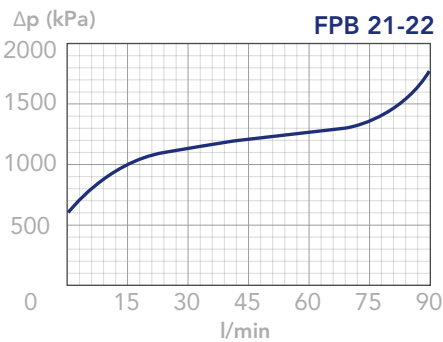
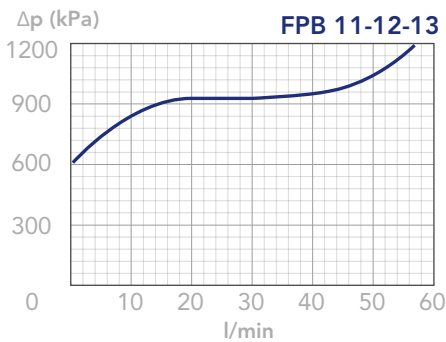
CLEAN FILTER ELEMENT PRESSURE DROP WITH H+ MEDIA
(depending both on the internal diameter of the element and on the filter media) - Recommended with no bypass option





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.



REVERSE FLOW VALVE

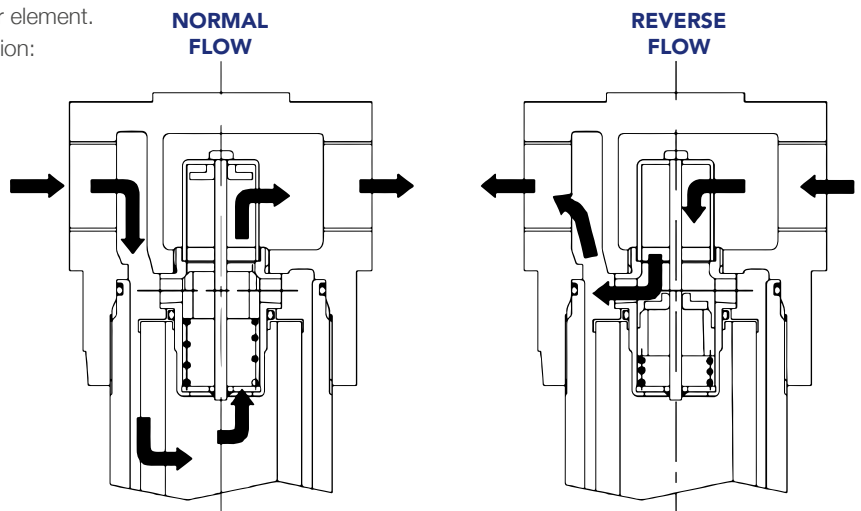
For hydraulic systems where reverse flow can occur, the pressure filters series FPB2+ and FPB3+ are available with a free reverse flow valve allowing the fluid to pass through the filter element in the normal direction and to bypass the filter element in the reverse direction (option "R"). The reverse flow valve is available also with incorporated bypass valve for the normal flow direction, set at 6 bar (option "P").

In normal flow conditions the whole flow pass through the filter element. In the option "P", if the differential pressure across the element exceeds 6 bar the bypass is activated.

In reverse flow conditions the flow bypasses the filter element.

Pressure drop through the valve in the reverse direction:

- 0,4 bar at 100 L/min
- 0,6 bar at 200 L/min
- 0,8 bar at 300 L/min



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 3968:2005. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



www.ufihyd.com



FPC

PRESSURE FILTERS

DESCRIPTION

High pressure inline filter

MATERIALS

Head: Cast iron
Bowl: Steel
Bypass valve: Steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 35 MPa (350 bar)
Collapse, differential for the filter element
standard series 2 MPa (20 bar)
H+ series 21 MPa (210 bar)

BYPASS VALVE

Setting: 350 kPa (3,5 bar) \pm 10%
600 kPa (6 bar) \pm 10%

FLOW RATE

Qmax 150 l/min

WORKING TEMPERATURE

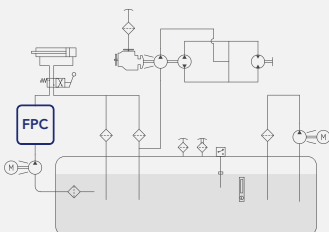
From -25° to +110° C

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

FPC

PRESSURE FILTERS



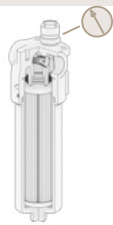


ORDERING AND OPTION CHART

F	P	C	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY	E	P	C
			SIZE & LENGTH	51	53	55	SIZE & LENGTH			
			PORT TYPE							
			B = BSP thread	B	B	B				
			M = Metric thread (only M22x1,5)	M	M	M				
			S = SAE thread	S	S	S				
			PORT SIZE							
			04 = 1/2"	04	04	04				
			06 = 3/4"	06	06	06				
			08 = 1"	08	08	08				
			BYPASS VALVE							
			W = without	W	W	W				
			C = 600 kPa (6 bar)	C	C	C				
			D = 350 kPa (3,5 bar)	D	D	D				
			SEALS				SEALS			
			N = NBR Nitrile	N	N	N				
			F = FKM Fluoroelastomer	F	F	F				
			G = Treatment for water-glycol	G	G	G				
			FormulaUFI MEDIA				FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FC	FC	FC				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FS	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FD	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ >1.000 Δp 2MPa (20 bar)	FE	FE	FE				
			CLOGGING INDICATOR**							
			00 = without predisposition	00	00	00				
			03 = port, plugged	03	03	03				
			5E = visual differential 500 kPa (5 bar)	5E	5E	5E				
			6E = electrical differential 500 kPa (5 bar)	6E	6E	6E				
			7E = indicator 6E with LED	7E	7E	7E				
			XE = electrical differential N.O. 500 kPa (5 bar)	XE	XE	XE				
			XD = electrical differential N.O. 240 kPa (2,4 bar)	XD	XD	XD				
			XL = electrical differential N.C. 240 kPa (2,4 bar)	XL	XL	XL				
			XG = electrical differential N.C. 340 kPa (3,4 bar)	XG	XG	XG				
			T2 = elect. diff. 500 kPa (5 bar) with thermostat 30°C	T2	T2	T2				
			ACCESSORI / ACCESSORIES							
			W = without clogging indicator predisposition	W	W	W				
			A = lateral indicator port (see DWG)	A	A	A				
			C = indicator port on the top (see DWG)	C	C	C				
			ACCESSORI / ACCESSORIES							
			X = no accessory available	X	X	X				

**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)

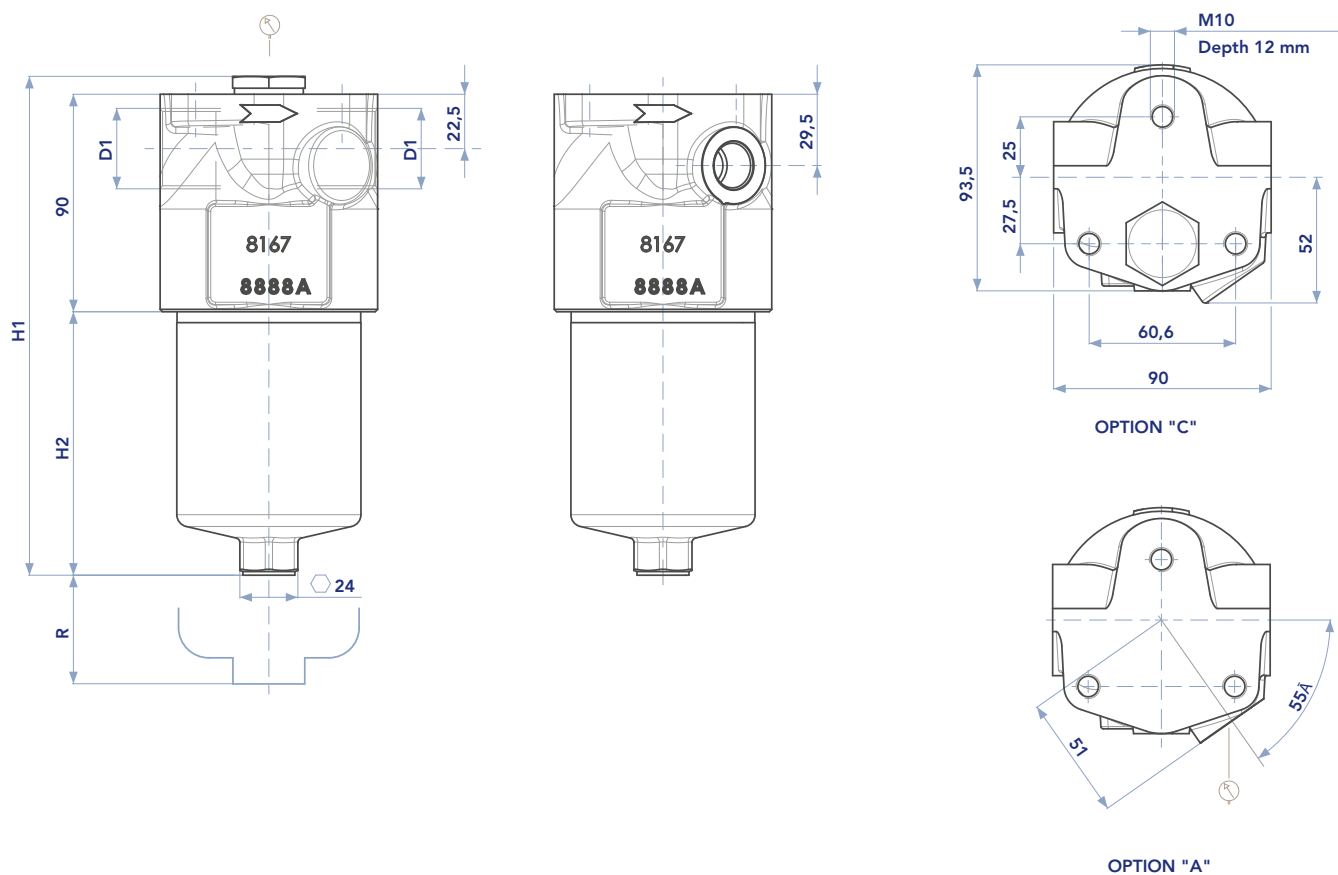
SPARE PARTS

FILTER HOUSING										FILTER ELEMENT			CLOGGING INDICATOR	
														
B	P	C								E	P	C		

SPARE SEAL KIT

	NBR	FKM
FPC51-53-55	521.0131.2	521.0132.2

INSTALLATION DRAWING



FILTER HOUSING

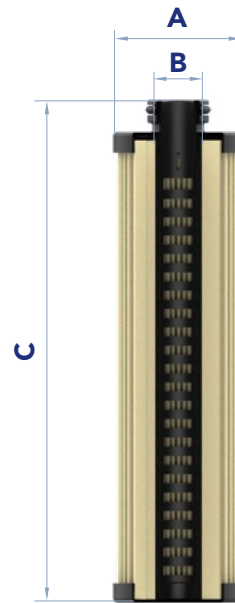
	D1	H1	H2	Kg
FPC51	M22x1,5 - 1/2" - 3/4" - 1" BSP or SAE thread	206,5	109,0	4,2
FPC53	M22x1,5 - 1/2" - 3/4" - 1" BSP or SAE thread	254,5	157,0	4,7
FPC55	M22x1,5 - 1/2" - 3/4" - 1" BSP or SAE thread	307,0	209,5	5,3

FPC

PRESSURE FILTERS

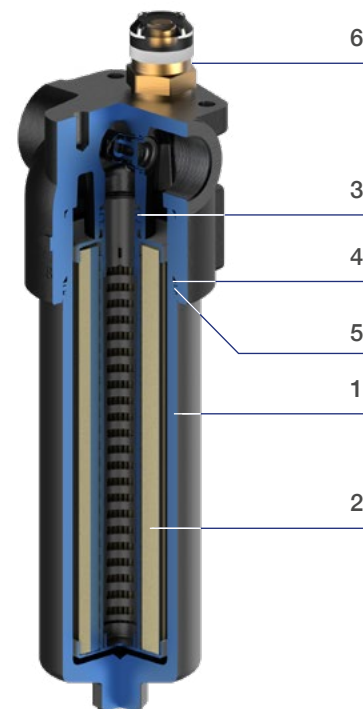
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media F+
EPC51	56,5	27	118	0,12	945
EPC53	56,5	27	166	0,15	1.401
EPC55	56,5	27	219	0,19	1.905



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
N.B. The used filter elements and oil dirty filter parts dirty are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the bowl o-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion o-ring (5) must be positioned downwards (under the gasket).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 70 Nm + 5/0.



Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

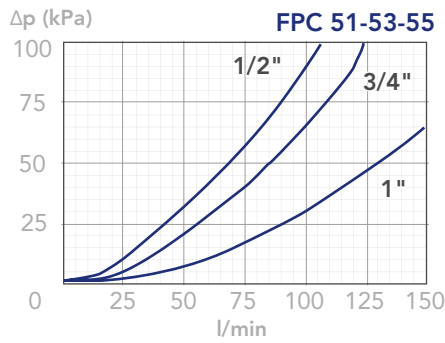
Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.



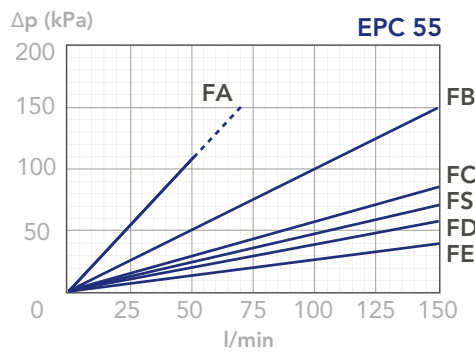
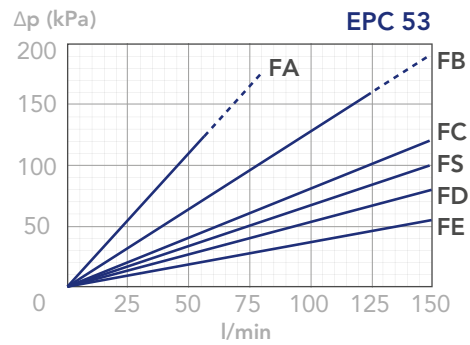
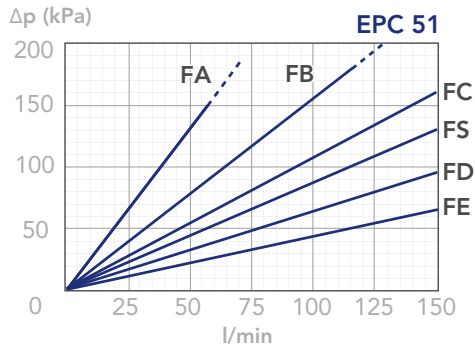
PRESSURE DROP CURVES (Δp)

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 120 kPa (1,2 bar). In any case this value should never exceed 1/3 of the bypass valve setting.



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

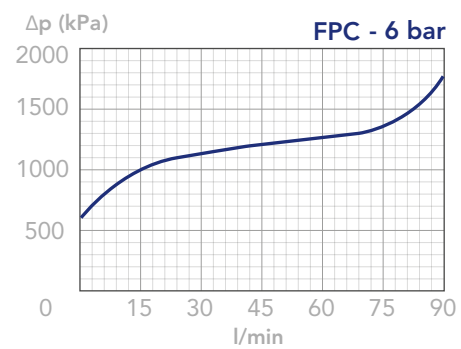
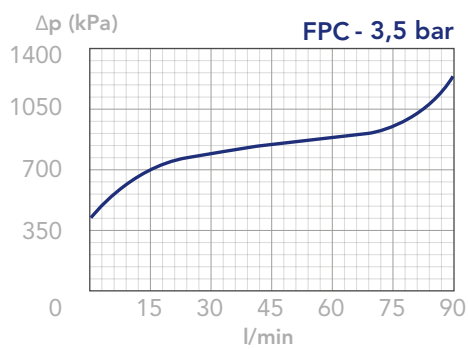


FPC

PRESSURE FILTERS

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 3968:2005. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FPD

PRESSURE FILTERS

DESCRIPTION

Modular inline filter

MATERIALS

Head: Cast iron
Bowl: Steel
Bypass valve: Steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 31,5 MPa (315 bar)
Collapse, differential for the filter element:
21 MPa (210 bar)

FLOW RATE

Qmax 400 l/min

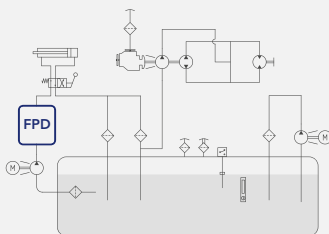
WORKING TEMPERATURE

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



FPD




PRESSURE FILTERS

ORDERING AND OPTION CHART

F	P	D	COMPLETE FILTER FAMILY											FILTER ELEMENT FAMILY			E	P	B
			SIZE & LENGTH	01	02	12	21	22	31	32	33	34	35						
				01	12	12	21	22	31	32	33	34	35	SIZE & LENGTH					
			PORT TYPE																
			C = CETOP interface	C	C	C	C	C	C	C	C	C	C	C	C				
			Y = bowl side B	Y	Y	-	-	-	-	-	-	-	-	-					
			PORT SIZE																
			03 = CETOP 3 (size 6)	03	03	-	-	-	-	-	-	-	-	-					
			05 = CETOP 5 (size 10)	-	-	05	-	-	-	-	-	-	-						
			07 = CETOP 7 (size 16)	-	-	-	07	07	-	-	-	-	-						
			30 = size 30	-	-	-	-	-	30	30	30	30	30						
X			BYPASS VALVE																
			X = not available	X	X	X	X	X	X	X	X	X	X	X	X				
			SEALS																
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F	F					
			FormulaUFI MEDIA																
			HA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21 MPa (210 bar)	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA					
			HB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21 MPa (210 bar)	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB					
			HC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21 MPa (210 bar)	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC					
			HD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21 MPa (210 bar)	HD	HD	HD	HD	HD	HD	HD	HD	HD	HD	HD					
			CLOGGING INDICATOR**																
			03 = port, plugged	03	03	03	03	03	03	03	03	03	03	03	03				
			5F = visual differential 800 kPa (8 bar)	5F	5F	5F	5F	5F	5F	5F	5F	5F	5F	5F					
			6F = electrical differential 800 kPa (8 bar)	6F	6F	6F	6F	6F	6F	6F	6F	6F	6F	6F					
			7F = indicator 6F with LED	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F					
			T3 = elect. diff. 800 kPa (8 bar) with thermostat 30°C	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3					
X	X		ACCESSORI / ACCESSORIES																
			XX = no accessories available	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX				

** 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 PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	D	X	E	P	B					



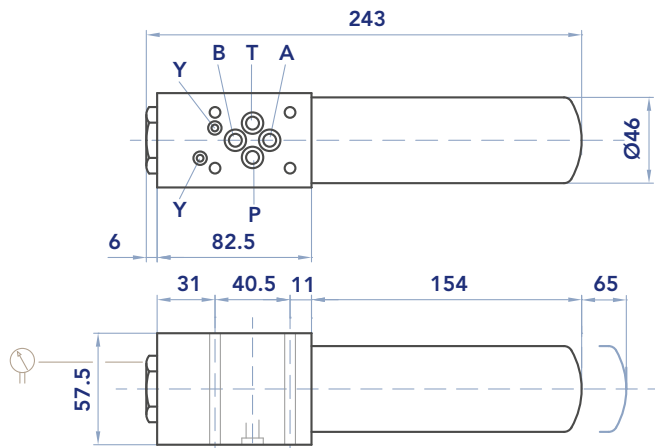
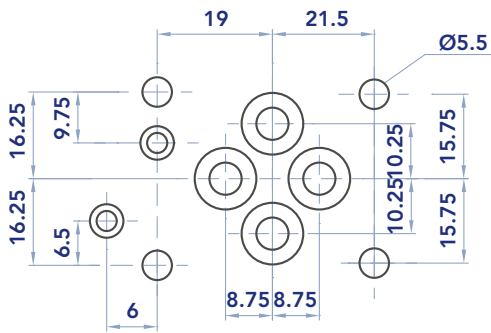
SPARE SEAL KIT

	NBR	FKM
FPD01	521.0005.2	521.0073.2
FPD02	521.0107.2	521.0108.2
FPD12	521.0071.2	521.0074.2

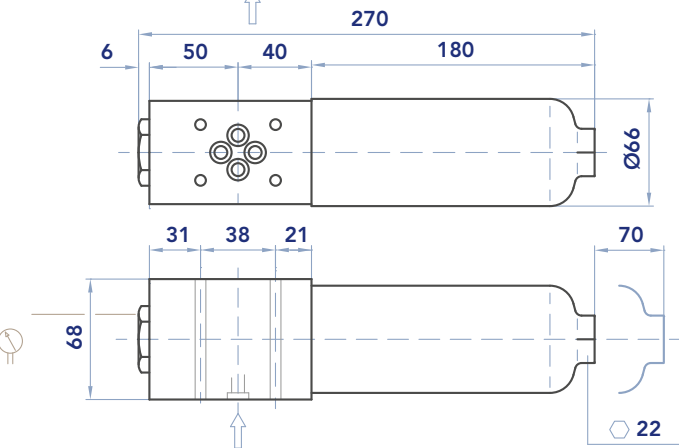
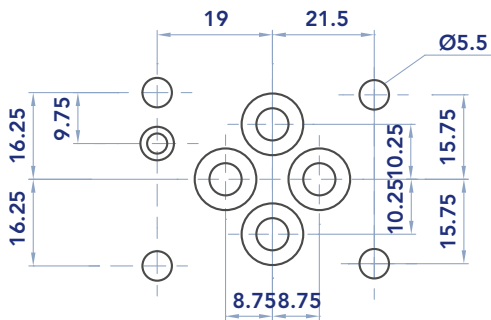
	NBR	FKM
FPD21-22	521.0072.2	521.0028.2
FPD31-32-33-34-35	521.0109.2	521.0110.2

INSTALLATION DRAWING

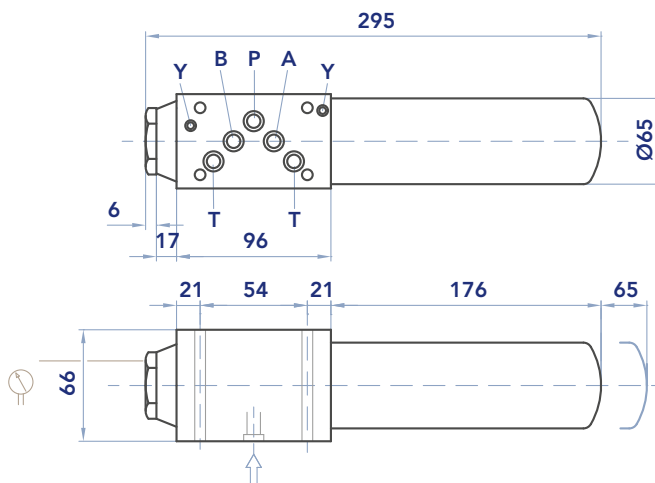
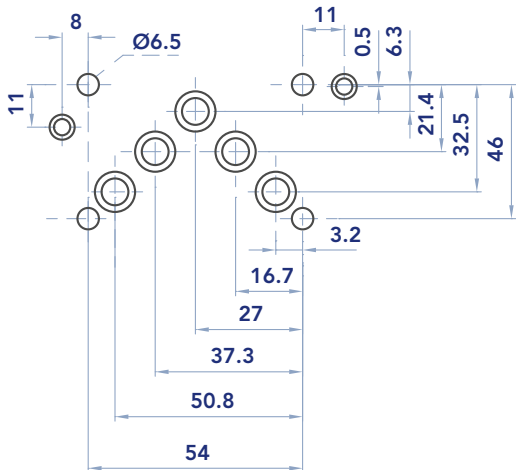
FPD 01 weight Kg. 2.5



FPD 02 weight Kg. 2.5



FPD 12 weight Kg. 4.2

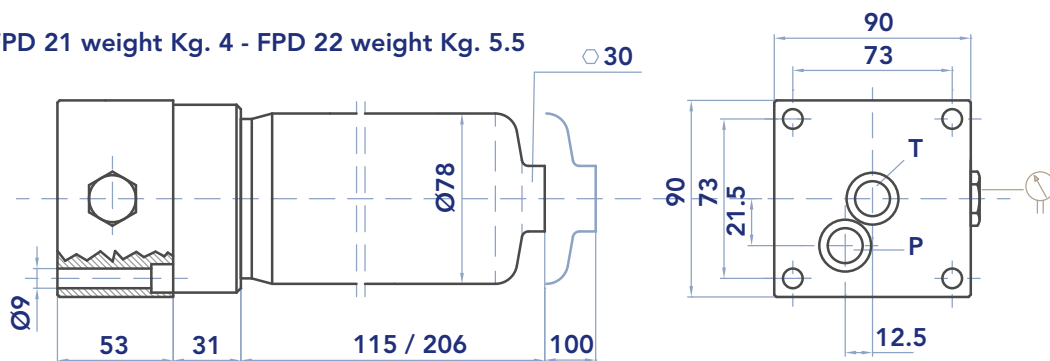


FPD

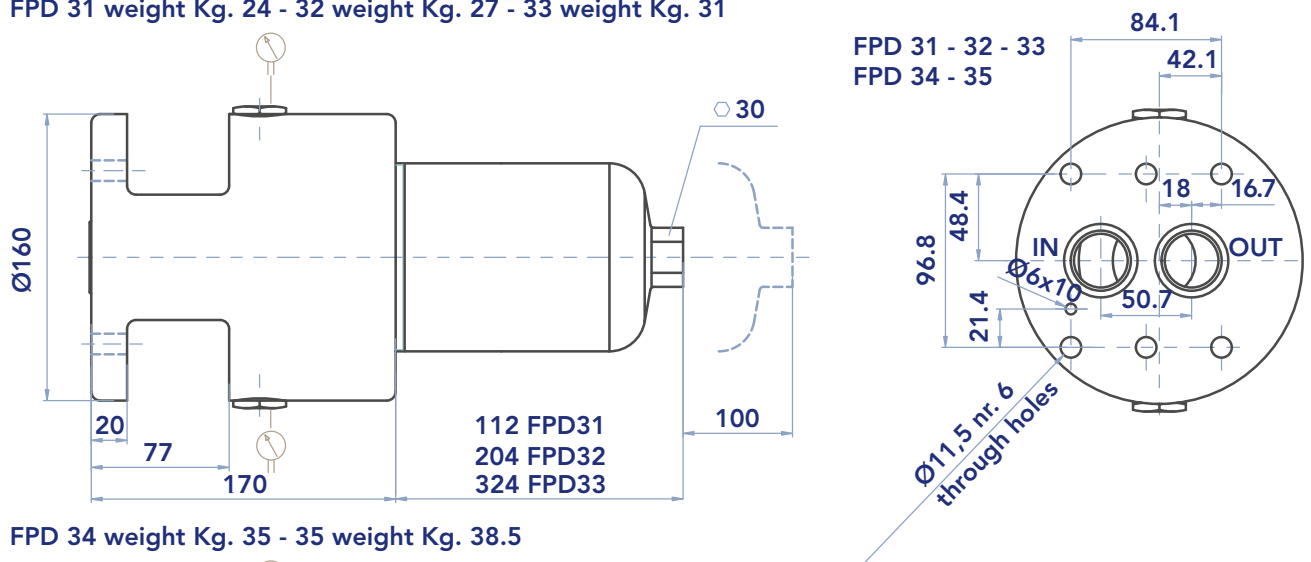
PRESSURE FILTERS

INSTALLATION DRAWING

FPD 21 weight Kg. 4 - FPD 22 weight Kg. 5.5



FPD 31 weight Kg. 24 - 32 weight Kg. 27 - 33 weight Kg. 31



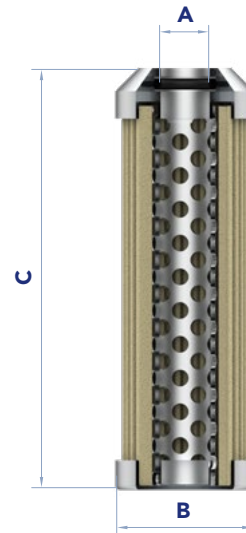
FPD 34 weight Kg. 35 - 35 weight Kg. 38.5





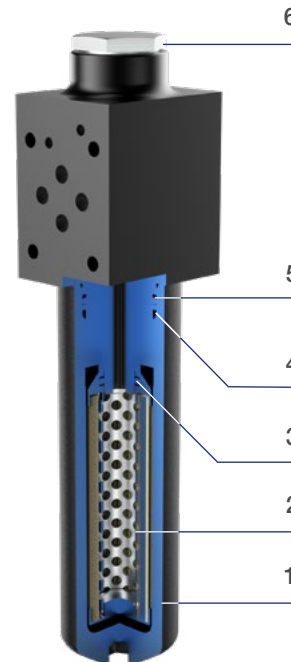
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media H+
EPB01	33	16	100	0,14	270
EPB12	45	25	116	0,55	475
EPB21	52	23,5	115	0,40	975
EPB22	52	23,5	210	0,55	1.785
EPB31	78	42,5	118	0,70	1.470
EPB32	78	42,5	210	1,30	2.695
EPB33	78	42,5	330	1,60	4.325
EPB34	78	42,5	430	1,80	5.685
EPB35	78	42,5	530	2,00	7.045



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
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 authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the condition of the o-ring on the bowl (4) and lubricate with oil .
If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion ring (5) must be positioned as follows:
FPD01-FPD02 upwards with the concave part downwards (seal side);
FPD2-FPD3 downwards (in this series the anti-extrusion ring has no concave part).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 70 Nm + 5/0.



Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.

FPD

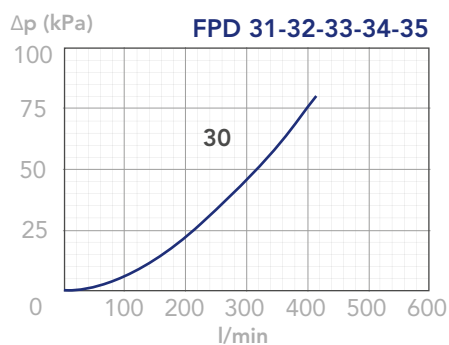
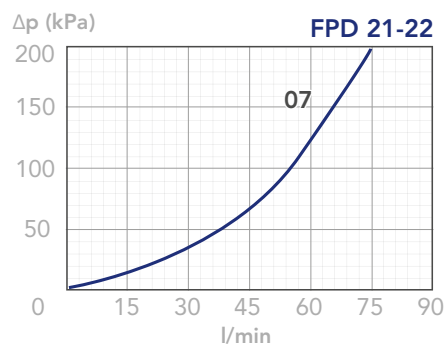
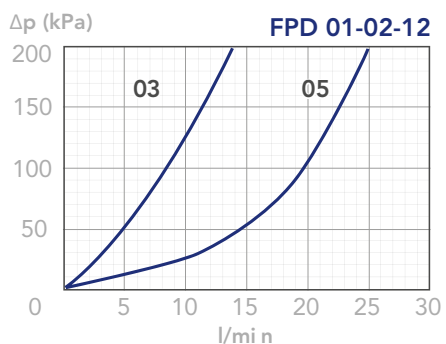
PRESSURE FILTERS

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

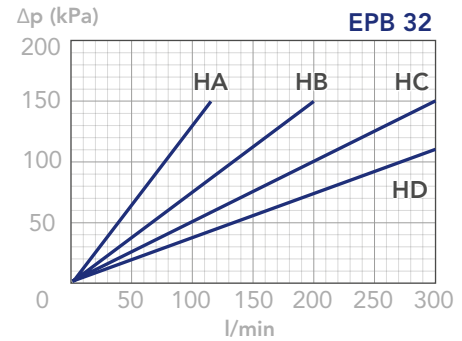
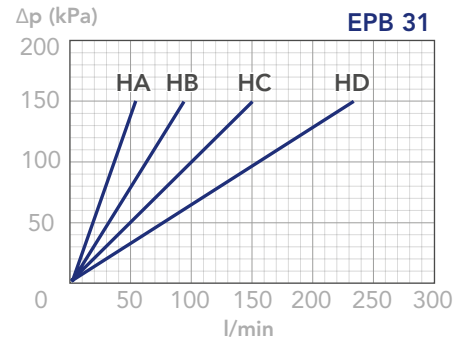
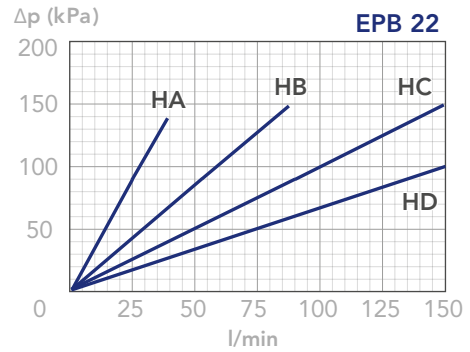
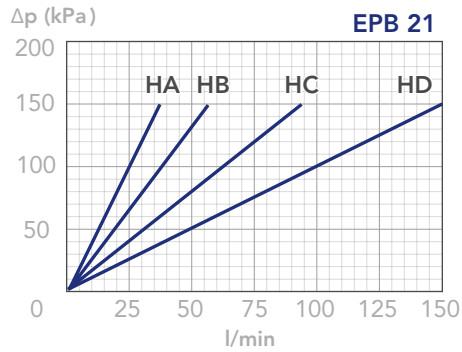
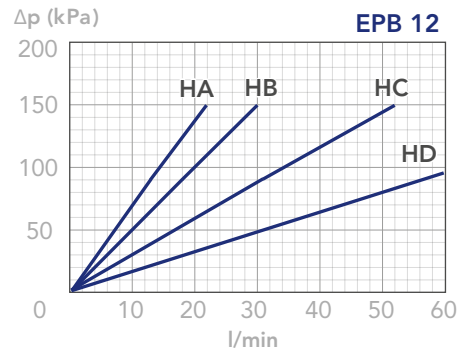
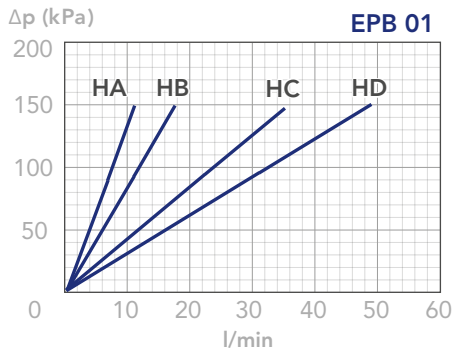
Element corresponding to the considered Flow Rate and it must be lower than 120 kPa (1,2 bar).

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



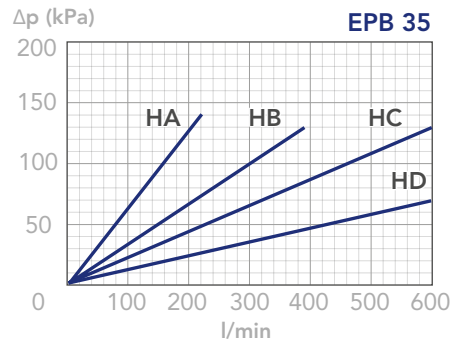
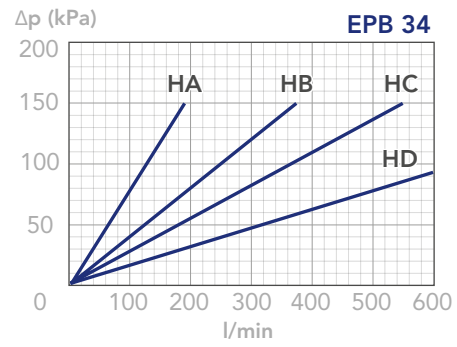
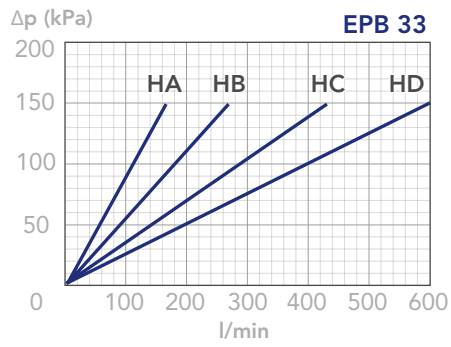


CLEAN FILTER ELEMENT PRESSURE DROP WITH H+ MEDIA
 (depending both on the internal diameter of the element and on the filter media)



FPD

PRESSURE FILTERS



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.



FPE

PRESSURE FILTERS



DESCRIPTION

Inline spin-on filter

MATERIALS

Head: Aluminum alloy
Spin-on cartridge: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max working: 1,2 MPa (12 bar)
Collapse, differential for the filter element:
400 kPa (4 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 300 l/min

WORKING TEMPERATURE

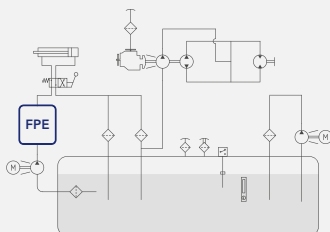
From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-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

FPE

PRESSURE FILTERS



ORDERING AND OPTION CHART

F	P	E	COMPLETE FILTER FAMILY									FILTER ELEMENT FAMILY	E	S	E
			SIZE & LENGTH	11	12	21	22	31*	32*	41*	42*	SIZE & LENGTH			
			PORT TYPE												
			B = BSP thread	B	B	B	B	B	B	B	B	B			
			F = SAE flange 3000 psi	-	-	-	-	-	-	F	F				
			PORT SIZE												
			06 = 3/4"	06	06	-	-	-	-	-	-				
			10 = 1" 1/4	-	-	10	10	-	-	-	-				
			12 = 1" 1/2	-	-	-	-	12	12	12	12				
			BYPASS VALVE												
			W = without	W	W	W	W	W	W	W	W	W			
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B	B			
			SEALS												
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N			
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F			
			FormulaUFI MEDIA												
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	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	FB	FB			
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	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	FD	FD			
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC	CC			
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD	CD	CD	CD	CD	CD			
			CLOGGING INDICATOR												
			06 = port, plugged	06	06	06	06	06	06	06	06	06			
			31 = pressure gauge, rear connection	31	31	31	31	31	31	31	31	31			
			P1 = SPDT, pressure switch	P1	P1	P1	P1	P1	P1	P1	P1	P1			
X	X		ACCESSORI / ACCESSORIES												
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX	XX			

* When ordering the filter elements, please consider the following information:
 ESE31 = 2 x ESE21
 ESE32 = 2 x ESE22
 ESE41 = 2 x ESE21
 ESE42 = 2 x ESE22

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	E		E	S	E					




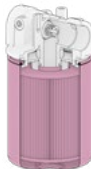
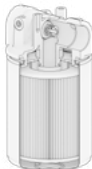
ORDERING AND OPTION CHART - VERSION WITH DIFFERENTIAL INDICATOR

F	P	E	COMPLETE FILTER FAMILY	A1*	A2*	B1*	B2*	31*	32*	41*	42*	FILTER ELEMENT FAMILY	E	S	E
			SIZE & LENGTH									SIZE & LENGTH			
			PORT TYPE												
			B = BSP thread	B	B	B	B	B	B	B	B				
			F = SAE flange 3000 psi	-	-	-	-	-	-	F	F				
			PORT SIZE												
			06 = 3/4" (F06 not available)	06	06	-	-	-	-	-	-				
			10 = 1" 1/4 (N10 not available)	-	-	10	10	-	-	-	-				
			12 = 1" 1/2 (G12 option not available)	-	-	-	-	12	12	12	12				
			BYPASS VALVE												
			W = without	W	W	W	W	W	W	W	W				
			B = 170 kPa (1,7 bar)	B	B	B	B	B	B	B	B				
			SEALS									SEALS			
			N = NBR Nitrile	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F				
			FormulaUFI MEDIA									FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	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	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	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	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD	CD	CD	CD	CD				
			CLOGGING INDICATOR**												
			03 = port, plugged	-	-	-	-	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	-	-	-	-	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	-	-	-	-	6B	6B	6B	6B				
			7B = indicator 6E with LED	-	-	-	-	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	-	-	-	-	T0	T0	T0	T0				
			0U = ports, plugged	0U	0U	0U	0U	-	-	-	-				
			U0 = visual differential 130 kPa (1,3 bar)	U0	U0	U0	U0	-	-	-	-				
			N0 = visual-electrical differential 130 kPa (1,3 bar)	N0	N0	N0	N0	-	-	-	-				
X	X		ACCESSORI / ACCESSORIES												
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX				

* When ordering the filter elements, please consider the following information:
 ESEA1 = ESE21
 ESEA2 = ESE22
 ESEB1 = ESE21
 ESEB2 = ESE22
 ESE31 = 2 x ESE21
 ESE32 = 2 x ESE22
 ESE41 = 2 x ESE21
 ESE42 = 2 x ESE22

**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 PARTS

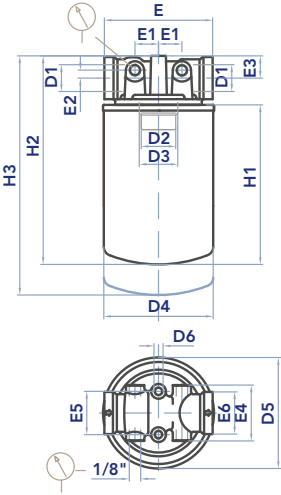
FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	E		E	S	E					

FPE

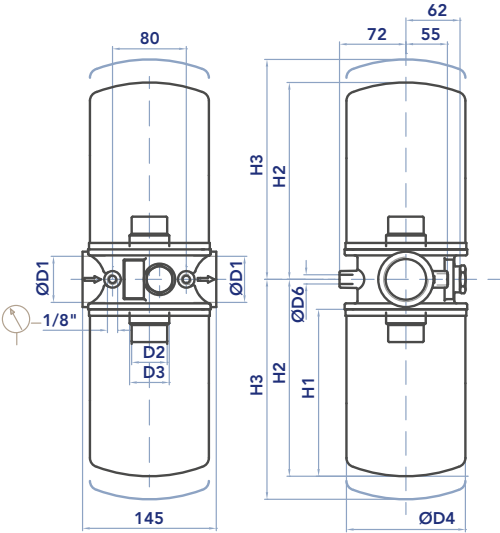
PRESSURE FILTERS

INSTALLATION DRAWING

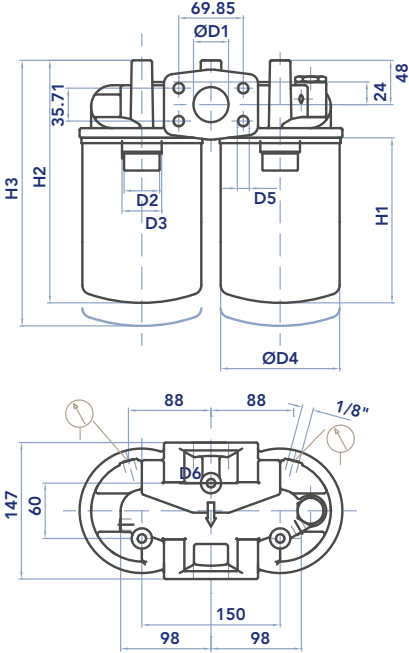
FPE 1+ & FPE 2+



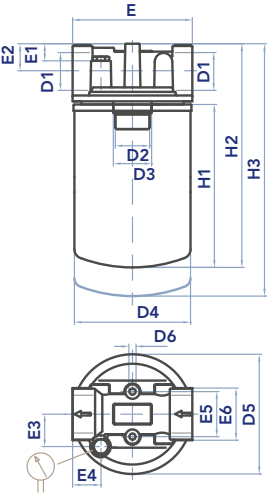
FPE 3+



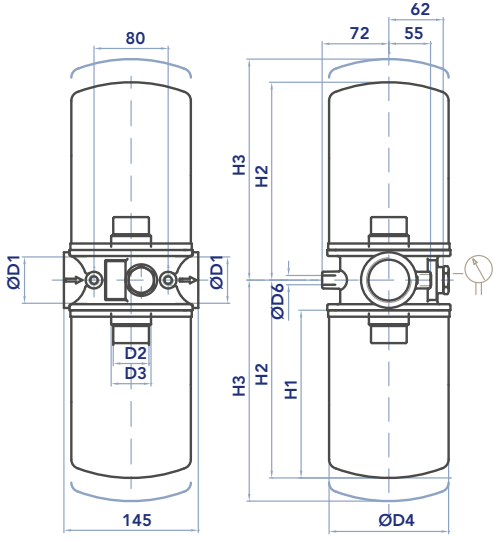
FPE 4+



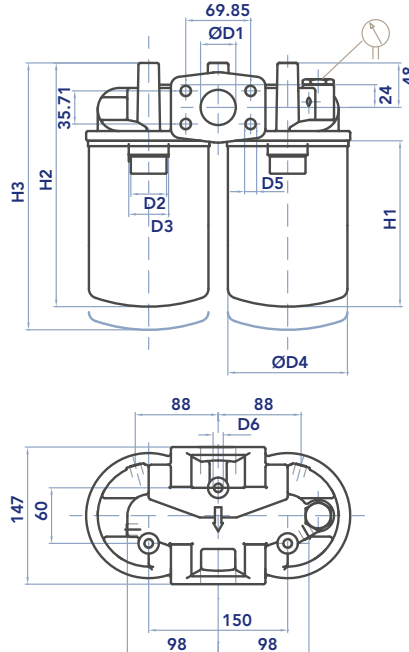
FPE A+ & FPE B+



FPE 3+



FPE 4+





FILTER HOUSING

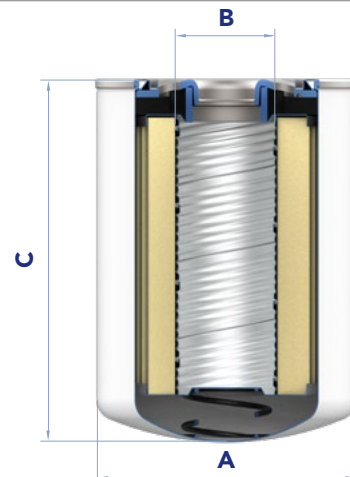
	D1	D2	D3	D4	D5	D6	E	E1	E2	E4	E5	E6	H1	H2	H3	Kg
FPE11	3/4"	3/4" BSP	-	96	97	M8	95	20,5	7	49	38	37	145	188	208	1,2
FPE12	3/4"	3/4" BSP	-	96	97	M8	95	20,5	7	49	38	37	191	234	254	1,5
FPE21	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	35	10	64	50	57	181	248	278	1,9
FPE22	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	35	10	64	50	57	226	293	323	2,0
FPE31	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	181	216	246	3,6
FPE32	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	226	261	291	3,8
FPE41	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	181	269	299	4,8
FPE42	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	226	314	344	5,0

FILTER HOUSING - VERSION WITH DIFFERENTIAL INDICATOR

	D1	D2	D3	D4	D5	D6	E	E1	E2	E3	E4	E5	E6	H1	H2	H3	Kg
FPEA1	3/4"	3/4" BSP	-	96	96	M8	95	-	23	24,5	21,5	38	32	145	188	208	1,2
FPEA2	3/4"	3/4" BSP	-	96	96	M8	95	-	23	24,5	21,5	38	32	191	234	254	1,5
FPEB1	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	19	30	36	35	50	54	181	248	278	1,9
FPEB2	1"1/4	1"1/2 16-UN	1"1/4 BSP	129	134	M8	133	19	30	36	35	50	54	226	293	323	2,0
FPE31	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	181	216	246	3,6
FPE32	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	-	M10	-	-	-	-	-	-	-	226	261	291	3,8
FPE41	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	181	269	299	4,8
FPE42	1"1/2	1"1/2 16-UN	1"1/4 BSP	129	M12	M10	-	-	-	-	-	-	-	226	314	344	5,0

FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)	
					Media F+	MediaC+
ESE11	96,5	3/4" BSP	146	0,70	2.140	3.305
ESE12	96,5	3/4" BSP	191	0,80	3.630	4.745
ESE21	129	1"1/4 BSP	181	1,20	4.450	5.560
ESE22	129	1"1/4 BSP	226	1,40	5.890	7.360



FPE

PRESSURE FILTERS



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the dirty filter element (1).
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 authorized Companies.
- 4) Check the filter element part number on the silk-screen printing or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the element o-ring gasket with oil.
- 6) Screw the clean filter element until the first contact of the gasket with the flange.
- 7) Tighten strongly for $\frac{3}{4}$ of a turn (indicative tightening torque of 18 Nm).

Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.

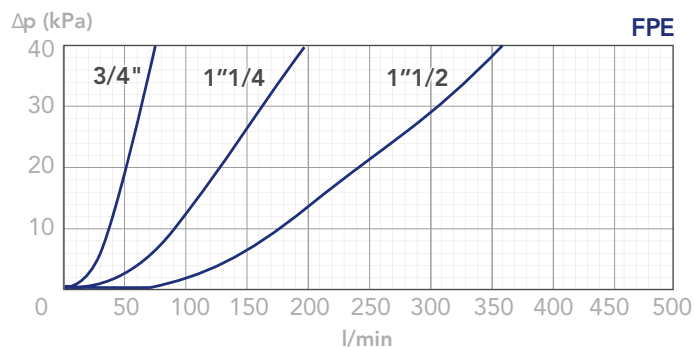


PRESSURE DROP CURVES (Δp)

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)

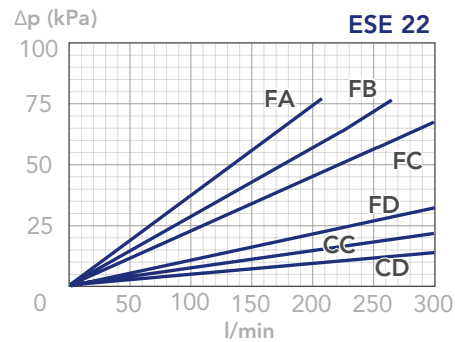
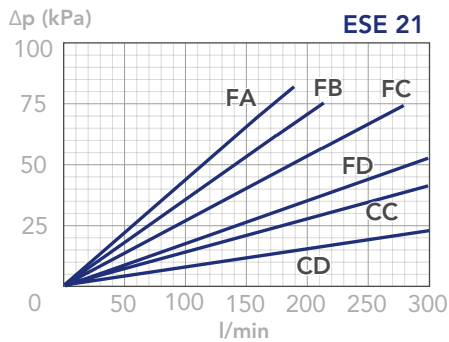
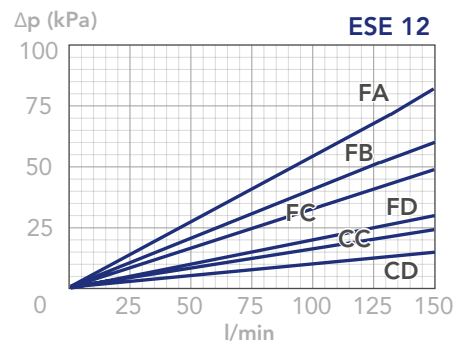
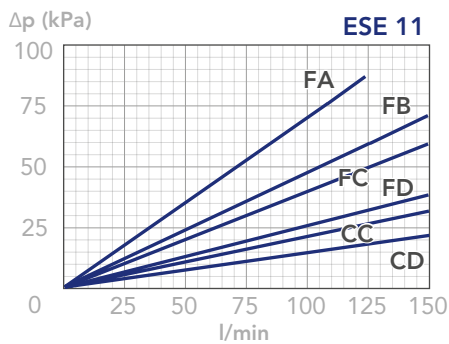




CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ AND C+ MEDIA
 (depending both on the internal diameter of the element and on the filter media)

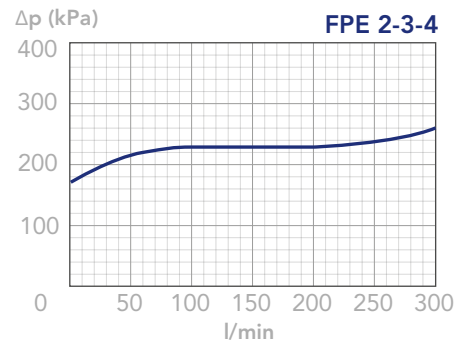
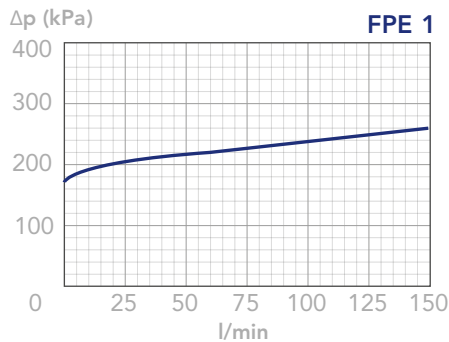
FPE3+ and FPE4+ filters use double element canisters. The Assembly Pressure Drop is therefore determined by adding the Housing Pressure Drop at the real flow rate and half the pressure drop of the ESE2+ element.

E.g. The pressure drop of a complete FPE31-----FC---- filter at a 60 l/min flow rate is obtained by adding the Housing Pressure Drop and half the ESE21NFC element pressure drop at 60 l/min.



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.



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FPG

PRESSURE FILTERS



DESCRIPTION

Medium pressure filter

MATERIALS

Head: Aluminum alloy
Bowl: Steel
Bypass valve : Steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max working: 5 MPa (50 bar)
Collapse, differential for the filter element:
1 MPa (10 bar)

BYPASS VALVE

Setting: 350 kPa (3,5 bar) $\pm 10\%$

FLOW RATE

Qmax 400 l/min

WORKING TEMPERATURE

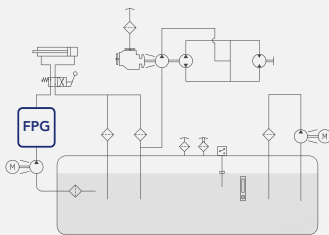
From -25° to +110° C

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

FPG

PRESSURE FILTERS

ORDERING AND OPTION CHART

F	P	G	COMPLETE FILTER FAMILY	20	21	22	31	FILTER ELEMENT FAMILY	E	P	G
			SIZE & LENGTH					SIZE & LENGTH			
		B	PORT TYPE								
			B = BSP thread	B	B	B	B				
			PORT SIZE								
			06 = 3/4"	06	06	06	-				
			08 = 1"	08	08	08	-				
			10 = 1" 1/4	-	-	-	10				
			12 = 1" 1/2	-	-	-	12				
			BYPASS VALVE								
			W = without	W	W	W	W				
			D = 350 kPa (3,5 bar)	D	D	D	D				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FE	FE	FE	FE				
			MC = FormulaUFI.WEB 10 μm	MC	MC	MC	MC				
			MD = FormulaUFI.WEB 30 μm	MD	MD	MD	MD				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			MF = FormulaUFI.WEB 90 μm	MF	MF	MF	MF				
			CLOGGING INDICATOR**								
			00 = no indicator port	00	00	00	00				
			03 = port, plugged	03	03	03	03				
			5D = visual differential 250 kPa (2,5 bar)	5B	5B	5B	5B				
			6D = electrical differential 250 kPa (2,5 bar)	6B	6B	6B	6B				
			7D = indicator 6D with LED	7B	7B	7B	7B				
			T6 = elect. diff. 250 kPa (2,5 bar) with thermostat 30°C	T0	T0	T0	T0				
			ACCESSORI / ACCESSORIES								
			W = No indicator port	W	W	W	W				
			A = Indicator port side A (see dwg)	A	A	A	A				
			B = Indicator port side B (see dwg)	B	B	B	B				
			C = Indicator port side C (see dwg)	C	C	C	C				
		X	ACCESSORI / ACCESSORIES								
			X = no accessory available	X	X	X	X				

** 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 PARTS

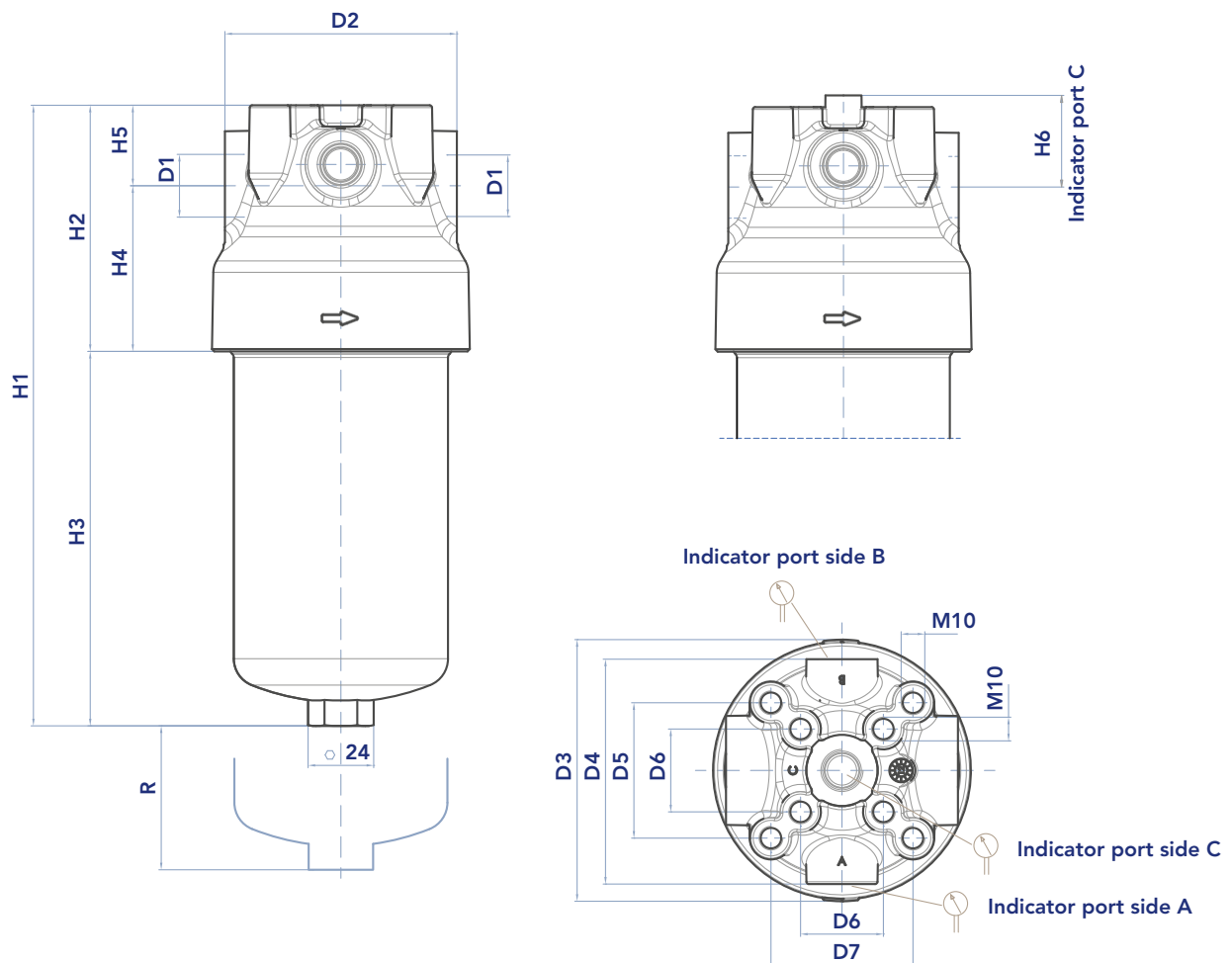
FILTER HOUSING												FILTER ELEMENT				CLOGGING INDICATOR					



SPARE SEAL KIT

	NBR	FKM
FPG20-21-22	521.0117.2	521.0118.2
FPG31	521.0119.2	521.0120.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	D4	D5	D6	D7	H1	H2	H3	H4	H5*	H6*	R	Kg
FPG20	3/4" - 1"	98	110,5	95	57	35	60	202	104	98	70	34	39	70	2,00
FPG21	3/4" - 1"	98	110,5	95	57	35	60	262	104	158	70	34	39	70	2,25
FPG22	3/4" - 1"	98	110,5	95	57	35	60	342	104	238	70	34	39	70	2,80
FPG31	1"1/4 - 1"1/2	122	126	115	70	48	70	335	116	219	77	39	44	70	3,50

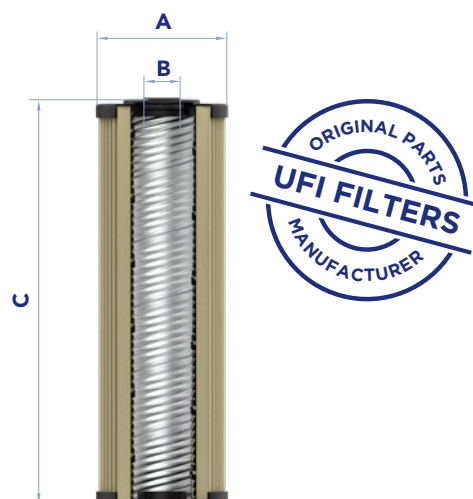
* with clogging indicator option W, A and B, please consider H5; with clogging indicator option C, please consider H6

FPG

PRESSURE FILTERS

FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)		
					Media F+	Media F+	Media M+
EPG20	78	30	100	0,20	1.300	1.500	1.000
EPG21	78	30	160	0,30	2.200	2.550	1.700
EPG22	78	30	240	0,45	3.300	3.900	2.600
EPG31	92	40	220	0,45	4.700	5.100	3.500



MAINTENANCE

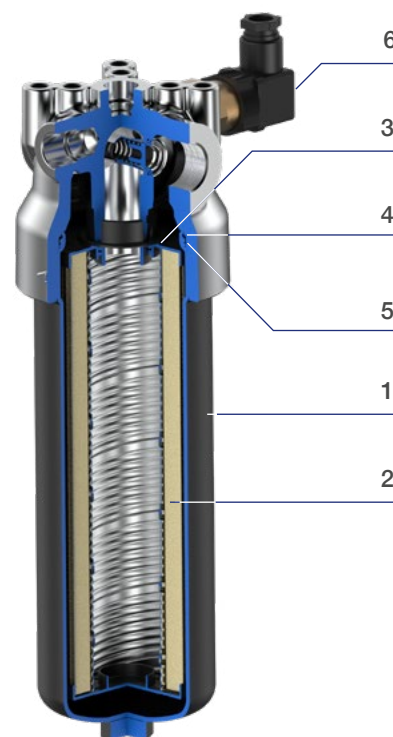
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 5) Check the filter element part number on the filter label or in the ordering and option chart.
N.B. The locking system is patented. Use only original spare parts.
- 6) Lubricate the element o-ring gasket (3) with oil.
- 7) Insert the clean element into its seat with care.
The element must be rotated clockwise on the shank to be in the correct locking position.
- 8) Check the bowl o-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table
N.B. The anti-extrusion o-ring (5) must be positioned downwards (under the gasket).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 70 Nm + 5/0.

Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.



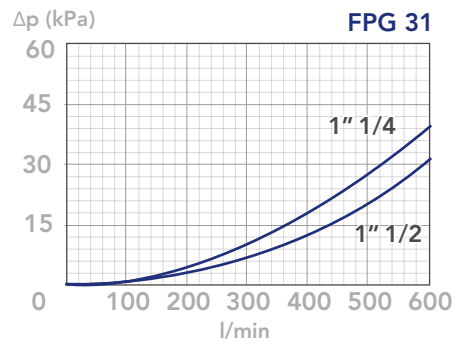
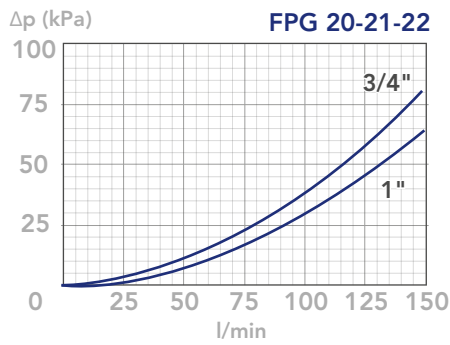


PRESSURE DROP CURVES (Δp)

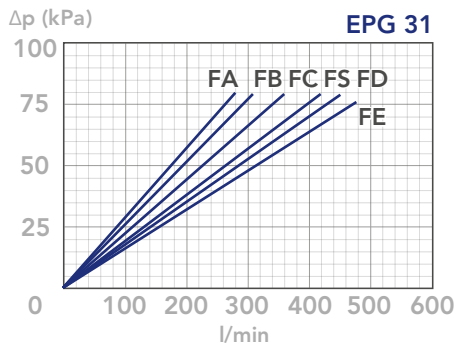
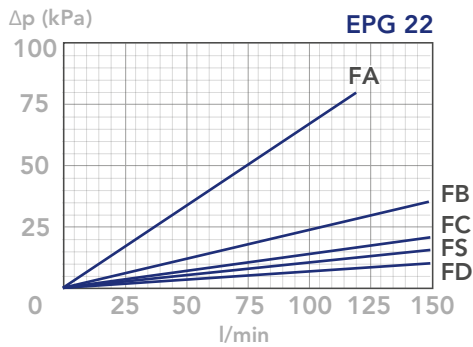
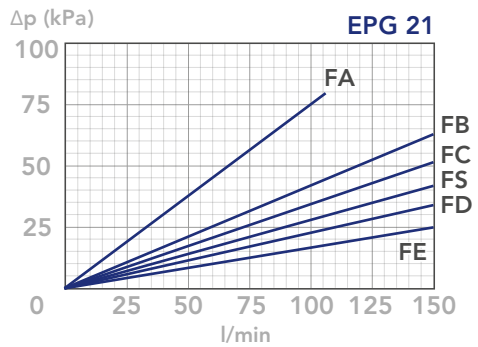
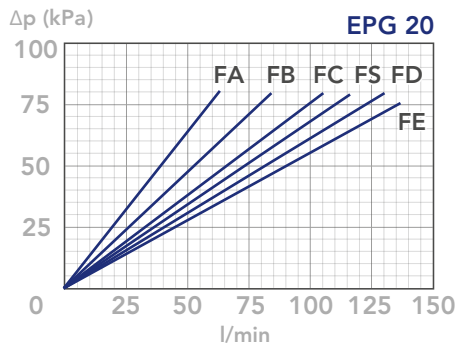
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 100 kPa (1 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+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)



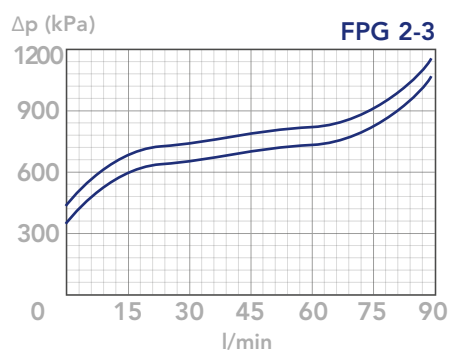
FPG

PRESSURE FILTERS



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.



FPH

PRESSURE FILTERS

DESCRIPTION

3-way inline filter

MATERIALS

Head: Aluminum alloy

Bowl: 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:

300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 400 l/min

WORKING TEMPERATURE

From -25° to +110° C

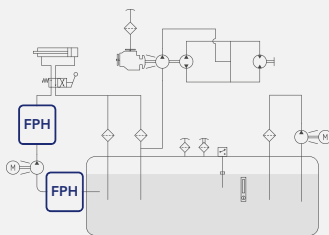
COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HV-HTG

(according to ISO 6743/4)

For fluids different than the above mentioned,
please contact our Sales Department.

HYDRAULIC DIAGRAM



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



FPH

PRESSURE FILTERS

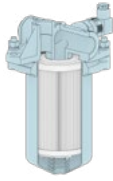
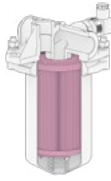
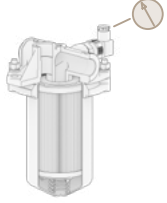


ORDERING AND OPTION CHART

F	P	H	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	A
			SIZE & LENGTH	31	40	50	52	SIZE & LENGTH			
			PORT TYPE								
			B = BSP thread	B	B	B	B				
			N = NPT thread	N	N	N	N				
			PORT SIZE								
			03 = 3/8"	03	-	-	-				
			04 = 1/2"	04	-	-	-				
			06 = 3/4"	-	06	-	-				
			08 = 1"	-	08	-	-				
			10 = 1" 1/4	-	-	10					
			12 = 1" 1/2	-	-	-	12				
		B	BYPASS VALVE								
			B = 170 kPa (1,7 bar)	B	B	B	B				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FE	FE	FE	FE				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			MF = FormulaUFI.WEB 90 μm	MF	MF	MF	MF				
			CLOGGING INDICATOR**								
			03 = port, plugged	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B				
			7B = indicator 6E with LED	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0				
			0R = 1/8" predisposition	0R	0R	0R	0R				
			31 = pressure gauge, rear connection	31	31	31	31				
			P1 = SPDT, pressure switch	P1	P1	P1	P1				
			10 = vacuum gauge	10	10	10	10				
			91 = vacuum switch	91	91	91	91				
X	X		ACCESSORI / ACCESSORIES								
			XX = no accessory available	XX	XX	XX	XX				

** 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)

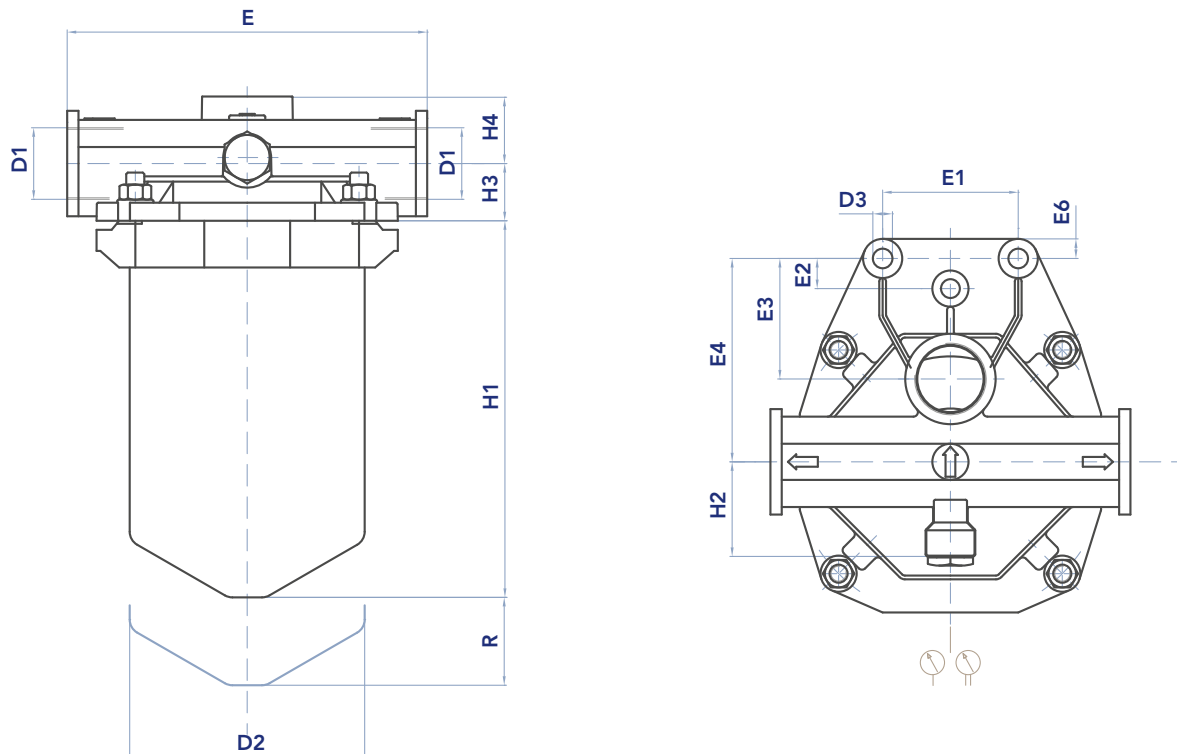
SPARE PARTS

FILTER HOUSING					FILTER ELEMENT					CLOGGING INDICATOR						
																
B	P	H			B					E	R	A				

SPARE SEAL KIT

NBR		FKM		NBR		FKM		NBR		FKM		
FPH31	521.0006.2	521.0075.2			FPH40	521.0007.2	521.0076.2			FPH50-52	521.0008.2	521.0077.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	E	E1	E2	E3	E4	E6	H1	H2	H3	H4	R	kg
FPH31	3/8" - 1/2"	81	11	114	50	-	42	70	10	114	44	19	27	20	1,3
FPH40	3/4" - 1"	114	13	150	50	-	50	85	13	212	58	30	35	20	3,2
FPH50	1"1/4	156	13	240	90	20	80	135	13	200	62	38	45	25	6,1
FPH52	1"1/2	156	13	240	90	20	80	135	13	265	62	38	45	25	6,8

FPH

PRESSURE FILTERS



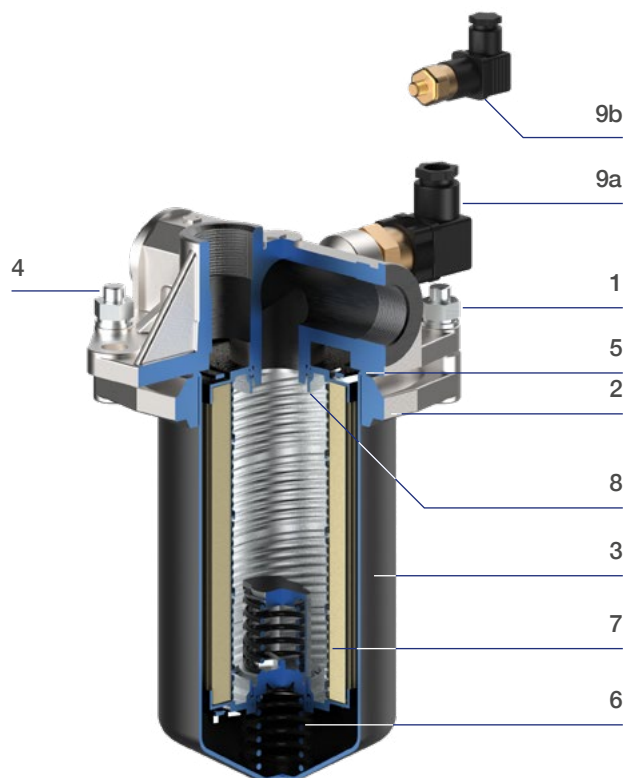
FILTER ELEMENT

	AREA (cm ²)			Kg	Media F+	Media M+
	A	B	C			
ERA31	70	28	85	0,20	620	990
ERA40	99	40	170	0,60	3.630	3.390
ERA50	130	63	140	1,00	4.450	4.360
ERA52	130	63	200	1,35	6.190	6.520



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the nuts (1) to disassemble the flange (2) from the bowl (3) positioned below the head (4). N.B. The bowl is in contact only with the flange.
- 4) Empty and clean the bowl (3). Make sure the gasket (5) and the spring (6) remain on the bottom of the bowl. These parts have to be reused.
- 5) Remove the dirty filter element (7).
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 authorized Companies.
- 6) Check the filter element part number on the filter label or in the ordering and option chart.
Use only original spare parts.
- 7) Lubricate the element o-ring gasket (8) with oil.
- 8) Insert the clean element into its seat with care.
- 9) Fit the bowl into the flange and place the flat gasket. The spring must be centred on the bottom of the bowl.
- 10) Place the flange against the head, centering the 4 threaded pins.
- 11) Screw manually a nut and its washer (1) onto the stud without locking. Repeat the same operation with the opposite nut, and then with the remaining two.
- 12) Tighten all nuts gradually with the cross system until the bowl is completely locked, to ensure the correct adhesion between the container and the head.



- a) Differential clogging indicator with metric thread connection (9a). Lubricate the o-ring gaskets with oil and screw until stop, with a tightening torque of 40 Nm +5/0.
- b) Clogging indicator with 1/8" thread connection (9b). Apply a thread-sealing and screw until tight. An over-tightening can damage the thread.

Accessories:

Clogging indicator (9).

If damaged, unscrew and replace it (check the part number in the ordering and option chart). Follow the instruction (a) or (b) according to the type of indicator in use.

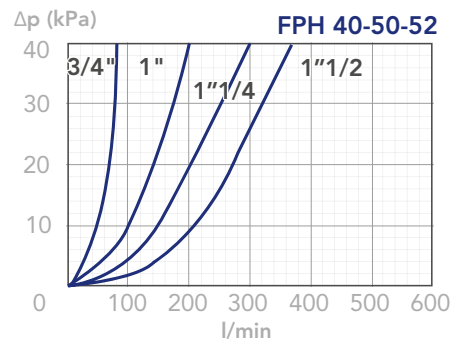
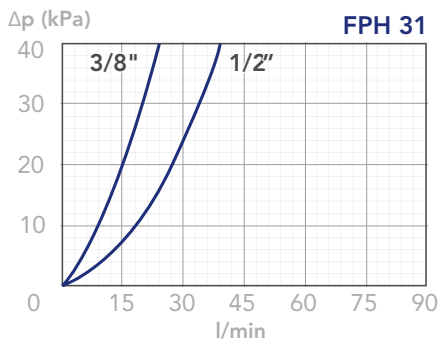


PRESSURE DROP CURVES (Δp)

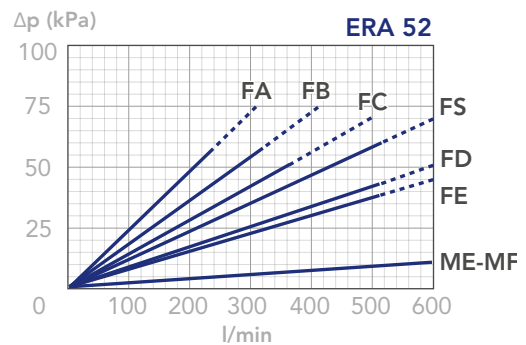
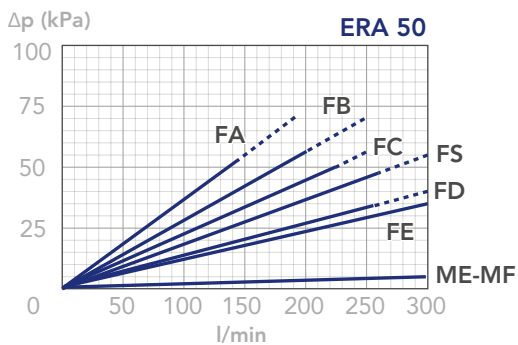
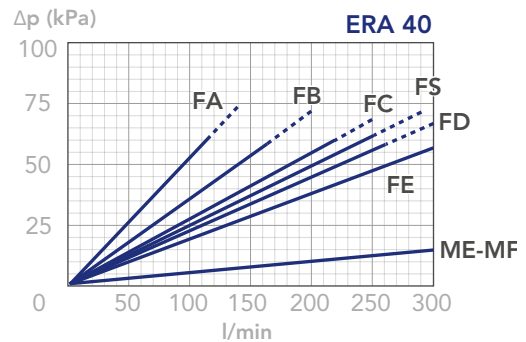
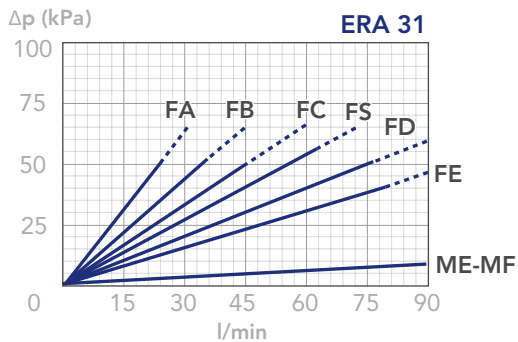
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



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



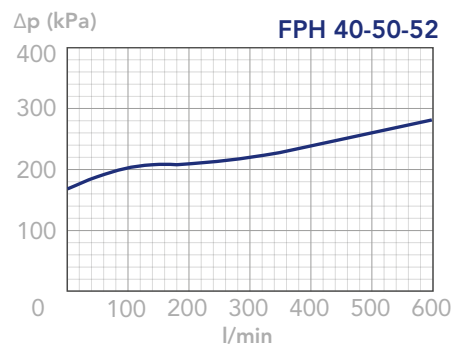
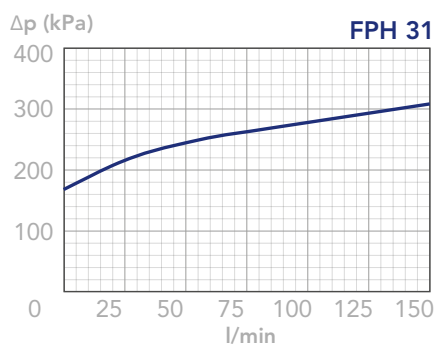
FPH

PRESSURE FILTERS



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 0,9 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 3968:2005. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



FPL

PRESSURE FILTERS



DESCRIPTION

Pressure filter manifold side mounting

MATERIALS

Head: Cast iron
Bowl: Steel
Bypass valve: Steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 31,5 MPa (315 bar)
Collapse, differential for the filter element standard series: 2 MPa (20 bar)
H+ series: 21 MPa (210 bar)

BYPASS VALVE

Setting: 600 kPa (6 bar) \pm 10%

FLOW RATE

Qmax 400 l/min

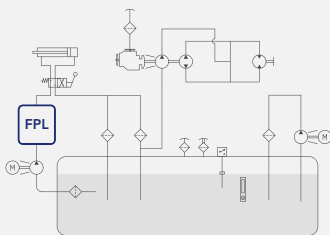
WORKING TEMPERATURE

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

FPL

PRESSURE FILTERS



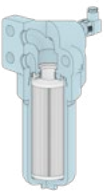
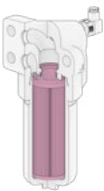
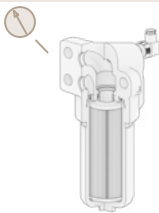
ORDERING AND OPTION CHART

F	P	L	COMPLETE FILTER FAMILY												FILTER ELEMENT FAMILY			E	P	B
			SIZE & LENGTH	11	12	13	21	22	31	32	33	34	35	SIZE & LENGTH						
			PORT TYPE																	
			C = Flanges 90° (manifold)	C	C	C	C	C	C	C	C	C	C	C						
			PORT SIZE																	
			15 = size 15	15	15	15	-	-	-	-	-	-	-	-						
			20 = size 20	-	-	-	20	20	-	-	-	-	-	-						
			32 = size 32	-	-	-	-	-	32	32	32	32	32							
			BYPASS VALVE																	
			W = without	W	W	W	W	W	W	W	W	W	W	W						
			C = 600 kPa (6 bar)	C	C	C	C	C	C	C	C	C	C							
			SEALS												SEALS					
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N						
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F							
			FormulaUFI MEDIA												FormulaUFI MEDIA					
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA						
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB						
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC						
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS	FS						
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD						
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 2MPa (20 bar)	FE	FE	FE	FE	FE	FE	FE	FE	FE	FE	FE						
			HA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21MPa (210 bar)	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA	HA						
			HB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21MPa (210 bar)	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB	HB						
			HC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21MPa (210 bar)	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC	HC						
			HD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000 \Delta p$ 21MPa (210 bar)	HD	HD	HD	HD	HD	HD	HD	HD	HD	HD	HD						
			CLOGGING INDICATOR**																	
			03 = port, plugged	03	03	03	03	03	03	03	03	03	03	03						
			5E = visual differential 500 kPa (5 bar)	5E	5E	5E	5E	5E	5E	5E	5E	5E	5E	5E						
			5F = visual differential 800 kPa (8 bar)	5F	5F	5F	5F	5F	5F	5F	5F	5F	5F	5F						
			6E = electrical differential 500 kPa (5 bar)	6E	6E	6E	6E	6E	6E	6E	6E	6E	6E	6E						
			6F = electrical differential 800 kPa (8 bar)	6F	6F	6F	6F	6F	6F	6F	6F	6F	6F	6F						
			7E = indicator 6E with LED	7E	7E	7E	7E	7E	7E	7E	7E	7E	7E	7E						
			7F = indicator 6F with LED	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F	7F						
			T2 = elect. diff. 500 kPa (5 bar) with thermostat 30°C	T2	T2	T2	T2	T2	T2	T2	T2	T2	T2	T2						
			T3 = elect. diff. 800 kPa (8 bar) with thermostat 30°C	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3	T3						
X	X		ACCESSORI / ACCESSORIES																	
			XX = no accessory available	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX						

** 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 PARTS

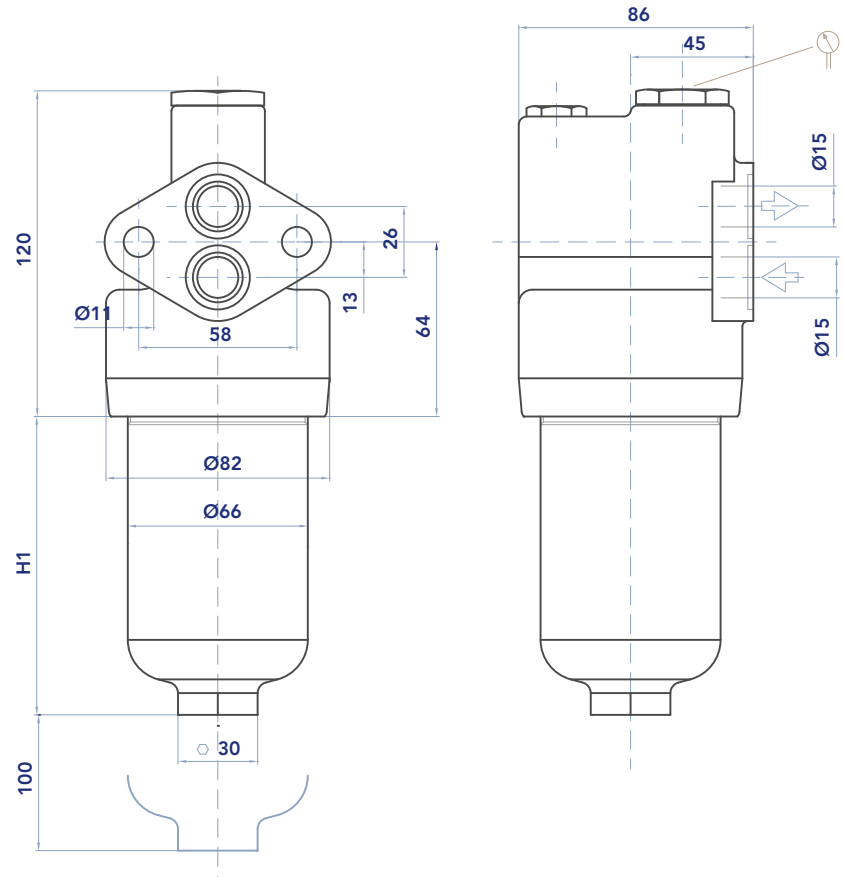
FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR
		
B P L X X	E P B 	

SPARE SEAL KIT

	NBR	FKM		NBR	FKM
FPL11-12-13	521.0080.2	521.0083.2	FPL31-32-33-34-35	521.0082.2	521.0085.2
FPL21-22	521.0081.2	521.0084.2			

INSTALLATION DRAWING

FPL1



Technical drawing of the FPL1 filter housing. The front view shows a total height of 120 mm and a mounting flange diameter of Ø111. The flange has two ports with a diameter of Ø58 and a distance of 26 mm between them. The main body has a diameter of Ø82 and a bottom diameter of Ø66. The bottom flange has a diameter of Ø30. The side view shows a total height of 100 mm, a top diameter of 86 mm, and a mounting flange diameter of 45 mm. Two ports on the side have a diameter of Ø15 mm.

FILTER HOUSING

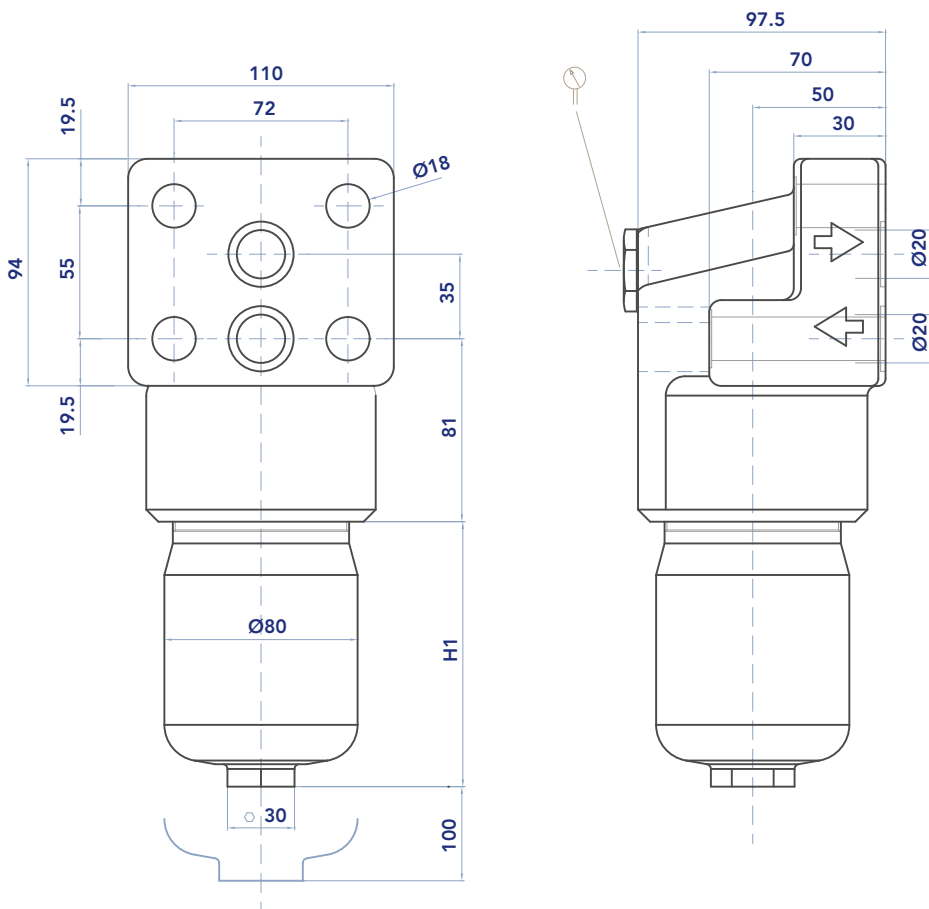
	H1	Kg
FPL11	75	4,4
FPL12	107	4,6
FPL13	201	5,2

FPL

PRESSURE FILTERS

INSTALLATION DRAWING

FPL2



FILTER HOUSING

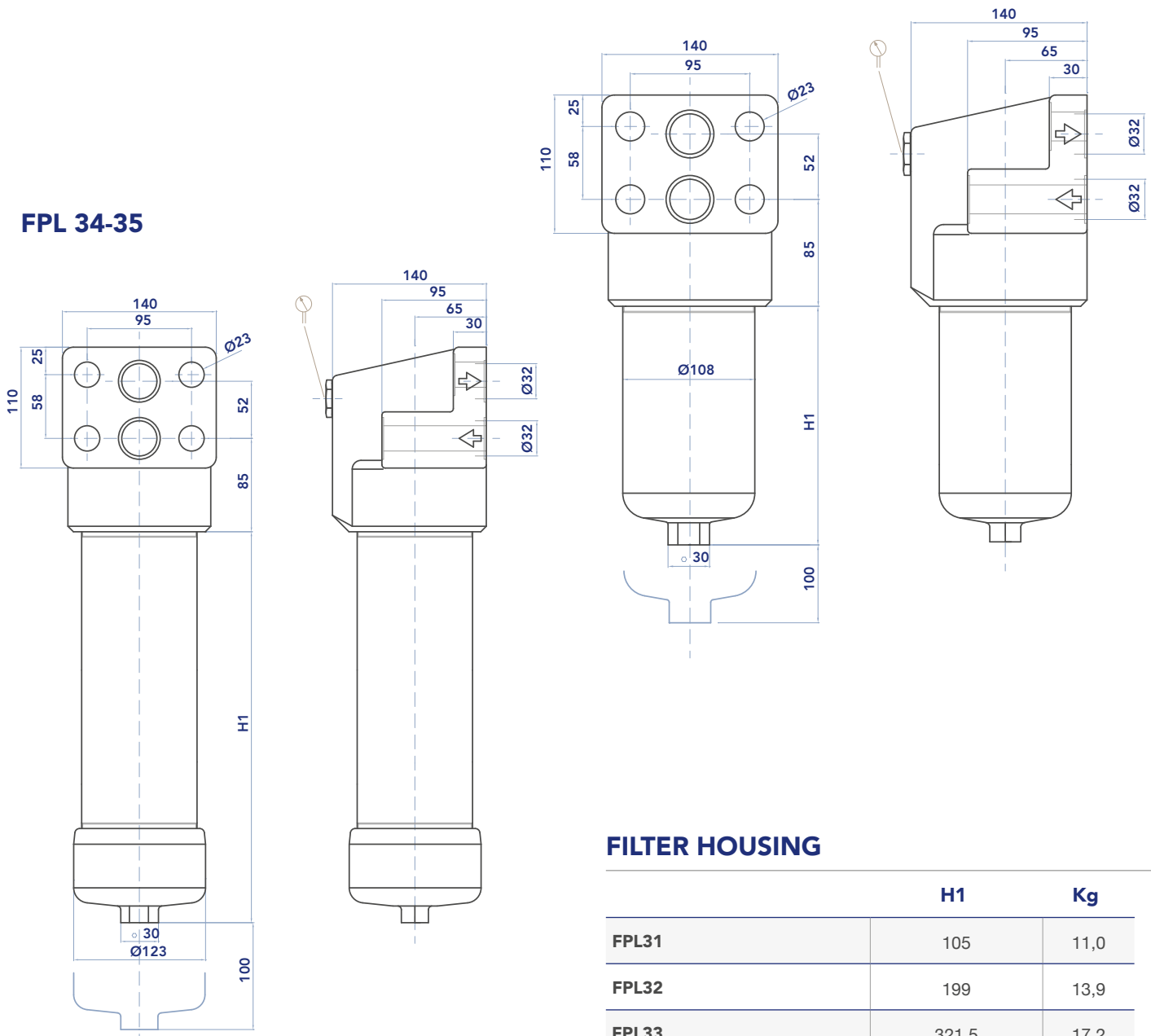
	H1	Kg
FPL21	107	6,6
FPL22	202	8,2



INSTALLATION DRAWING

FPL 31-32-33

FPL 34-35



FILTER HOUSING

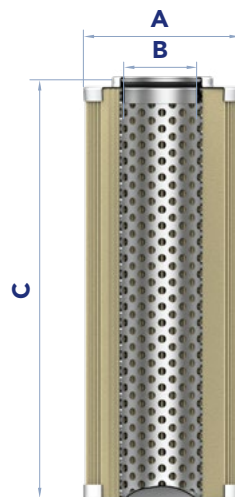
	H1	Kg
FPL31	105	11,0
FPL32	199	13,9
FPL33	321,5	17,2
FPL34	420	22,0
FPL35	520	25,0

FPL

PRESSURE FILTERS

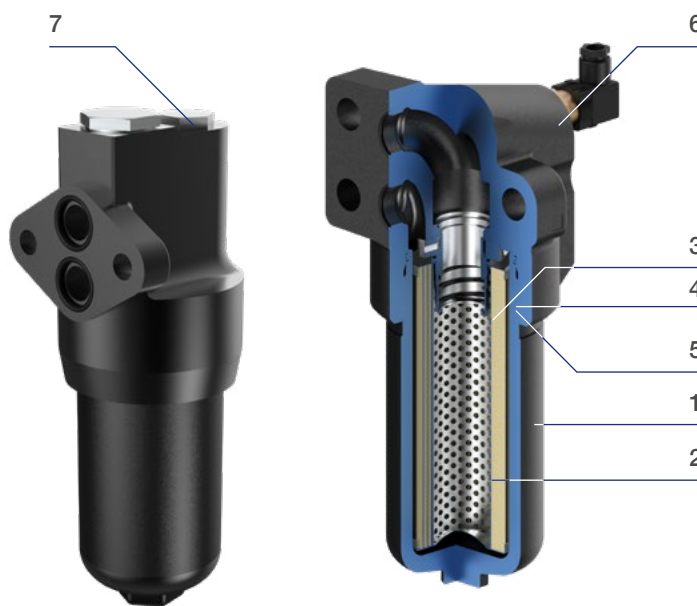
FILTER ELEMENT

	A	B	C	Kg	Kg	AREA (cm ²)	
				Media F	Media H	Media F+	Media H+
EPB11	45	25	85	0,15	0,25	355	340
EPB12	45	25	116	0,20	0,55	500	475
EPB13	45	25	211	0,30	0,45	935	915
EPB21	52	23,5	115	0,25	0,40	975	975
EPB22	52	23,5	210	0,35	0,55	1.830	1.785
EPB31	78	42,5	118	0,40	0,70	2.000	1.470
EPB32	78	42,5	210	0,80	1,30	3.695	2.695
EPB33	78	42,5	330	1,00	1,60	5.025	4.325
EPB34	78	42,5	430	1,20	1,80	6.585	5.685
EPB35	78	42,5	530	1,40	2,00	8.145	7.045



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
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 authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the bowl o-ring condition (4) and lubricate with oil. If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion o-ring (5) must be positioned downwards (under the gasket).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 70 Nm + 5/0.



Accessories:

Clogging indicator (6)

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.

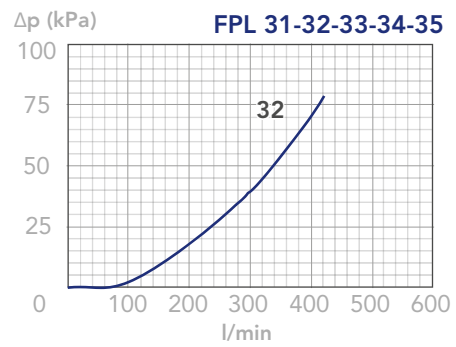
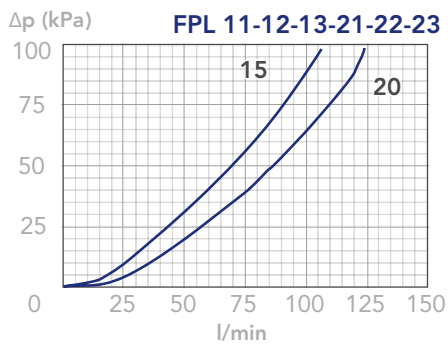


PRESSURE DROP CURVES (Δp)

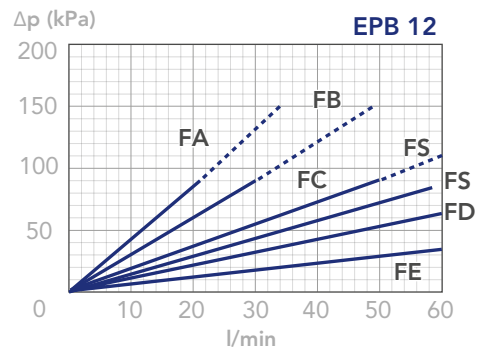
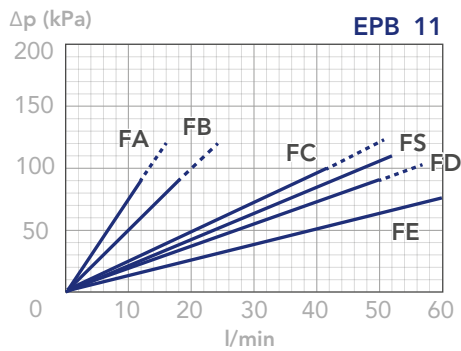
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must be

lower than 120 kPa (1,2 bar). In any case this value should never exceed 1/3 of the bypass setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

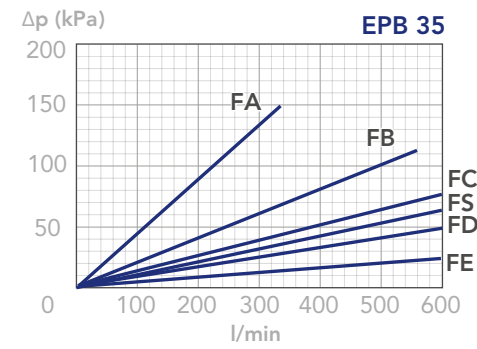
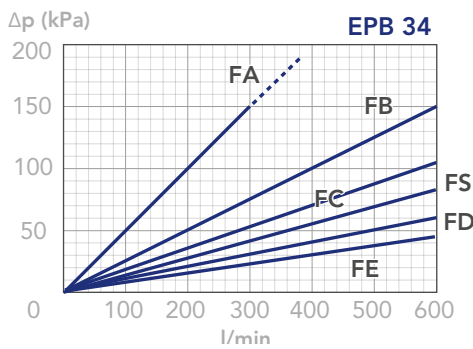
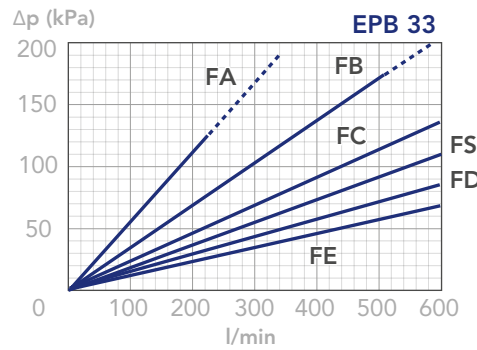
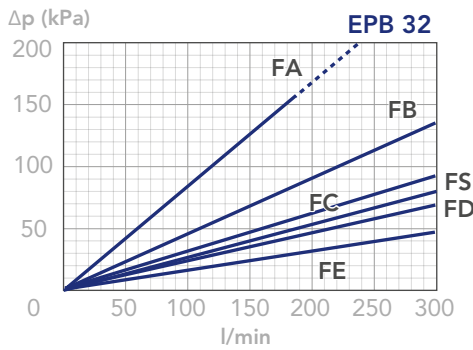
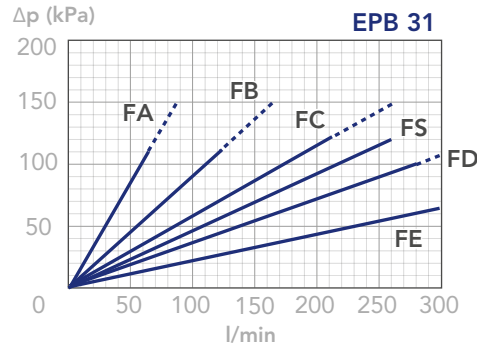
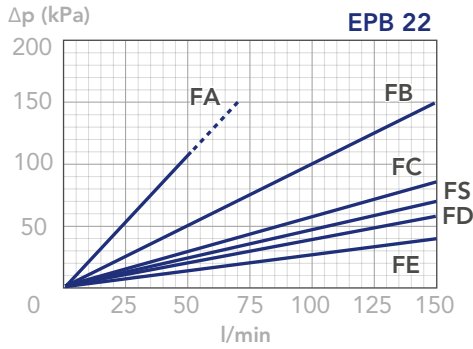
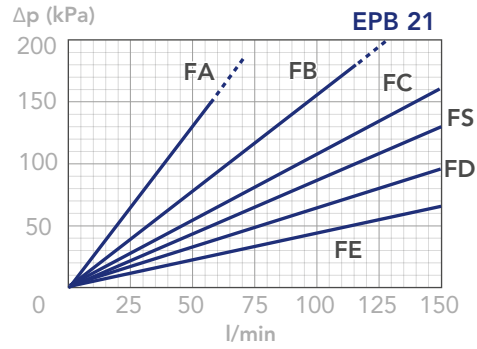
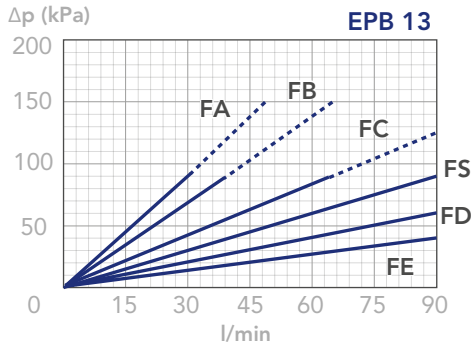


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ MEDIA
(depending both on the internal diameter of the element and on the filter media)



FPL

PRESSURE FILTERS



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

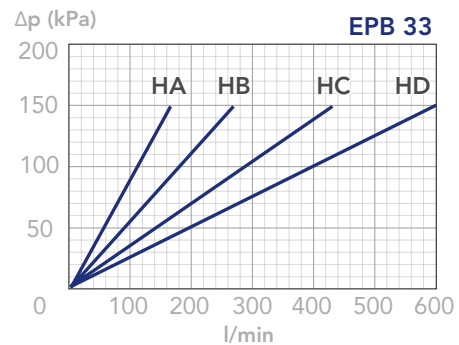
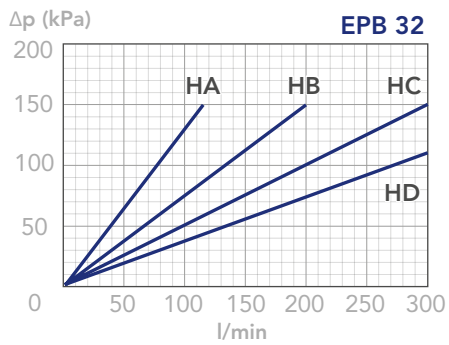
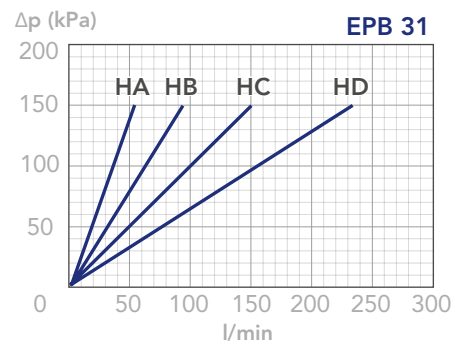
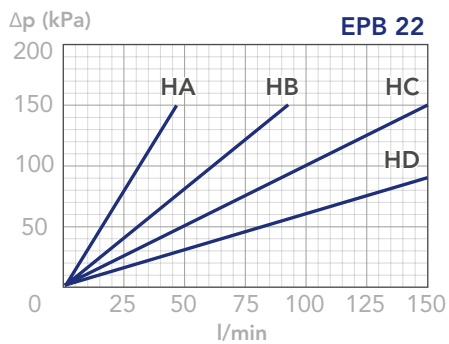
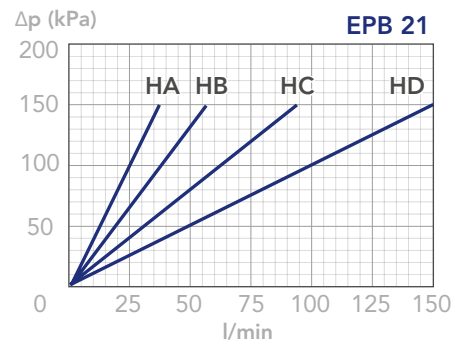
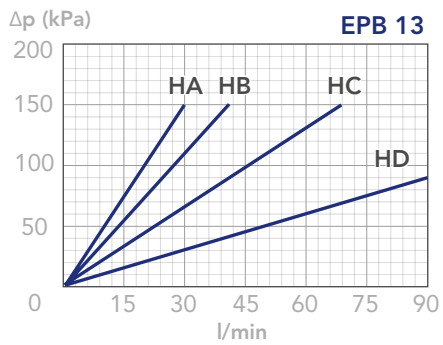
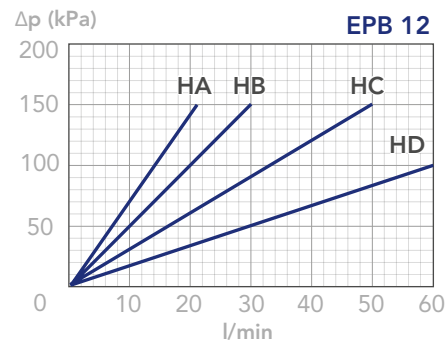
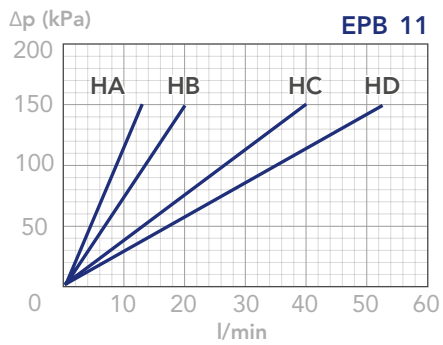
are obtained from test done at the UFI FILTERS HYDRAULICS Laboratory, according to the specification ISO 3968. In case of discrepancy, please check the contamination level, viscosity and features of the fluid in use.



PRESSURE DROP CURVES (Δp)

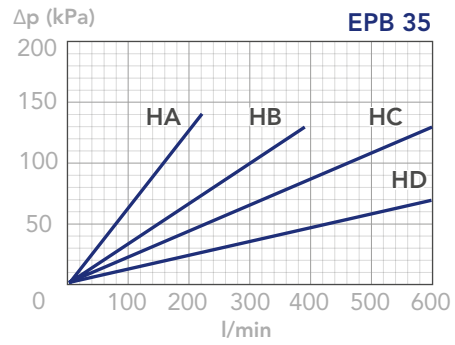
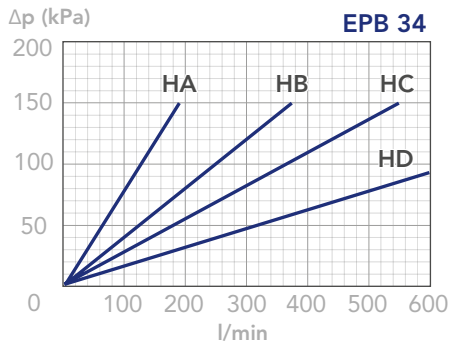
CLEAN FILTER ELEMENT PRESSURE DROP WITH H+ MEDIA

depending both on the internal diameter of the element and on the filter media) - Recommended with no bypass option



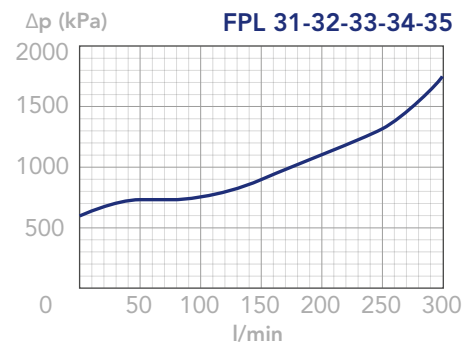
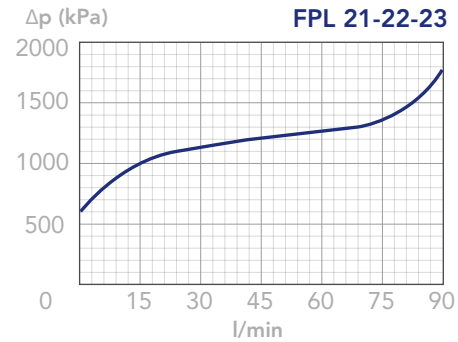
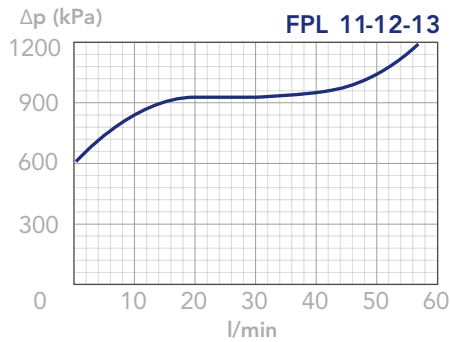
FPL

PRESSURE FILTERS



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.



FPM

PRESSURE FILTERS

DESCRIPTION

Medium pressure inline filter

MATERIALS

Housing: Anodized aluminum alloy

Bypass valve: Steel

Seals: NBR Nitrile (FKM Fluoroelastomer on request)

Indicator housing: Brass

PRESSURE

Max. working: 21 MPa (210 bar)

Collapse, differential for the filter element:

2,1 MPa (21 bar)

BYPASS VALVE

Setting: 600 kPa (6 bar) \pm 10%

FLOW RATE

Qmax 120 l/min

WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

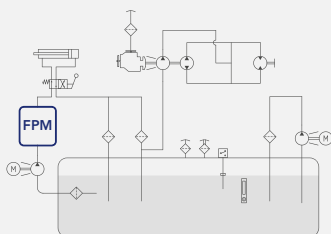
Full with fluids: HH-HL-HM-HV-HTG

(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

FPM

PRESSURE FILTERS



ORDERING AND OPTION CHART

F	P	M	COMPLETE FILTER FAMILY			FILTER ELEMENT FAMILY	E	P	B
			SIZE & LENGTH	21	22	SIZE & LENGTH			
			PORT TYPE						
			B = BSP thread	B	B				
			N = NPT thread	N	N				
			S = SAE thread	S	S				
			PORT SIZE						
			04 = 1/2" (N04 not available)	04	04				
			06 = 3/4"	06	06				
			08 = 1"	08	08				
			BYPASS VALVE						
			W = without	W	W				
			C = 600 kPa (6 bar)	C	C				
			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				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD				
			FE = FormulaUFI.MICRON 30 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FE	FE				
			CLOGGING INDICATOR**						
			03 = port, plugged	03	03				
			5E = visual differential 500 kPa (5 bar)	5E	5E				
			6E = electrical differential 500 kPa (5 bar)	6E	6E				
			7E = indicator 6E with LED	7E	7E				
			T2 = elect. diff. 500 kPa (5 bar) with thermostat 30°C	T2	T2				
X	X		ACCESSORI / ACCESSORIES						
			XX = no accessory available	XX	XX				

**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)

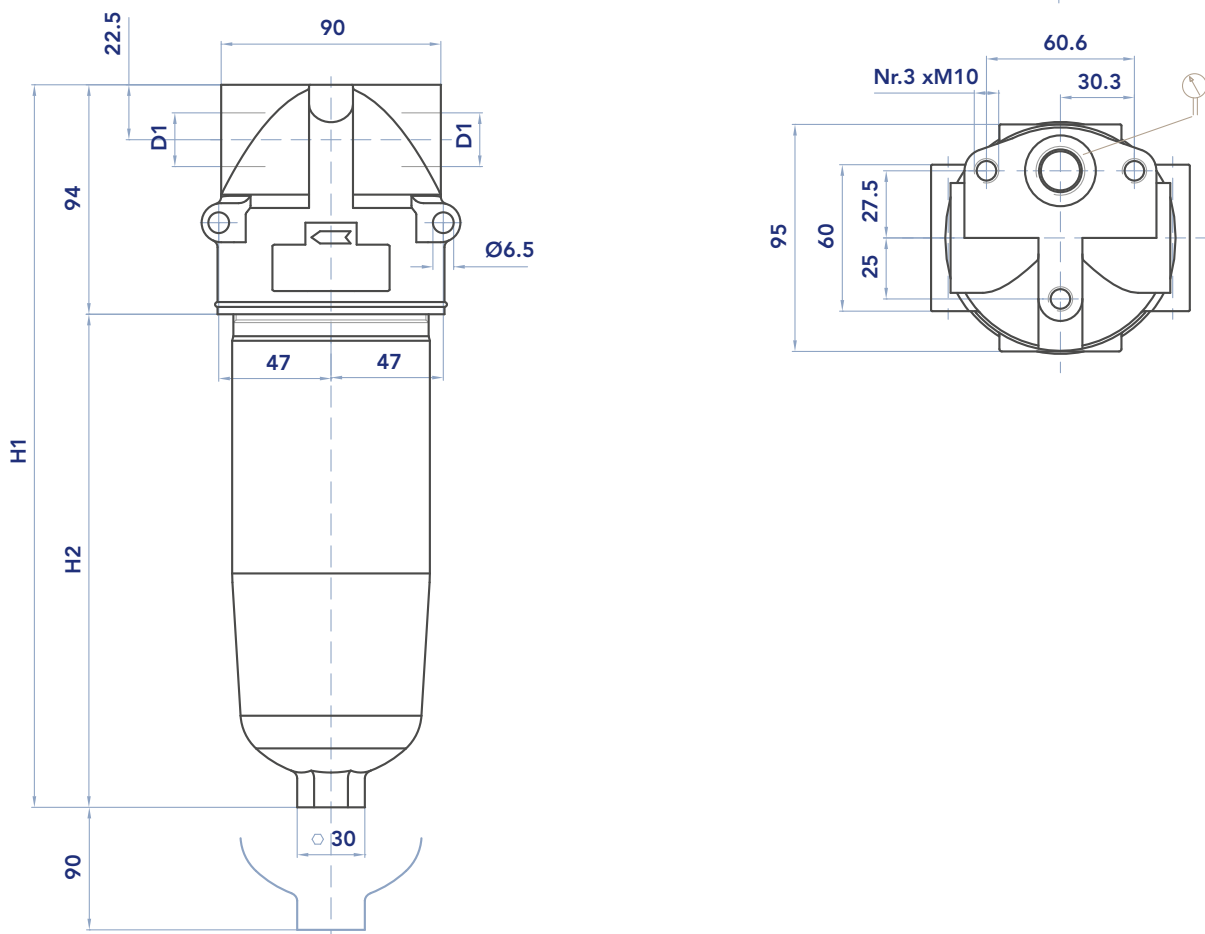
SPARE PARTS

FILTER HOUSING										FILTER ELEMENT					CLOGGING INDICATOR			
B	P	M								E	P	B						

SPARE SEAL KIT

	NBR	FKM
FPM21-22	521.0011.2	521.0010.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	H1	H2	R	Kg
FPM21	1/2" - 3/4" - 1"	205	111	100	1,5
FPM22	1/2" - 3/4" - 1"	300	206	100	2,0

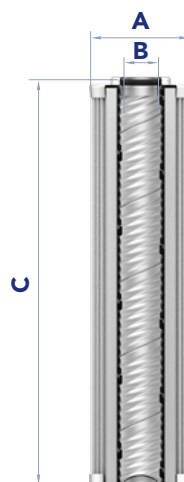
FPM

PRESSURE FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media C+
EPB21	52	23,5	115	0,25	780
EPB22	52	23,5	210	0,25	1.465



MAINTENANCE

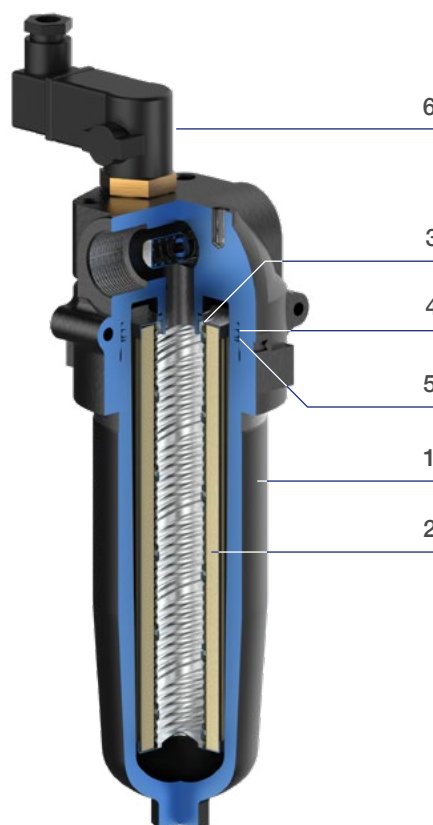
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the bowl (1) and clean it.
- 4) Remove the dirty filter element (2).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized 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 (3) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Check the bowl o-ring condition (4) and lubricate with oil.
If damaged, check the seal kit part number in the spare seal kit table.
N.B. The anti-extrusion o-ring (5) must be positioned with the concave side upwards (gasket side).
- 9) Screw the bowl (1) until it stops, with a tightening torque of 60 Nm + 5/0.

Accessories:

Clogging indicator (6).

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Lubricate the o-ring gasket with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.





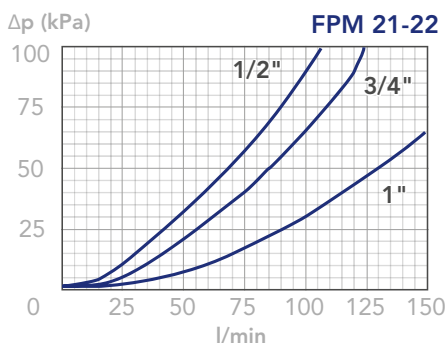
PRESSURE DROP CURVES (Δp)

PRESSURE DROP CURVES (Δp)

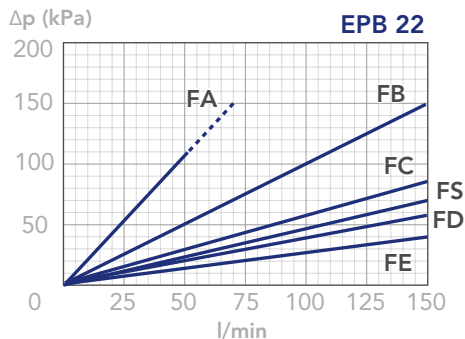
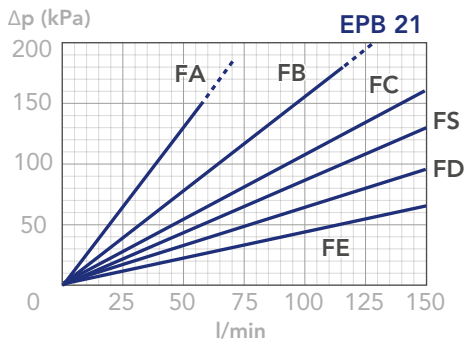
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter

Element corresponding to the considered Flow Rate and it must be lower than 120 kPa (1,2 bar). In any case this value should never exceed 1/3 of the bypass setting.

FILTER HOUSING PRESSURE DROP (mainly depending on the port size)

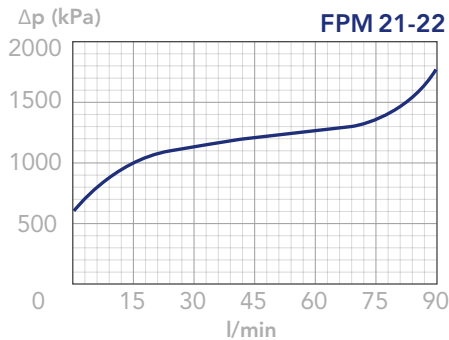


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+ MEDIA (depending both on the internal diameter of the element and on the filter media)



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.



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FPO

PRESSURE FILTERS



DESCRIPTION

High pressure spin-on filter

MATERIALS

Head: Aluminum alloy
Spin-on housing: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max working: 3,5 MPa (35 bar) for FPO1+
and 2,5 MPa (25 bar) for FPO2+
Collapse, differential for the filter element: 1 MPa (10 bar)

BYPASS VALVE

Setting:
170 kPa (1,7 bar) \pm 10%
350 kPa (3,5 bar) \pm 10%

FLOW RATE

Qmax 250 l/min

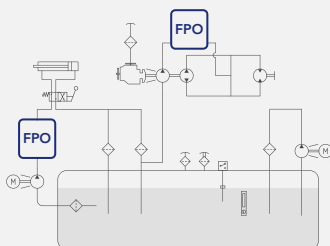
WORKING TEMPERATURE

From -25° to +110° C

COMPATIBILITY (ISO 2943)

Full with fluids: HH-HL-HM-HR-HV-HTG (according to ISO 6743/4)
For fluids different than the above mentioned,
please contact our Customer Service.

HYDRAULIC DIAGRAM



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FPO

PRESSURE FILTERS



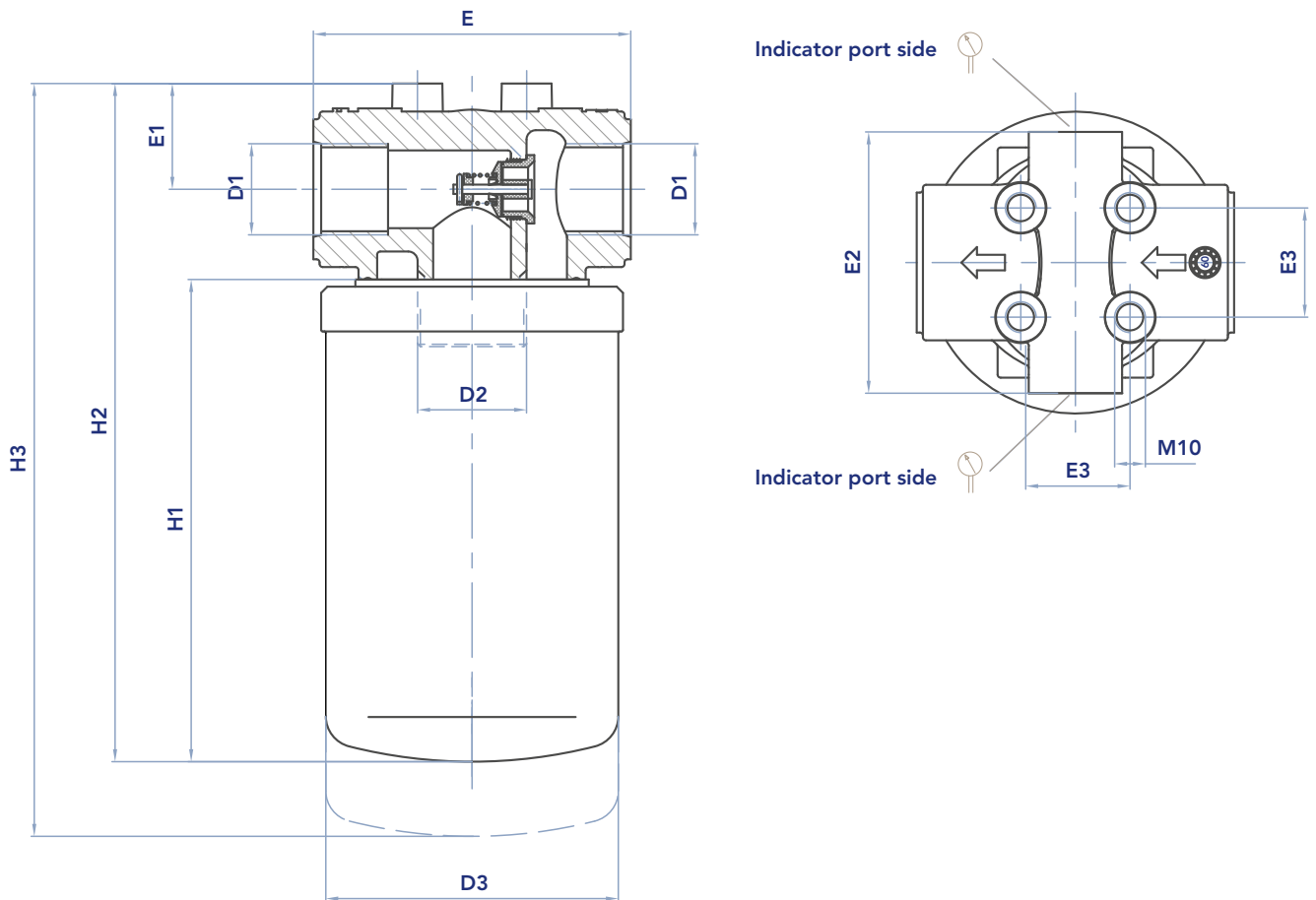
ORDERING AND OPTION CHART

F	P	O	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	P	O
			SIZE & LENGTH	11	12	14	21	22	SIZE & LENGTH			
			PORT TYPE									
			B = BSP thread	B	B	B	-	-				
			N = NPT thread	N	N	N	-	-				
			PORT SIZE									
			06 = 3/4"	06	06	06	-	-				
			08 = 1"	08	08	08	-	-				
			BYPASS VALVE									
			W = without	W	W	W	-	-				
			B = 170 kPa (1,7 bar)	B	B	B	-	-				
			D = 350 kPa (3,5 bar)	D	D	D	-	-				
			SEALS						SEALS			
			N = NBR Nitrile	N	N	N	-	-				
			FormulaUFI MEDIA						FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC				
			FS = FormulaUFI.MICRON 16 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FS	FS	FS	FS	FS				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD				
			CLOGGING INDICATOR									
			03 = port, plugged	03	03	03	-	-				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	-	-				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	-	-				
			7B = indicator 6B with LED	7B	7B	7B	-	-				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°	T0	T0	T0	-	-				
			5D = visual differential 250 kPa (2,5 bar)	5D	5D	5D	-	-				
			6D = electrical differential 250 kPa (2,5 bar)	6D	6D	6D	-	-				
			7D = indicator 6D with LED	7D	7D	7D	-	-				
			T6 = elect. diff. 250 kPa (2,5 bar) with thermostat 30°	T6	T6	T6	-	-				
X	X		ACCESSORI / ACCESSORIES									
			XX = no accessory available	XX	XX	XX	-	-				

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR			
											
B	P	O		E	P	O					

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	E	E1	E2	E3	H1	H2	H3	Kg
FPO11	3/4"-1"	1"3/8-12 UNF 2A	94	102	36	84	35	155	219	243	1,6
FPO12	3/4"-1"	1"3/8-12 UNF 2A	94	102	36	84	35	182	246	270	1,7
FPO13	3/4"-1"	1"3/8-12 UNF 2A	94	102	36	84	35	228	292	316	1,9
FPO14	3/4"-1"	1"3/8-12 UNF 2A	94	102	36	84	35	240	304	328	2,0

FPO

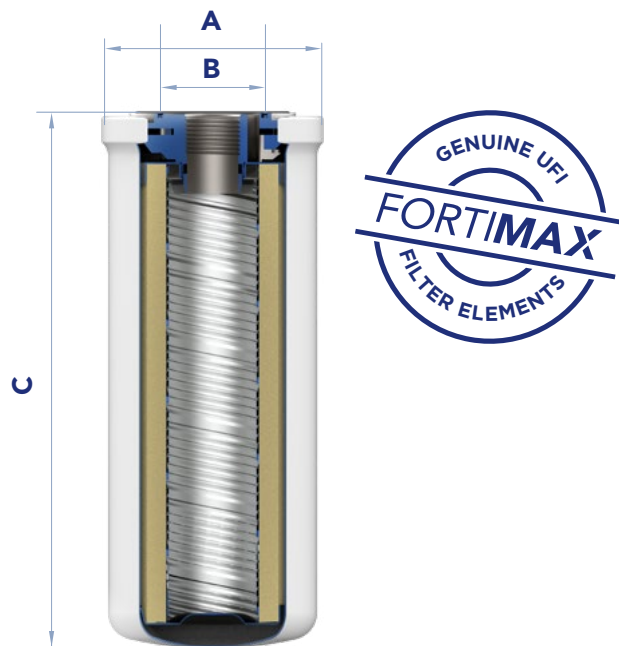
PRESSURE FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media F+
EPO11	97	1 3/8"-12 UNF 2B	155	0,9	1.860
EPO12	97	1 3/8"-12 UNF 2B	182	1,0	2.285
EPO13	97	1 3/8"-12 UNF 2B	228	1,2	3.110
EPO14	97	1 3/8"-12 UNF 2B	240	1,3	3.320
EPO21	121	1 3/4"-12 UN 2B	294	2,3	5.060
EPO22	121	1 3/4"-12 UN 2B	361	2,7	6.300

The FORTIMAX series includes also several additional dimensions and options. Please check our website for the dedicated brochure or contact our Sales Team or Customer Service for further information and support.



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the dirty filter element (1).
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 authorized Companies.
- 4) Check the filter element part number on the silk-screen printing or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the element o-ring gasket with oil.
- 6) Screw the clean filter element until the first contact of the gasket with the flange.
- 7) Tighten strongly for 3/4 of a turn (indicative tightening torque of 18 Nm).

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.



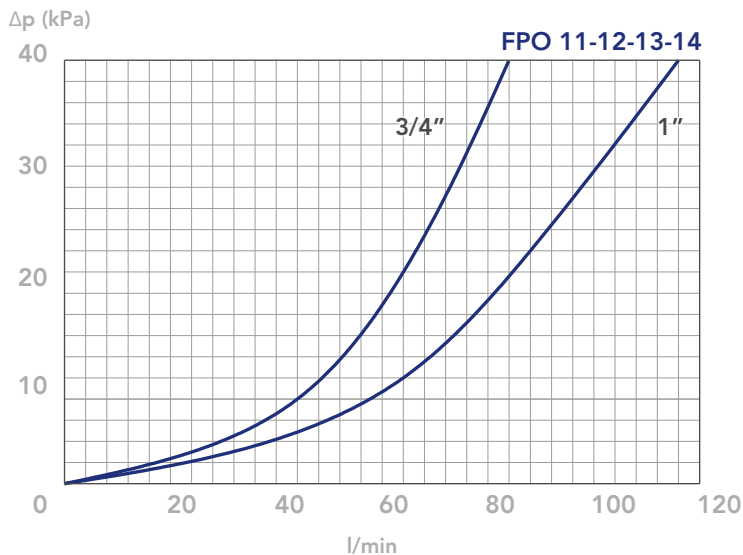


PRESSURE DROP CURVES (Δp)

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

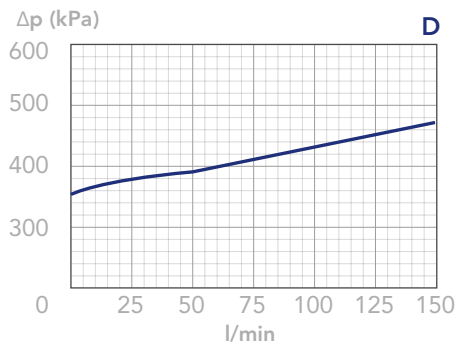
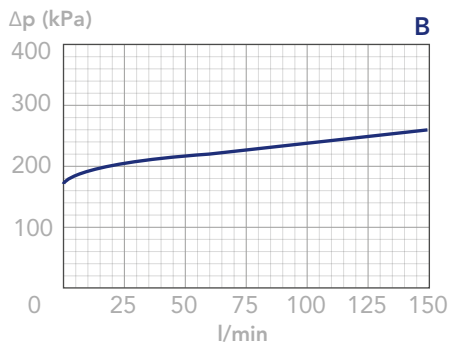
lower than 120 kPa (1,2 bar). In any case this value should never exceed 1/3 of the bypass setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



BYPASS VALVE PRESSURE DROP

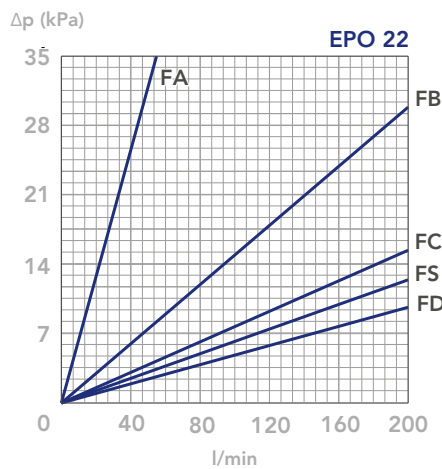
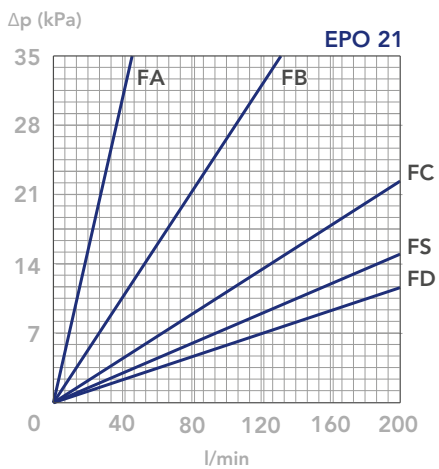
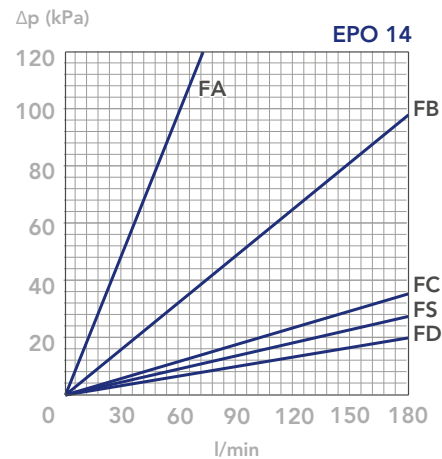
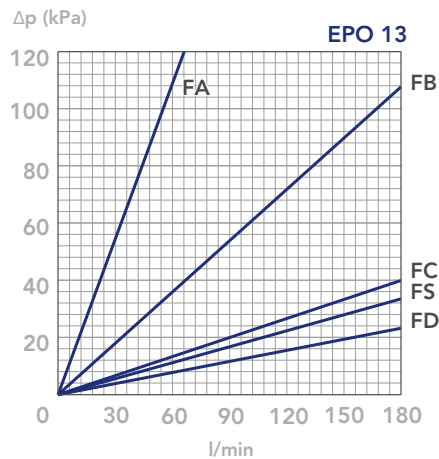
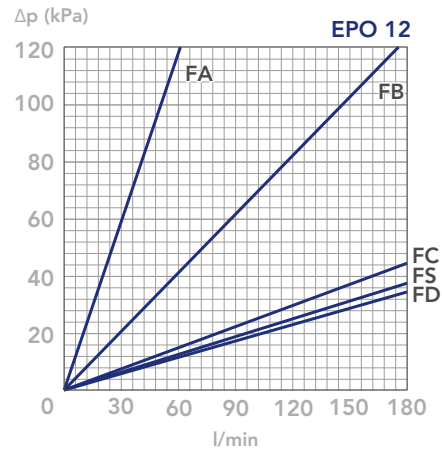
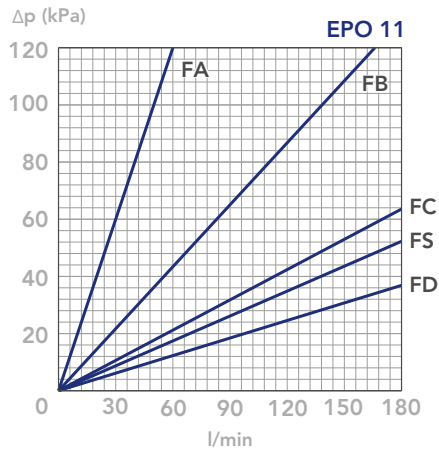
When selecting the filter size, these curves must be taken into account if it is foreseen that any flow peak is to be absorbed by the bypass valve, it also must be of proper configuration to avoid pressure peaks. The valve pressure drop is directly proportional to fluid specific gravity.



FPO

PRESSURE FILTERS

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



N.B.

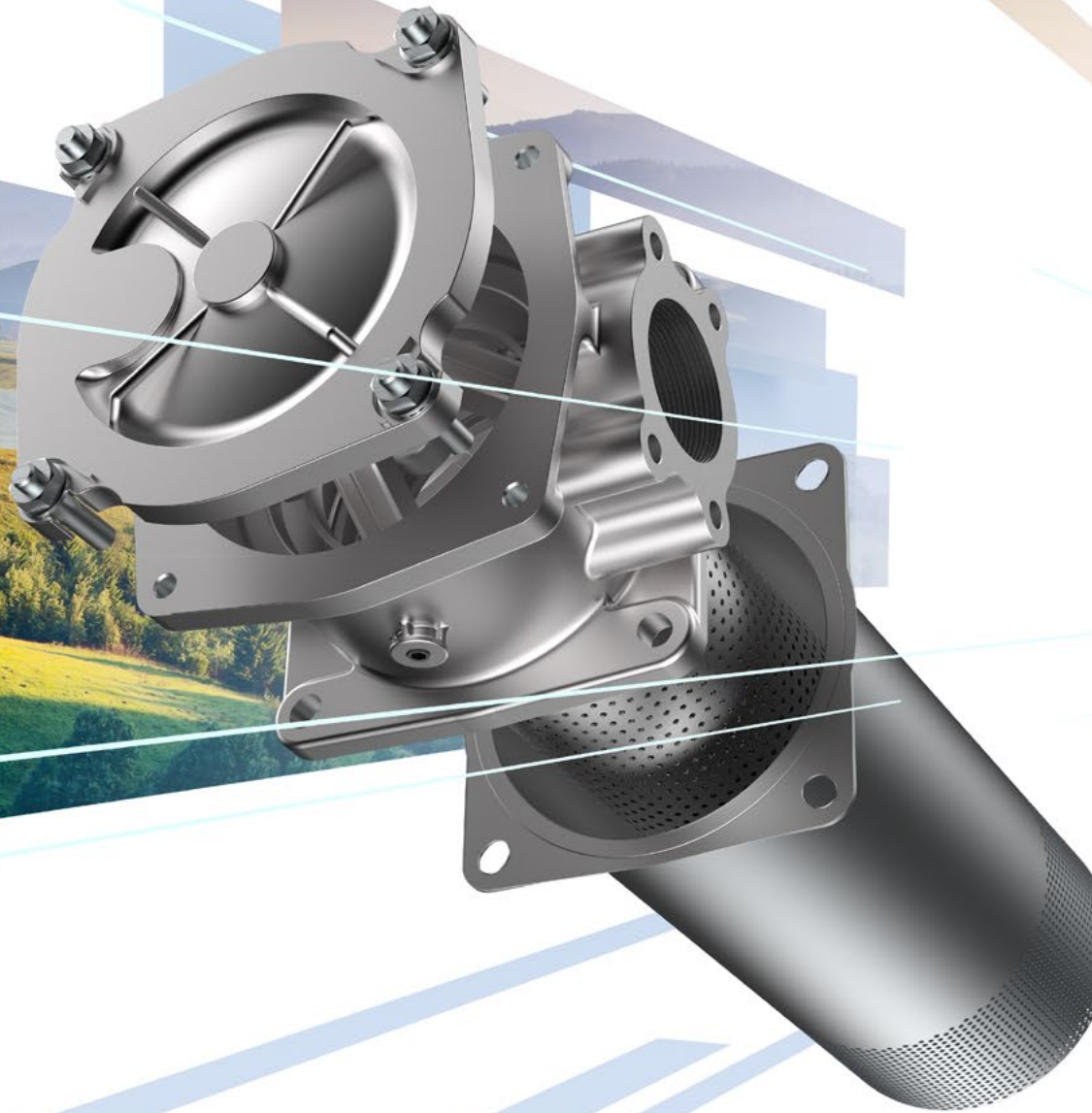
All the curves have been obtained with mineral oil having a kinematic viscosity 30 cSt and specific gravity 0,86 Kg/dm³; for fluids with different features, please consider the factors described in the first part of this catalogue. All the curves

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.



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RETURN FILTERS



RETURN-LINE SAFEGUARDS FLUID CLEANLINESS

Application:

Hydraulic return line filters are used on the return-side of the hydraulic circuit, where the oil re-enters the tank-reservoir.

Return Filters play a critical role in the hydraulic system by ensuring that the fluid is kept free from solid contaminants, generated by deterioration of system components, that enter the oil reservoir and ultimately return to the system through the suction lines.

In addition to filtering the fluid, the return line filter serves other functions: they ensure a smooth flow of the fluid in a hydraulic system and protect the system with the aim of further extending the system and fluid life.

This type of filter should be sized for the maximum flow of the hydraulic system.

User Benefits:

- Several types of layout (tank-top, tank-insert, in-line) according to the application and the available space for assembly
- Ease of maintenance and filter element replacement
- Different accessories available, like in built-in air breathers, filling plugs, dipsticks, diffusor and magnetic core
- Integral filter element by-pass valves option
- Increased life of system components and lower maintenance costs
- Higher machine utilisation with less down time



FRA

RETURN FILTERS

DESCRIPTION

Tank top return line filter

MATERIALS

Head and cover: Aluminum alloy

Bowl: Polyamide for FRA21-31-32-33-41

Zinc plated steel for FRA11-42-51-52- 53-5D

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 700 l/min

WORKING TEMPERATURE

From -25° to +110° C

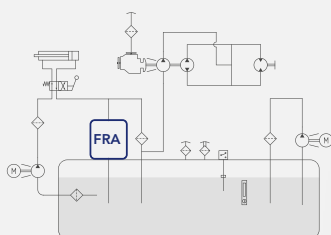
COMPATIBILITY (ISO 2943)

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



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FRA



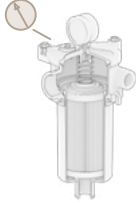

RETURN FILTERS

ORDERING AND OPTION CHART

F	R	A	COMPLETE FILTER FAMILY														FILTER ELEMENT FAMILY	E	R	A		
			SIZE & LENGTH	11	21	31	32	33	41	42	51	5A	52	5B	5C	53	5D	SIZE & LENGTH				
			PORT TYPE																			
			B = BSP thread	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
			N = NPT thread	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
			S = SAE thread	-	S	S	S	S	S	S	S	S	S	S	S	S	S	S				
			F = SAE flange 3000 psi	-	-	-	-	-	-	-	F	F	F	F	F	F	F					
			PORT SIZE																			
			03 = 3/8"	03	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
			04 = 1/2"	-	04	04	-	-	-	-	-	-	-	-	-	-	-	-				
			06 = 3/4"	-	-	06	06	06	-	-	-	-	-	-	-	-	-	-				
			08 = 1"	-	-	-	08	08	08	08	-	-	-	-	-	-	-	-				
			10 = 1" 1/4 (F10 not available)	-	-	-	-	-	10	10	10	10	10	10	-	-	-	-				
			12 = 1" 1/2 (* F12 available only for FRA4+ only)	-	-	-	-	-	(*)	(*)	12	12	12	-	-	-	-	-				
			16 = 2" (F16 not available)	-	-	-	-	-	-	-	16	16	16	16	16	16	16	16				
			20 = 2" 1/2 (F20 only)	-	-	-	-	-	-	-	20	20	20	20	20	20	20	20				
			BYPASS VALVE																			
			B = 170 kPa (1,7 bar)	X	B	B	B	B	B	B	B	B	B	B	B	B	B	B				
			SEALS																			
			N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G				
			FormulaUFI MEDIA																			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA	FA	FA	FA	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	FB	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	FC	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	FD	FD	FD	FD	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD	CD				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME				
			CLOGGING INDICATOR																			
			01 = 1/8" port, plugged	01	01	01	01	01	01	01	01	01	01	01	01	01	01	01				
			30 = pressure gauge, rear connection	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30				
			32 = pressure gauge, cottom connection	32	32	32	32	32	32	32	32	32	32	32	32	32	32	32				
			P1 = SPDT pressure switch	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1	P1				
			ACCESSORIES																			
			W = without	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W				
			P = with filling plug	P	P	P	P	P	P	P	P	P	P	P	P	P	P	P				
		X	ACCESSORIES																			
			X= no other accessory available	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				



SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR	ACCESSORIES
			
B R A <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> B <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> X	E R A <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> X

SPARE SEAL KIT

	NBR	FKM
FRA11	521.0032.2	521.0039.2
FRA21	521.0012.2	521.0040.2
FRA31-32-33	521.0013.2	521.0041.2
FRA41-42	521.0014.2	521.0043.2
FRA51-5A-52-5B-5C-53-5C	521.0015.2	521.0044.2

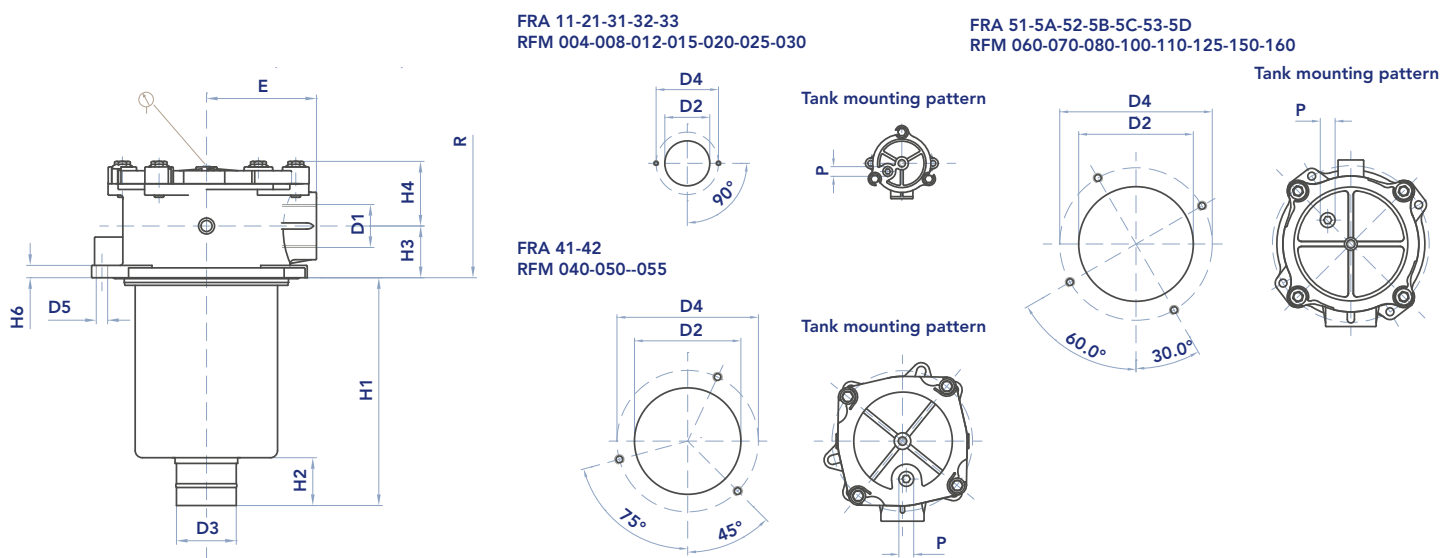
SPARE SPRING

FRA11	008.0032.1
FRA21	008.0149.1
FRA31-32-33	008.0003.1
FRA41-42	008.0151.1
FRA51-5A-52-5B-5C-53-5C	008.0028.1

FRA

RETURN FILTERS

INSTALLATION DRAWING



FILTER HOUSING

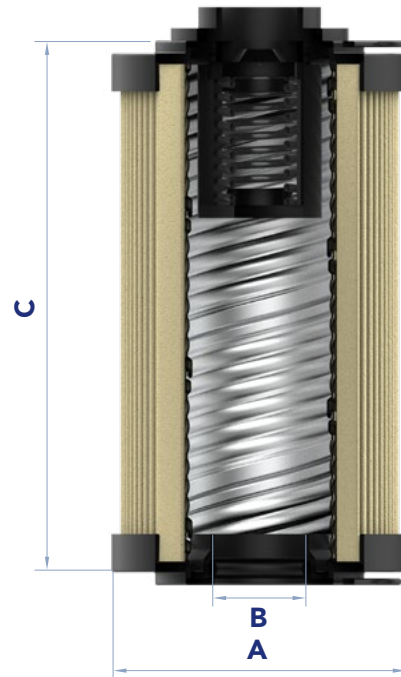
	D1	min D2	max D2	D3	D4	D5	E	H1	H2	H3	H4	H6	P	R	Kg
FRA11	3/8"	50	50	12	80	6,5	40	59	16	12	33	9	1/8"	90	0,30
FRA21	1/2"	67	68	24	90	6,5	50	85	20	22	33	9	3/8"	120	0,45
FRA31	1/2"-3/4"	89	90	28	115	9	67	107	25	28	47	10	3/8"	150	0,80
FRA32	3/4" - 1"	89	90	28	115	9	67	150	25	28	47	10	3/8"	190	0,95
FRA33	3/4" - 1"	89	90	40	115	9	67	234	30	28	47	10	3/8"	270	1,10
FRA41	1" - 1"1/4 - 1"1/2	126	131	40	175	10,5	95	248	50	35	56	13	1/2"	289	2,10
FRA42	1" - 1"1/4 - 1"1/2	126	131	40	175	10,5	95	268	30	35	56	13	1/2"	306	2,30
FRA51	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	50	220	10,5	115	178	50	55	69	13	1/2"	250	3,10
FRA5A	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	50	220	10,5	115	240	50	55	69	13	1/2"	315	3,50
FRA52	1"1/4 - 1"1/2 - 2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	315	3,60
FRA5B	2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	315	3,65
FRA5C	2" - 2"1/2	174	180	63,5	220	10,5	115	240	50	55	69	13	1/2"	250	3,65
FRA53	2" - 2"1/2	174	180	63,5	220	10,5	115	285	50	55	69	13	1/2"	355	4,10
FRA5D	2" - 2"1/2	174	180	63,5	220	10,5	115	300	50	55	69	13	1/2"	370	4,30



FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)		
					Media F+	Media C+	Media M+
ERA11	38	13	50	0,05	270	345	200
ERA21	52	24	70	0,10	310	380	240
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
ERA51	130	51	140	1,00	4.140	4.360	1.800
ERA5A	130	51	200	1,10	5.840	6.460	2.730
ERA52	130	63	200	1,35	5.840	6.460	2.700
ERA5B	130	63	200	1,45	7.070	7.070	2.700
ERA5C	130	63	232	1,50	7.280	7.600	3.040
ERA53	130	63	251	1,55	7.500	8.350	3.450
ERA5D	130	63	266	1,60	8.000	8.800	3.730

* Connection dimension



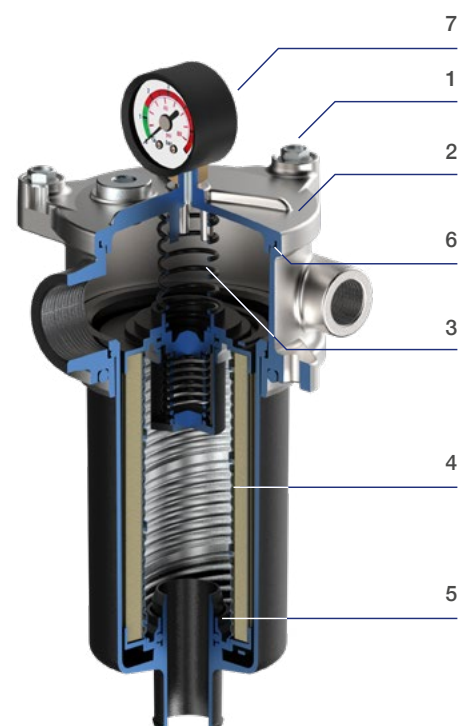
MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the screws (1) until the cover (2) is free to rotate clockwise.
- 3) Remove the cover (2) and the spring (3) below. N.B. Handle with care the clogging indicator (7) when present.
- 4) Remove the dirty filter element (4) using its 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 authorized 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 (5) with oil.
- 7) Insert the clean element into its seat with care.
- 8) Re-assembly the spring (3).
- 9) 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
- 10) Re-assembly the cover (2) and tighten the screws (1)

Accessories:

Clogging indicator (7).

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. overtightening can damage the thread.



FRA

RETURN FILTERS

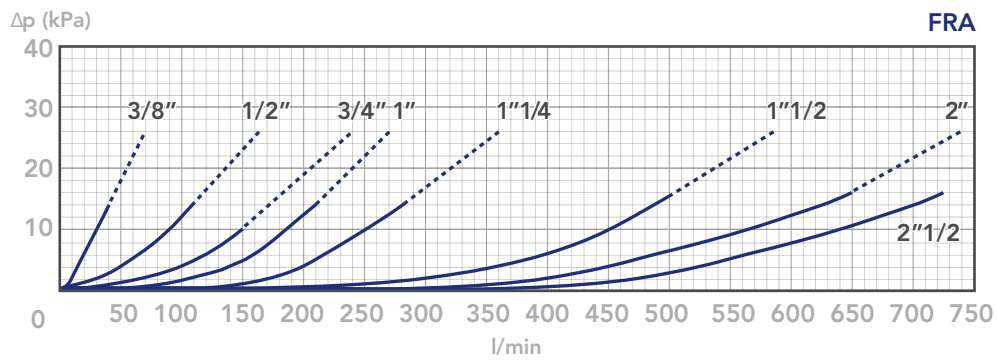


PRESSURE DROP CURVES (ΔP)

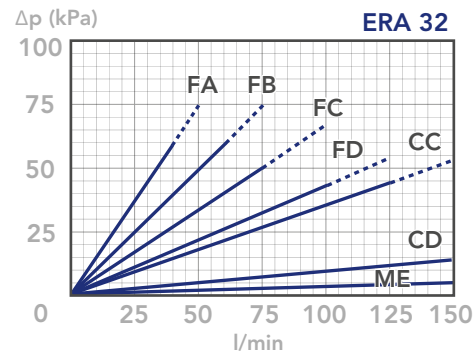
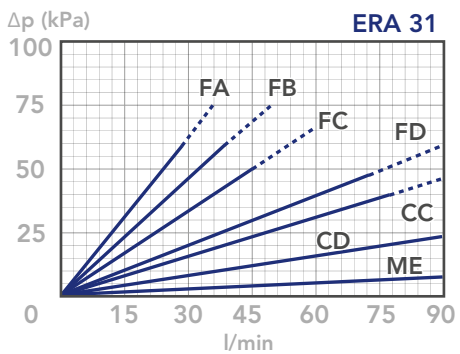
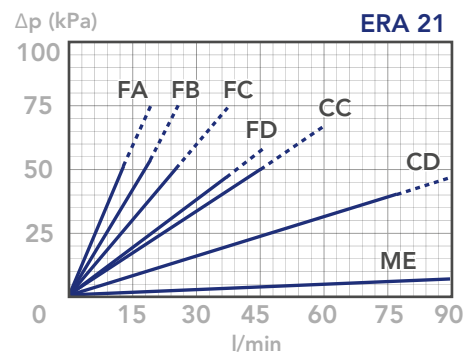
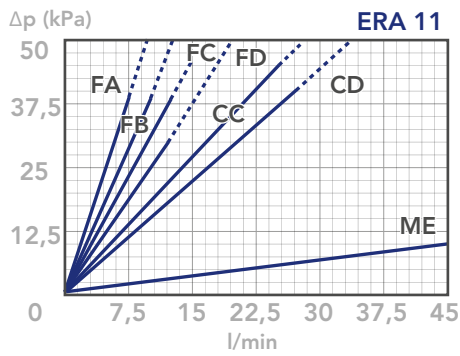
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

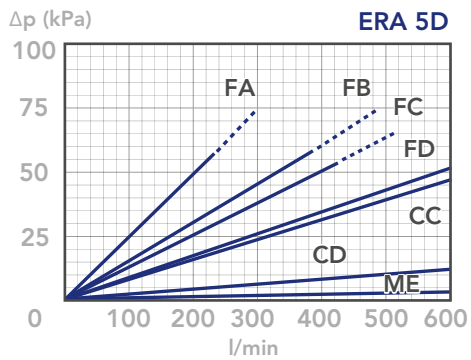
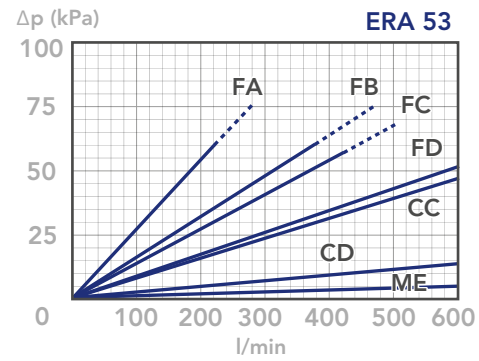
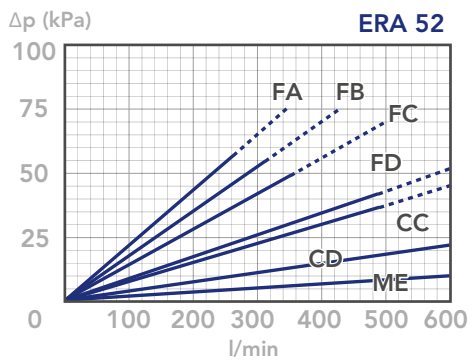
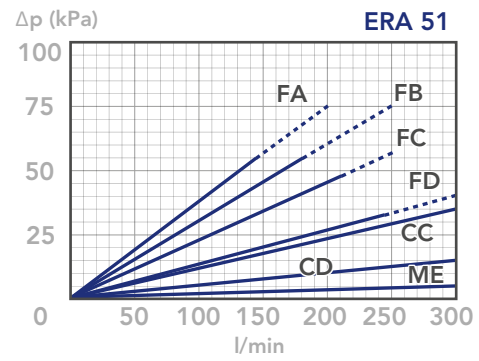
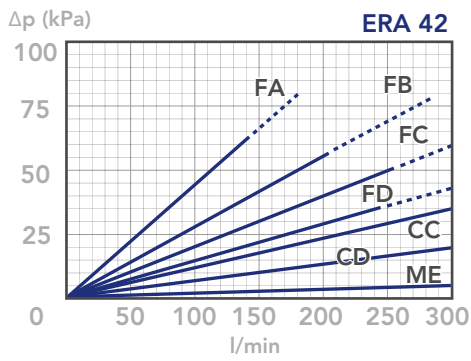
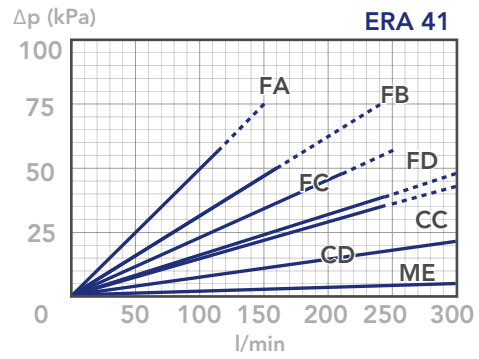
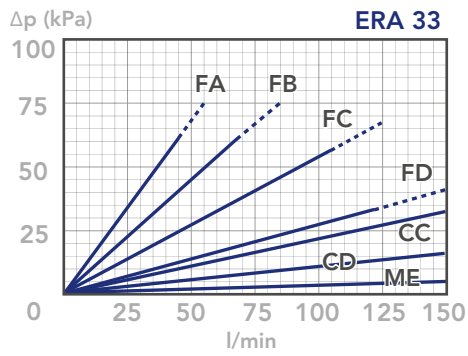
be lower than 50 kPa (0,5 bar). In any case this value should never exceed 1/3 of the bypass valve setting.

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)



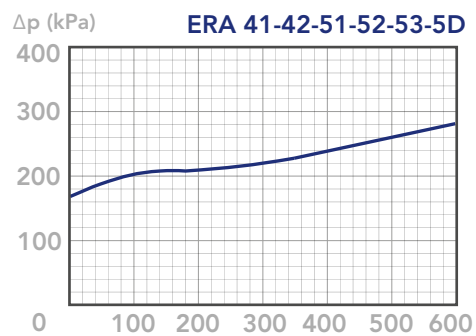
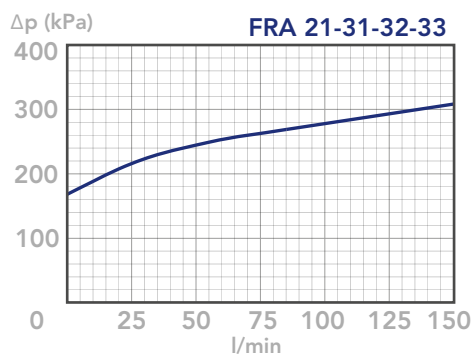


FRA

RETURN FILTERS

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.



FRB

RETURN FILTERS



DESCRIPTION

Tank top return line filter, inbuilt breather

MATERIALS

Head: Aluminum alloy
Cover and Bowl: Polyamide
Bypass valve: Polyamide
Seals: NBR Nitrile
Indicator housing: Brass

PRESSURE

Max. working: 700 kPa (7 bar)
Collapse, differential for the filter element (ISO 2941):
300 kPa (3 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%
250 kPa (2,5 bar) \pm 10%

FLOW RATE

Qmax 140 l/min

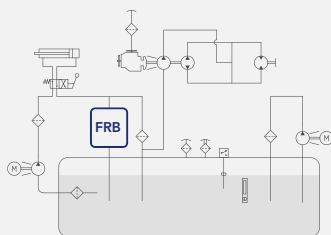
WORKING TEMPERATURE

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.
please contact our Customer Service.

HYDRAULIC DIAGRAM



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



FRB

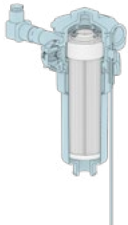
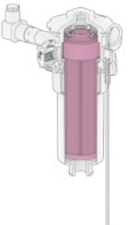
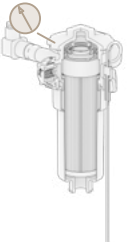
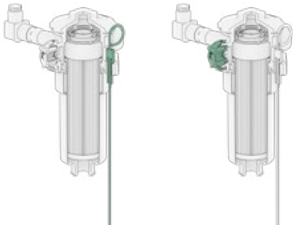
RETURN FILTERS



ORDERING AND OPTION CHART

F	R	B	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	B
			SIZE & LENGTH	11	21	22	23	SIZE & LENGTH			
			PORT TYPE								
			B = BSP thread	B	B	B	B				
			N = NPT thread	N	N	N	N				
			S = SAE thread	S	S	S	S				
			PORT SIZE								
			04 = 1/2"	04	-	-	-				
			06 = 3/4"	06	06	06	06				
			08 = 1"	-	08	08	08				
		B	BYPASS VALVE								
			B = 170 kPa (1,7 bar) - 250 kPa (2,5 bar) for F+ media	B	B	B	B				
		N	SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD				
			CLOGGING INDICATOR								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = pressure gauge, rear connection	30	30	30	30				
			P4 = SPDT pressure switch	P4	P4	P4	P4				
			P6 = SPDT pressure switch	P6	P6	P6	P6				
			ACCESSORIES								
			W = without	W	W	W	W				
			C = with polyester air breather	C	C	C	C				
			D = with metal air filter	D	D	D	D				
			ACCESSORIES								
			W = without	W	W	W	W				
			H = with dipstick	H	H	H	H				

SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR				ACCESSORIES			
															
B	R	B		B	N										

SPARE SEAL KIT

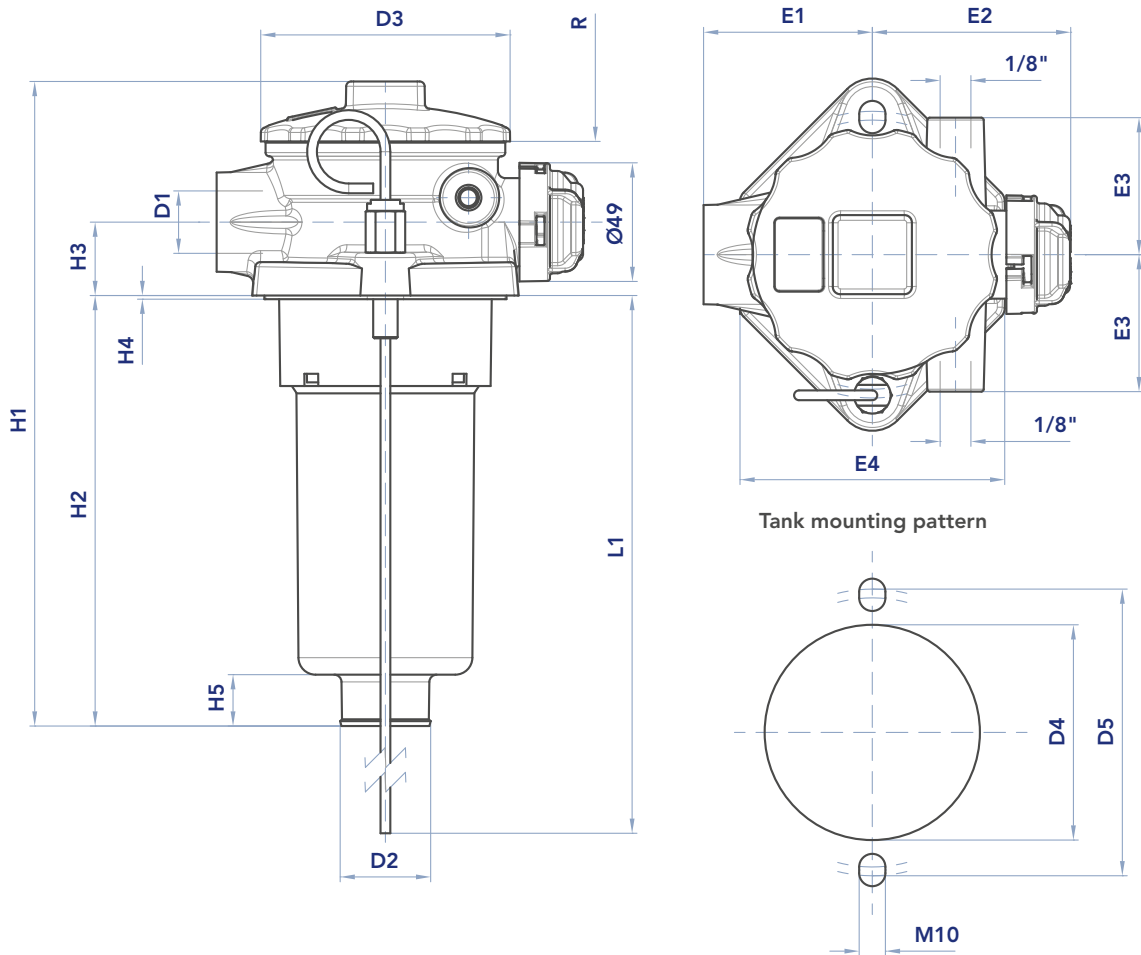
NRB

FRB11	521.0016.2
FRB21	521.0017.2

SPARE SPRING

FRB11	008.0208.1
FRB21	008.3014.1

INSTALLATION DRAWING



FILTER HOUSING

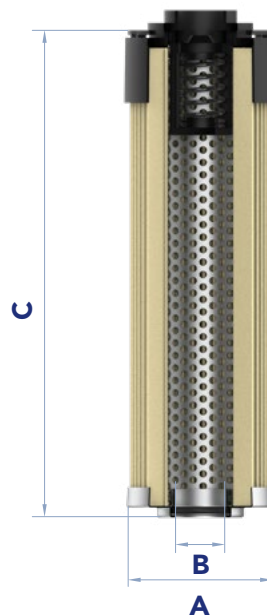
	D1	D2	D3	D4	D5	E1	E2	E3	E4	H1	H2	H3	H4	H5	L1	R	Kg
FRB11	1/2"-3/4"	28	75	60÷63	82÷88	50	70	28	77	243	178	24	2	16	380	220	0,40
FRB21	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	200	110	30	1,5	22	370	190	0,84
FRB22	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	265	175	30	1,5	22	370	240	0,87
FRB23	3/4" - 1"	36	104	87÷91	110÷115	70	83	37	108	365	275	30	1,5	22	370	350	0,92

FRB

RETURN FILTERS

FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)	
					Media F+	MediaC+
ERB11	43	20	200	0,20	1.030	1.225
ERB21	59	28	134	0,30	1.140	1.430
ERB22	59	28	200	0,40	1.760	2.200
ERB23	59	28	300	0,50	2.380	3.400



MAINTENANCE

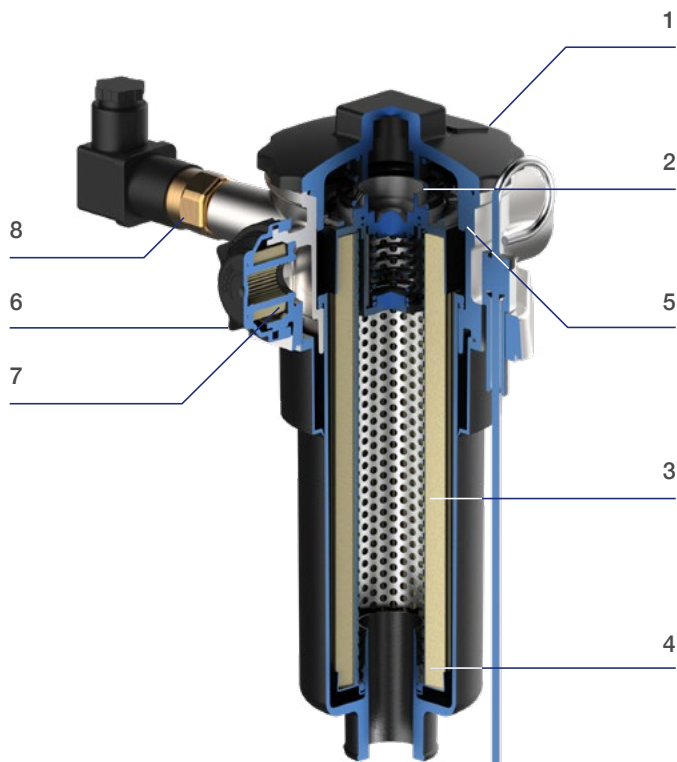
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the the cover (1) and remove the spring (2) below.
- 3) Remove the dirty filter element (3) using its handle.
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized 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 with care.
- 8) Re-assembly the spring (2).
- 9) 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.
- 10) Re-screw the cover (1).

Accessories:

Air breather filter element (7). If necessary, unscrew the cover (6) and replace the air breather element with a new one (please contact our Customer Service for additional information).

Clogging indicator (8).

If damaged, unscrew and replace it (check the part number in the ordering and option chart). Lubricate the o-ring gaskets with oil and tighten until it stops, with a tightening torque of 40 Nm +5/0.



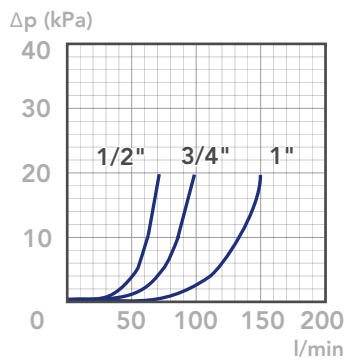


PRESSURE DROP CURVES (Δp)

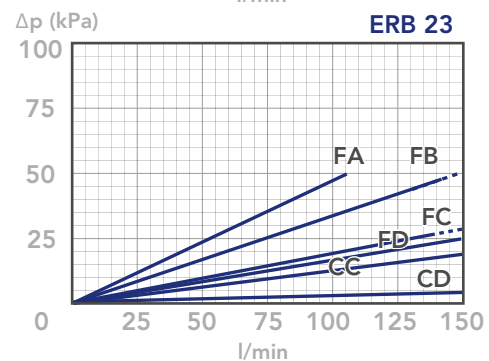
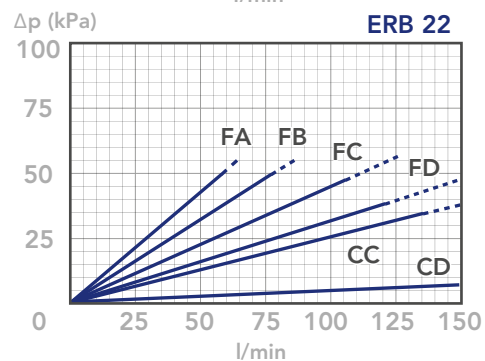
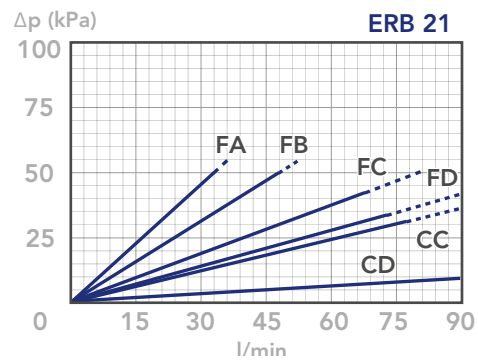
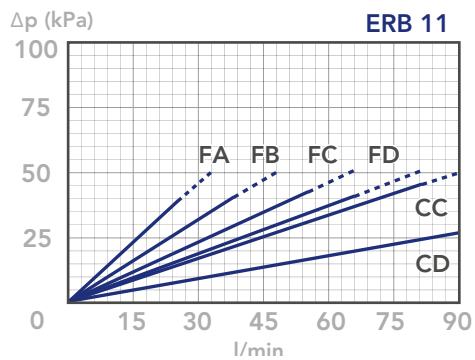
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)

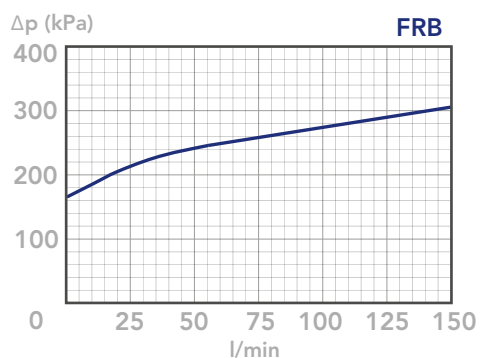


FRB

RETURN FILTERS

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.



FRC

RETURN FILTERS

DESCRIPTION

Tank top return spin-on filter

MATERIALS

Head: Aluminum alloy
Spin-on cartridge: Steel
Bypass valve: Polyamide
Seals: NBR Nitrile
Indicator housing: Brass

PRESSURE

Max. working: 700 kPa (7 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

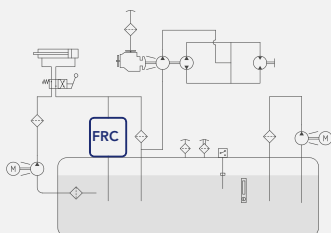
WORKING TEMPERATURE

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



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FRC

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	C	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	C
			SIZE & LENGTH	11	12	21	22	SIZE & LENGTH			
		B	PORT TYPE								
			B = BSP thread	B	B	B	B				
			PORT SIZE								
			06 = 3/4"	06	06	-	-				
			12 = 1"1/2"	-	-	12	12				
		B	BYPASS VALVE								
			B = 170 kPa (1,7 bar) with anti-drain membrane	B	B	B	B				
		N	SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			CD = FormulaUFI.CELL 25 μm $\beta > 2$	CD	CD	CD	CD				
			CLOGGING INDICATOR								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = pressure gauge, rear connection	30	30	30	30				
			P1 = SPDT pressure switch	P1	P1	P1	P1				
X	X		ACCESSORIES								
			XX = no accessory available	XX	XX	XX	XX				

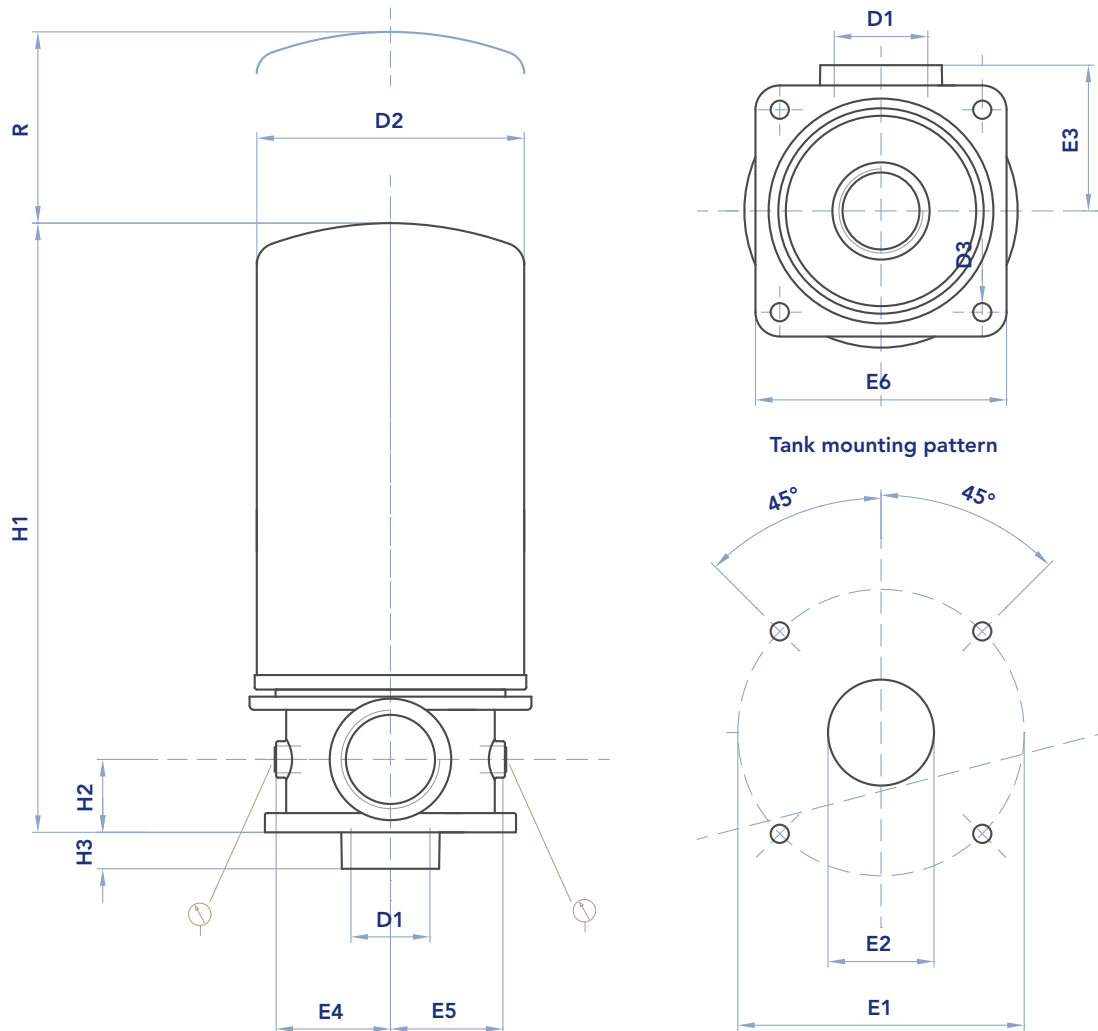
SPARE PARTS

FILTER HOUSING				FILTER ELEMENT				CLOGGING INDICATOR					
B	R	C		B		B	N					X	X
				E	R	C		N					

SPARE SEAL KIT

NBR		NBR	
FRC11 - 12	521.0018.2	FRC21 - 22	521.0036.2

INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	D3	H1	H2	H3	E1	E2	E3	E4	E5	E6	R	Kg
FRC11	3/4"	96	7	196	25	18	99	40÷45	50	38	38	90	15	1,3
FRC12	3/4"	96	7	241	25	18	99	40÷45	50	38	38	90	15	1,6
FRC21	1"1/2	129	9	252	36	18	141	65÷70	72	56	56	124	30	2,1
FRC22	1"1/2	129	9	297	36	18	141	65÷70	72	56	56	124	30	2,2

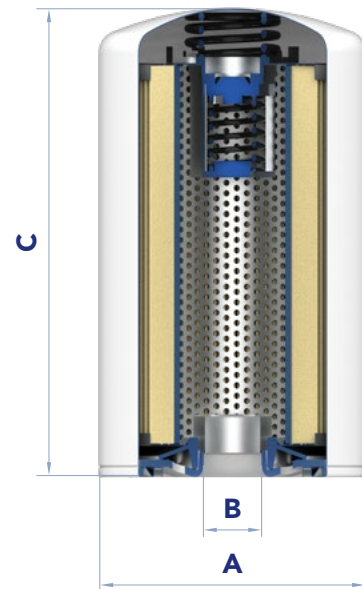
FRC

RETURN FILTERS



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)	
					Media F+	Media C+
ERC11	96,5	3/4" BSP	146	1,00	2.600	3.100
ERC12	96,5	3/4" BSP	191	1,20	3.630	4.745
ERC21	129	1"1/4 BSP	181	1,40	4.450	5.560
ERC22	129	1"1/4 BSP	226	1,50	5.088	7.360



MAINTENANCE

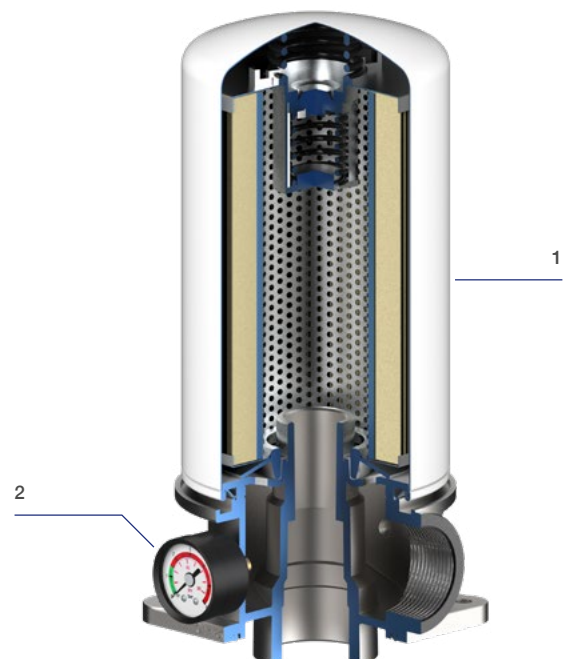
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Collect the oil inside the filter with a suitable container.
- 3) Unscrew the dirty filter element (1).
N.B. The exhausted filter elements and the oil dirty filter parts are classified "Dangerous waste material" and must be disposed of according to the local laws, by authorized Companies.
- 4) Check the filter element part number on the silk-screen printing or in the ordering and option chart.
Use only original spare parts.
- 5) Lubricate the element o-ring gasket with oil.
- 6) Screw the clean filter element until the first contact of the gasket with the flange.
- 7) Tighten strongly for 3/4 of a turn (indicative tightening torque of 18 Nm).

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.



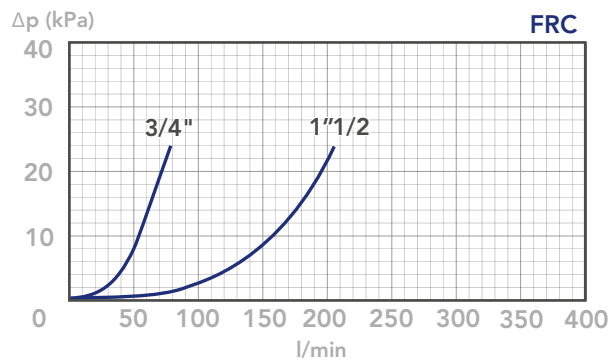


PRESSURE DROP CURVES (ΔP)

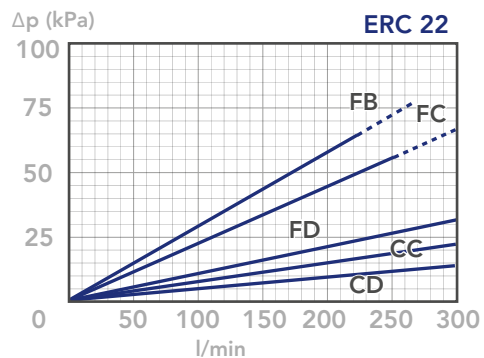
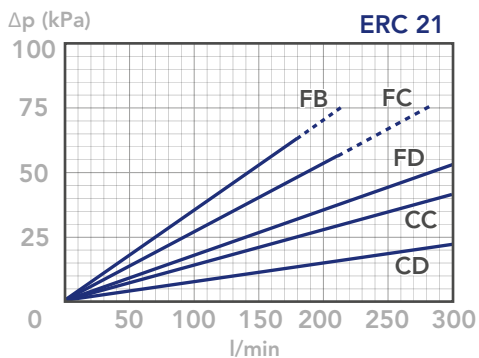
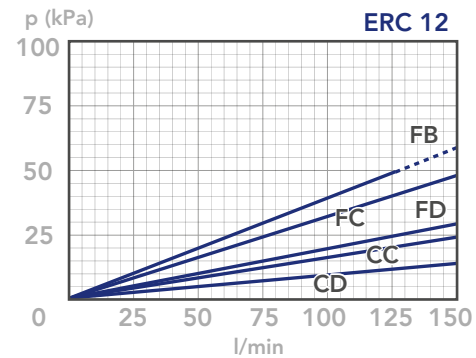
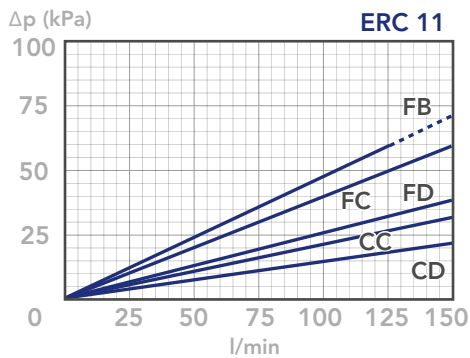
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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+ AND C+ MEDIA
(depending both on the internal diameter of the element and on the filter media)

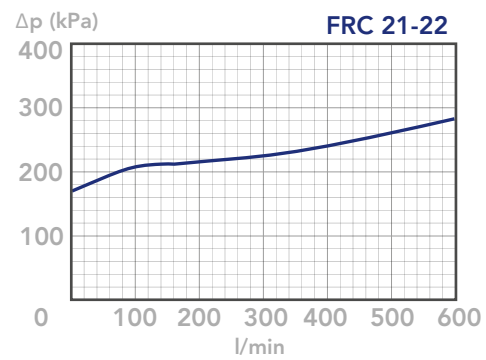
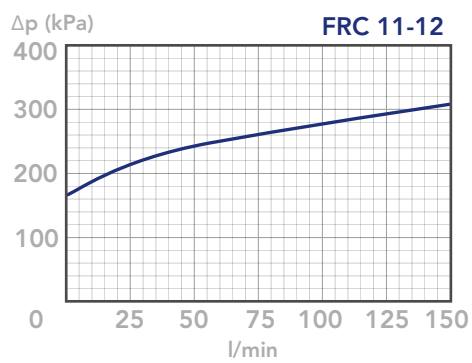


FRC

RETURN FILTERS

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.



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

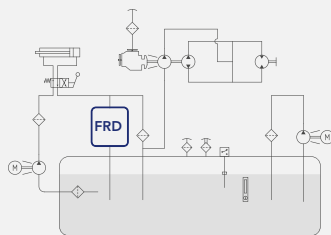
WORKING TEMPERATURE

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



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FRD

RETURN FILTERS

ORDERING AND OPTION CHART

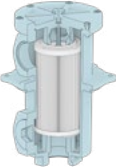
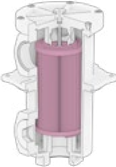
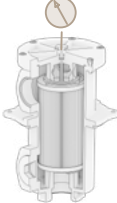
F	R	D	COMPLETE FILTER FAMILY	11	21	31	41	51	61	62	FILTER ELEMENT FAMILY	E	R	D
			SIZE & LENGTH								SIZE & LENGTH			
			PORT TYPE											
			B = BSP thread	B	B	B	B	B	-	-				
			N = NPT thread	N	N	N	N	N	-	-				
			S = SAE thread	S	S	S	S	S	-	-				
			F = SAE flange 3000 psi, metric screw	-	-	F	F	F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

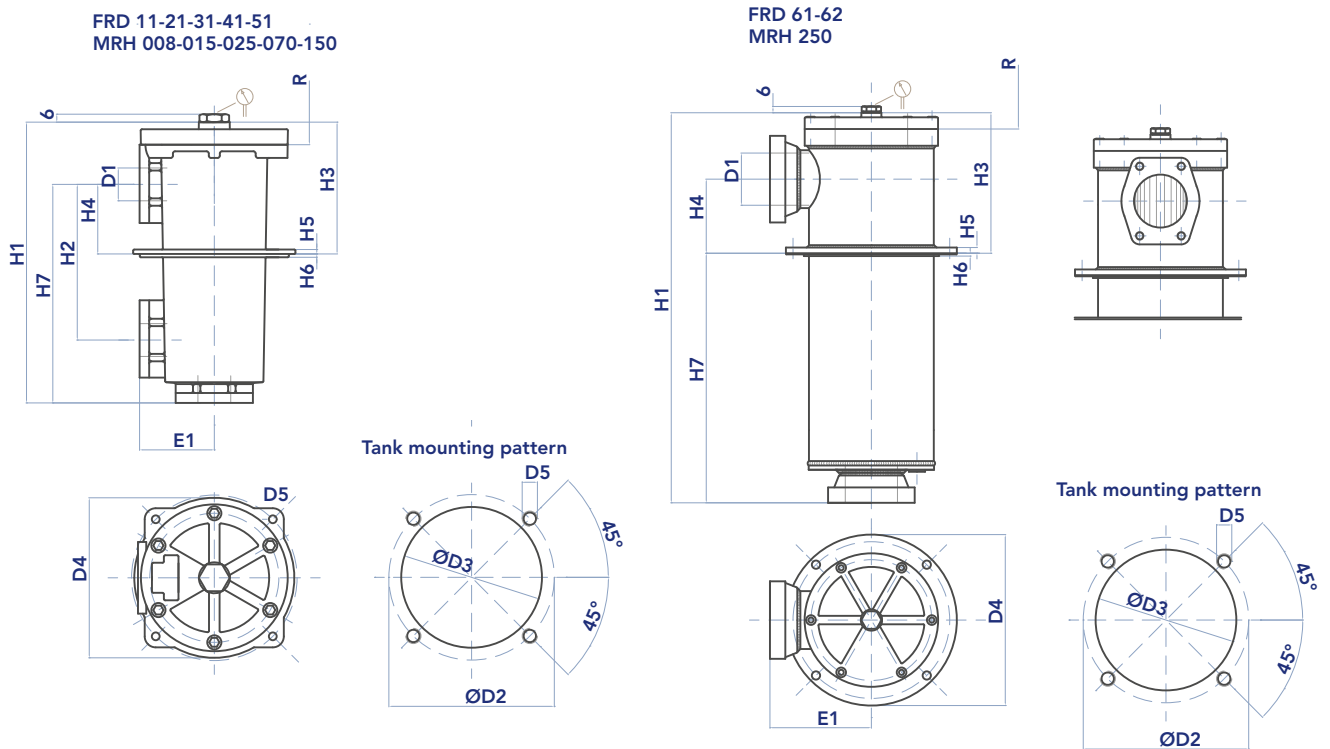
SPARE SEAL KIT

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 X X	E R D 	

INSTALLATION DRAWING



FILTER HOUSING

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

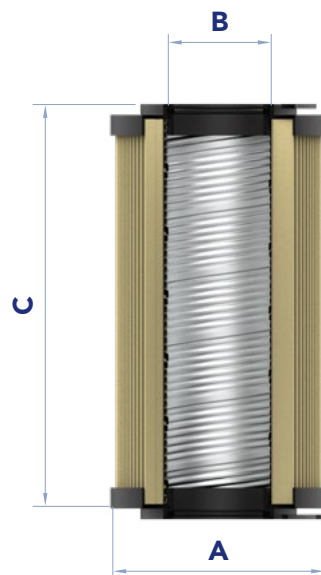
FRD

RETURN FILTERS



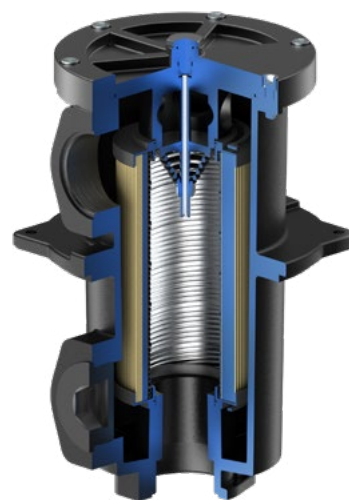
FILTER ELEMENT

	A	B*	C	Kg	AREA (cm ²)			
					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.

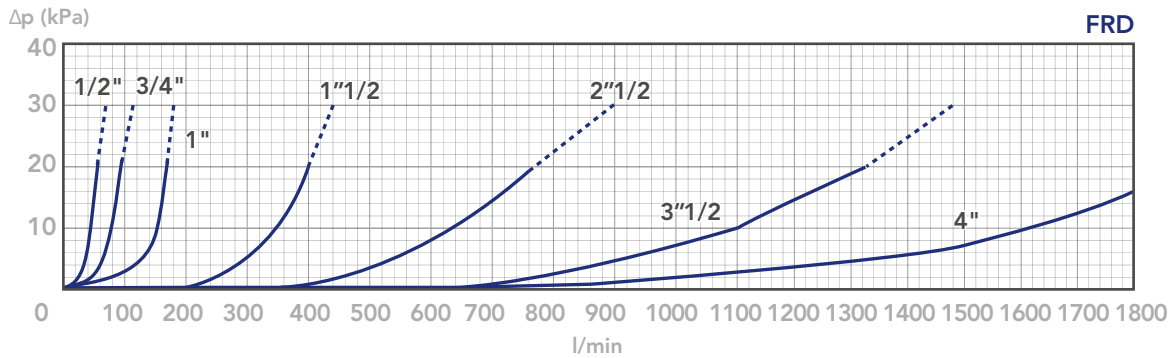


PRESSURE DROP CURVES (ΔP)

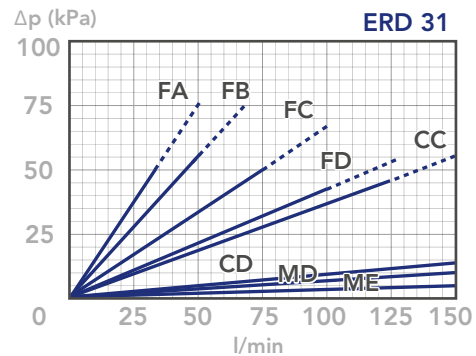
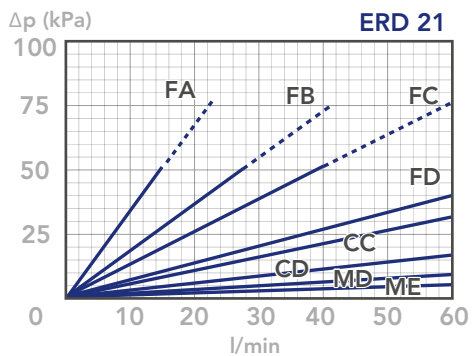
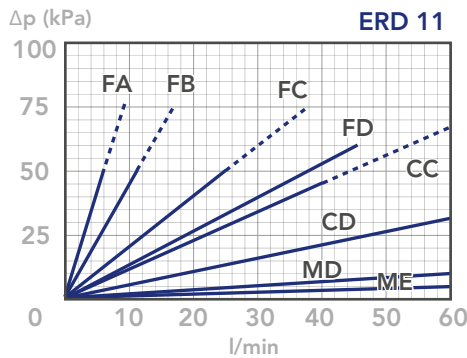
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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)

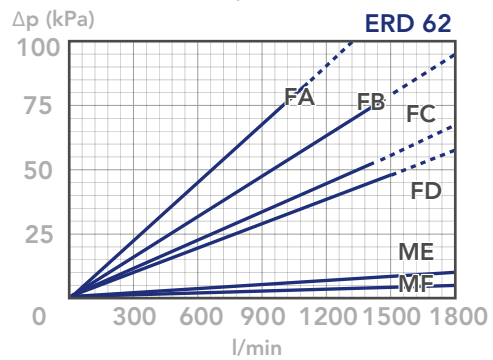
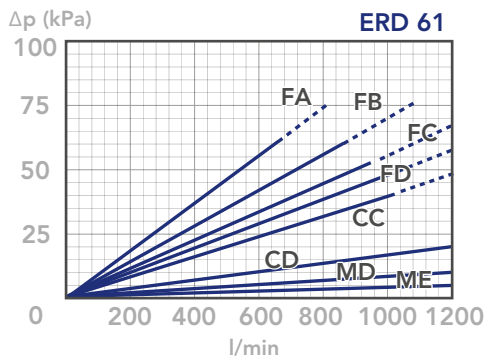
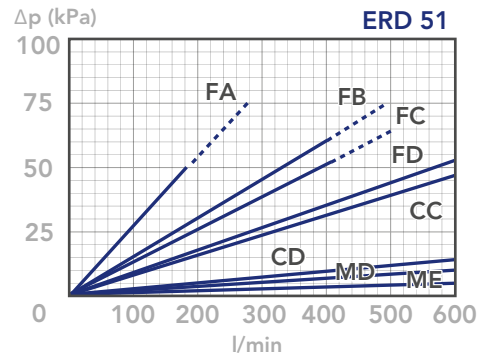
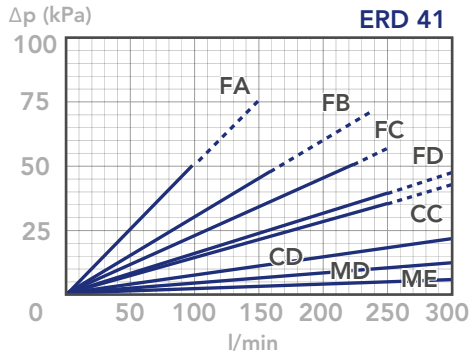


CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, C+ AND M+ MEDIA
(depending both on the internal diameter of the element and on the filter media)



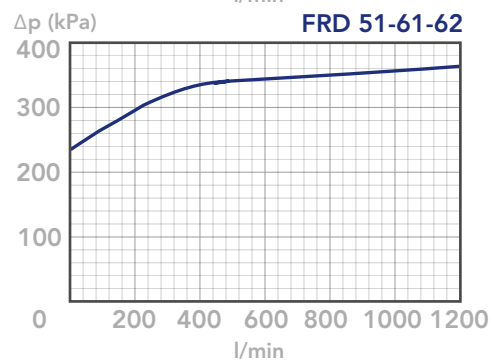
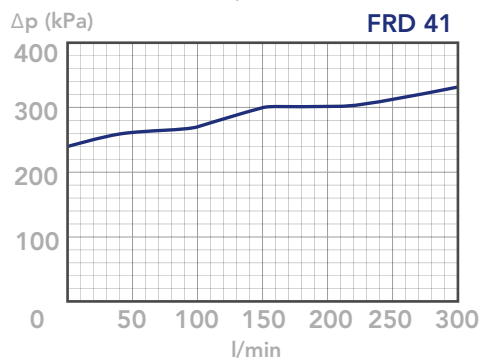
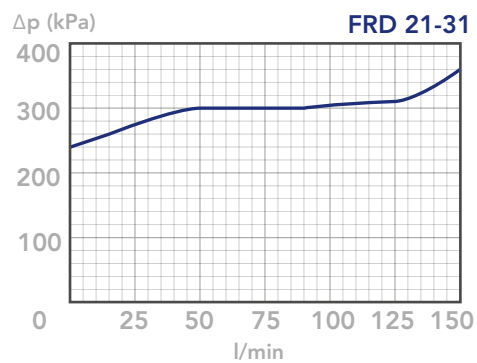
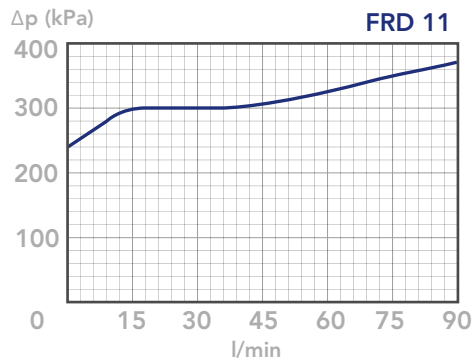
FRD

RETURN FILTERS



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.



FRF

RETURN FILTERS



DESCRIPTION

In-out tank top return line filter

MATERIALS

Head and cover: Aluminum alloy
Diffusor: Zinc plated steel
Element support: Polyamide (aluminum alloy for FRF3+ and FRF4+)
Magnetic core: Synthesized magnetic material (phosphated steel for FRF1X)
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 1 MPa (10 bar)
Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 150 kPa (1,5 bar) \pm 10%

FLOW RATE

Qmax 2200 l/min

WORKING TEMPERATURE

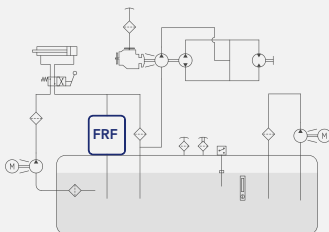
From -25° to +110° C

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



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FRF1

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	11	12	13	14	1X	SIZE & LENGTH			
			PORT TYPE									
			B = BSP thread	B	B	B	B	B				
			A = BSP thread, double port (only A08)	A	A	A	A	A				
			N = NPT thread	N	N	N	N	N				
			S = SAE thread	S	S	S	S	S				
			PORT SIZE									
			06 = 3/4"	06	06	06	06	06				
			08 = 1"	08	08	08	08	08				
			10 = 1" 1/4	10	10	10	10	10				
		F	BYPASS VALVE									
			F = 150 kPa (1,5 bar)	F	F	F	F	F				
			SEALS						SEALS			
			N = NBR Nitrile	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G	G				
			FormulaUFI MEDIA						FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME				
			CLOGGING INDICATOR									
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4	P4				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			F = with diffusor	F	F	F	F	F				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			M = magnetic core	M	M	M	M	M				

FRF2

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	22	23	24	SIZE & LENGTH			
			PORT TYPE							
			B = BSP thread	B	B	B				
			A = BSP thread, double port (only AD1)	A	A	A				
			N = NPT thread	N	N	N				
			S = SAE thread	S	S	S				
			F = SAE flange 3000 psi	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P				
			PORT SIZE							
			12 = 1" 1/2 (P12= 1"1/2 SAE+1" 1/2 BSP)	12	12	12				
			D1 = 1" 1/2 +1" 1/4 (only AD1)	D1	D1	D1				
		F	BYPASS VALVE							
			F = 150 kPa (1,5 bar)	F	F	F				
			SEALS				SEALS			
			N = NBR Nitrile	N	N	N				
			F = FKM Fluoroelastomer	F	F	F				
			G = Treatment for water-glycol	G	G	G				
			FormulaUFI MEDIA				FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME				
			CLOGGING INDICATOR (**)							
			05 = nr. 2 x 1/8" ports, plugged	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0				
			ACCESSORIES							
			W = without accessory	W	W	W				
			F = with diffusor	F	F	F				
			ACCESSORIES							
			W = without accessory	W	W	W				
			M = magnetic core	M	M	M				

** 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)

FRF3

RETURN FILTERS

ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	31	32	33	34	SIZE & LENGTH			
			PORT TYPE								
			F = SAE flange 3000 psi	F	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P	P				
			PORT SIZE								
			16 = 2"	16	16	16	16				
			20 = 2" 1/2	20	20	20	20				
			DA = 2" 1/2+2"	DA	DA	DA	DA				
			D7 = 2"+1" 1/2	D7	D7	D7	D7				
F			BYPASS VALVE								
			F = 150 kPa (1,5 bar)	F	F	F	F				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			CLOGGING INDICATOR (**)								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			F = with diffusor	F	F	F	F				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			M = magnetic core	M	M	M	M				

** 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)

FRF4

RETURN FILTERS



ORDERING AND OPTION CHART

F	R	F	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	41	42	43	44	SIZE & LENGTH			
			PORT TYPE								
			F = SAE flange 3000 psi	F	F	F	F				
			P = SAE flange 3000 psi, double port	P	P	P	P				
			PORT SIZE								
			24 = 3"	24	24	24	24				
			32 = 4"	32	32	32	32				
			D9= 3"+4"	D9	D9	D9	D9				
		F	BYPASS VALVE								
			F = 150 kPa (1,5 bar)	F	F	F	F				
			SEALS					SEALS			
			N = NBR Nitrile	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F				
			G = Treatment for water-glycol	G	G	G	G				
			FormulaUFI MEDIA					FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME				
			CLOGGING INDICATOR (**)								
			05 = nr. 2 x 1/8" ports, plugged	05	05	05	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30	30	30	30				
			P4 = SPDT, pressure switch	P4	P4	P4	P4				
			03 = port for differential indicator, plugged	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B				
			7B = indicator 6B with LED	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			F = with diffusor	F	F	F	F				
			ACCESSORIES								
			W = without accessory	W	W	W	W				
			M = magnetic core	M	M	M	M				



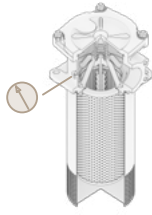

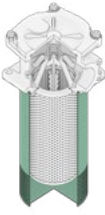
** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

FRF

RETURN FILTERS



SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	CLOGGING INDICATOR	ACCESSORIES	
				
B R F F ■ ■ ■ ■ ■ ■ ■ ■	E R F ■ ■ ■ ■ ■ ■ ■ ■	■ ■	■	■

SPARE SEAL KIT

	NBR	FKM
FRF11-12-13-14-1X	521.0055.2	521.0056.2
FRF22-23-24	521.0020.2	521.0057.2
FRF31-32-33-34	521.0021.2	521.0058.2
FRF41-42-43-44	521.0095.2	521.0096.2

SPARE SPRING

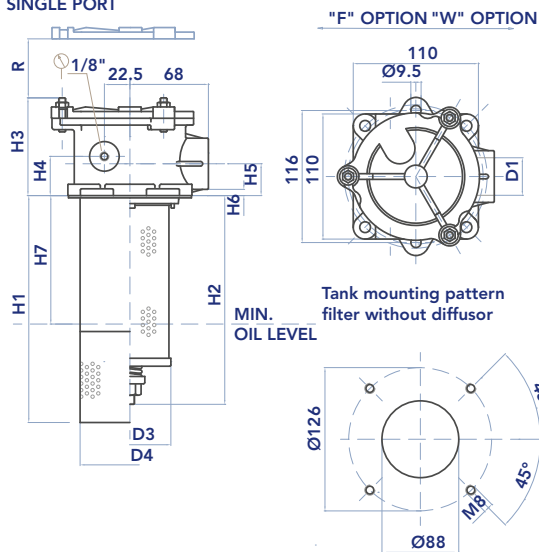
FRF11-12-13-14-1X	008.0282.1
FRF22-23-24	008.0269.1
FRF31-32-33-34	008.0275.1
FRF41-42-43-44	008.0283.1

FRF1

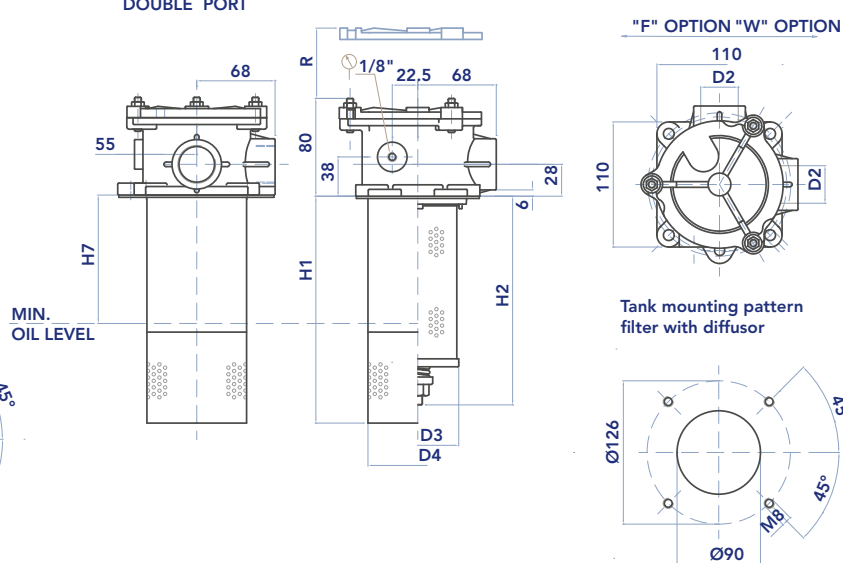
RETURN FILTERS

INSTALLATION DRAWING

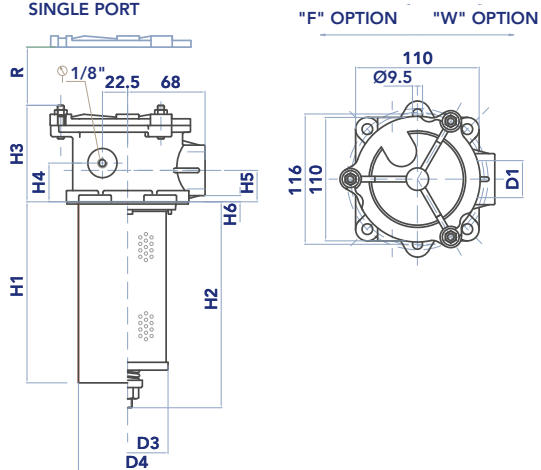
FRF 11-12-13-14
SINGLE PORT



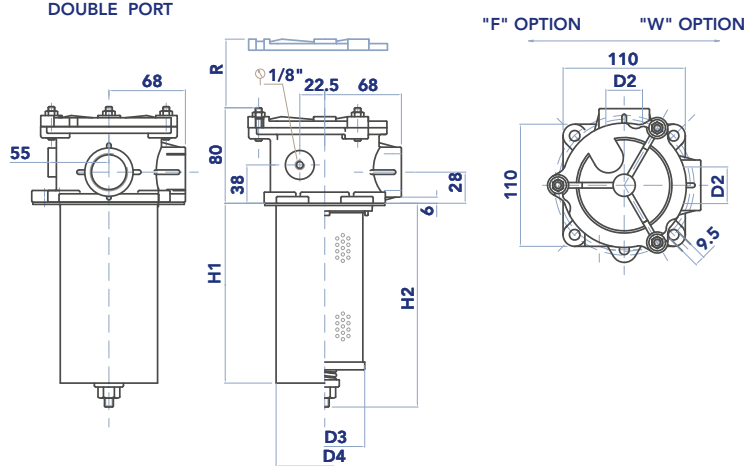
FRF 11-12-13-14
DOUBLE PORT



FRF 1X
SINGLE PORT



FRF 1X
DOUBLE PORT



FILTER HOUSING

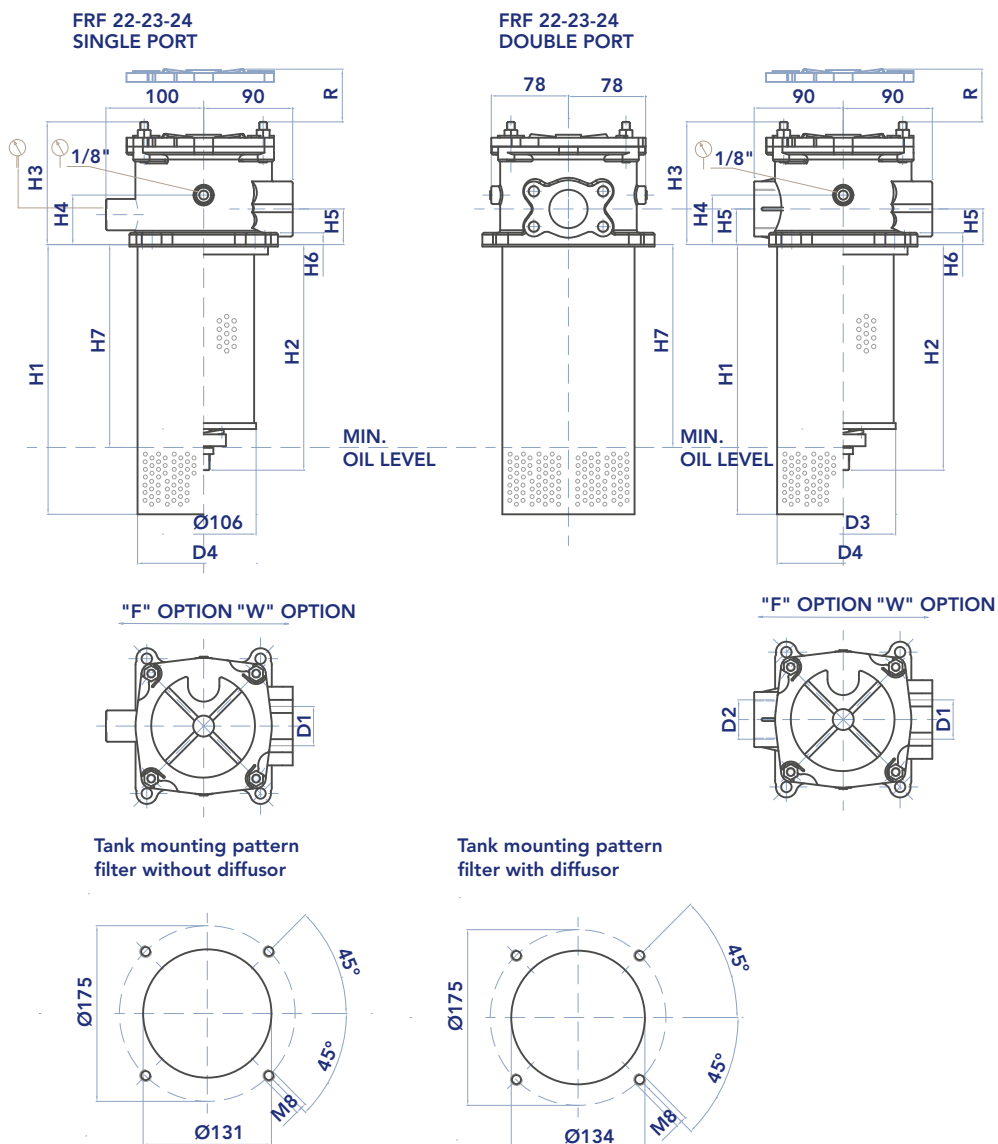
	D1	D2	D3	D4	D5	H1	H2	H3	H4	H5	H6	H7	R	Kg
FRF11	3/4" - 1" - 1" 1/4	1"	72	89	9	198	140	90	38	28÷32	6	118	230	1,20
FRF12	3/4" - 1" - 1" 1/4	1"	72	89	9	198	185	90	38	28÷32	6	118	275	1,40
FRF13	3/4" - 1" - 1" 1/4	1"	72	89	9	250	235	90	38	28÷32	6	170	325	1,50
FRF14	3/4" - 1" - 1" 1/4	1"	72	89	9	350	335	90	38	28÷32	6	270	445	1,70
FRF1X	3/4" - 1" - 1" 1/4	1"	72	89	9	500	535	90	38	28÷32	6	270	625	2,00

FRF2

RETURN FILTERS



INSTALLATION DRAWING



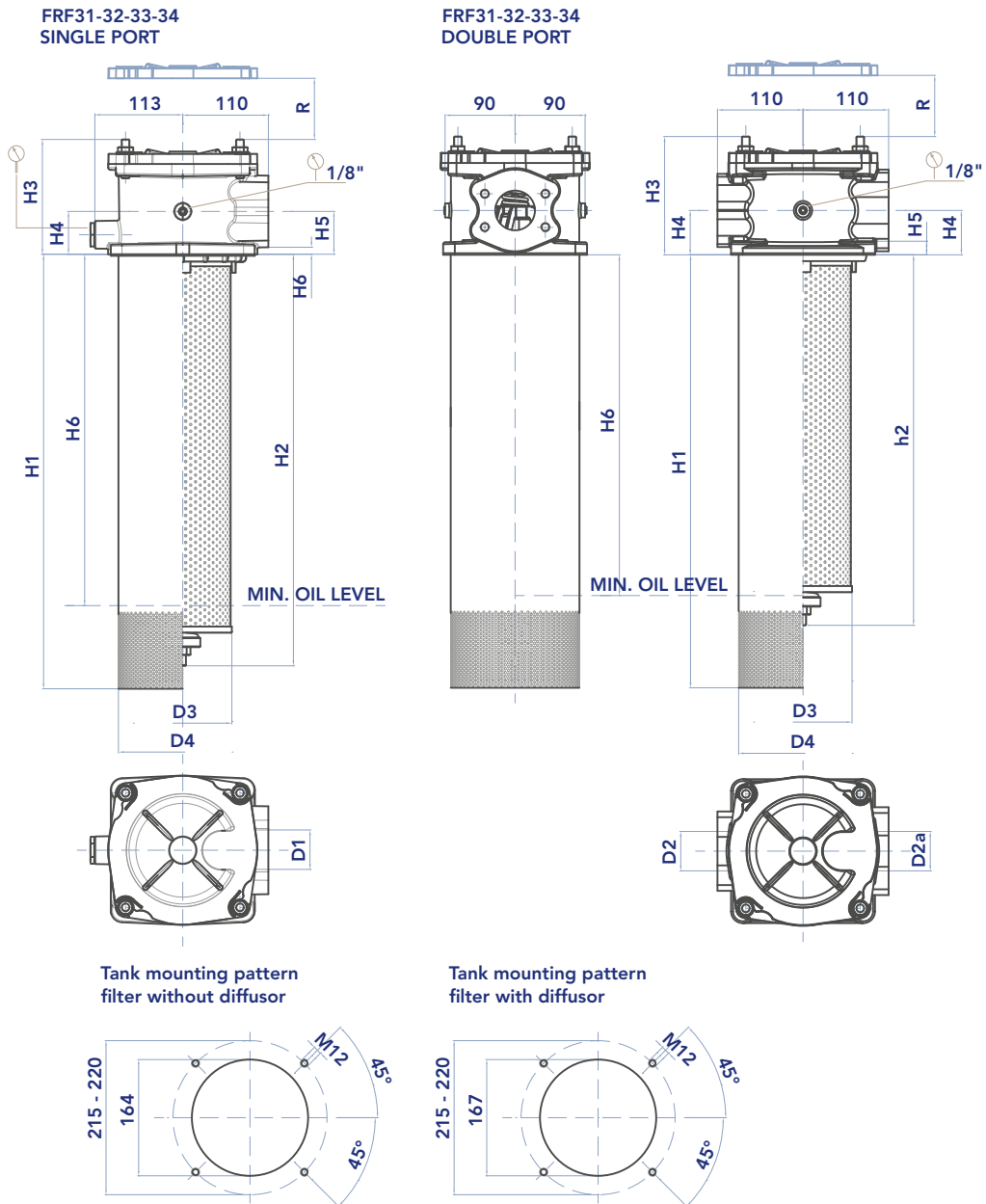
FILTER HOUSING

	D1	D2	D3	D4	H1	H2	H3	H4	H5	H6	H7	R	Kg
FRF22	1" 1/2	1"1/4 ÷ 1"1/2	106	133	250	225	129	50	36	12	150	310	4,20
FRF23	1" 1/2	1"1/4 ÷ 1"1/2	106	133	320	295	129	50	36	12	220	380	4,70
FRF24	1" 1/2	1"1/4 ÷ 1"1/2	106	133	525	500	129	50	36	12	425	580	5,00

FRF3

RETURN FILTERS

INSTALLATION DRAWING



FILTER HOUSING

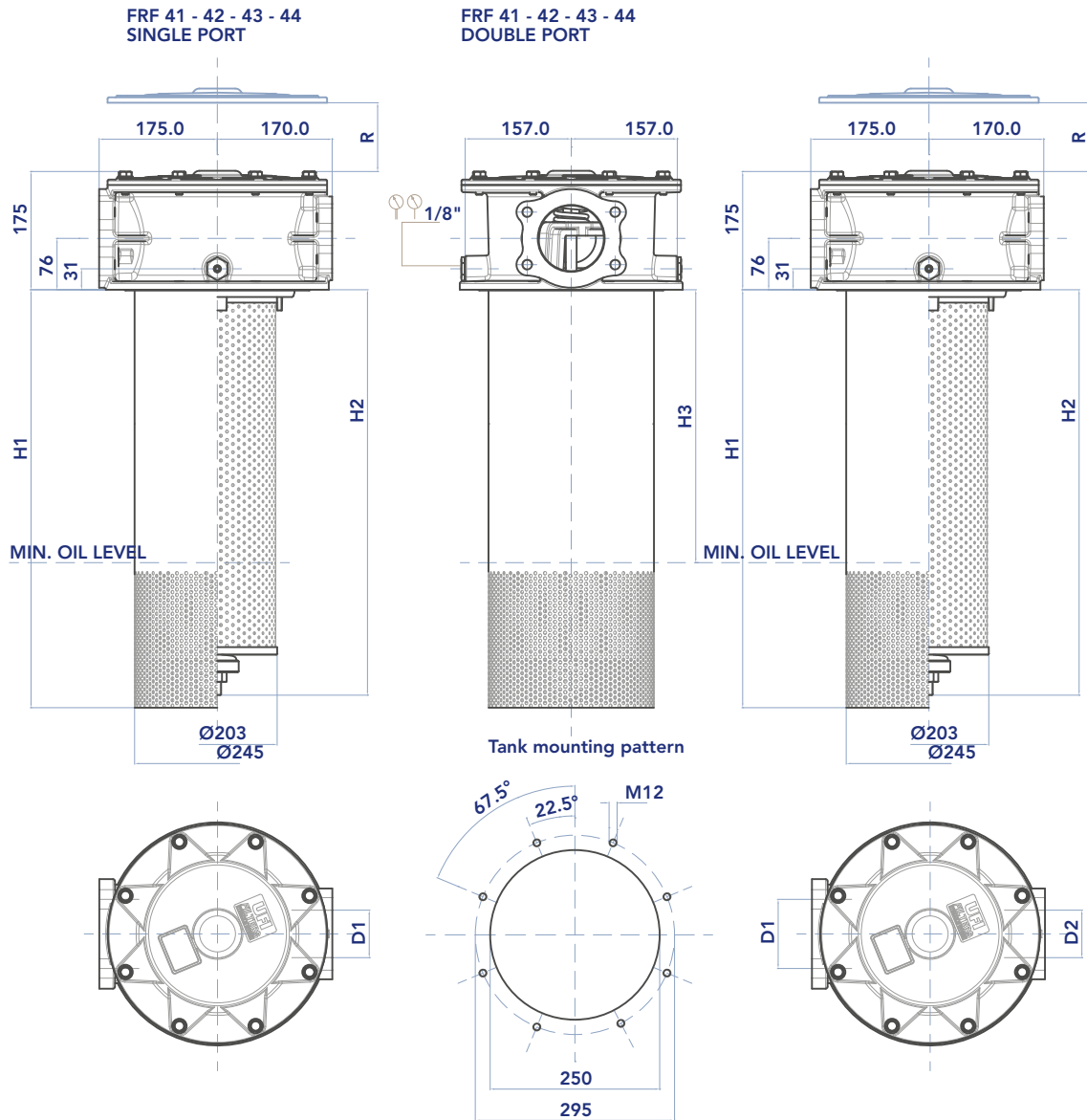
	D1	D2	D2a	D3	D4	H1	H2	H3	H4	H5	H6	R	Kg
FRF31	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	290	260	155	55	14	190	350	8,00
FRF32	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	370	340	155	55	14	270	430	8,40
FRF33	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	470	440	155	55	14	370	580	8,60
FRF34	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	560	530	155	55	14	460	620	9,10

FRF4

RETURN FILTERS



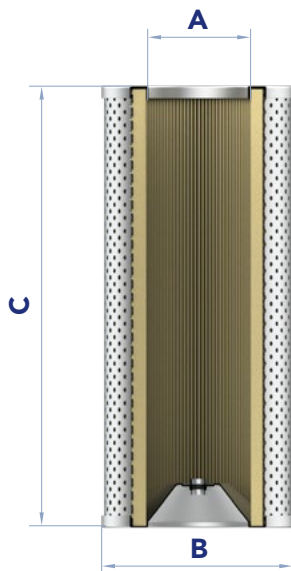
INSTALLATION DRAWING



FILTER HOUSING

	D1	D2	H1	H2	H3	R
FRF41	3"	4"	405	396	205	600
FRF42	3"	4"	620	611	420	810
FRF43	3"	4"	900	891	700	1.090
FRF44	3"	4"	1165	1156	965	1.360

FILTER ELEMENT



FRF1

	A	B	C	Kg	AREA (cm ²)		
					Media F+	Media C+	Media M+
ERF11	45	72	106	0,25	770	1.250	460
ERF12	45	72	150	0,35	1.170	1.800	650
ERF13	45	72	200	0,45	1.570	2.450	880
ERF14	45	72	300	0,60	2.370	3.600	1.320
ERF1X	45	72	500	1,00	3.950	6.000	2.200

FRF2

ERF22	72	106	190	0,75	3.900	4.600	1.500
ERF23	72	106	260	1,00	5.400	6.400	2.050
ERF24	72	106	465	1,50	9.700	11.800	3.670

FRF3

ERF31	92	126	210	1,15	5.500	6.650	2.250
ERF32	92	126	290	1,50	7.700	9.200	3.150
ERF33	92	126	290	1,90	10.400	12.400	4.250
ERF34	92	126	480	2,20	12.800	15.400	5.250

FRF4

ERF41	157	203	330	3,90	17.900	22.100	6.400
ERF42	157	203	545	5,20	30.000	37.000	10.800
ERF43	157	203	825	9,00	45.200	55.500	16.200
ERF44	157	203	1.090	13,00	60.000	74.000	21.800

FRF

RETURN FILTERS

MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the nuts (1) on the cover (2). N.B. it is not necessary to disassemble the nuts, use the slots on the cover. FRF4: Unscrew the screws (1).
- 3) Turn the cover (2) clockwise and remove it. FRF4: remove the cover (2).
- 4) Extract the filter element using the handle (3).
- 5) At the bottom of the element, unscrew the nut (4) from the tie-rod (5) locking the nut (6) with a wrench to prevent rotation of the tie-rod. Remove the spring holder washer (7) and the spring (8).
- 6) 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 authorized Companies.
- 7) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 8) Check the correct positioning and the condition of the O-ring (10) between the handle and the element. Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 9) Insert the clean element (9) on the tie-rod (5) handling with care.
- 10) Assembly the spring (8), the spring holder (7) and screw the nut (4) on the tie-rod (5) until it stops.
- 11) Check the correct position and the condition of handle O-ring gasket (11). Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 12) Replace the filter element assembly (with the handle) into the housing with the upper spring (12).
- 13) Check the correct positioning and the condition of the O-ring gasket (13) of the cover (2) and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 14) Position the cover (2) and tighten the nuts (1) until it stops.
FRF4: Position the cover (2) and tighten the screws (1) until it stops.

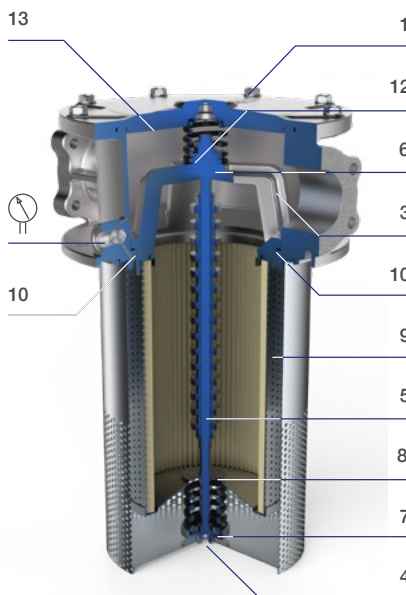
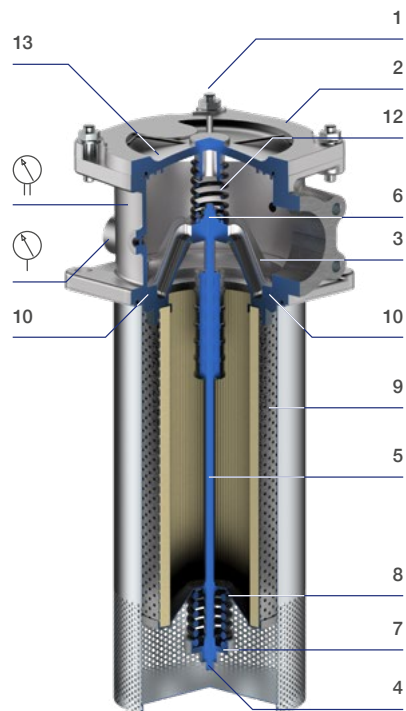
Accessories:

Clogging indicator.

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Indicators with thread M20x1,5: Lubricate the O-ring gaskets and tighten until it stops, with a tightening torque of 40 Nm +5/0.

Indicators with conical thread 1/8": Apply a thread-sealing and screw until tight. N.B. Over-tightening can damage the thread.



FRF

RETURN FILTERS

PRESSURE DROP CURVES (ΔP) 1+

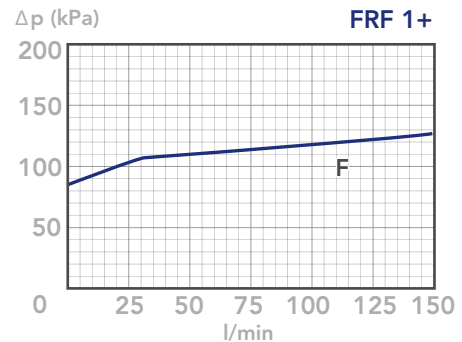
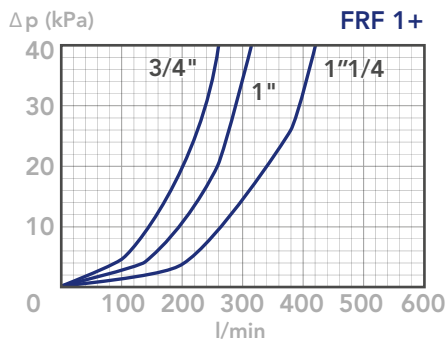
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

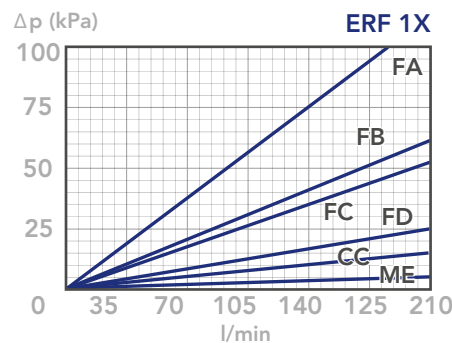
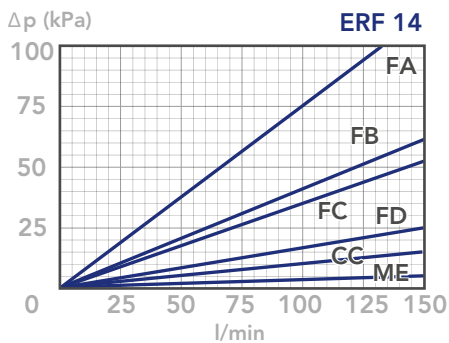
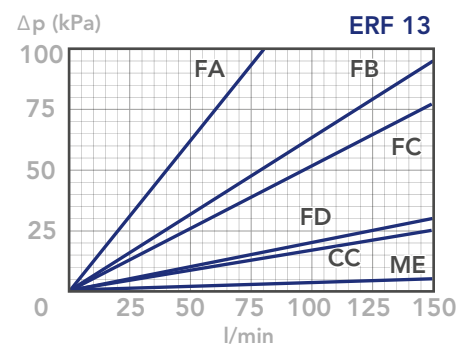
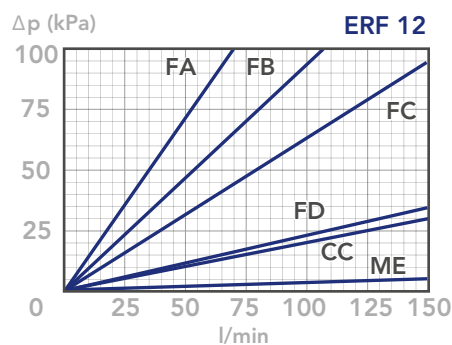
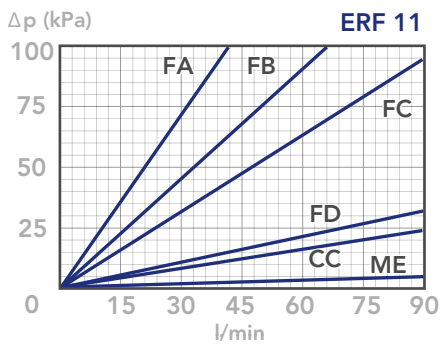
FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

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.



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)



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.

FRF

RETURN FILTERS

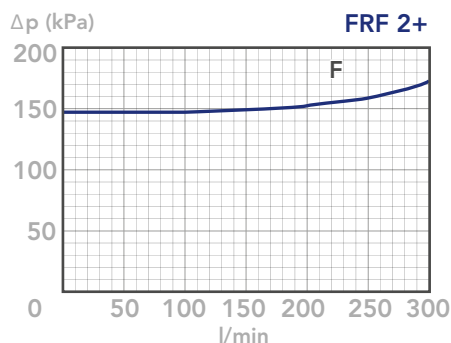
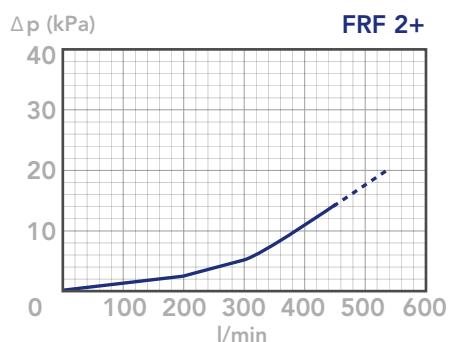
PRESSURE DROP CURVES (ΔP) 2+

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

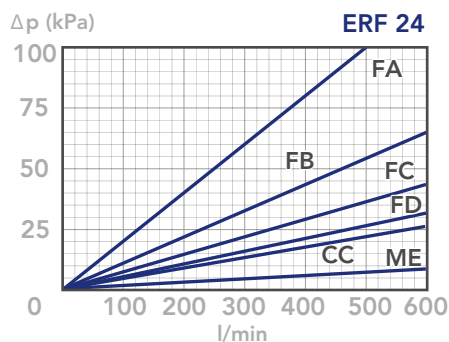
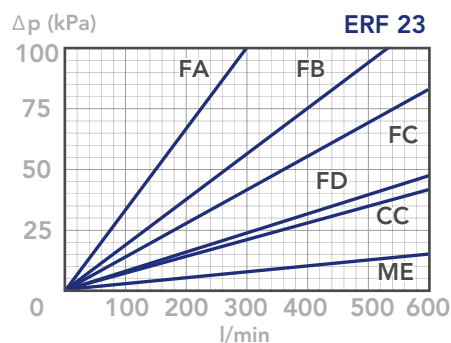
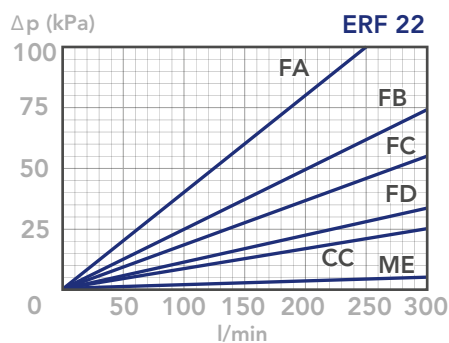
be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

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.



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)



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.

FRF

RETURN FILTERS

PRESSURE DROP CURVES (ΔP) 3+

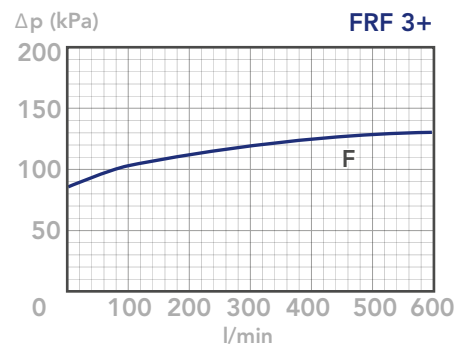
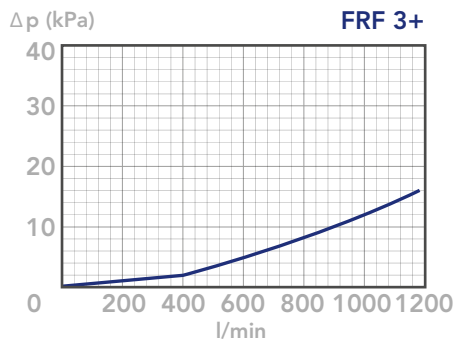
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

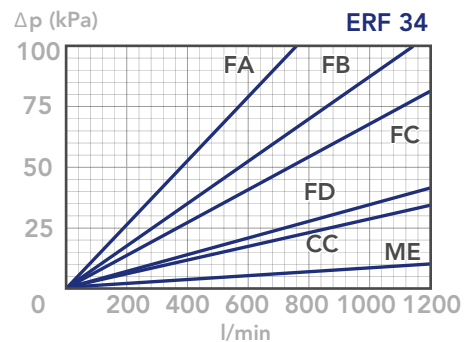
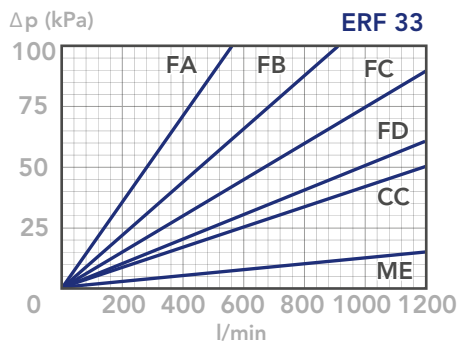
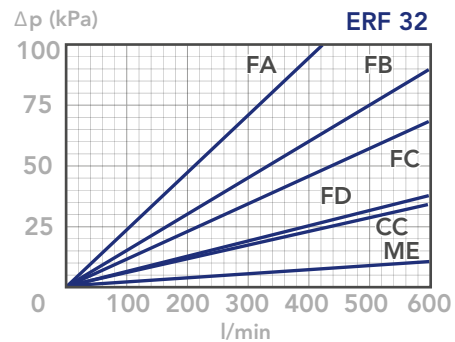
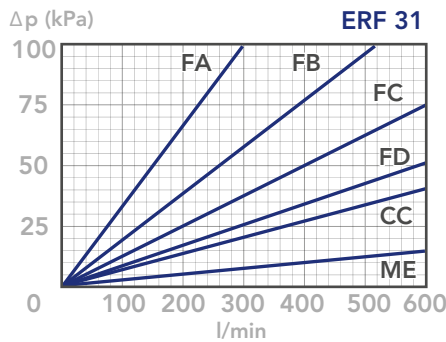
FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

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.



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)



N.B.

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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.

FRF

RETURN FILTERS



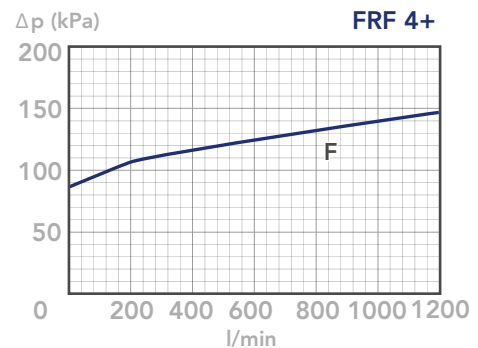
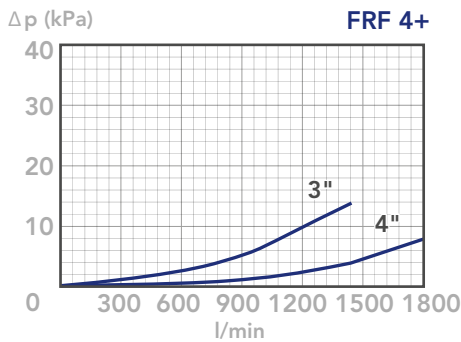
PRESSURE DROP CURVES (ΔP) 4+

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

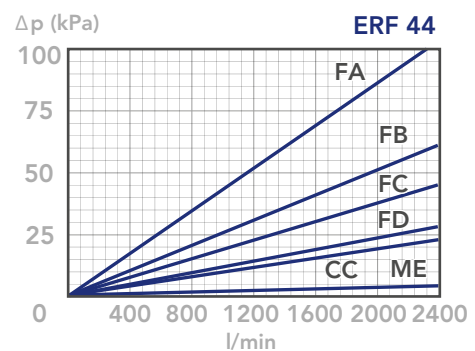
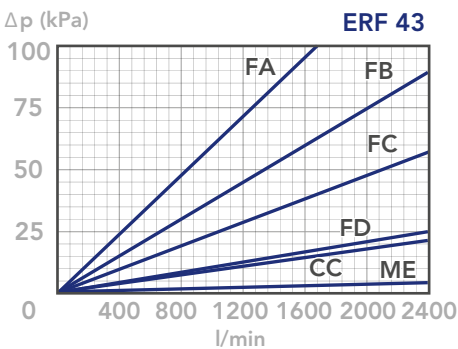
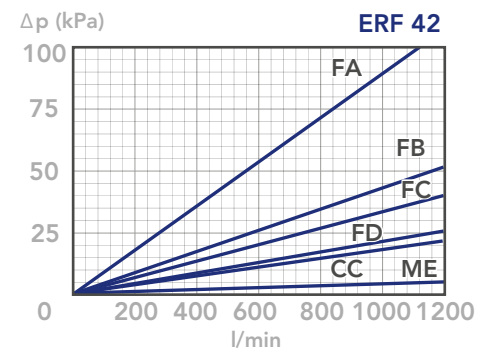
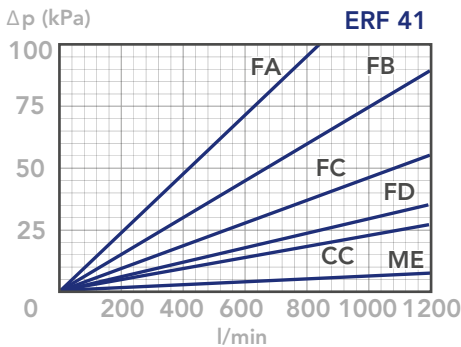
be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

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.



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)



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.



FRG

RETURN FILTERS

DESCRIPTION

Tank insert return line filter, inside to outside filtration

MATERIALS

Diffusor: Zinc plated steel
Element support: Polyamide
(aluminum alloy for FRG3+ & 4+)
Magnetic core: Synthesized magnetic material
Seals: NBR Nitrile
FKM Fluoroelastomer on request

PRESSURE

Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 150 kPa (1,5 bar) \pm 10%

FLOW RATE

Qmax 2400 l/min

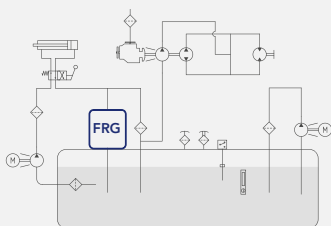
WORKING TEMPERATURE

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

FRG





RETURN FILTERS



ORDERING AND OPTION CHART

FRG	COMPLETE FILTER FAMILY																	FILTER ELEMENT FAMILY	E	R	F
	SIZE & LENGTH	11	12	13	14	22	23	24	31	32	33	34	41	42	43	44	SIZE & LENGTH				
	T PORT TYPE																				
	T = in the tank	T	T	T	T	T	T	T	T	T	T	T	T	T	T	T					
00	PORT SIZE																				
	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00					
	F BYPASS VALVE																				
	F = 150 kPa (1,5 bar)	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F					
	SEALS																	SEALS			
	N = NBR Nitrile	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N					
	F = FKM Fluoroelastomer	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F					
	FormulaUFI MEDIA																	FormulaUFI MEDIA			
	FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA	FA					
	FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB	FB					
	FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC	FC					
	FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(e)}$ $\beta > 1.000$	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD	FD					
	CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC	CC					
	ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME	ME					
XX	CLOGGING INDICATOR																				
	XX = not applicable	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX	XX					
	ACCESSORIES																				
	W = without diffusor	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W					
	F = with diffusor	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F					
X	ACCESSORIES																				
	W = without magnetic core	W	W	W	W	W	W	W	W	W	W	W	W	W	W	W					
	M = with magnetic core	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M					

SPARE PARTS

FILTER HOUSING	FILTER ELEMENT	ACCESSORIES	
			
BRG T00F XX	ERF		



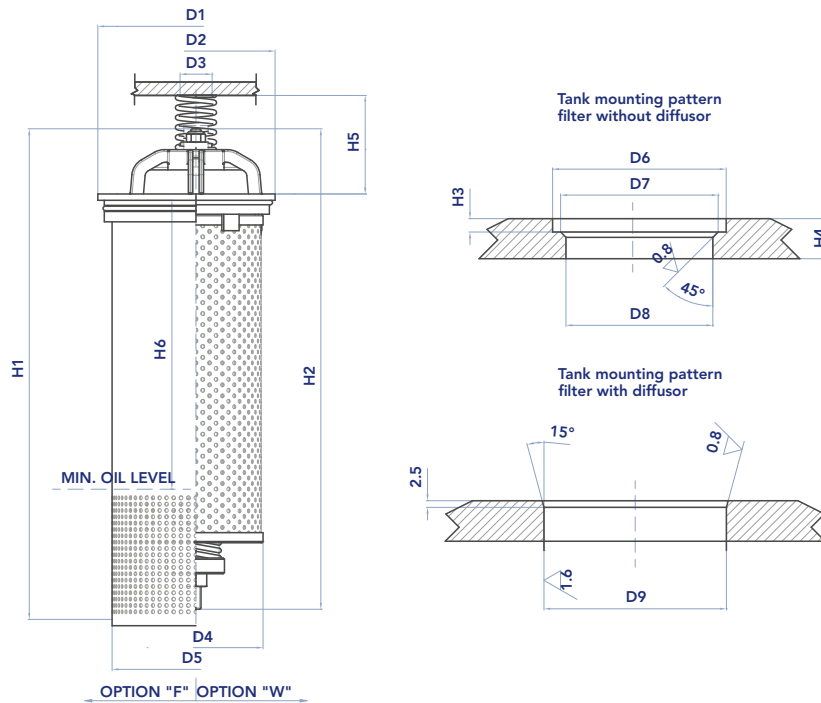
SPARE SEAL KIT

	NBR	FKM
FRG11-12-13-14	521.0063.2	521.0067.2
FRG22-23-24	521.0064.2	521.0068.2
FRG31-32-33-34	521.0065.2	521.0069.2
FRG41-42-43-44	521.0066.2	521.0070.2

SPARE SPRING

FRG11-12-13-14	008.0282.1
FRG22-23-24	008.0269.1
FRG31-32-33-34	008.0275.1
FRG41-42-43-44	008.0283.1

INSTALLATION DRAWING



FILTER HOUSING

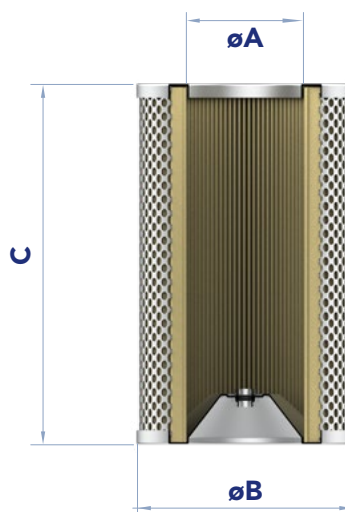
	D1	D2	D3	D4	D5	D6	D7	D8	D9	H1	H2	H3	H4	H5	H6	KG opz F	KG opz W
FRG11	120	87	20	72	89	88	82,5	76	110	245	180	4	12	45	118	1,25	0,70
FRG12	120	87	20	72	89	88	82,5	76	110	245	224	4	12	45	118	1,45	0,90
FRG13	120	87	20	72	89	88	82,5	76	110	295	274	4	12	45	170	1,65	1,00
FRG14	120	87	20	72	89	88	82,5	76	110	395	374	4	12	45	270	2,10	1,30
FRG22	155	125,5	25	106	132	126	123,5	117	145	312	305	5	15	78	150	2,75	1,65
FRG23	155	125,5	25	106	132	126	123,5	117	145	382	375	5	15	78	220	3,20	1,90
FRG24	155	125,5	25	106	132	126	123,5	117	145	587	580	5	15	78	425	4,40	2,50
FRG31	185	150	25	126	165	151	149	139	178	365	351	5	18	100	190	3,85	2,25
FRG32	185	150	25	126	165	151	149	139	178	455	431	5	18	100	270	4,70	2,80
FRG33	185	150	25	126	165	151	149	139	178	555	531	5	18	100	370	5,60	3,20
FRG34	185	150	25	126	165	151	149	139	178	645	619	5	18	100	460	6,20	3,50
FRG41	260	230	40	203	235	231	227	217	250,5	530,5	515	6	20	140	205	10,20	7,20
FRG42	260	230	40	203	235	231	227	217	250,5	745,5	730	6	20	140	420	14,00	9,50
FRG43	260	230	40	203	235	231	227	217	250,5	1025,5	1010	6	20	140	700	20,00	14,00
FRG44	260	230	40	203	235	231	227	217	250,5	1290,5	1275	6	20	140	965	26,00	19,00

FRG

RETURN FILTERS

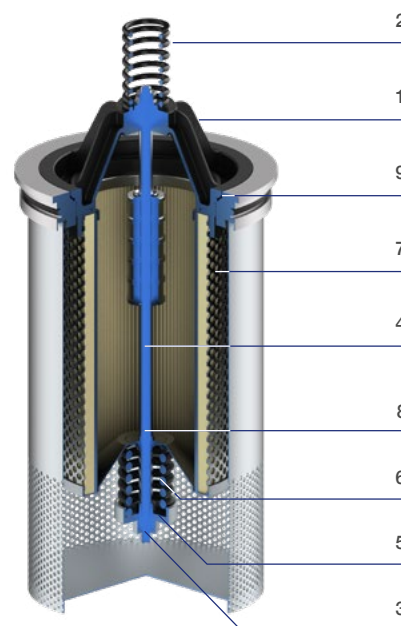
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)		
					Media F+	MediaH+	Media C+
ERF11	45	72	106	0,25	770	1.250	460
ERF12	45	72	150	0,35	1.170	1.800	650
ERF13	45	72	200	0,45	1.570	2.450	880
ERF14	45	72	300	0,60	2.370	3.600	1.320
ERF22	72	106	190	0,75	3.900	4.600	1.500
ERF23	72	106	260	1,00	5.400	6.400	2.050
ERF24	72	106	465	1,50	9.700	11.800	3.670
ERF31	92	126	210	1,15	5.500	6.650	2.250
ERF32	92	126	290	1,50	7.700	9.200	3.150
ERF33	92	126	390	1,90	10.400	12.400	4.250
ERF34	92	126	480	2,20	12.800	15.400	5.250
ERF41	157	203	330	3,90	17.900	22.100	6.400
ERF42	157	203	545	5,20	30.000	37.000	10.800
ERF43	157	203	825	9,00	45.200	55.500	16.200
ERF44	157	203	1090	13,00	60.000	74.000	21.800



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Remove the complete filter by upper handle (1) and if necessary remove the spring (2). Remove the cover (2).
- 3) Unscrew the nut (3) from tie-rod (4) and remove the spring holder (5) and the spring (6).
- 4) Remove the dirty filter element (7).
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 authorized 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 (8) with oil.
- 7) Insert the clean element on the tie-rod (4) with care.
- 8) Assembly the spring (6), spring holder (5) and tighten the nut (3) on the tie-rod (4) until it stops, with a tightening torque of 15 Nm +3/0.
- 9) Check the handle O-ring (9) condition and lubricate with oil. If damaged, check the catalogue or contact the customer care service.
- 10) Insert the complete filter into its seat.



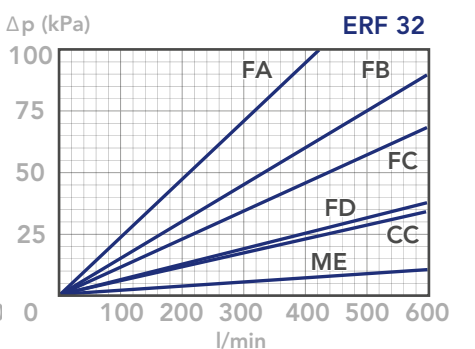
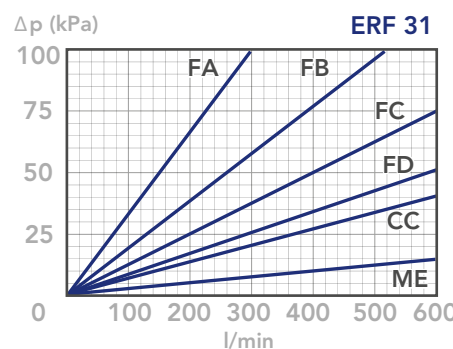
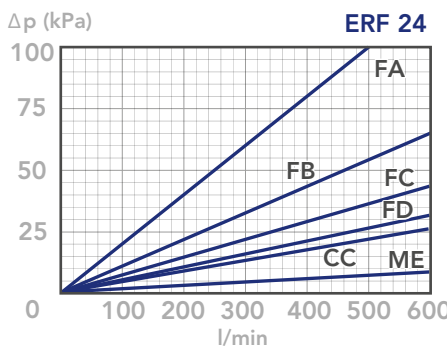
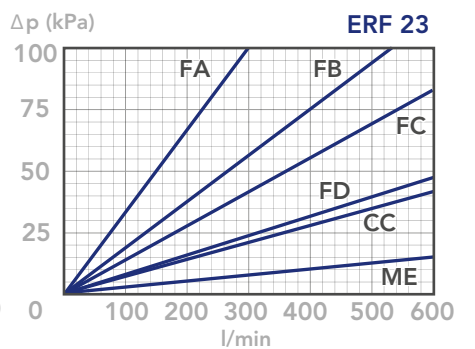
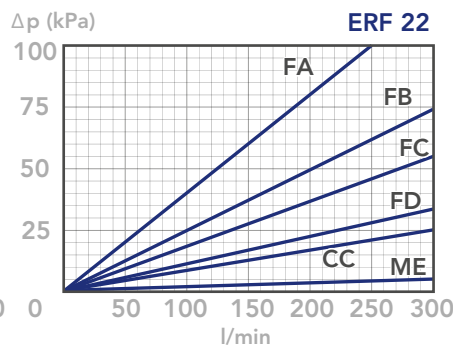
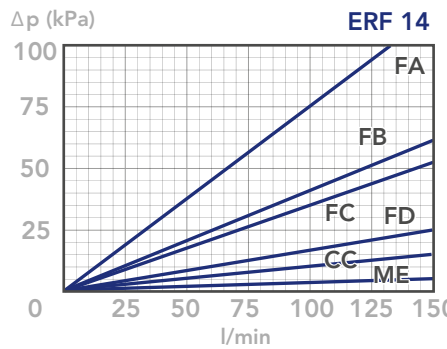
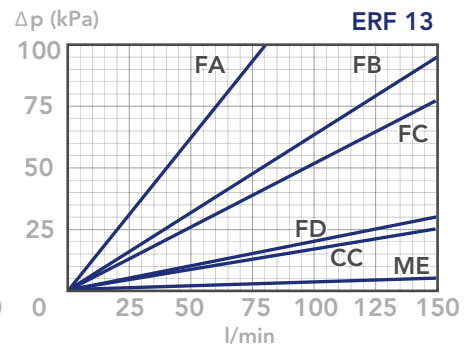
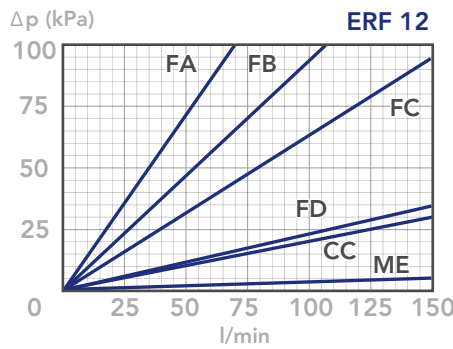
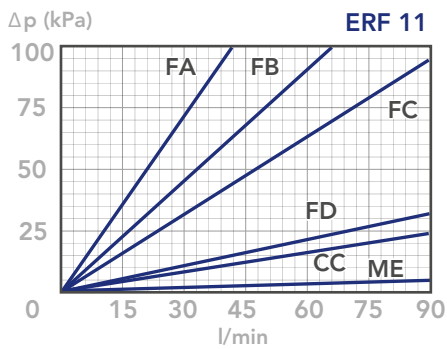


PRESSURE DROP CURVES (Δp)

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) and should never exceed 1/3 of the bypass valve setting.

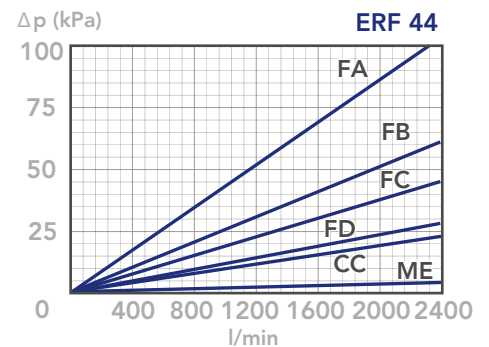
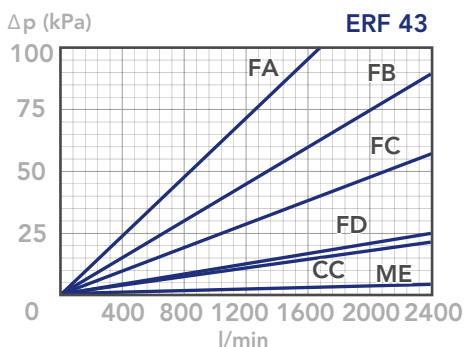
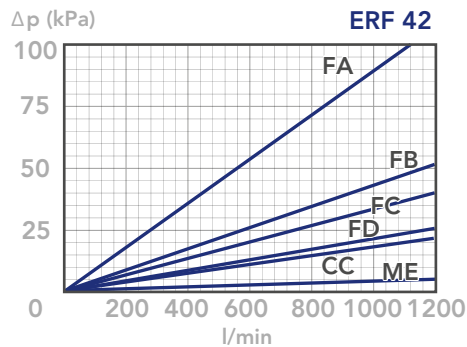
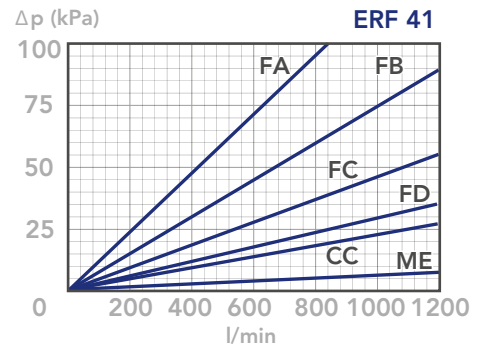
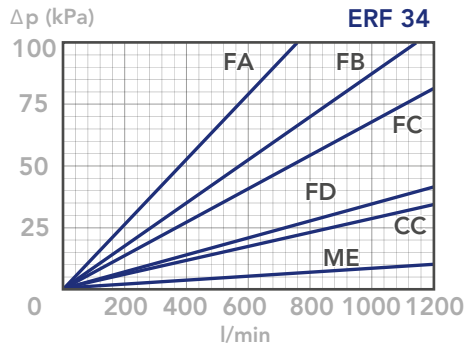
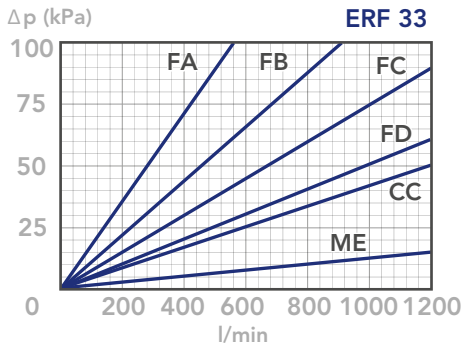
CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, CC AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)



FRG

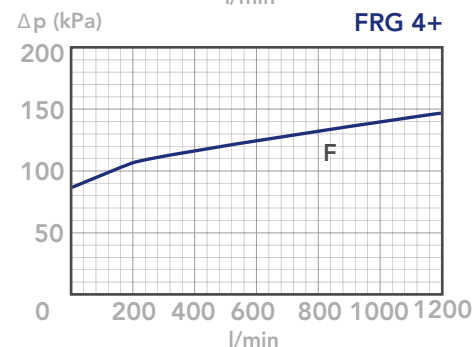
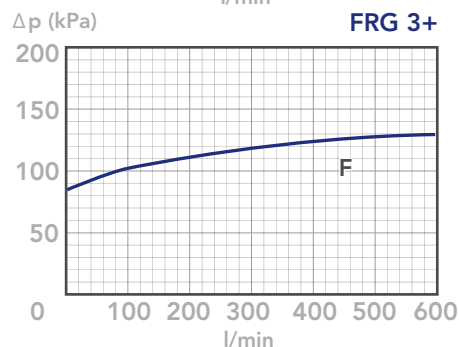
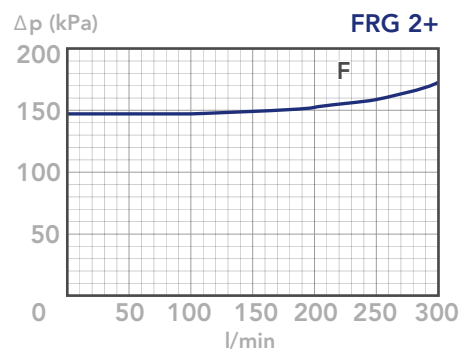
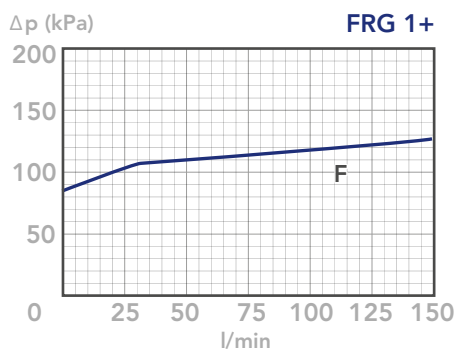
RETURN FILTERS

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



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.



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

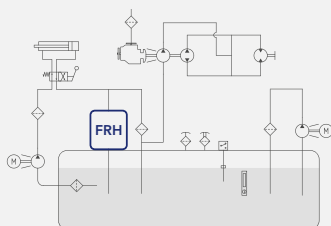
From -25° to +110° C

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



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						
			P = SAE flange 3000 psi, double port	P	P				
12			PORT SIZE						
			12 = 1"1/2	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
FRH31 - 32 - 33 - 41 - 42	521.0022.2	521.0059.2

SPARE SPRING

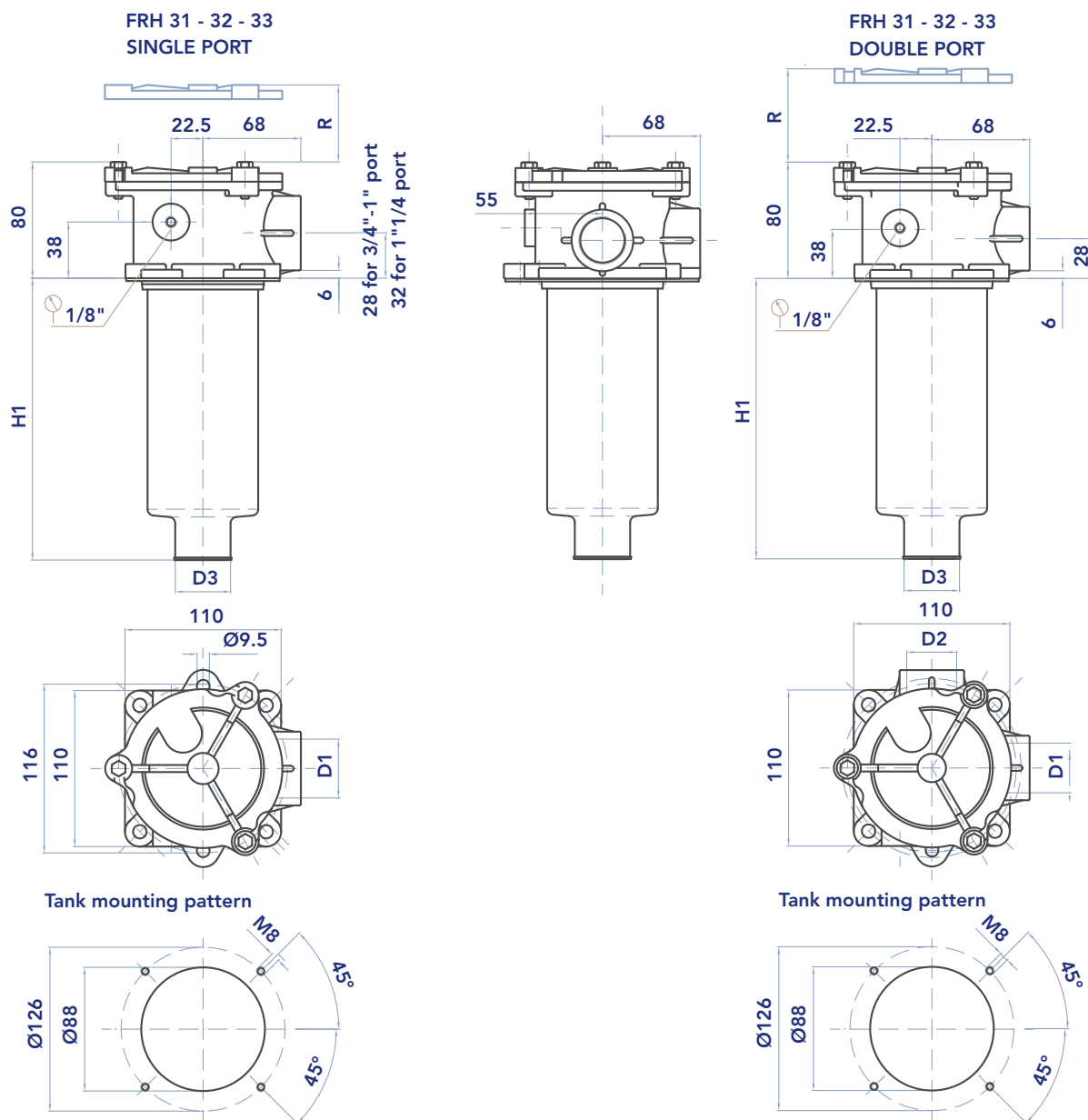
FRH31 - 32 - 33 - 41 - 42	008.0267.1
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FRH

RETURN FILTERS



INSTALLATION DRAWING



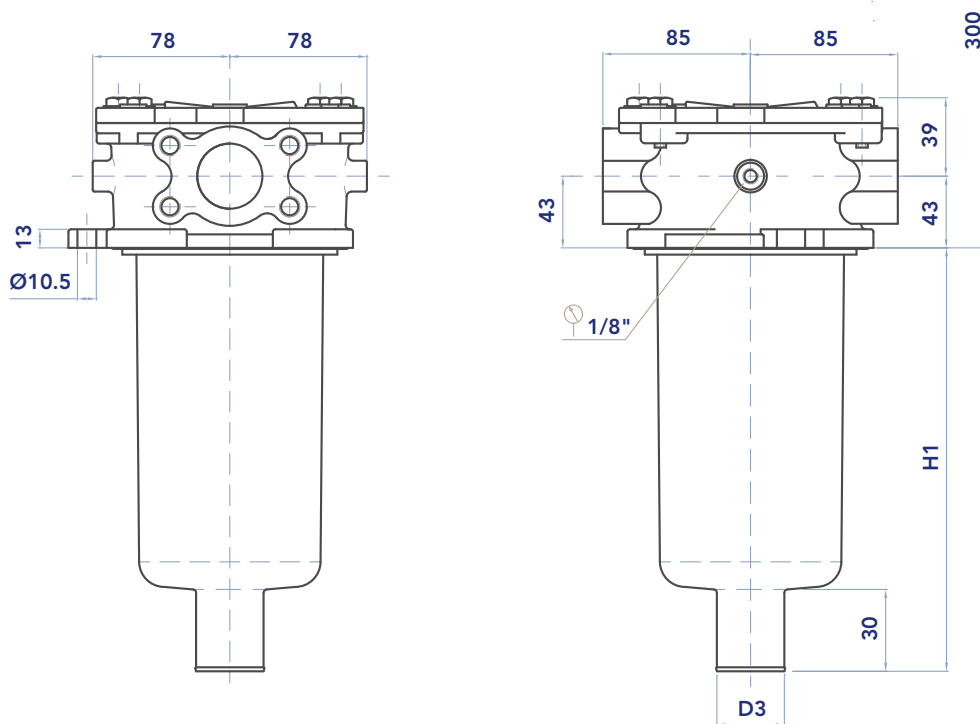
FILTER HOUSING

	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

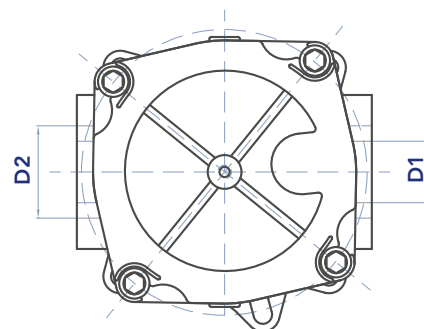
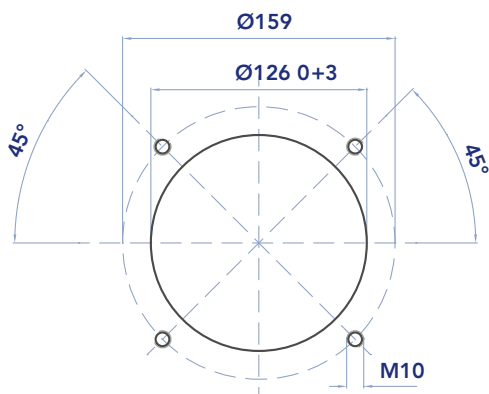


INSTALLATION DRAWING

FRH 41 - 42



Tank mounting pattern



FILTER HOUSING

	D1	D2	D3	H1	R	Kg
FRH41	1"1/2	1"1/2	40	248	289	2,40
FRH42	1"1/2	1"1/2	40	265	306	2,60

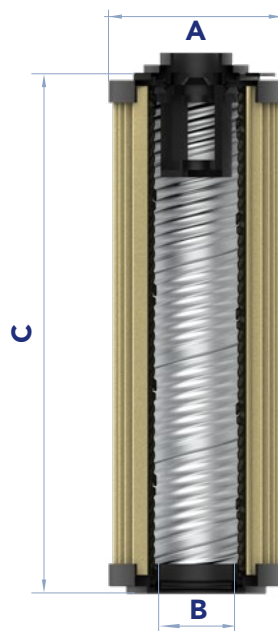
FRH

RETURN FILTERS



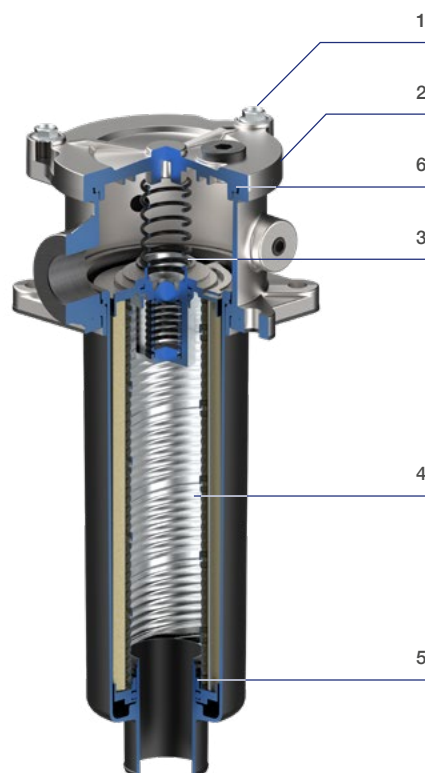
FILTER ELEMENT

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

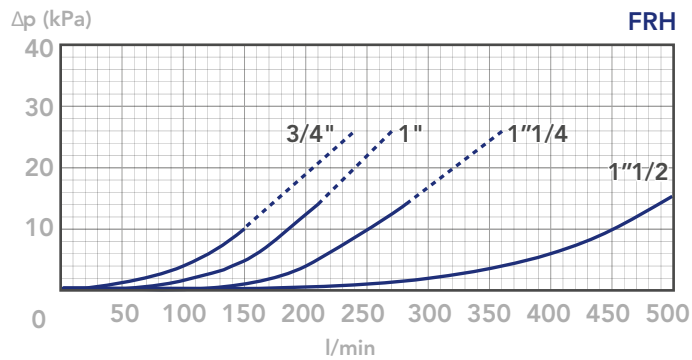


PRESSURE DROP CURVES (ΔP)

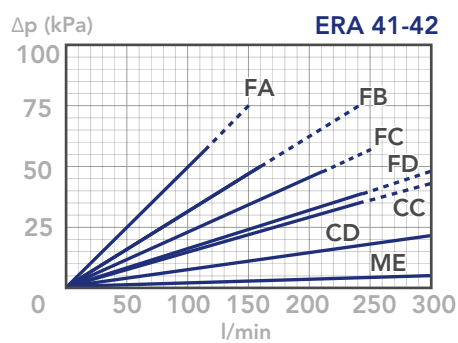
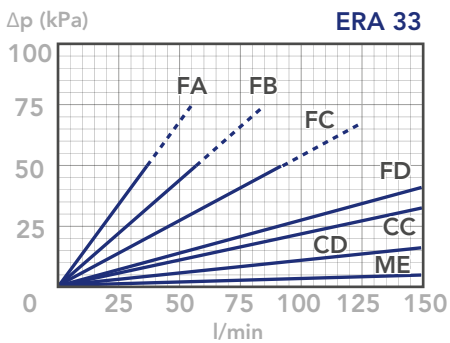
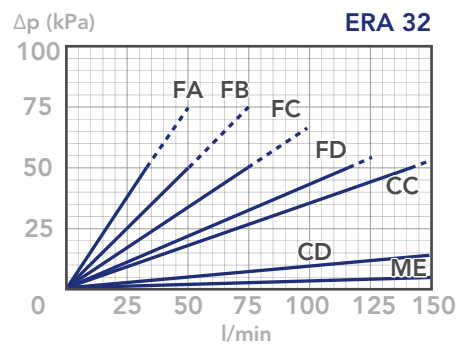
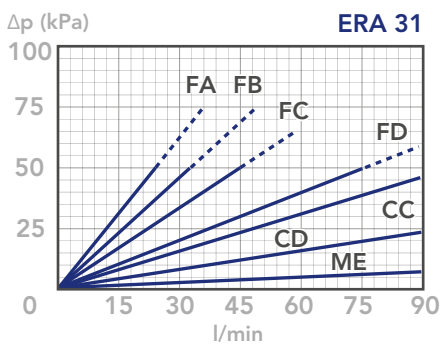
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

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)



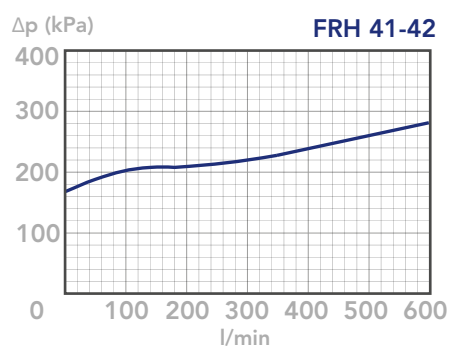
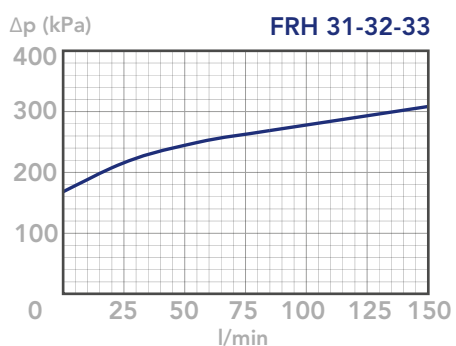
FRH

RETURN FILTERS



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.



GRF

RETURN FILTERS



DESCRIPTION

Ecofriendly in-out tank top return filter

MATERIALS

Head and cover: Aluminum alloy
Diffusor: Zinc plated steel
Element support: Aluminum alloy
Magnetic core: Syntherized magnetic material
Seals: NBR Nitrile (FKM Fluoroelastomer on request)
Indicator housing: Brass

PRESSURE

Max. working: 1 MPa (10 bar)
Collapse, differential for the filter element (ISO 2941):
1 MPa (10 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 1200 l/min

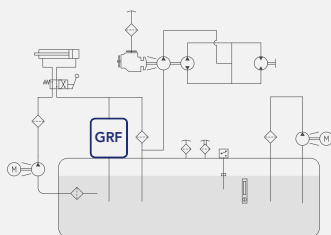
WORKING TEMPERATURE

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



GRF

RETURN FILTERS

ORDERING AND OPTION CHART

G	R	F	COMPLETE FILTER FAMILY		FILTER ELEMENT FAMILY	I	R	F
			SIZE & LENGTH	34	SIZE & LENGTH			
			PORT TYPE					
			F = SAE flange 3000 psi	F				
			PORT SIZE					
			16 = 2"	16				
			20 = 2"1/2"	20				
		F	BYPASS VALVE					
			F = 170 kPa (1,7 bar)	F				
			SEALS		SEALS			
			N = NBR Nitrile	N				
			F = FKM Fluoroelastomer	F				
			FormulaUFI MEDIA		FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 μm _(c) β>1.000	FA				
			FB = FormulaUFI.MICRON 7 μm _(c) β>1.000	FB				
			FC = FormulaUFI.MICRON 12 μm _(c) β>1.000	FC				
			FD = FormulaUFI.MICRON 21 μm _(c) β>1.000	FD				
			CLOGGING INDICATOR (**)					
			05 = nr. 2 x 1/8" ports, plugged	05				
			30 = manometer, scale 0 - 600 kPa (0 - 6 bar)	30				
			P4 = SPDT, pressure switch	P4				
			03 = port for differential indicator, plugged	03				
			5B = visual differential 130 kPa (1,3 bar)	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B				
			7B = indicator 6B with LED	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0				
			ACCESSORIES					
			W = without accessory	W				
			F = with diffusor	F				
			ACCESSORIES					
			W = without accessory	W				
			M = magnetic core	M				

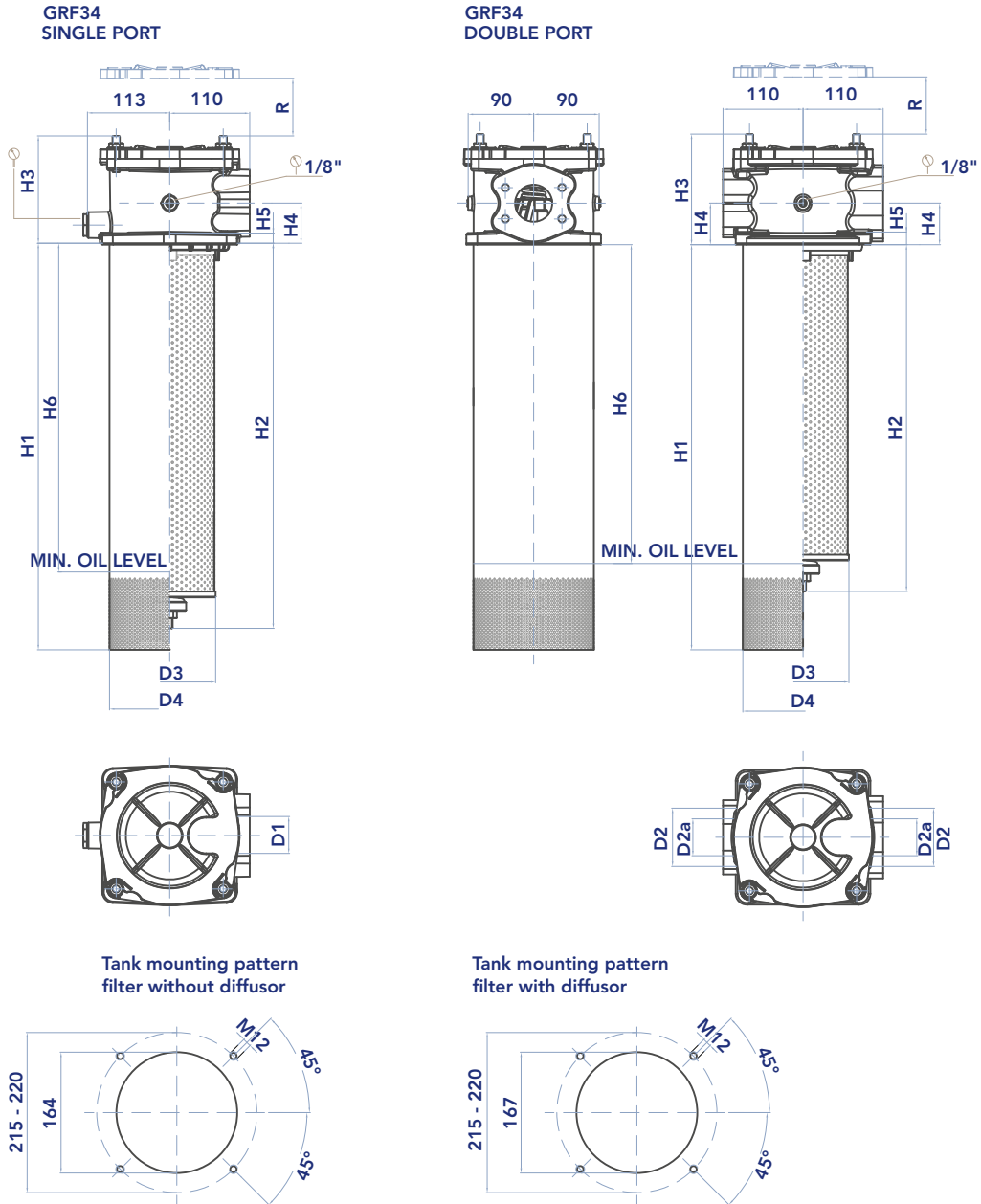
** When the filter is ordered with FKM seals, the first digit of the indicator code is a letter (please see Clogging Indicator Chapter for further details)

SPARE PARTS

FILTER HOUSING							FILTER ELEMENT							CLOGGING INDICATOR							ACCESSORY																						
GRF																																											



INSTALLATION DRAWING



FILTER HOUSING

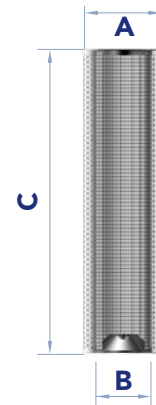
	D1	D2	D2a	D3	D4	H1	H2	H3	H4	H5	H6	R	Kg
GRF34	2" - 2"1/2	2" - 2"1/2	1"1/2 - 2"	126	165,5	543	530	155	55	14	460	620	9,10

GRF

RETURN FILTERS

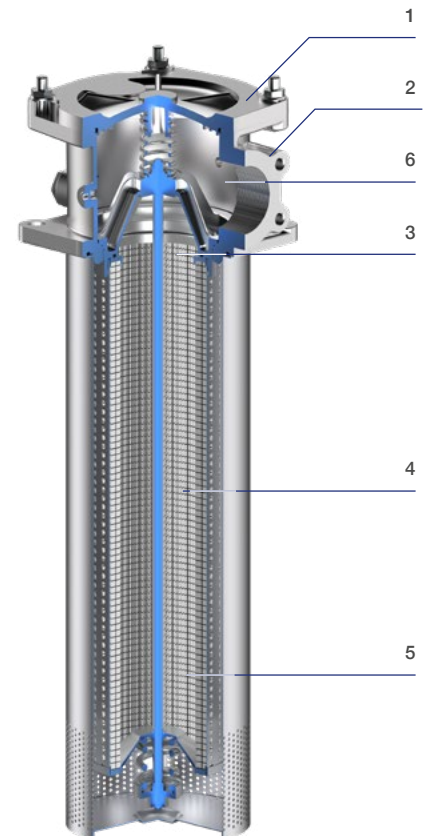
FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²) Media F+
IRF34	90	120,8	480	0,75	10.810



MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the nuts (1) on the cover (2). N.B. it is not necessary to disassemble the nuts, use the slots on the cover.
- 3) Turn the cover (2) clockwise and remove it.
- 4) Extract the filter element using the handle (3).
- 5) At the bottom of the element, unscrew the nut (4) from the tie-rod (5) locking the nut (6) with a wrench to prevent rotation of the tie-rod. Remove the spring holder washer (7) and the spring (8).
- 6) Remove the dirty filter element (9).
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 authorized Companies.
- 7) Check the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 8) Insert the clean element (9) in the perforated pipe (10) until it stops on lower cap (10a).
- 9) Assembly the spring (8), the spring holder (7) and screw the nut (4) on the tie-rod (5) until it stops.
- 10) Check the correct position and the condition of handle O-ring gasket (11). Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 11) Replace the filter element assembly (with the handle) into the housing with the upper spring (12).
- 12) Check the correct positioning and the condition of the O-ring gasket (13) of the cover (2) and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 13) Position the cover (2) and tighten the nuts (1) until it stops.



Accessories:

Clogging indicator

If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Indicators with thread M20x1,5: Lubricate the O-ring gaskets and tighten until it stops, with a tightening torque of 40 Nm +5/0.

Indicators with conical thread 1/8": Apply a thread-sealing and screw until tight. N.B. An over-tightening can damage the thread.



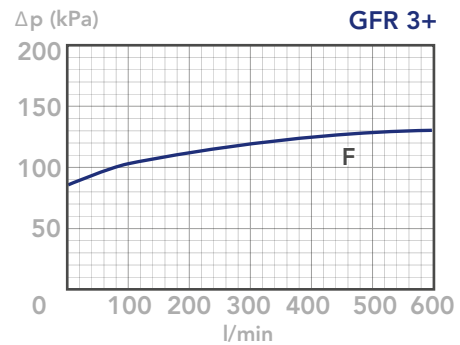
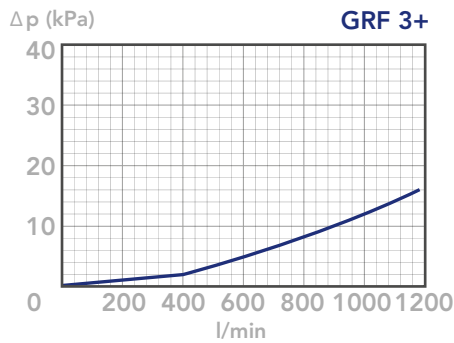
PRESSURE DROP CURVES (ΔP)

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

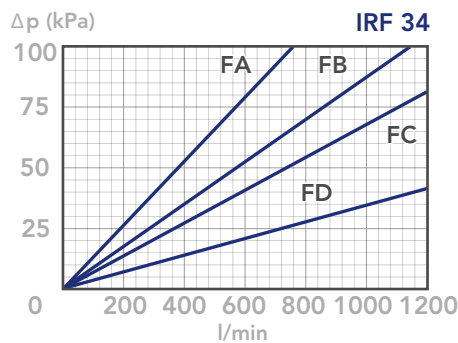
FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)

Rate and it must be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

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.



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



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.

OFF-LINE FILTERS



FLUSHING AND HYDRAULIC-FLUID TRANSFER

Application:

Off-line filters are used to maintain “Roll-Off-Cleanliness” in the hydraulic-fluid circuit when a new machine leaves the manufacturing assembly-line or undergoes repair or re-build.

Independent of the main lubrication system, offline filtration provides isolated treatment of fluids before they are introduced back into the equipment. While still providing continuous flow, this extra stage of filtration prevents particulates and water from continuously circulating through engine systems, gear reducers, and oil reservoirs. Offline filtration ensures a high degree of lubricant cleanliness that reduces premature wear of machinery and optimizes equipment performance.

User Benefits:

- Off-line filters grant an added degree of lubrication cleanliness
- Off-line filtration represents an enhanced best practice for fluid transfer
- Roll-off filtration provides an additional opportunity for lubricant inspection
- Off-line filters are available in multiple configurations and can be portable or permanent
- Off-line filtration units can be run continuously or as-needed



FOF

OFF-LINE FILTERS

DESCRIPTION

Off-line filter, inside to outside filtration

MATERIALS

Head and covers: Aluminum alloy

Bowl: Steel

Element Holder: Polyamide FOF2

Aluminum Alloy FOF3 and FOF4

Seals: NBR Nitrile

FKM Fluoroelastomer on request

Indicator housing: Brass

PRESSURE

Max. working: 1 MPa (10 bar)

Collapse, differential for the filter element (ISO 2941):

3 MPa (30 bar)

BYPASS VALVE

Setting: 170 kPa (1,7 bar) \pm 10%

FLOW RATE

Qmax 1500 l/min

WORKING TEMPERATURE

From -25° to +110° C

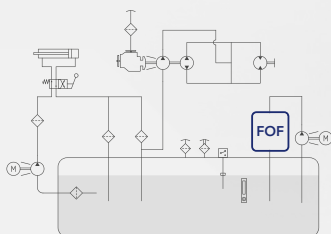
COMPATIBILITY (ISO 2943)

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



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FOF

OFF-LINE FILTERS

ORDERING AND OPTION CHART

F	O	F	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	R	F
			SIZE & LENGTH	24	34	36	41	44	SIZE & LENGTH			
			PORT TYPE									
			B = BSP thread	B	-	-	-	-				
			N = NPT thread	N	-	-	-	-				
			S = SAE thread	S	-	-	-	-				
			F = SAE flange 3000 psi	F	F	F	F	F				
			PORT SIZE									
			12 = 1" 1/2	12	-	-	-	-				
			16 = 2"	-	16	16	-	-				
			20 = 2" 1/2	-	20	20	-	-				
			24 = 3"	-	-	-	24	24				
			32 = 4"	-	-	-	32	32				
			BYPASS VALVE									
			W = without bypass	W	W	W	W	W				
			F = 170 kPa (1,7 bar)	F	F	F	F	F				
			SEALS						SEALS			
			N = NBR Nitrile	N	N	N	N	N				
			F = FKM Fluoroelastomer	F	F	F	F	F				
			FormulaUFI MEDIA						FormulaUFI MEDIA			
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FA	FA	FA	FA	FA				
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FB	FB	FB	FB	FB				
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FC	FC	FC	FC	FC				
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$	FD	FD	FD	FD	FD				
			CC = FormulaUFI.CELL 10 μm $\beta > 2$	CC	CC	CC	CC	CC				
			ME = FormulaUFI.WEB 60 μm	ME	ME	ME	ME	ME				
			WR = FormulaUFI.H2O (*)	WR	WR	WR	WR	WR				
			CLOGGING INDICATOR**									
			03 = port, plugged	03	03	03	03	03				
			5B = visual differential 130 kPa (1,3 bar)	5B	5B	5B	5B	5B				
			6B = electrical differential 130 kPa (1,3 bar)	6B	6B	6B	6B	6B				
			7B = indicator 6E with LED	7B	7B	7B	7B	7B				
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C	T0	T0	T0	T0	T0				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			M = magnetic core	M	M	M	M	M				
			ACCESSORIES									
			W = without accessory	W	W	W	W	W				
			B = mounting brackets	B	B	B	B	B				

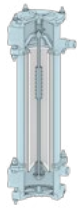
* FormulaUFI.H2O, water removal media, for further details see "Hydro dry" chapter

** 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 PARTS

FILTER HOUSING



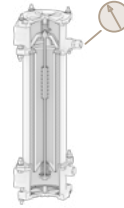
BOF

FILTER ELEMENT



ERF

CLOGGING INDICATOR



ACCESSORY



SPARE SEAL KIT

	NBR	FKM
FOF24	521.0101.2	521.0102.2
FOF34 - 36	521.0103.2	521.104.2
FOF41 - 44	521.0105.2	521.0106.2

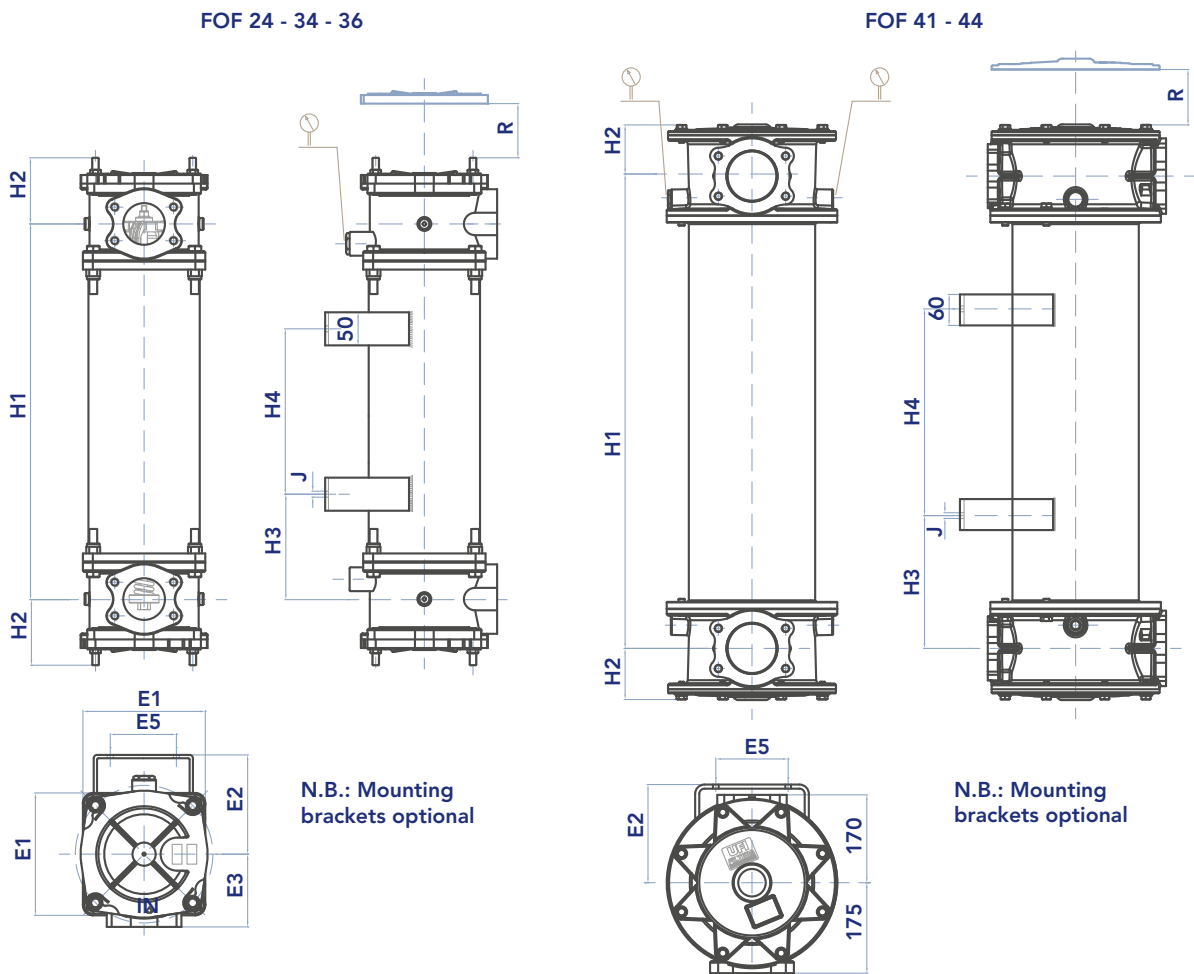
SPARE SPRING

FOF24	008.0269.1
FOF34 - 36	008.0275.1
FOF41 - 44	008.0283.1

FOF

OFF-LINE FILTERS

INSTALLATION DRAWING



FILTER HOUSING

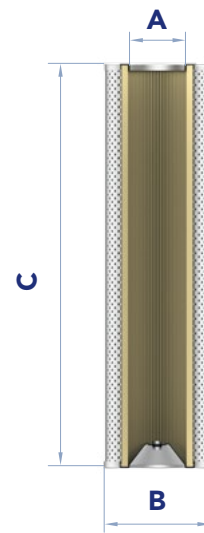
	PORT SIZE	E1	E2	E3	E5	H1	H2	H3	H4	J	R	kg
FOF24	1" 1/2	150	132	90	70	513	93	130	250	9	580	18,0
FOF34	2" - 2" 1/2	185	150	110	100	568	82	135	250	9	620	22,0
FOF36	2" - 2" 1/2	185	150	110	100	770	82	165	250	9	820	27,9
FOF41	3" - 4"	-	190	-	140	420	99	160	100	11	600	38,4
FOF44	3" - 4"	-	190	-	140	1180	99	340	500	11	1360	66,4



FILTER ELEMENT

	A	B	C	Kg	AREA (cm ²)			
					Media F+	Media CC	Media ME	Media WR
ERF24	72	106	465	1,50	9.700	11.800	3.670	6.749
ERF34	92	126	480	2,20	12.800	15.400	5.250	8.682
ERF36	92	126	680	3,00	18.200	19.500	7.700	12.330
ERF41	157	203	330	3,90	17.900	22.100	6.400	13.520
ERF44	157	203	1090	13,00	60.000	74.000	21.800	22.422

The used filter elements cannot be cleaned and are classified as “Dangerous waste material”. They must be disposed according to local laws by authorized Companies.
Verify that the Company you choose has the expertise and authorization to dispose this type of waste material.



MAINTENANCE

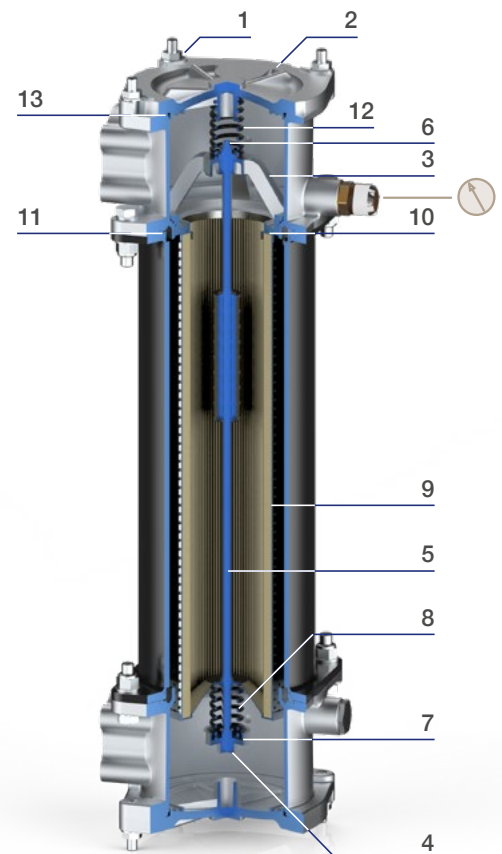
- 1) Stop the system and verify there is no pressure in the filter.
- 2) Loosen the nuts (1) on the cover (2). N.B. it is not necessary to disassemble the nuts, use the slots on the cover.
- 3) Turn the cover (2) clockwise and remove it.
- 4) Extract the filter element using the handle (3).
- 5) At the bottom of the element, unscrew the nut (4) from the tie-rod (5) locking the nut (6) with a wrench to prevent rotation of the tie-rod. Remove the spring holder washer (7) and the spring (8).
- 6) 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 authorized Companies.
- 7) Verify the filter element part number on the filter label or in the ordering and option chart. Use only original spare parts.
- 8) Check the correct positioning and the condition of the O-ring (10) between the handle and the element. Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 9) Insert the clean element (9) on the tie-rod (5) handling with care.
- 10) Assembly the spring (8), the spring holder (7) and screw the nut (4) on the tie-rod (5) until it stops.
- 11) Check the correct position and the condition of handle O-ring gasket (11). Clean and lubricate with oil. If damaged, check the seal kit part number in the catalogue or contact the customer care service.
- 12) Replace the filter element assembly (with the handle) into the housing with the upper spring (12).
- 13) Check the correct positioning and the condition of the O-ring gasket (13) of the cover (2) and lubricate with oil. If damaged, verify the seal kit part number in the catalogue or contact the customer care service.
- 14) Position the cover (2) and tighten the nuts (1) until it stops.

Accessories:

Clogging indicator.

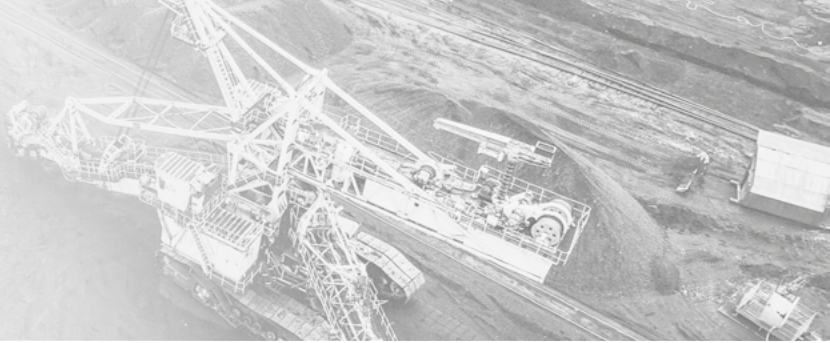
If damaged, unscrew and replace it (check the part number in the ordering and option chart).

Apply a thread-sealing and screw until tight. N.B. An overtightening can damage the thread.



FOF

OFF-LINE FILTERS

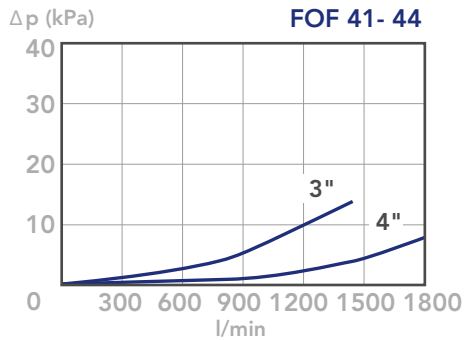
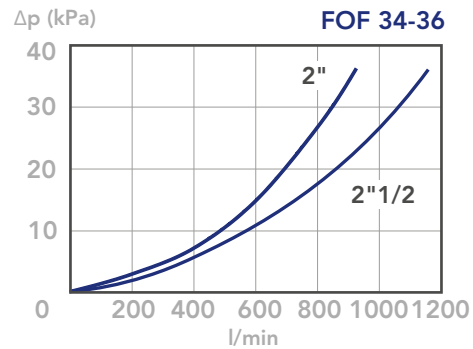
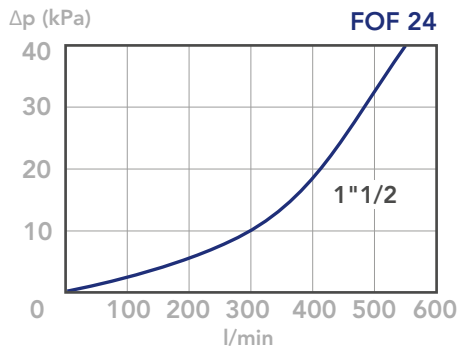


PRESSURE DROP CURVES (ΔP)

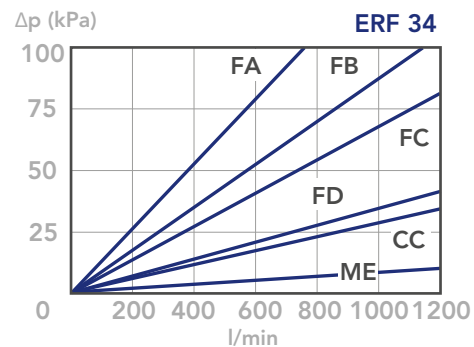
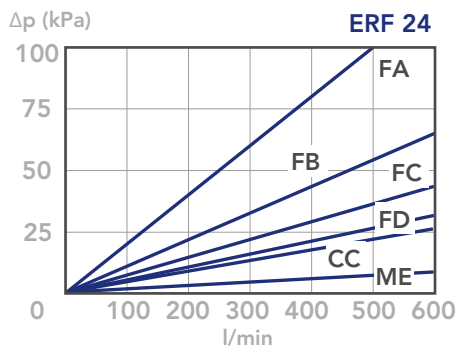
The “Assembly Pressure Drop (Δp)” is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

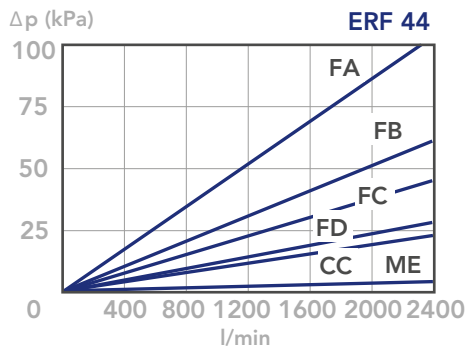
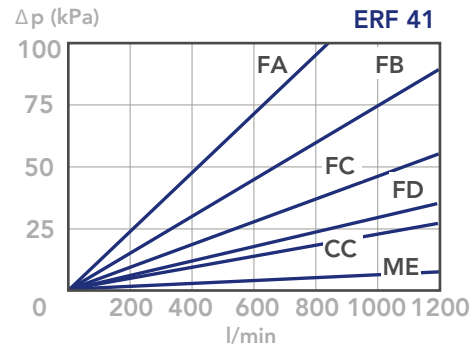
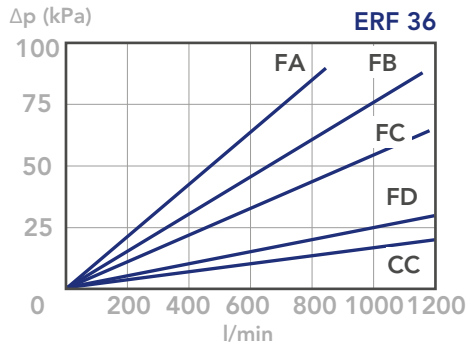
be lower than 50 kPa (0,5 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



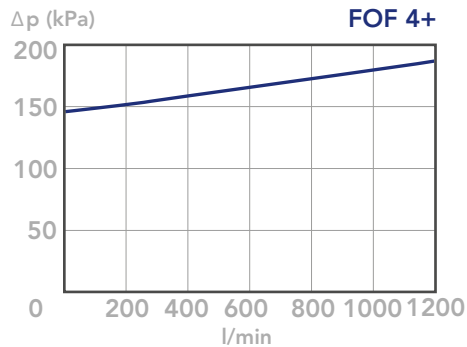
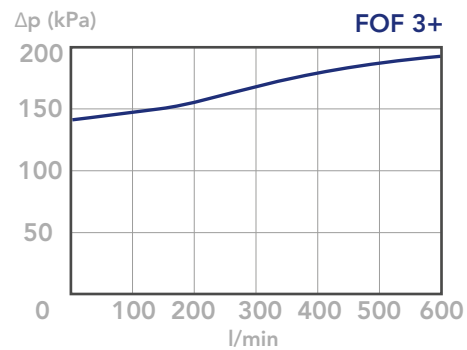
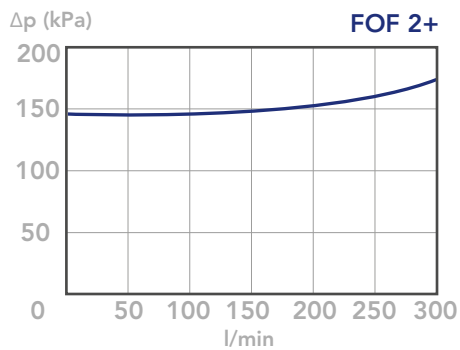
CLEAN FILTER ELEMENT PRESSURE DROP WITH F+, CC AND ME MEDIA
(depending both on the internal diameter of the element and on the filter media)





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.



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UOW

OFF-LINE FILTERS

DESCRIPTION

Portable filling and filtration unit with green element
Inlet and Outlet
flexible hose, 2 m long with rigid end 0,5 m long
“Y” type filter for pump protection
Gear pump 40 l/min with inbuilt
1 MPa (10 bar) relief valve
Electric motor
three phase 380V - 0,75 kW
1450 rpm - IP54
Double handle for easy
and safe transportation
Total weight 50 kg

FLOW RATE

Qmax 40 l/min

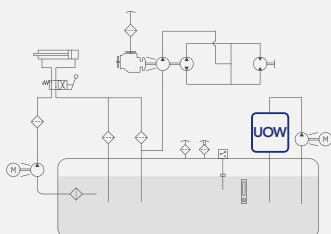
HOW IT WORKS

The mobile filtration unit is used for cleaning the fluid off line, for the transfer, filling and topping up of the oil tank and for any roll-off operation. The UOW mobile off-line filtration unit filters hydraulic fluid at low-pressure with the aid of a self-contained pump, motor and filter. The construction design is compact and user-friendly, and guarantees high filtration performances and long life filter element. The oil returning to the tank-reservoir from the return line is filtered by the UOW unit, reducing drastically the “clean-up time.” The filter can be fitted with a visual or electrical clogging indicator, also of differential type. The filter element is designed to meet the most demanding requirements of respect for the environment and reduction of polluting components of the hydraulic system. The filter element, having a wide filtration area and excellent efficiency features, is normally available with FormulaUFI. MICRON, from 5 to 21 $\mu\text{m(c)}$ (Bx > 1.000) and FormulaUFI.H2O. The mobile filtration unit includes a detailed use and maintenance instruction manual, that is available on our website in the Download section.

Filter element and clogging indicator must be ordered separately



HYDRAULIC DIAGRAM



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

UOW

OFF-LINE FILTERS



ORDERING AND OPTION CHART

U	O	W	WHEELED OIL FILTRATION UNIT
0	4	0	NOMINAL FLOW RATE
			040 = 40 l/min
			ELECTRICAL MOTOR TYPE
			T = three phases (standard)
			M = single phase (optional)
0	0	7 5	NOMINAL POWER
			0075 = 0,75 kW
A	3		VERSION
			A3 = standard version
X	X		ACCESSORIES
			XX = without accessories

Filter element and clogging indicator must be ordered separately
Please refer to the following ordering and option charts

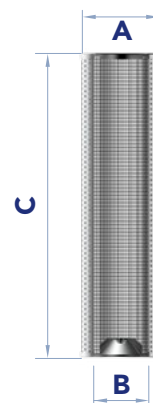
I	R	F	CORELESS FILTER ELEMENT
3	4		SIZE & LENGTH
		N	SEALS
			N = NBR Nitrile
			FormulaUFI MEDIA
			FA = FormulaUFI.MICRON 5 $\mu\text{m}_{(c)}$ $\beta > 1.000$
			FB = FormulaUFI.MICRON 7 $\mu\text{m}_{(c)}$ $\beta > 1.000$
			FC = FormulaUFI.MICRON 12 $\mu\text{m}_{(c)}$ $\beta > 1.000$
			FD = FormulaUFI.MICRON 21 $\mu\text{m}_{(c)}$ $\beta > 1.000$
			WR = FormulaUFI.H ₂ O*
			CLOGGING INDICATOR
			5B = visual differential 130 kPa (1,3 bar)
			6B = electrical differential 130 kPa (1,3 bar)
			7B = indicator 6E with LED
			T0 = elect. diff. 130 kPa (1,3 bar) with thermostat 30°C

* Water removal media, see "Hydro dry" chapter.



FILTER ELEMENT

	AREA (cm ²)					
	A	B	C	Kg	Media F+	Media WR
IRF34	90	120,8	480	0,75	10.810	7.567





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HYDRO DRY

OFF-LINE FILTERS

WATER REMOVAL ELEMENTS

The hydro-dry filter elements remove up to 80% of the free water present in the oil.

The hydro-dry elements use the FormulaUFI.H2O filter media, working by absorption and ensuring a high water retention capacity.

To get the maximum water removal efficiency the hydro-dry elements must be used at constant flow rate and low and constant pressure, i.e. the ideal use is in a off-line filter, a low pressure filter, as the FMA series, or in a filtration trolley.

The hydro-dry elements remove also the solid contamination ($\beta_{21(c)} > 1.000$), but we recommend to remove the main part of solid contamination upstream, using a dedicated return-line filter. The hydro-dry elements are available in standard dimensions, to fit standard filter housings.

A clogging indicator set at 130 kPa (1,3 bar) on the filter housing is recommended for proper replacement of the clogged element.



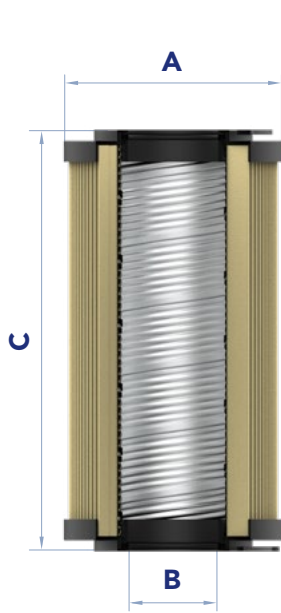
HYDRO DRY

OFF-LINE FILTERS



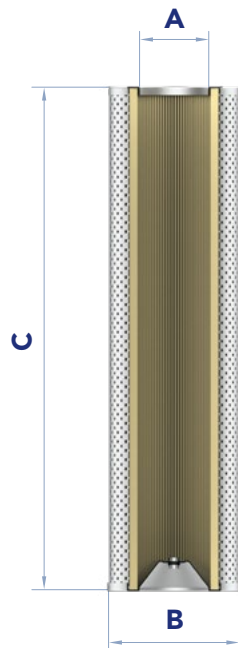
HYDRO-DRY ELEMENTS ERD SERIES

Fit the FRD series filter housings.



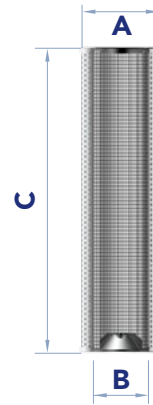
HYDRO-DRY ELEMENTS ERF SERIES

Fit the FOF series filter housings and the UOW filtration unit



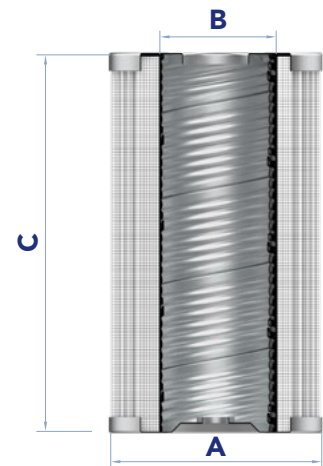
HYDRO-DRY ELEMENTS IRF SERIES

Fit the UOW filtration unit Green Version



HYDRO-DRY ELEMENTS EMA SERIES

Fit the FMA series filter housings



FILTER ELEMENT

	H2O retention capacity (ml)		Recommended max flow rate (l/min)	A	B	C	KG	AREA (cm ²) Media M+
	with oil 30 cSt	with oil 98 cSt						
EMA11NWR	50	34	6	70	29,5	88	0,21	669
EMA21NWR	78	52	8	70	29,5	134	0,23	1.036
EMA22NWR	160	106	15	95	41	175	0,50	2.112
EMA31NWR	239	159	20	140	65,5	145	0,73	3.181
EMA32NWR	343	229	25	140	65,5	205	0,92	4.574
ERD31NWR	60	45	8	70	34	130	0,25	1.006
ERD41NWR	240	170	20	99	51	211	0,70	3.801
ERD51NWR	500	350	35	130	74	251	1,50	7.493
ERD61NWR	1000	750	90	130	74/85	500	2,00	13.634
ERF24NWR	500	350	50	72	106	465	1,50	6.749
ERF34NWR	650	450	70	92	126	480	2,20	8.682
IRF34NWR	550	400	60	90	120,8	480	0,75	7.567
ERF36NWR	900	600	85	92	126	680	2,60	12.330
ERF41NWR	1000	700	90	157	203	330	3,95	13.520
ERF44NWR	1400	900	120	157	203	1090	6,63	22.420



TRANSMISSION FILTERS



COMBINED RETURN & SUCTION FILTER

Application:

The hydrostatic transmission is a system that generates and transmits power to perform a job through the pressurisation and release of a fluid. In particular, the energy captured by the fluid through the hydraulic pumps is transferred to the transmission of a vehicle. Hydrostatic transmissions are typically used in heavy-duty applications.

The filter is a key part of the transmission system, designed to prevent metal shavings from the gears, and other dirt and debris, from contaminating the transmission fluid. Transmission filters also remove the shavings deriving from the general wear of the machine. Combined Return & Suction Filters replace the need for suction- or pressure filters for the charge-pump in closed-loop

hydrostatic-drive circuits and for return filters in the open-loop hydraulic circuit (Split transmissions).

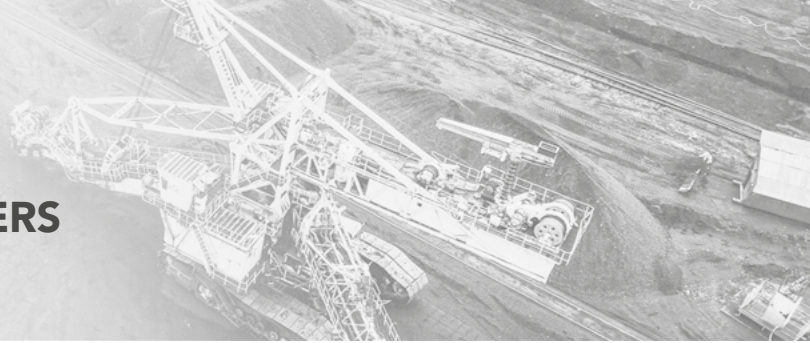
User Benefits:

- Only one filter for both circuits that, thanks to a lightweight construction, guarantees space-saving
- Less piping required and fewer potential leakage points
- The total oil volume is filtered in the return line
- Improved charge-pump protection, as the supplied oil is already pre-filtered
- Excellent cold start
- Simplified maintenance & easy filter element removal, with retained contamination



FTA-FTB

TRANSMISSION FILTERS



DESCRIPTION

Hydrostatic transmission filter

MATERIALS

Head: Aluminum alloy
Cover: Polyamide FTA-FTB2
Aluminum alloy FTA-FTB3
Bowl: Steel
Seals: NBR Nitrile
Indicator housing: Brass

PRESSURE

Max working: 1 MPa (10 bar)
Collapse, differential for the filter element: 1 MPa (10 bar)

BYPASS VALVE

Setting: 250 kPa (2,5 bar) \pm 10%

FLOW RATE

Qmax 240 l/min

WORKING TEMPERATURE

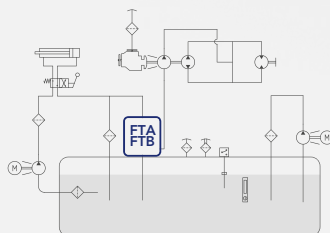
From -25° to +110° C

COMPATIBILITY (ISO 2943)

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

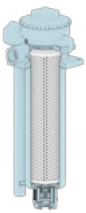
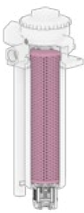
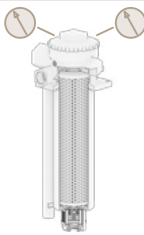
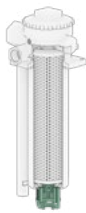
FTA-FTB

TRANSMISSION FILTERS

ORDERING AND OPTION CHART

F	T	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY				E	T	A
		A = with internal bypass										
		B = with external bypass										
		SIZE & LENGTH	23	31	32	33	SIZE & LENGTH					
		B PORT TYPE										
		B = BSP thread	B	B	B	B						
		PORT SIZE										
		D3 = 3/4" suction + 3/4" return	D3	-	-	-						
		D4 = 3/4" suction + 1" return	D4	-	-	-						
		T1 = 1 1/4" return + 2x1" suction	-	T1	T1	T1						
		B BYPASS VALVE										
		B = 170 kPa (1,7 bar)	B	B	B	B						
		N SEALS					SEALS					
		N = NBR Nitrile	N	N	N	N						
		FormulaUFI MEDIA					FormulaUFI MEDIA					
		FC = FormulaUFI.MICRON 12 $\mu_{m(c)}$ >1.000 Δp 2MPa (20 bar)	FC	FC	FC	FC						
		FS = FormulaUFI.MICRON 16 $\mu_{m(c)}$ >1.000 Δp 2MPa (20 bar)	FS	FS	FS	FS						
		CLOGGING INDICATOR										
		05 = nr. 2 x 1/8" ports, plugged	05	05	05	05						
		30 = pressure gauge, rear connection	30	30	30	30						
		P6 = SPDT, pressure switch	P6	P6	P6	P6						
		ACCESSORIES										
		A = pressurisation valve	A	A	A	A						
		B = press. valve + drain hole	B	B	B	B						
		C = press. valve + suction bypass	C	C	C	C						
		D = press. valve + drain hole + suction bypass	D	D	D	D						
		X ACCESSORIES										
		X = no other accessory available	X	X	X	X						

SPARE PARTS ELEMENTS

FILTER HOUSING			FILTER ELEMENT			CLOGGING INDICATOR			ACCESSORIES					
														
B	T		B	N		X			E	T	A	N		

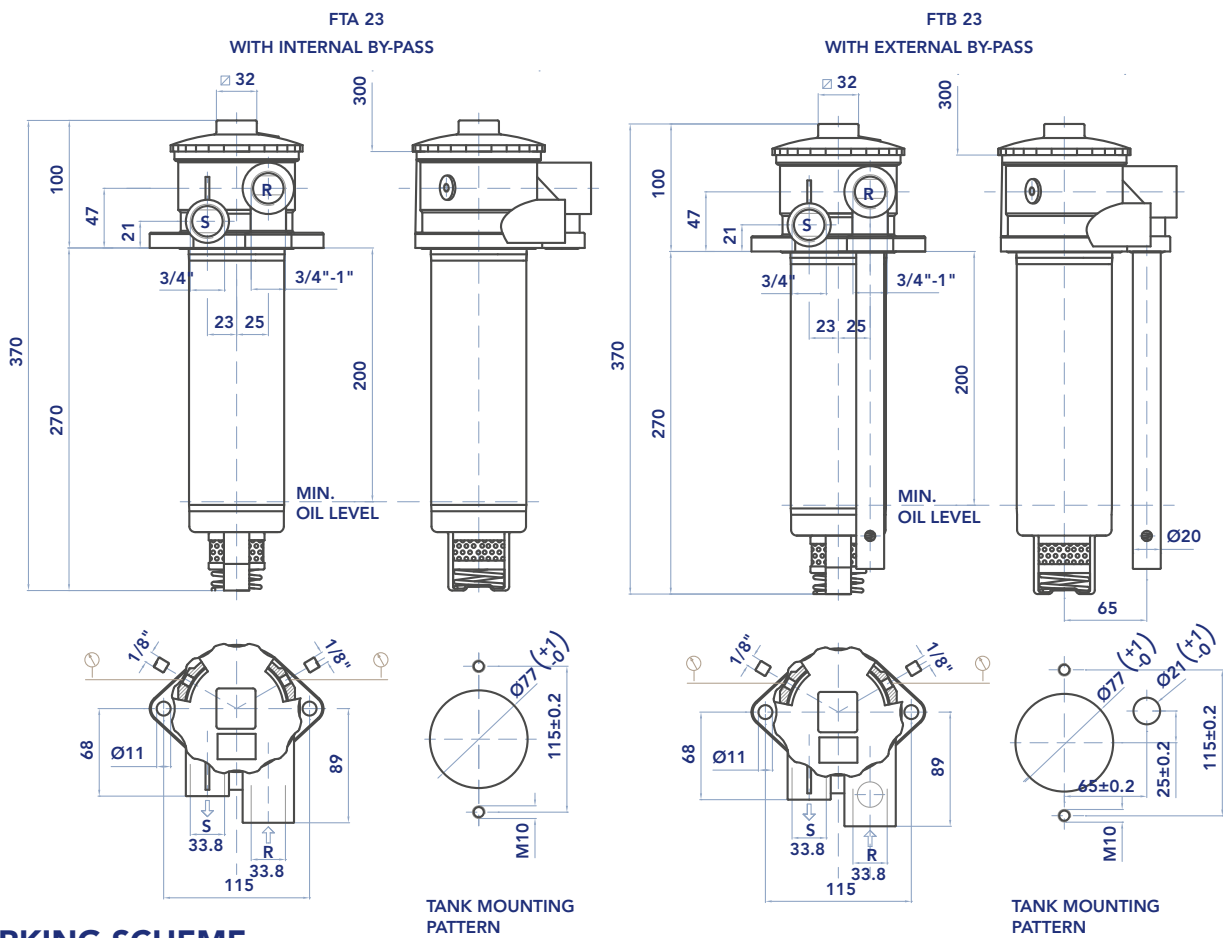


SPARE SEAL KIT

	NBR	FKM
FTA2-FTB2	521.0121.2	521.0122.2
FTA3-FTB3	521.0123.2	521.0124.2

* For any different media requirement, please check the availability with our Customer Service

INSTALLATION DRAWING

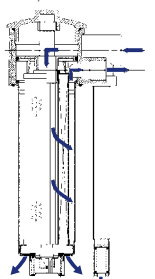
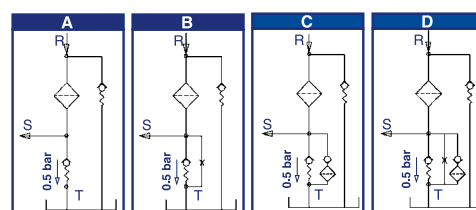
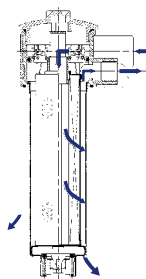
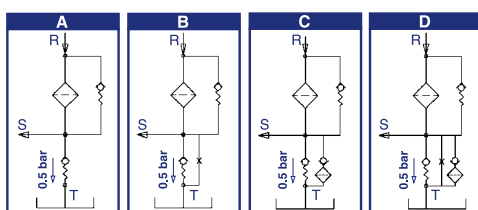


WORKING SCHEME

Options A and C are recommended for horizontal filter mounting.

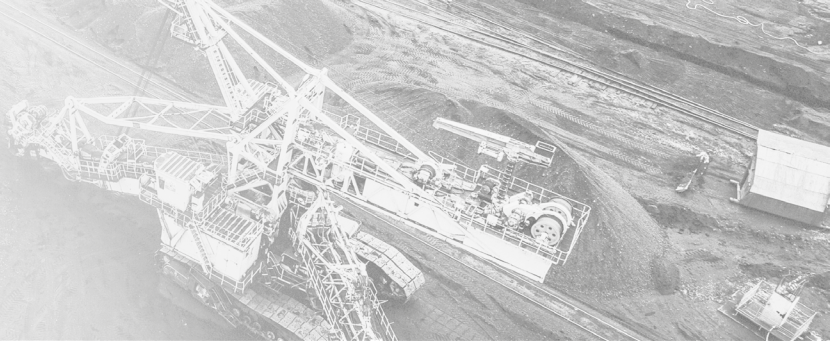
Options B and D are recommended for vertical filter mounting (drain hole).

Options C and D a 125 µm strainer protects the emergency valve in case of brief lack of oil in the suction of the boost pump (situation to be anyway avoided)

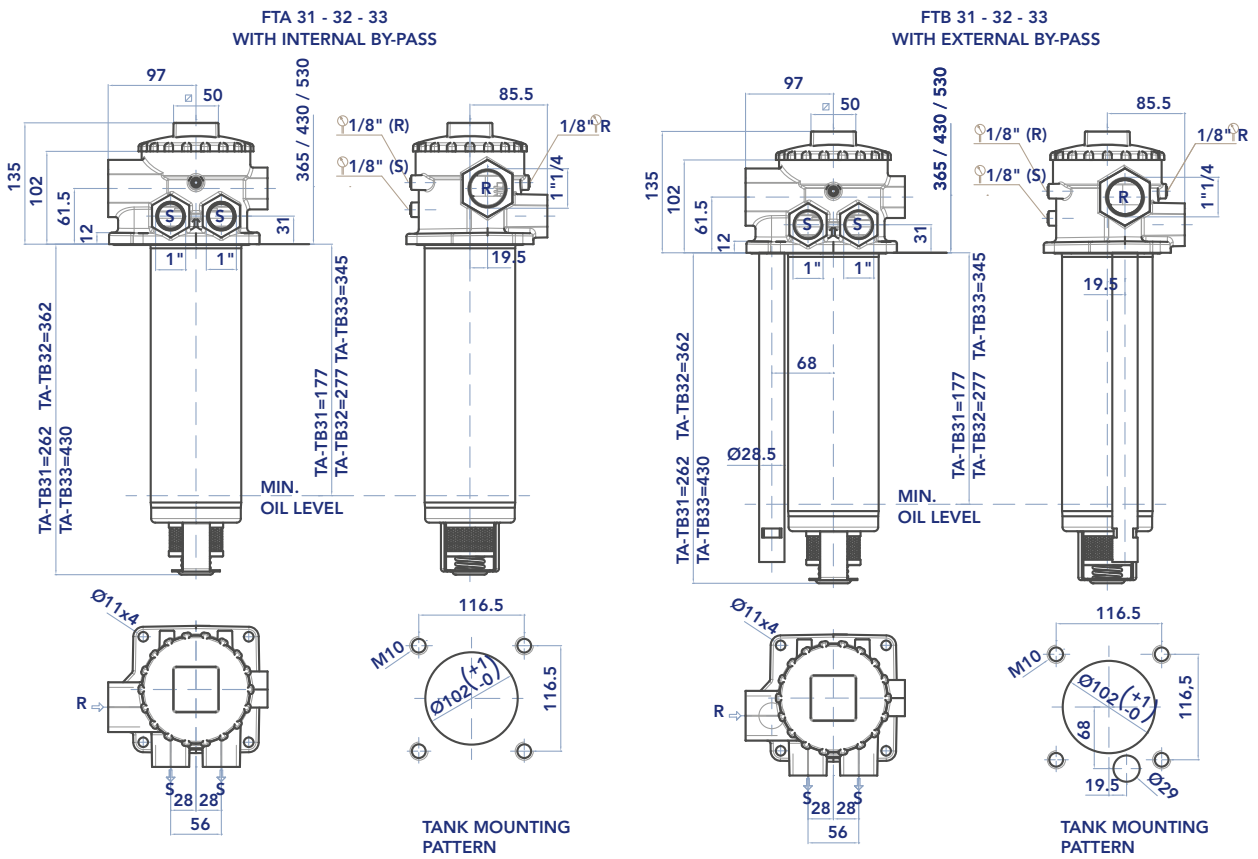


FTA-FTB

TRANSMISSION FILTERS



INSTALLATION DRAWING

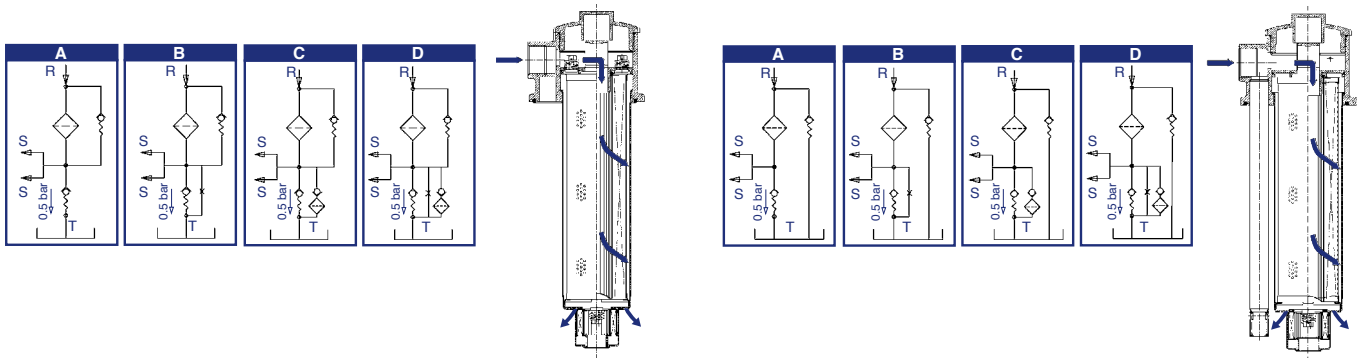


WORKING SCHEME

Options A and C are recommended for horizontal filter mounting.

Options B and D are recommended for vertical filter mounting (drain hole).

Options C and D a 125 µm strainer protects the emergency valve in case of brief lack of oil in the suction of the boost pump (situation to be anyway avoided)



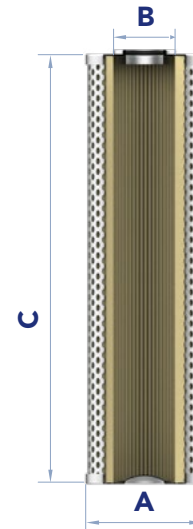


FILTER ELEMENT

	AREA (cm ²)				Media F+
	A	B	C	Kg	
ETA23	63,5	28	230	0,40	1.900
ETA31	90	40	232	0,55	2.800
ETA32	90	40	333	0,77	4.100
ETA33	90	40	400	0,85	4.900

The used filter elements cannot be cleaned and are classified as “Dangerous waste material”. They must be disposed according to local laws by authorized Companies.

Verify that the Company you choose has the expertise and authorization to dispose this type of waste material.

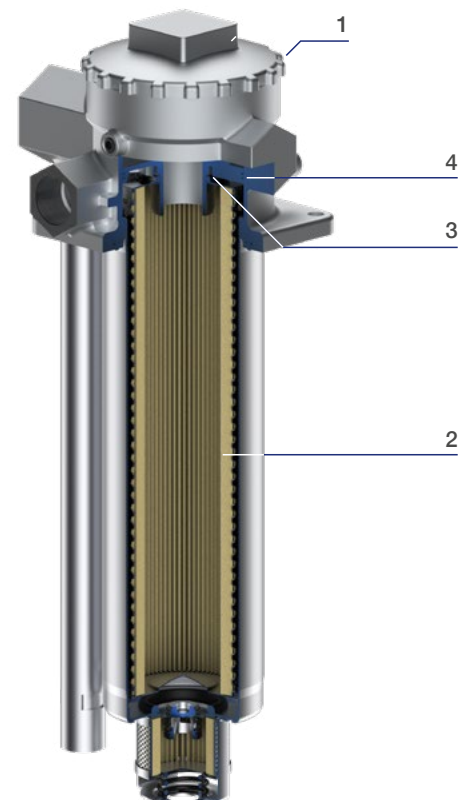


MAINTENANCE

- 1) Stop the system and verify there is no pressure in the filter and collect the oil inside the filter with a suitable container.
- 2) Unscrew the plug (1).
- 3) Remove the filter element (2) 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 authorized Companies.
- 4) Extract the filter element (2) from its handle.
- 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 filter element O-ring gasket (3) with oil
- 7) Insert the clean element on the handle, handling with care.
- 8) Check the handle O-ring gasket (4) and lubricate with oil. Insert the handle assembled with the filter element in the housing.
- 9) Check the plug O-ring condition and lubricate with oil. If damaged, check the catalogue or call the customer service.
- 10) Tighten the plug (1) until it stops with the following tightening torques: Series FT2: 25 Nm +5/0 Series FT3: 35 Nm +5/0.



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.

FTA-FTB

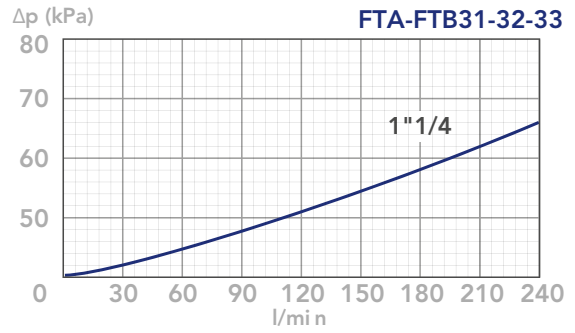
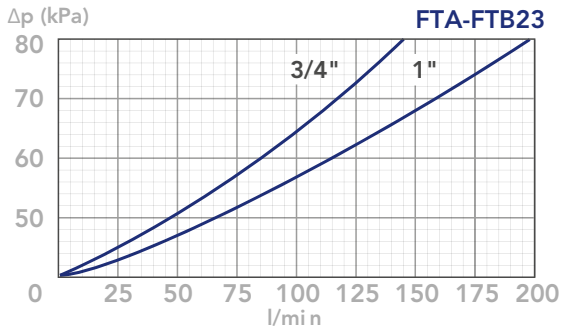
TRANSMISSION FILTERS

PRESSURE DROP CURVES (ΔP)

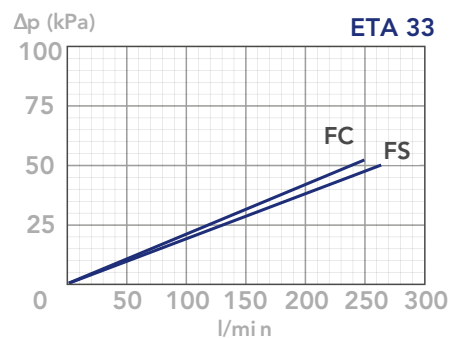
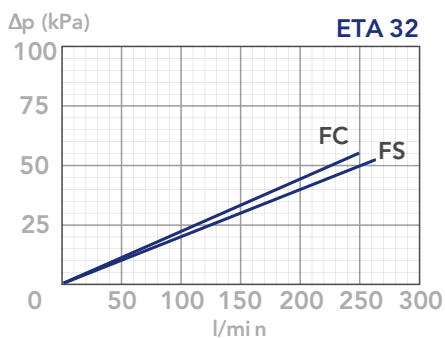
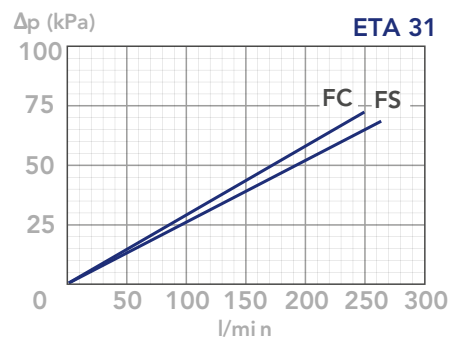
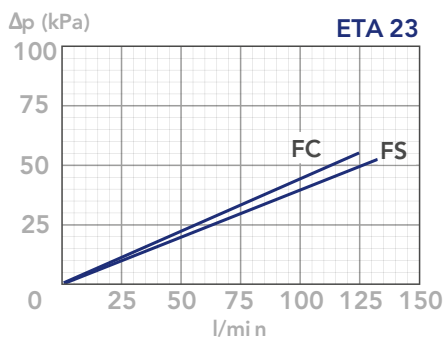
The "Assembly Pressure Drop (Δp)" is obtained by adding the pressure drop values of the Filter Housing and of the Clean Filter Element corresponding to the considered Flow Rate and it must

be lower than 40 kPa (0,4 bar) and should never exceed 1/3 of the bypass valve setting.

FILTER HOUSING PRESSURE DROP
(mainly depending on the port size)



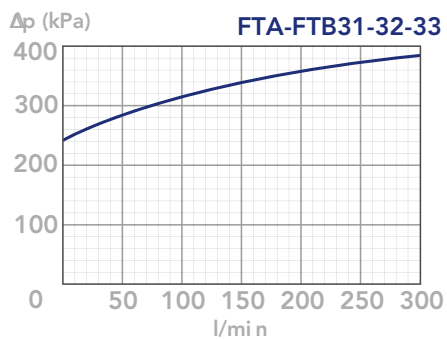
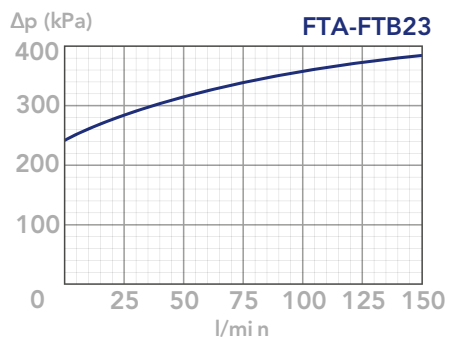
CLEAN FILTER ELEMENT PRESSURE DROP
(depending both on the internal diameter of the element and on the filter media)





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.

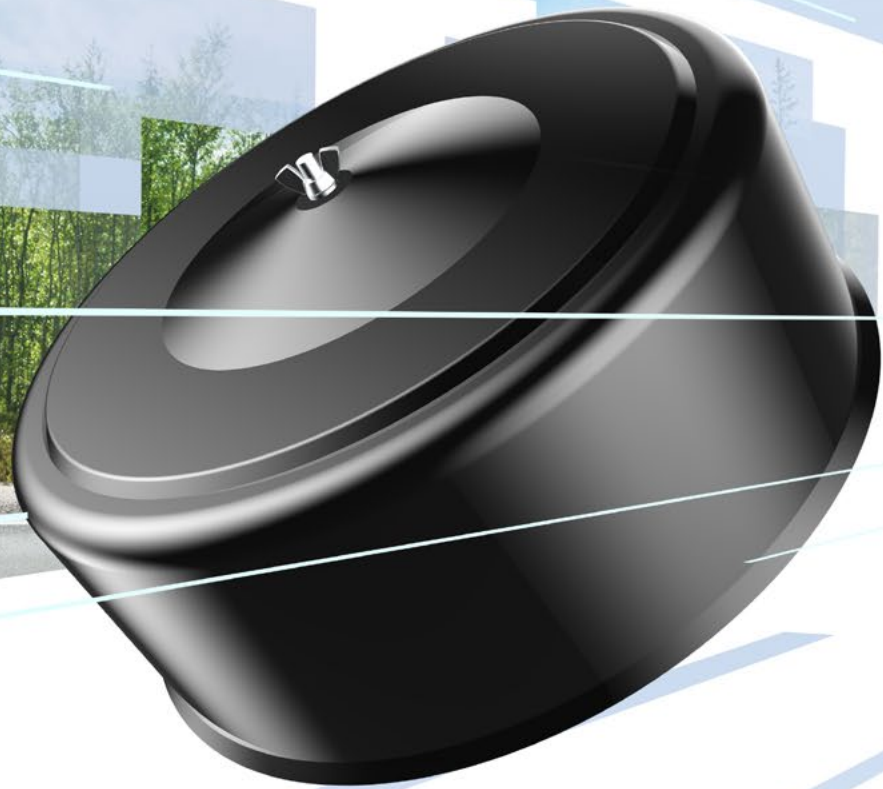


N.B.

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.

AIR FILTERS



AIR FILTRATION LINE

Application:

The Air Filters and Breathers are the best complement of the hydraulic filters to avoid external contaminant ingress and to keep the contamination class at the desired value.

Air breathers are used on hydraulic tanks, lubricating oil systems and gearboxes.

Air filters should be fitted to the top of the tank-reservoir to clean any air that enters the reservoir as fluid level drops from normal system cycling.

The breathers (with or without filler-cap) form a barrier between the air exiting and entering the free-air space above the level of hydraulic oil in the tank-reservoir.

The air-breathers represent one of the most important anti-contamination methods in a modern day hydraulic system.

User Benefits:

- Protect the system from airborne particulate contamination and humidity.
- Prevent Ambient Air from Entering the Reservoir Unless it has been Filtered.
- Help to maintain the air pressure over the hydraulic oil and hence prevent cavitation in the pump.
- Prevent moisture in the system.
- Lengthen time in between required maintenance intervals, reduces operating costs and extends overall equipment operational life.
- Lockable versions prevent unauthorized access to the tank.



CBA
AIR FILTERS



DESCRIPTION

Air breather, hand mounting

MATERIALS

Housing, flange and basket: Zinc plated steel
Cap: Chrome plated

Filter element (not replaceable, filtration degree in air):
Impregnated cellulose 3µm
Polyurethane foam 10µm

FLOW RATE

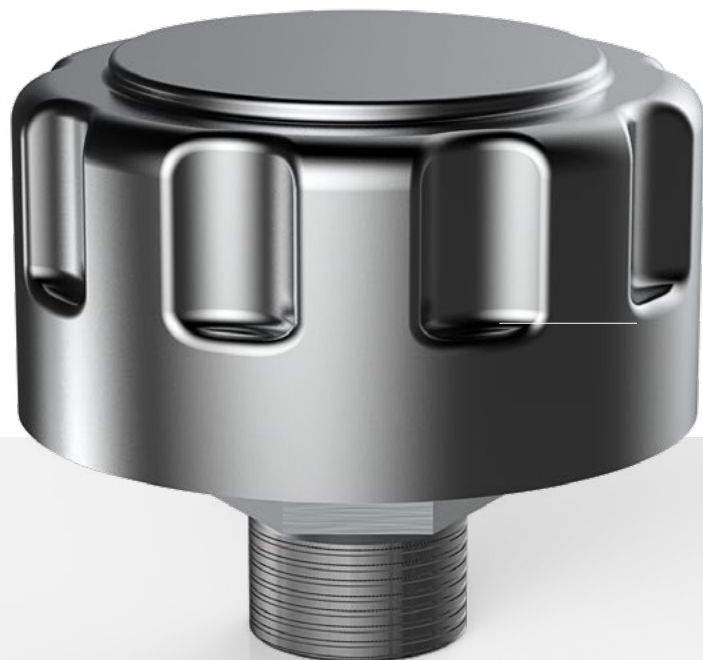
Qmax 750 l/min

COMPATIBLY

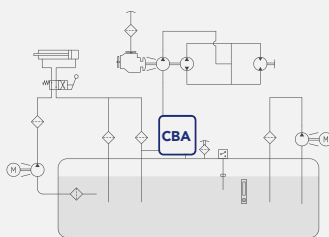
Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).
For fluids different than the above mentioned, please contact
our Customer Service.

WORKING TEMPERATURE:

From -25°C to 110°C



HYDRAULIC DIAGRAM

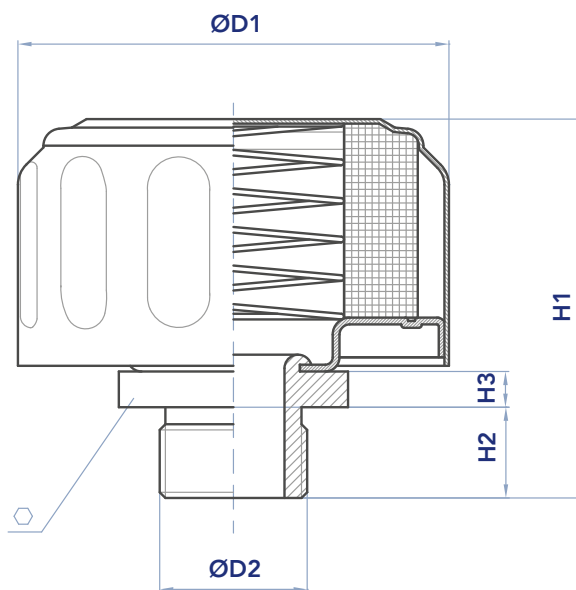


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ORDERING AND OPTION CHART

C	B	A	COMPLETE FILTER FAMILY	
			SIZE & LENGHT	
			11	21
			PORT TYPE	
			B = BSP thread	B B
			PORT SIZE	
			02 = 1/4"	02 -
			06 = 3/4"	- 06
			FILTER MEDIA	
			CC = impregnated cellulose 3 µm	CC CC
			PE = polyurethane foam 10 µm	PE PE

INSTALLATION DRAWING



DIMENSIONS

	filtr. µm (in air)	flow rate (l/min)	D1	D2	H1	H2	H3	
CBA11B02CC	3	150	47	1/4" BSP	19	45	12	7
CBA11B02PE	10	250	47	1/4" BSP	19	45	12	7
CBA21B06CC	3	450	76	3/4" BSP	35	66	16	7
CBA21B06PE	10	750	76	3/4" BSP	35	66	16	7



CBB

AIR FILTERS



DESCRIPTION

Air breather with threaded connection

MATERIALS

Housing and threaded connection: Zinc plated steel
Spare filter element: Impregnated cellulose 10 μm
(filtration degree in air)

FLOW RATE

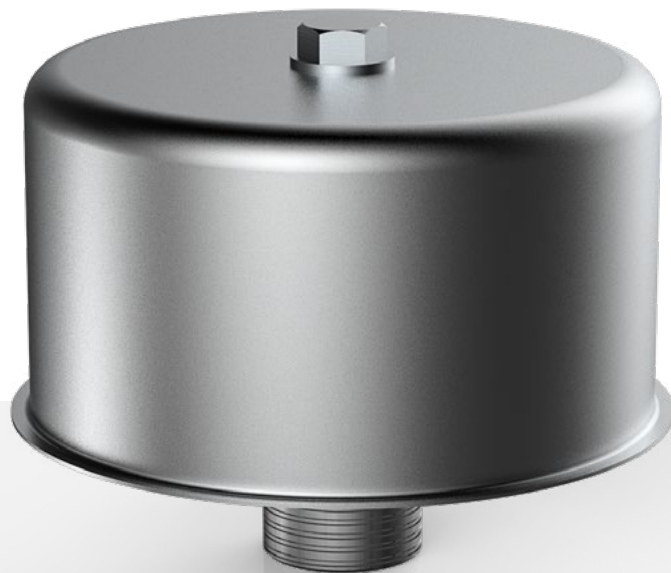
Qmax 500 l/min

COMPATIBLY

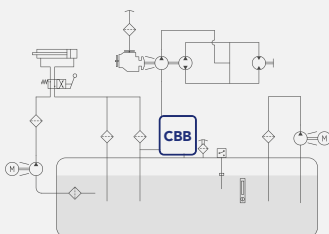
Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).
For fluids different than the above mentioned, please contact
our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM

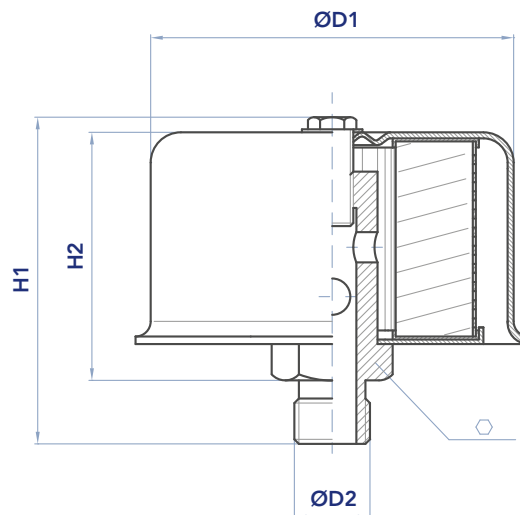


Is this datasheet the latest release? Please check on our website

ORDERING AND OPTION CHART

C	B	B	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY	E	B	B
			SIZE & LENGHT	11	21	31	SIZE & LENGTH			
			PORT TYPE							
			B = BSP thread	B	B	B				
			M = metric thread	M	M	M				
			PORT SIZE							
			02 = 1/4"	02	-	-				
			03 = 3/8"	03	-	-				
			04 = 1/2"	-	04	-				
			06 = 3/4"	-	06	-				
			08 = 1"	-	-	08				
			12 = M 12x1,5 (metric only)	12	-	-				
			16 = M 16x1,5 (metric only)	-	16	-				
			FILTER MEDIA				FILTER MEDIA			
			CD = impregnated cellulose 10µm	CD	CD	CD				

INSTALLATION DRAWING



DIMENSIONS

	filtr. µm	flow rate (l/min)	D1	D2	⬡	H1	H2	KG
CBB11B02CD	10	200	60	1/4" BSP	22	56	43	0,16
CBB11B03CD	10	200	60	3/8" BSP	22	56	43	0,16
CBB11M12CD	10	200	60	M12 X 1,5	17	56	43	0,16
CBB21B04CD	10	500	82	1/2" BSP	24	71	53	0,30
CBB21B06CD	10	500	82	3/4" BSP	32	71	53	0,30
CBB21M16CD	10	500	82	M16 X 1,5	22	71	53	0,30
CBB31B08CD	10	850	115	1" BSP	40	100	76	0,50



CBC AIR FILTERS

DESCRIPTION

Air breather filter, extension tube available on request

MATERIALS

Housing: Plastic
Basket: Plastic
Seal: NBR Nitrile
Spare filter element: Impregnated Cellulose 3µm
(Filtration degree in air)

FLOW RATE

Qmax 1800 l/min

COMPATIBLY

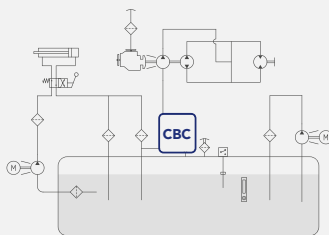
Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).
For fluids different than the above mentioned, please contact
our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM

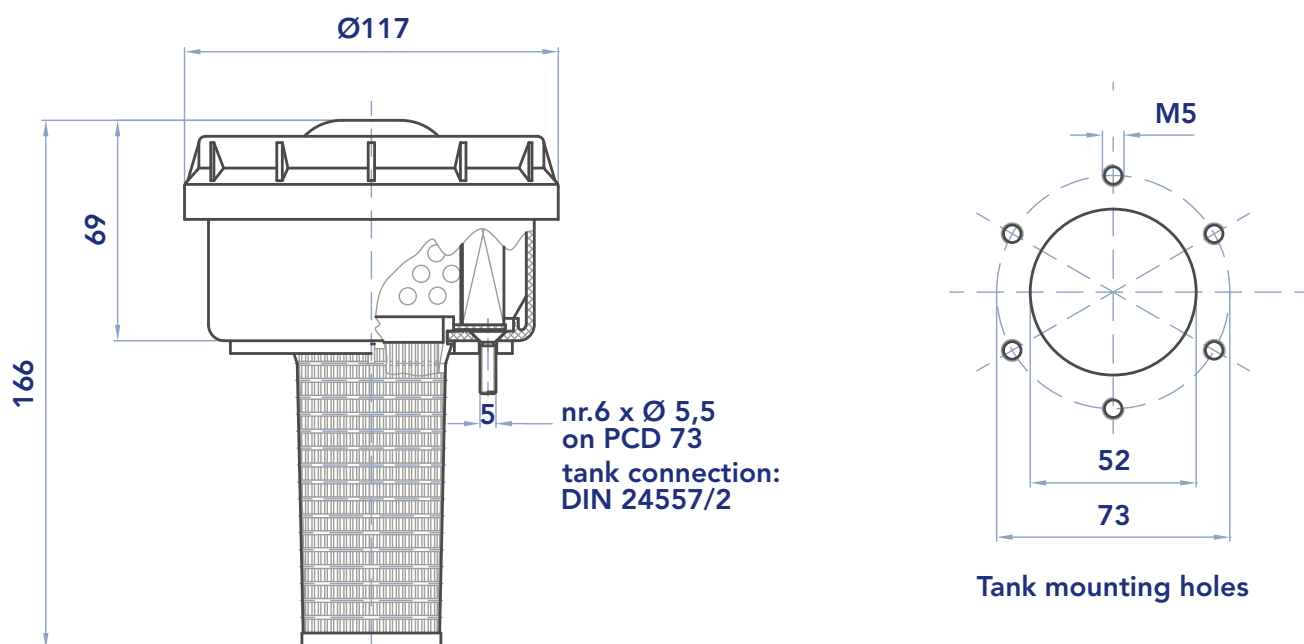


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ORDERING AND OPTION CHART

C	B	C	COMPLETE FILTER FAMILY		FILTER ELEMENT FAMILY	E	B	C
2	1		SIZE & LENGHT	21	SIZE & LENGTH	2	1	
			CONNECTION TYPE					
			S = flange	S				
			PORT SIZE					
			00 = DIN 24557/2	00				
W			PRESSURIZATION VALVE					
			W = without	W				
N			SEALS		SEALS		N	
			N = NBR Nitrile	N				
C	C		FILTER MEDIA		FILTER MEDIA	C	C	
			CC = impregnated cellulose 3 µm	CC				
W			ACCESSORIES					
			W = without	W				

INSTALLATION DRAWING





CBD

AIR FILTERS



DESCRIPTION

Air breather, thread mounted

MATERIALS

Housing: Black painted steel

Spare filter element: Filtration degree in air

VD - Velvet mesh 10 µm

FD - Fibreglass 2,5 µm (on request only)

CD - Impregnated cellulose 10 µm (on request only)

FLOW RATE

Qmax 1500 l/min

COMPATIBLY

Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).

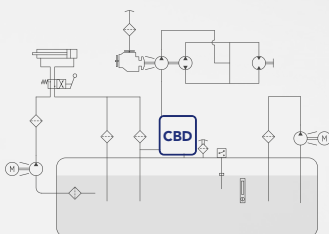
For fluids different than the above mentioned, please contact our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM



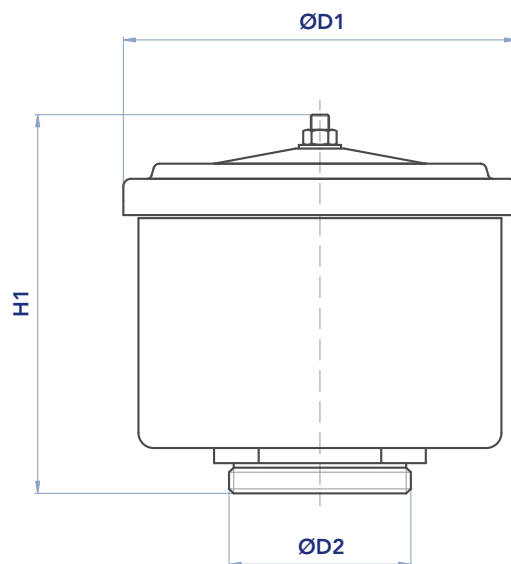
Is this datasheet the latest release? Please check on our website

ORDERING AND OPTION CHART

C	B	D	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY	E	B	D
			SIZE & LENGHT	11	12	13	SIZE & LENGTH			
	B		PORT TYPE							
			B = BSP thread	B	B	B				
1	6		PORT SIZE							
			16 = 2"	16	16	16				
			FILTER MEDIA				FILTER MEDIA			
			VD = velvet mesh 10 µm	VD	VD	VD				
			FD* = fibreglass 2,5 µm	FD	FD	FD				
			CD* = impregnated cellulose 10 µm	CD	CD	CD				

* on request only

INSTALLATION DRAWING



DIMENSIONS

	flow rate (l/min)	D1	D2	H1	KG
CBD11B16VD	500	130	2" BSP	100	0,50
CBD12B16VD	1.000	130	2" BSP	130	0,60
CBD13B16VD	1.500	130	2" BSP	175	0,80



CBE

AIR FILTERS



DESCRIPTION

Air breather, flange mounting

MATERIALS

Housing: Black painted steel

Spare filter element: Filtration degree in air

VD - Velvet mesh 10 μm

FD - Fibreglass 2,5 μm (on request only)

CD - Impregnated cellulose 10 μm (on request only)

FLOW RATE

Qmax 20000 l/min

COMPATIBLY

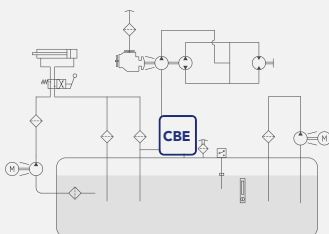
Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).

For fluids different than the above mentioned, please contact our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C

HYDRAULIC DIAGRAM



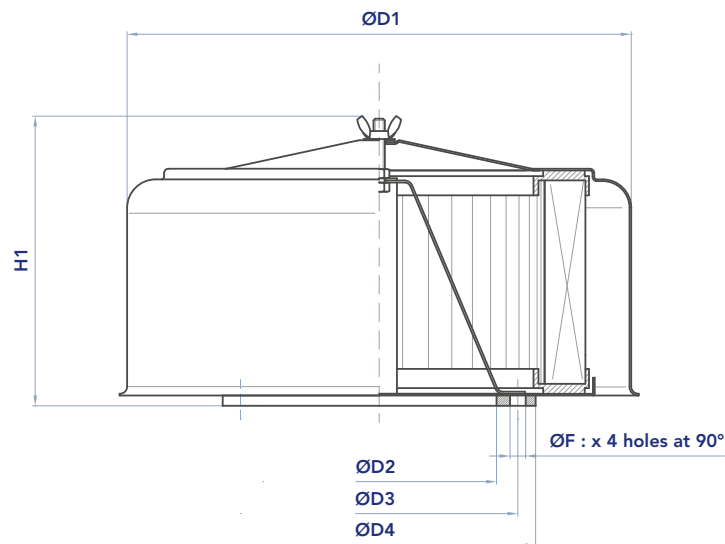
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ORDERING AND OPTION CHART

C	B	E	COMPLETE FILTER FAMILY						FILTER ELEMENT FAMILY	E	B	E
			SIZE & LENGHT	11	12	21	22	23	SIZE & LENGTH			
		F	PORT TYPE									
			F = round flange	F	F	F	F	F				
			PORT SIZE									
			10 = hole ø 100 mm	10	-	-	-	-				
			12 = hole ø 125 mm	-	12	-	-	-				
			14 = hole ø 145 mm	-	-	14	-	-				
			16 = hole ø 165 mm	-	-	-	16	16				
			FILTER MEDIA						FILTER MEDIA			
			VD = velvet mesh 10 µm	VD	VD	VD	VD	VD				
			FD* = fibreglass 2,5 µm	FD	FD	FD	FD	FD				
			CD* = impregnated cellulose 10 µm	CD	CD	CD	CD	CD				

* on request only

INSTALLATION DRAWING



DIMENSIONS

	flow rate (l/min)	D1	D2	D3	D4	F	H1	Kg
CBE11F10VD	6.000	292	100	130	160	8,5	120	2,50
CBE12F12VD	9.000	292	125	155,5	180	11	145	2,80
CBE21F14VD	12.000	354	145	175	200	11	160	2,50
CBE22F16VD	15.000	354	165	195	220	11	190	3,00
CBE23F16VD	20.000	354	165	195	220	11	240	3,50



CBF

AIR FILTERS



DESCRIPTION

Air breather, clamp mounting

MATERIALS

Housing: Black painted steel

Clamp: Stainless steel

Spare filter element: Filtration degree in air

VD - Velvet mesh 10 μm

FD - Fibreglass 2,5 μm (on request only)

CD - Impregnated cellulose 10 μm (on request only)

FLOW RATE

Qmax 4000 l/min

COMPATIBLY

Full with fluids HH-HL-HM-HV-HTG (according to ISO 6743/4).

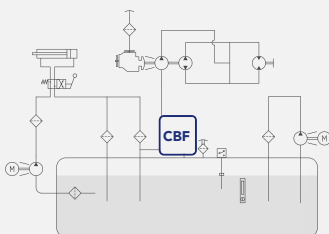
For fluids different than the above mentioned, please contact our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM



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

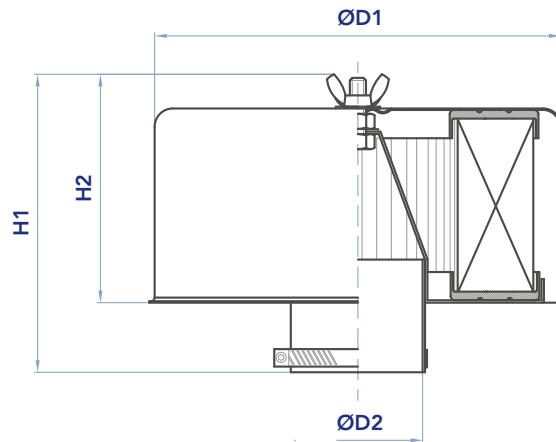


ORDERING AND OPTION CHART

C	B	F	COMPLETE FILTER FAMILY			FILTER ELEMENT FAMILY	E	B	F
			SIZE & LENGHT	11	21	SIZE & LENGTH			
		C	PORT TYPE						
			C = clamp	C	C				
			PORT SIZE						
			40 = hole ø 40 mm	40	-				
			52 = hole ø 52 mm	52	-				
			70 = hole ø 70 mm	-	70				
			76 = hole ø 76 mm	-	76				
			FILTER MEDIA			FILTER MEDIA			
			VD = velvet mesh 10 µm	VD	VD				
			FD* = fibreglass 2,5 µm	FD	FD				
			CD* = impregnated cellulose 10 µm	CD	CD				

* on request only

INSTALLATION DRAWING



DIMENSIONS

	flow rate (l/min)	D1	D2	H1	H2	Kg
CBF11C40VD	1.000	122	40	120	92	0,60
CBF11C52VD	1.500	122	52	120	92	0,60
CBF21C70VD	3.000	220	70	145	125	1,60
CBF21C76VD	4.000	220	76	145	125	1,60



CBS AIR FILTERS



DESCRIPTION

Air breather with spin-on element

MATERIALS

Connector: Steel (zinc plated for the flanged version)
Spin-on can: Steel
Spare filter element:
CC = Impregnated Cellulose
FD = Fibreglass
Filtration degree in air 3 µm

FLOW RATE

Qmax 2800 l/min

COMPATIBILITY

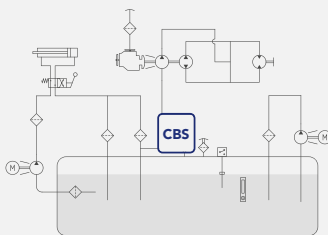
Full with fluids HH - HL - HM - HR - HV - HG (according to ISO 6743/4). For fluids different than the above mentioned, please contact our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM

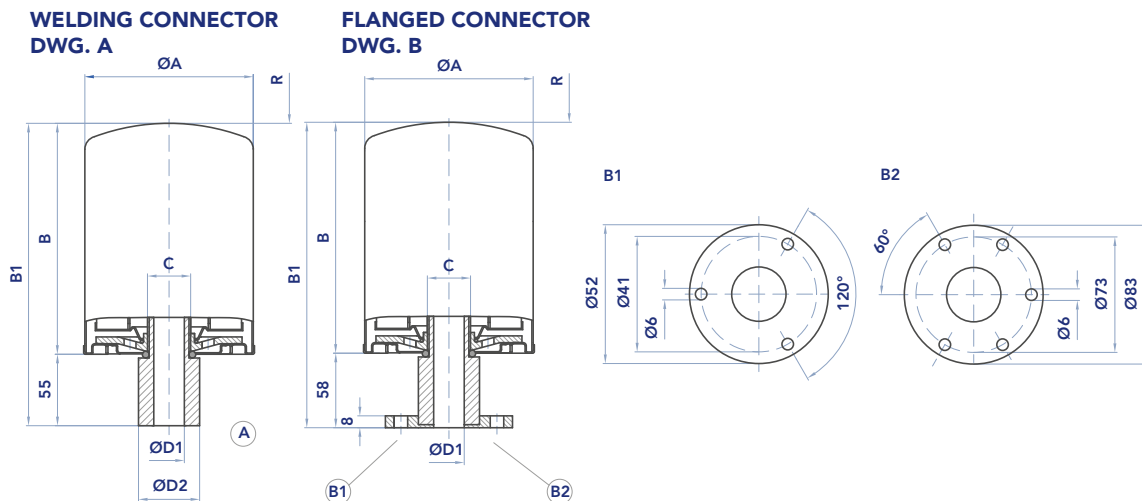


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ORDERING AND OPTION CHART

C	B	S	COMPLETE FILTER FAMILY				FILTER ELEMENT FAMILY			A	S	E	
			SIZE & LENGHT				11	12	21	22	SIZE & LENGTH		
			CONNECTION TYPE										
			S = standard flange				S	S	S	S			
			W = welding connector				W	W	W	W			
		W	PRESSURIZATION VALVE										
			W = without				W	W	W	W			
			SEALS								SEALS		
			X = no seals (welding type)				X	X	X	X		X	
			C = sugheroil (flange type)				C	C	C	C			
			FILTER MEDIA								FILTER MEDIA		
			FD = fibreglass				FD	FD	FD	FD			
			CC = impregnated cellulose				CC	CC	CC	CC			

INSTALLATION DRAWING



DIMENSIONS

	Dwg	flow rate (l/min)	A	B	B1	C	D1	D2	R
CBS11WWX	A	1.800	96	146	201	3/4" BSP	18	32	40
CBS12WWX	A	1.800	96	191	246	3/4" BSP	18	32	40
CBS21WWX	A	2.800	129	181	236	1 1/4" BSP	32	48	40
CBS22WWX	A	2.800	129	226	281	1 1/4" BSP	32	48	40
CBS11SWC	B1	1.800	96	146	204	3/4" BSP	18	-	40
CBS12SWC	B1	1.800	96	191	249	3/4" BSP	18	-	40
CBS21SWC	B2	2.800	129	181	239	1 1/4" BSP	32	-	40
CBS22SWC	B2	2.800	129	226	284	1 1/4" BSP	32	-	40



CSE AIR FILTERS



DESCRIPTION

Air breather with spin-on element

MATERIALS

Connector: Zinc plated steel
Basket: Zinc plated steel
Spin-on can: Steel
Spare filter element:
CC = Impregnated Cellulose
FD = Fibreglass
Filtration degree in air 3 µm

FLOW RATE

Qmax 2800 l/min

COMPATIBLY

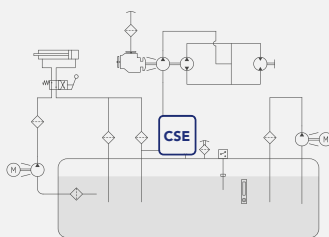
Full with fluids HH - HL - HM - HR - HV - HG (according to ISO 6743/4). For fluids different than the above mentioned, please contact our Customer Service.

WORKING TEMPERATURE

From -25°C to 110°C



HYDRAULIC DIAGRAM

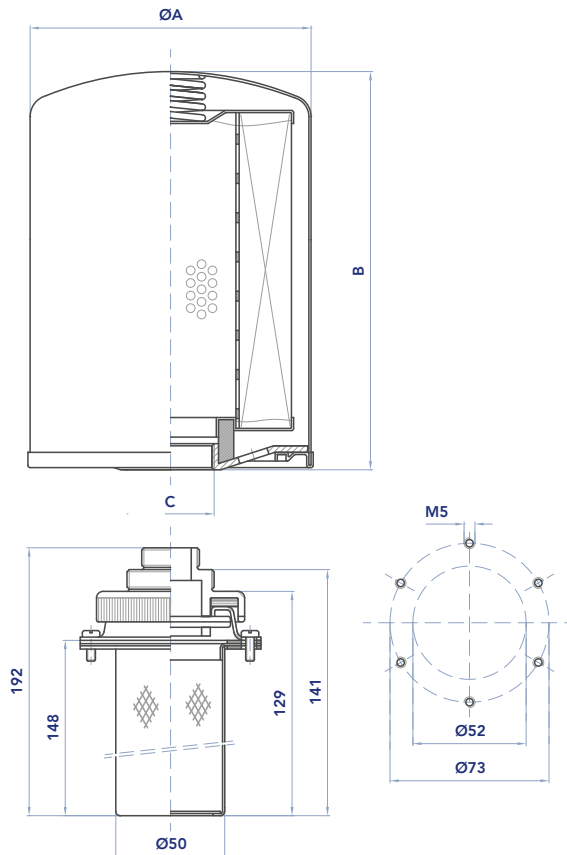


Is this datasheet the latest release? Please check on our website.

ORDERING AND OPTION CHART

C	S	E	COMPLETE FILTER FAMILY					FILTER ELEMENT FAMILY	A	S	E
			SIZE & LENGHT	11	12	21	22	SIZE & LENGTH			
			CONNECTION TYPE								
			S = standard flange	S	S	S	S				
			W PRESSURIZATION VALVE								
			W = without	W	W	W	W				
			SEALS					SEALS		X	
			C = sugheroil (flange type)	C	C	C	C				
			FILTER MEDIA					FILTER MEDIA			
			FD = fibreglass	FD	FD	FD	FD				
			CC = impregnated cellulose	CC	CC	CC	CC				

INSTALLATION DRAWING



DIMENSIONS

	flow rate (l/min)	A	B	C
CSE11SWC	1.800	96	146	3/4" BSP
CSE12SWC	1.800	96	191	3/4" BSP
CSE21SWC	2.800	129	181	1 1/4" BSP
CSE22SWC	2.800	129	226	1 1/4" BSP



AIR SENTRY

AIR FILTERS

DESCRIPTION

Air dryer filter breather

MATERIALS

D-10+ are manufactured from rugged ABS plastic and impact-modified Plexiglas.

R-10+ have a rugged steel reinforced base for heavy duty applications.

TECHNICAL DATA

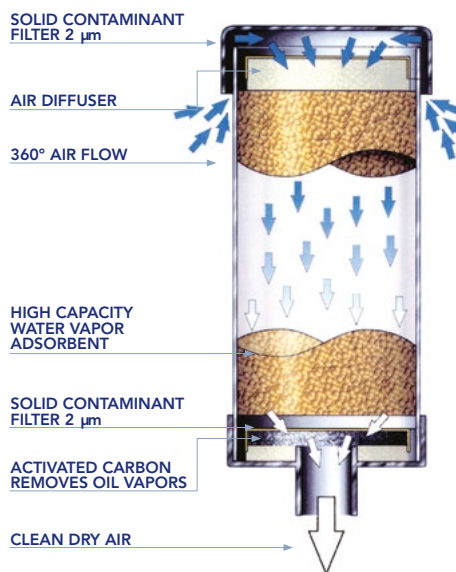
Nominal air flow rate: 1.000 l/min

Solid contaminant filtration: 2 μ m

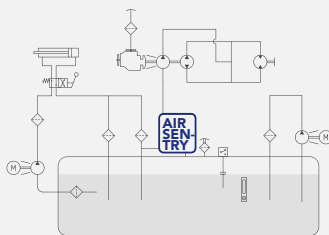
Silica gel adsorption: up to 40% of its weight in water

WORKING TEMPERATURE

From -30°C to 100°C



HYDRAULIC DIAGRAM



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



AIR SENTRY

AIR FILTERS



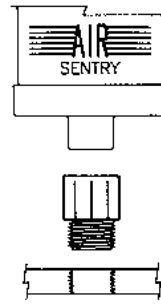
CONNECTION TO THE RESERVOIR

The breathers D10+ can be attached to the reservoir by using an adapter:

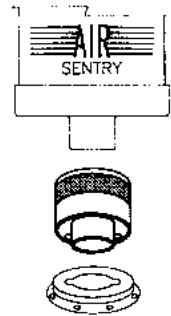
- mod. A-102 for mounting in a threaded hole 1"
- mod. A-104 for bayonet mounting on a standard flange pattern (6 holes on 73 mm PCD)

The breathers R10+ are attached to the reservoir by 1" NPT male pipe thread.

Adapter A-102
threaded 1" NPT



Adapter A-104
bayonet for
standard flange



INSTALLATION DRAWING

Air Sentry Breathers use a three-stage filtration design to ensure optimum protection by removing water vapor and solid contaminants before they enter the fluid system.

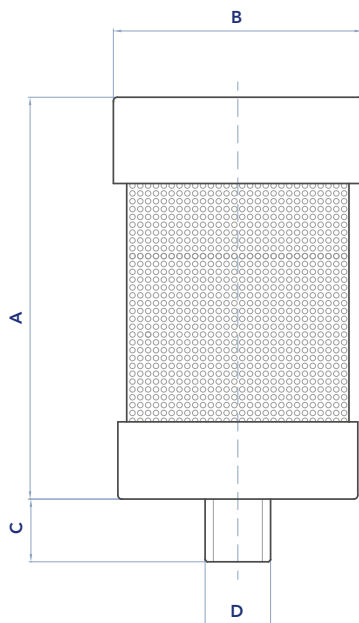
First, air passes through a fine, 2 µm solid particle filter. The air then passes through a diffuser to ensure maximum effectiveness within the silica gel chamber.

Next, water vapor is removed as the air travels through a bed of silica gel, the highest capacity adsorbent available. After being dried, the air passes through a second 2 µm solid particle filter and enter the reservoir, clean and dry.

Air entering is cleaned and dried. Expelled air partially regenerates the silica gel and backflushes the particulate filter to prolong the life of the breather.

Silica gel is chemically inert, non-toxic, non-deliquescent and non-corrosive. The internal structure is composed of interconnected microscopic pores that adsorb up to 40% of its weight.

When maximum adsorption is reached, the silica gel turns from yellow to blue to indicate that replacement of the breather is required.

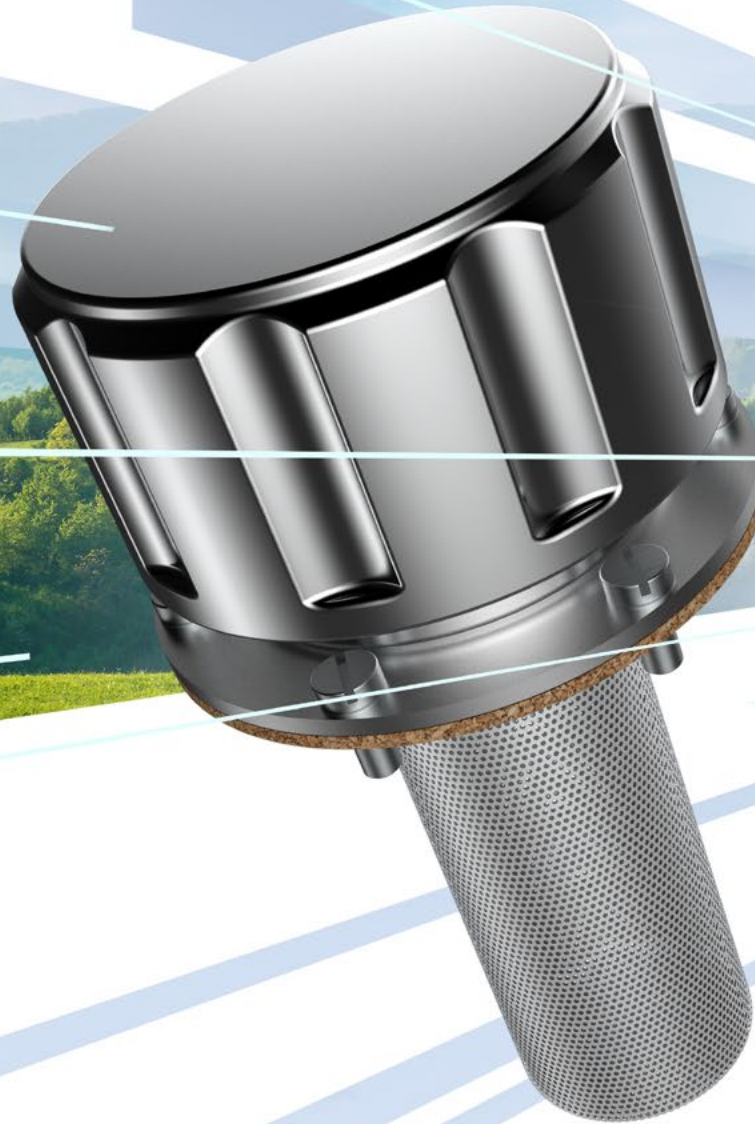


DIMENSIONS

	A	B	C	D	Kg	Max H ₂ O (l)
D-101	127	127	32	to fit an adaptor A-10+	1,0	0,2
D-102	205	127	32	to fit an adaptor A-10+	1,7	0,5
R-101	140	132	25	1"NPT	1,5	0,2
R-102	216	132	25	1"NPT	2,1	0,5



ACCESSORIES



COMPREHENSIVE CHOICE, HIGH QUALITY STANDARD

Application:

UFI Filters Hydraulics accessories program has been carefully selected and designed to offer a range of components suitable for the construction needs of hydraulic systems and tanks for most industrial and mobile applications.

Whether you require simple filler breathers or precise electrical level switches, UFI Hydraulics accessories range will provide you with the choice you need.

User Benefits:

- Reduction of the impurity's entering from the environment in order to keep the fluid cleaner;
- Improvement of pump suction working conditions and reduction of cavitation phenomena;
- Reduction of foam formation in the fluid;
- Monitoring and control of oil cleanliness, temperature, and level.



CFA ACCESSORIES

DESCRIPTION

Filling breathers

MATERIALS

Housing, flange and basket: Zinc plated steel
Cap: Chrome plated steel
Seals: Sugheroil (NBR Nitrile for pressurised version only)
Filter element ((not replaceable):
Impregnated cellulose 3µm
Polyurethan foam 10µm

FLOW RATE

Qmax 750 l/min

WORKING TEMPERATURE

From -25°C to 110°C

HOW IT WORKS

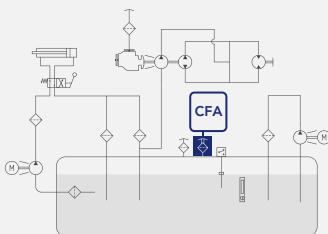
CFA filling plugs include an inbuilt air breather and a protection basket against ingress of coarse parts (removable for CFA23). The connection to the tank is flanged with standard dimensions, with additional tank connection options for CFA23 (welding flange or plug extension). For sizes CFA21 & CFA22 the plug has a safety chain.

COMPATIBILITY

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.

ORDERING AND OPTION CHART

C	F	A	COMPLETE FILTER FAMILY				
			SIZE & LENGTH	11	21	22	23
			MOUNTING PATTERN				
			S = DIN 24557/2 flange	S	S	S	S
			T = Plug extension	-	-	-	T
			W = Welding flange	-	-	-	W
			PRESSURIZATION VALVE				
			W = Without	W	W	W	W
			A = 35 kPa (0,35 bar)	-	A	A	A
			SEALS				
			C = Sugheroil	C	C	C	C
			N = NBR Nitrile (with A option only)	-	N	N	N
			FILTER MEDIA				
			CC = Impregnated cellulose 10 µm (3 µm in air)	CC	CC	CC	CC
			PE = Polyurethan foam 40 µm (10 µm in air)	PE	PE	PE	PE
			ACCESSORIES				
			P = Padlock holder	-	P	P	P
			S = Internal fixing chain (only for mounting pattern S)	-	S	S	S

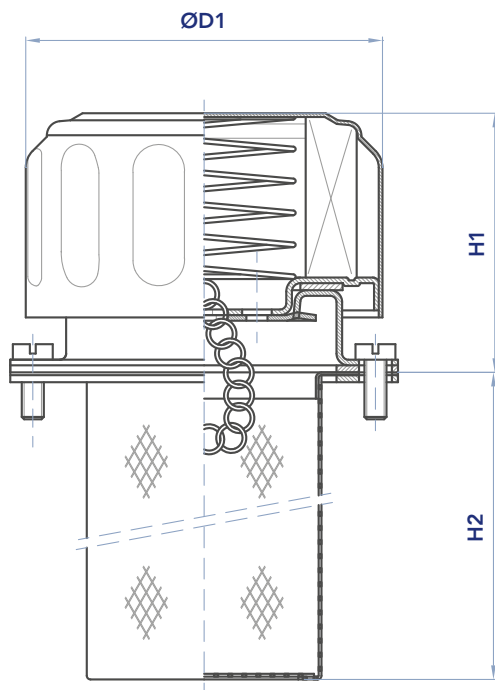
DIMENSIONS

	D1	D2	D3	D4	Holes n°	D5	D6	H1	H2	DWG
CFA11S	47	29	52	M5	3	31	41	48	64	A
CFA21S	80	50	83	M5	6	52	73	57	78	B
CFA22S	80	50	83	M5	6	52	73	57	148	B
CFA23S	80	40	83	M5	6	42	73	57	100	B
CFA23W	80	38	83	-	-	40	-	53	100	C
CFA23TW	80	38	-	-	-	-	-	-	-	D
CFA23TA	70	38	-	-	-	-	-	-	-	D

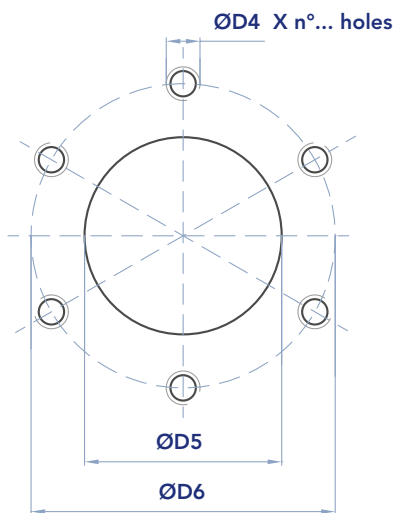
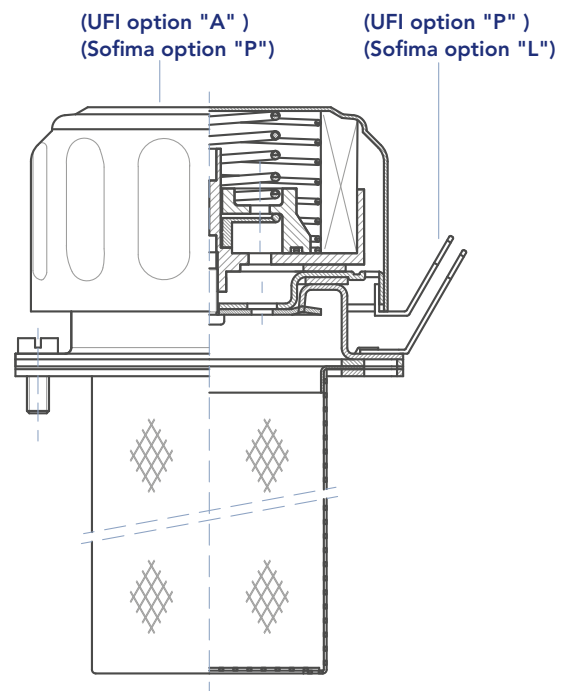


INSTALLATION DRAWING

DWG A



DWG B

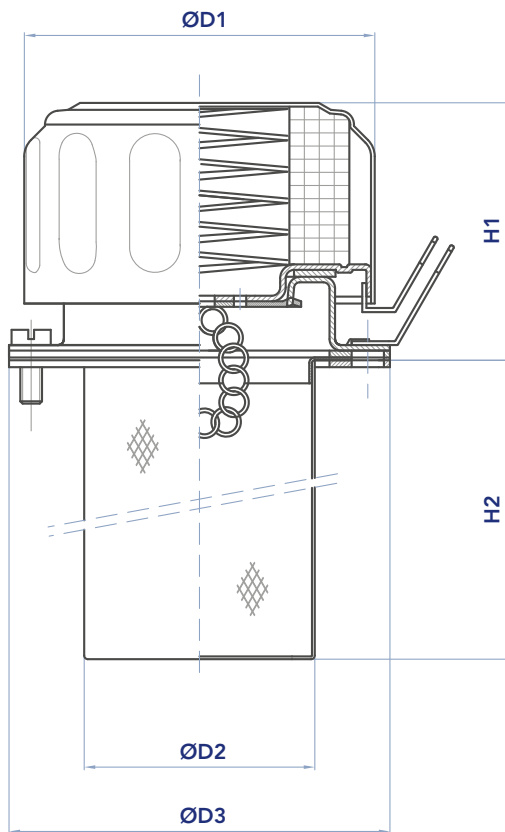


Tank connection:
DIN 24557/2

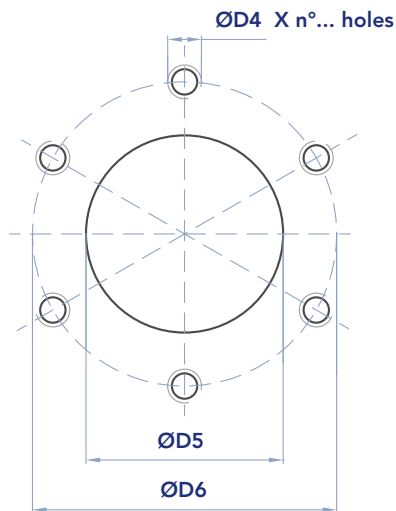
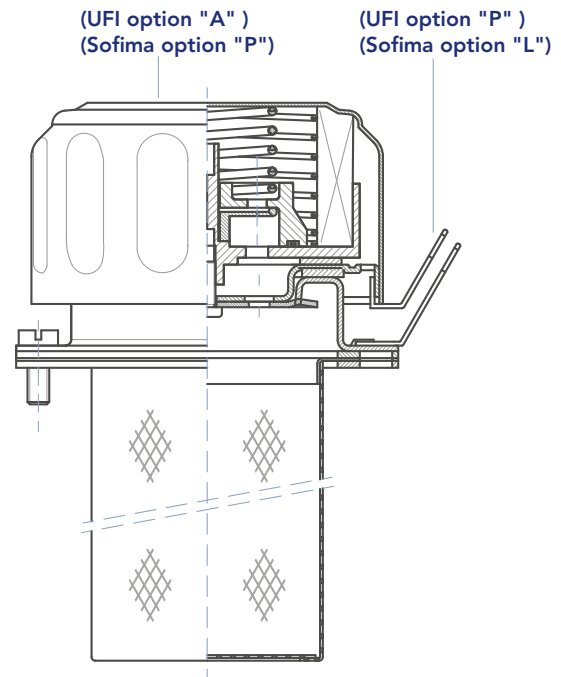


DIMENSIONS

DWG C



DWG D



Tank connection:
DIN 24557/2



DESCRIPTION

Visual level indicator

MATERIALS

Transparent part: Trogamid T
Anti-shock protection: Painted steel
Fixing bolts: Zinc plated steel
Seals: NBR Nitrile (FKM Fluoroelastomer on request)

Double scale thermometer (Celsius and Fahrenheit)
option available.
Tightening torque for the fixing bolts 10 Nm.

PRESSURE

Max pressure 100 kPa (1 bar)

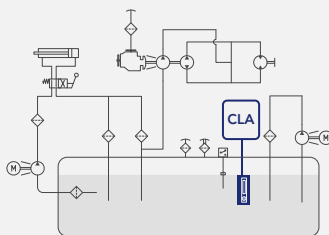
WORKING TEMPERATURE

From -20°C to +90°C

COMPATIBILITY

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



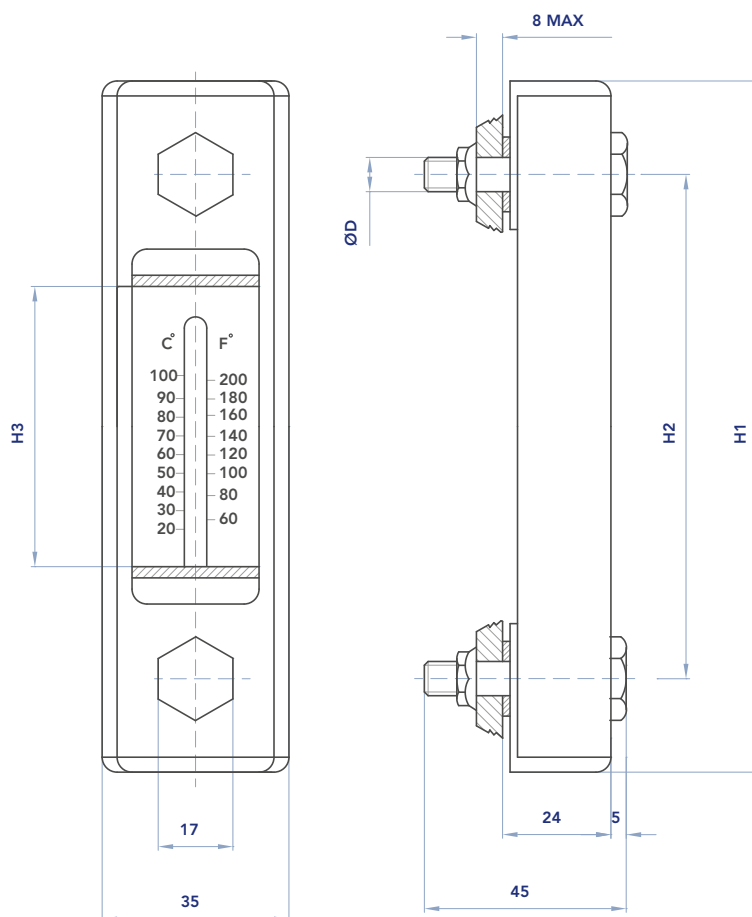
Is this datasheet the latest release? Please check on our website.

ORDERING AND OPTION CHART

C	L	A	COMPLETE FILTER FAMILY		
			SIZE & LENGTH		
			11	12	13
			M CONNECTION TYPE		
			M	M	M
			CONNECTION SIZE		
			10 = M10	10	10
			12 = M12	12	12
			N SEALS		
			N = NBR Nitrile	N	N
			F = FKM Fluoroelastomer	F	F
			ACCESSORIES		
			W = without	W	W
			T = with thermometer	T	T

DIMENSIONS

	H1	H2	H3	D
CLA11M10NW	108	76	32	M10
CLA11M10NT	108	76	32	M10
CLA12M12NW	160	127	78	M12
CLA12M12NT	160	127	78	M12
CLA13M12NW	286	254	202	M12
CLA13M12NT	286	254	202	M12





CLB ACCESSORIES

DESCRIPTION

Float switches

MATERIALS

Tank connection: Anodized aluminum
Rod: Stainless steel
Float: Polyamide

ELECTRICAL DATA

SPDT Reed switch
Max load AC up to 48 V - 0,5 A
Maxload DC up to 48 V - 0,5 A
Connector DIN 43650
Protection DIN 40050: IP 65

HOW IT WORKS

Electrical level indicators, an electrical signal is activated when the minimum (or maximum) oil level is reached. The REED switch has SPDT contacts.

N.B. the float switch must be mounted at min 50 mm from ferrous walls. Max oil viscosity 150 cSt.

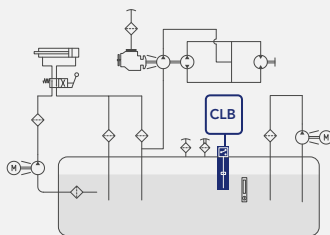
WORKING TEMPERATURE

From -10°C to 90°C

COMPATIBILITY

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.



CLB

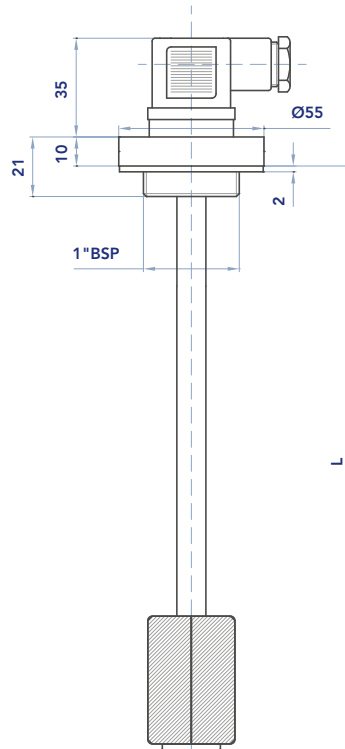
ACCESSORIES

ORDERING AND OPTION CHART

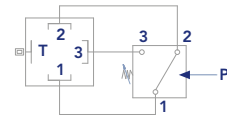
C	L	B	COMPLETE FILTER FAMILY						
			SIZE & LENGTH	15	20	25	35	40	50
			U CONNECTION TYPE						
			U = Universal, 1" BSP+ 2 or 3 holes flange	U	U	U	U	U	U
			N SEALS						
			N = NBR Nitrile	N	N	N	N	N	N
			W ACCESSORIES						
			W = Without	W	W	W	W	W	W

DIMENSIONS

	L
CLB15UNW LME150B5F	150
CLB20UNW LME200B5F	200
CLB25UNW LME250B5F	250
CLB35UNW LME350B5F	350
CLB40UNW LME400B5F	400
CLB50UNW LME500B5F	500



ELECTRICAL DATA



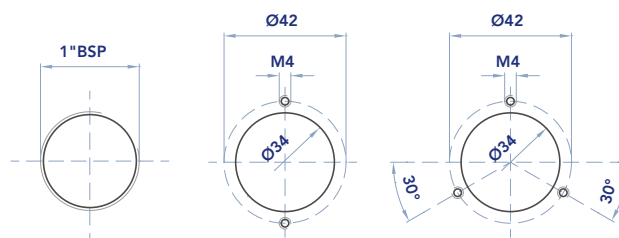
1=COMMON
2=N.C.
3=N.O.

SPDT Reed switch
Max load AC up to 48V-0,5A
Max load DC up to 48V-0,5 A

Connector DIN 43650

Protection DIN 40050: IP65

Tank mounting pattern possibilities:





FAB

ACCESSORIES



DESCRIPTION

Oil bath air filter and cyclone prefilter

MATERIALS

Housing: Black painted steel
Internal parts: Steel
Filter element: Zinc painted steel (stainless steel on request)
Prefilter transparent housing and baffle: plastic material
Seals: NBR Nitrile

FLOW RATE

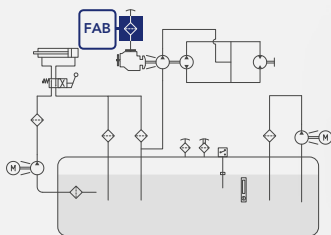
From 3.000 to 12.000 l/min

WORKING TEMPERATURE

Max working temperature: 95°C



HYDRAULIC DIAGRAM



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

FAB

ACCESSORIES

SIZING INSTRUCTIONS

$$Q = \frac{C \times N}{K}$$

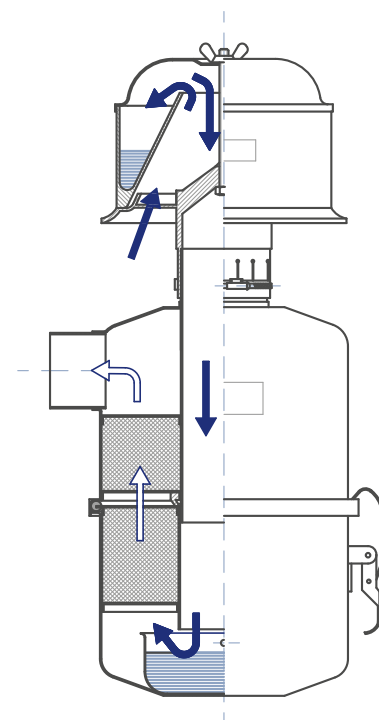
Q (lt/min) = Flow rate
 C (lt) = Total displacement
 N = RPM
 K = Coefficient

K - coefficient for engines

Cylinders	2 Strokes	4 Strokes
1	K = 0,42	K = 0,52
2	K = 0,83	K = 1
3	K = 0,83	K = 1,6
4 ÷ 8	K = 0,83	K = 2

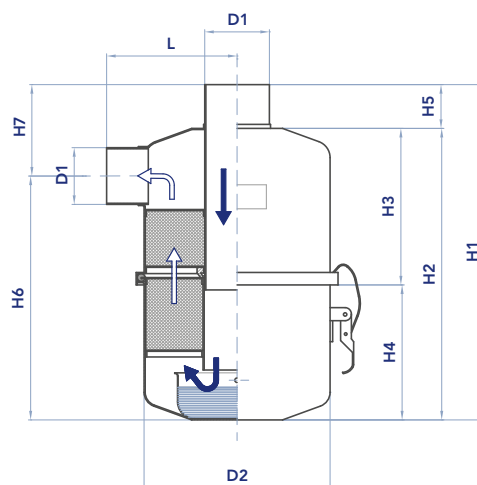
K - coefficient for compressors

Cylinders	K
1	K = 1,2
2	K = 2,4



DIMENSIONAL LAYOUT

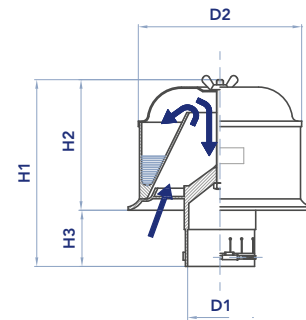
Filter	l/min	D1	D2	H1	H2	H3	H4	H5	H6	H7	L	Kg
6000.6	3000	57	164	293	252	129	123	41	201	92	116	2,5
6000.7	4000	57	164	348	307	156	151	41	260	88	116	3,9
6000.8	5500	65	187	385	334	172	162	51	273	112	131	4,5
6000.9	8000	93	266	451	397	209	188	54	321	130	182	7,5
6000.10	10000	93	266	529	475	246	229	54	399	130	179	9,5
6000.11	12000	114	322	558	503	262	241	55	412	146	210	13,5





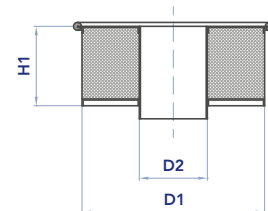
CYCLONE PREFILTER

Pre-filter	For filter	l/min	D1	D2	H1	H2	H3	Kg
6025.4	6000.6 - 6000.7	4000	57	140	175	115	60	0,4
6025.5	6000.8	6000	65	154	185	115	70	0,6
6025.6	6000.9 - 6000.10	10000	93	222	235	175	60	1,15
6025.6S2	-	11000	102	222	235	175	60	1,13
6025.7	6000.11	12000	114	222	235	175	60	1,1



SPARE FILTER ELEMENT

Filter	For filter	D1	D2	H1
5702.6	6000.6	161	60	70
5702.7	6000.7	161	60	105
5702.8	6000.8	184	68	105
5702.9	6000.9	262	96	120
5702.10	6000.10	262	96	170
5702.11	6000.11	318	117	185



CLOGGING INDICATORS



THE IMPORTANCE OF GETTING THE TIMING RIGHT

Application:

Hydraulic filter clogging indicators are warning devices designed to indicate visually and electrically the correct timing for maintenance. In fact, the most economic change-out time for the filter element requires a mechanism to monitor the pressure of the hydraulic fluid flowing through the filter, that alerts the user when this flow starts to diminish and, therefore, the changing of the filter elements is necessary.

The clogging indicator must be set to trigger a signal at a pressure lower than the setting of the integrated by-pass valve in the filter.

User Benefits:

- Continuous monitoring of the filter element condition with an exact indication of the efficiency status of the filter
- Avoiding of unnecessary element changes, thanks to the indication of the most appropriate time for the element replacement
- Prevention of potential system contamination thanks to a reliable signal prior to by-pass operation
- Prevention of unexpected downtime and expensive hydraulic component repair deriving from compromised performance of the fluid in the system

PRESSURE FILTERS

CLOGGING INDICATORS

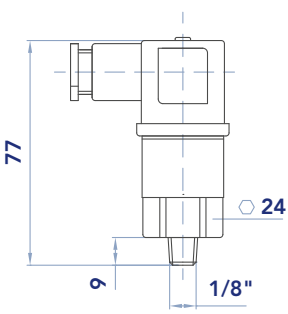
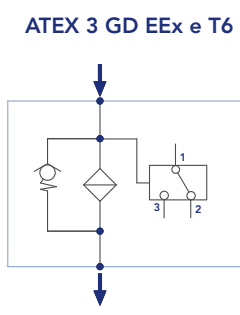
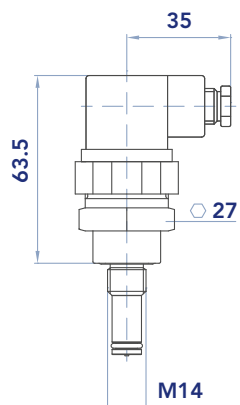
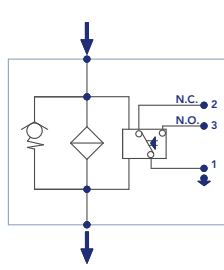
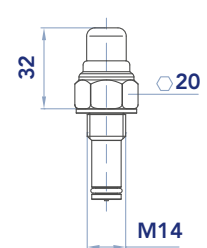
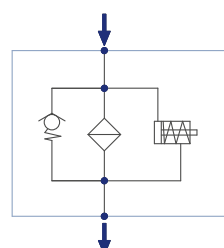


INDICATOR SERIE DESCRIPTION FOR PRESSURE FILTERS SERIES

NBR	FKM	Pressure gauge	
31	-	Scale 0÷1,2 MPa (0÷12 bar)	FPE - FPH
33	-	Scale 0÷1,2 MPa (0÷12 bar)	FMA
36	-	Scale 0÷1,2 MPa (0÷12 bar)	FPE - FPH

PRESSURE FILTERS

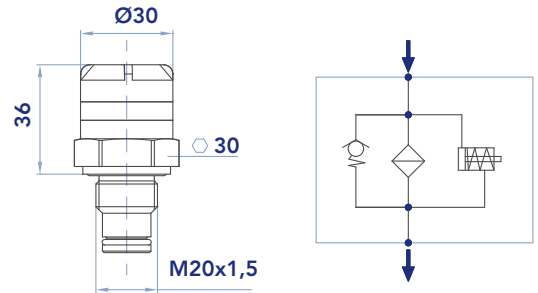
CLOGGING INDICATORS

INDICATOR SERIE		DESCRIPTION	FOR PRESSURE FILTERS SERIES
NBR	FKM	Pressure switch	
P1	-	Setting 150 kPa (1,5 bar) - SPDT	FMA - FPE - FPH  
SPDT, Max voltage 250V - 50 Hz - Max current 6 A resistive, 1 A inductive - Protection IP65 connector DIN 43650			
NBR	FKM	Differential VISUAL ELECTRICAL indicator	
N0	S0	Setting 130 kPa (1,3 bar)	for FPE A+, B+  
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650			
NBR	FKM	Differential VISUAL indicator	
U0	W0	Setting 130 kPa (1,3 bar)	for FPE A+, B+  

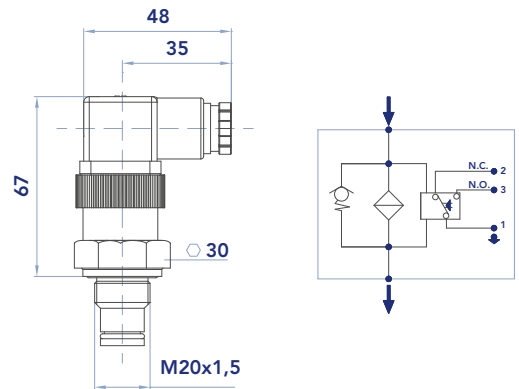


INDICATOR SERIE DESCRIPTION FOR PRESSURE FILTERS SERIES

NBR	FKM	Differential VISUAL indicators	
5B	AB	Setting 130 kPa (1,3 bar)	FPH - FPO
5D	AD	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPG - FPL - FPM - FPO
5E	AE	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
5F	AF	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM

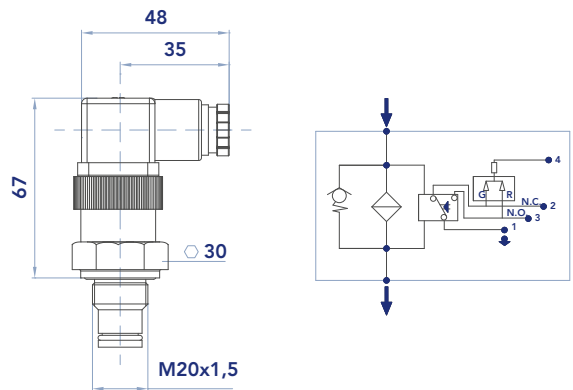


NBR	FKM	Differential ELECTRICAL indicators	
6B	CB	Setting 130 kPa (1,3 bar)	FPH - FPO
6D	CD	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPG - FPL - FPM - FPO
6E	CE	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
6F	CF	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM



SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	Differential ELECTRICAL indicators with LED (24 V) for visual indication	
7B	EB	Setting 130 kPa (1,3 bar)	FPH - FPO
7D	ED	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPG - FPL - FPM - FPO
7E	EE	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
7F	EF	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM



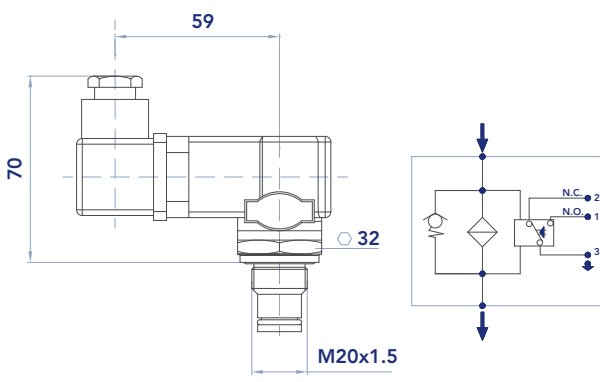
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

PRESSURE FILTERS

CLOGGING INDICATORS

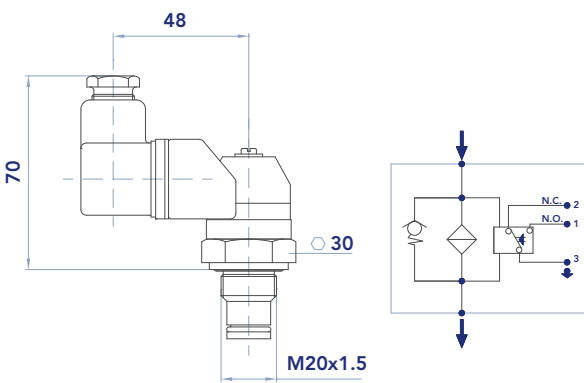
INDICATOR SERIE DESCRIPTION FOR PRESSURE FILTERS SERIES

NBR	FKM	Differential ELECTRICAL indicators with THERMOSTAT 30° C	
T0	DB	Setting 130 kPa (1,3 bar)	FPH - FPO
T2	DE	Setting 500 kPa (5 bar)	FPA - FPB - FPD - FPL - FPM
T3	DF	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM
T6	DD	Setting 250 kPa (2,5 bar)	FPA - FPB - FPC - FPD - FPG - FPL - FPM - FPO



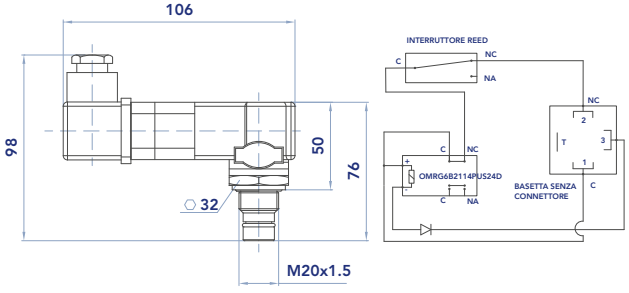
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	Differential VISUAL ELECTRICAL indicators	
70	E0	Setting 130 kPa (1,3 bar)	FPH
76	E6	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPL - FPM
72	E2	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
73	E3	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM



SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	Differential ELECTRICAL indicators VANDAL PROOF	
M2	-	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
M3	-	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM
M6	-	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPL - FPM

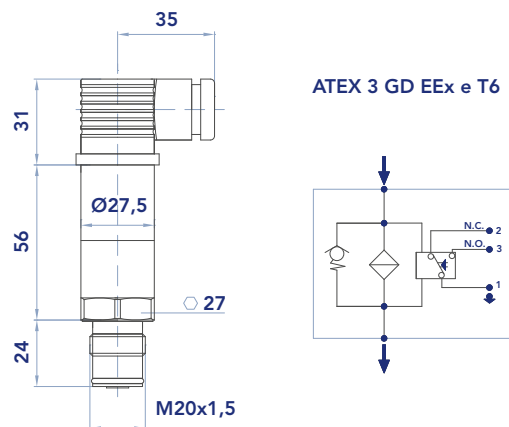


SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650



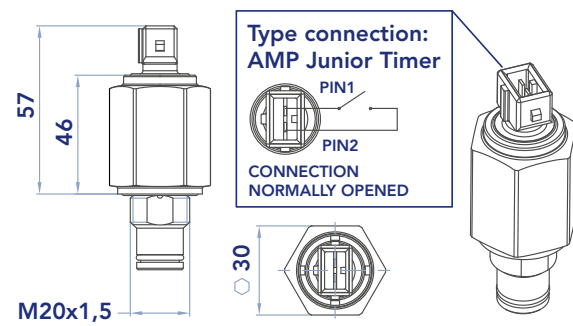
INDICATOR SERIE DESCRIPTION FOR PRESSURE FILTERS SERIES

NBR	FKM	Differential ELECTRICAL indicators ATEX	
008.0239.2	-	Setting 130 kPa (1,3 bar)	FPA - FPB - FPD - FPL - FPM
008.0240.2	-	Setting 250 kPa (2,5 bar)	FPA - FPB - FPD - FPL - FPM
008.0235.2	-	Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPL - FPM
008.0212.2	-	Setting 800 kPa (8 bar)	FPA - FPB - FPC - FPD - FPL - FPM



SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
 C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	Differential ELECTRICAL indicators	
XE	-	N.O. Setting 500 kPa (5 bar)	FPA - FPB - FPC - FPD - FPG - FPL - FPM
XD	-	N.O. Setting 240kPa (2,4 bar)	FPA - FPB - FPC - FPD - FPG - FPL - FPM
XL	-	N.C. Setting 240 kPa (2,4 bar)	FPA - FPB - FPC - FPD - FPG - FPL - FPM
XG	-	N.C. Setting 340 kPa (3,4 bar)	FPA - FPB - FPC - FPD - FPG - FPL - FPM



Electrical rating: 5(3)A/12 VDC - Type connection: AMP Junior timer

PRESSURE FILTERS

CLOGGING INDICATORS

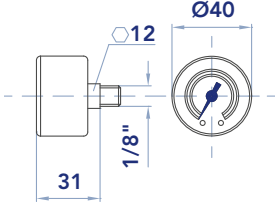
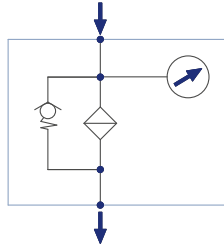
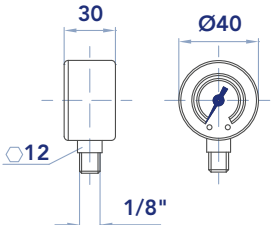
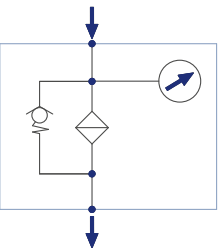
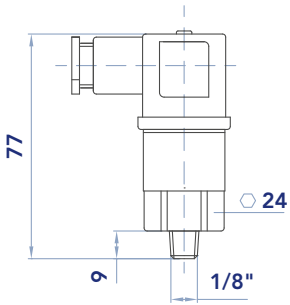
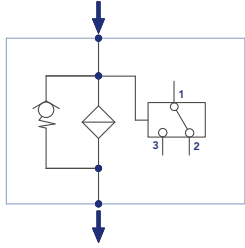
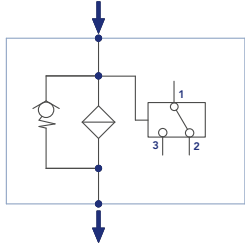
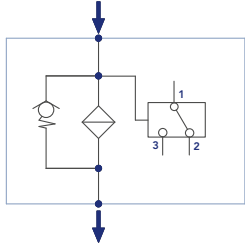
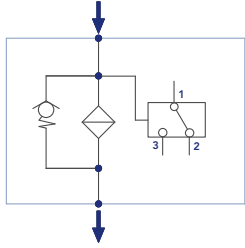


INDICATOR SERIE		DESCRIPTION	FOR PRESSURE FILTERS SERIES
NBR	FKM	ELECTRONICAL Differential PRESSURE CLOGGING INDICATOR	
008.0265.2	-	Setting 150 kPa (75%) - Setting 200kPa (100%) PNP-NO	<p>FPA FPB FPC FPD FPH FPL FPM</p>
		<p>PIN1:24V +/-10%. - PIN2: Analogue output 4-20mA - For input < 25%FS analogue signal output is constant at 4mA - Accuracy at 25°C, for input >25%FS =+/-5%FS max; - PIN3: Digital output 1 calibrated at 1,5 bar – PNP – Max Load 0,2A – NO - PIN4: Digital output 2 calibrated at 2,0bar – PNP – Max Load 0,2A – NO - PIN5: 0V – GND Protection IP67 - Connector: M12x5PIN</p>	
NBR	FKM	ELECTRONICAL differential pressure clogging indicator	
008.0266.2	-	Setting 375 (75%) - Setting 500kPa (100%) PNP-NO	<p>FPA FPB FPC FPD FPH FPL FPM</p>
		<p>PIN1:24V +/-10%. - PIN2: Analogue output 4-20mA - For input < 25%FS analogue signal output is constant at 4mA - Accuracy at 25°C, for input >25%FS =+/-5%FS max; - PIN3: Digital output 1 calibrated at 3,75 bar – PNP – Max Load 0,2A – NO - PIN4: Digital output2 calibrated at 5,0bar – PNP – Max Load 0,2A – NO - PIN5: 0V – GND Protection IP67 - Connector: M12x5PIN</p>	

RETURN FILTERS

CLOGGING INDICATORS

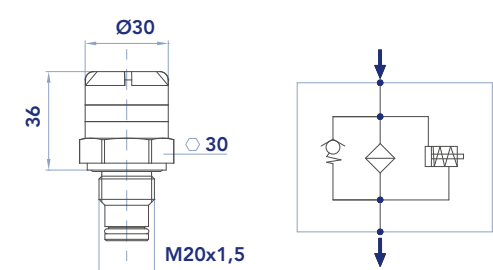
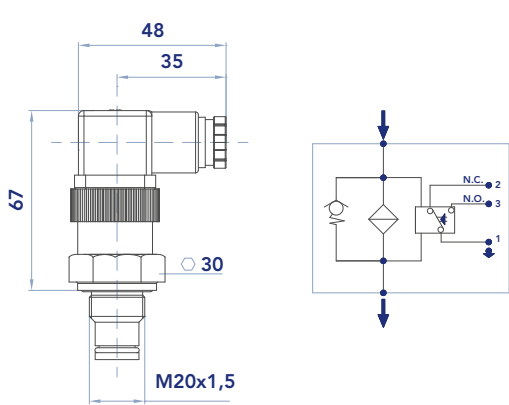
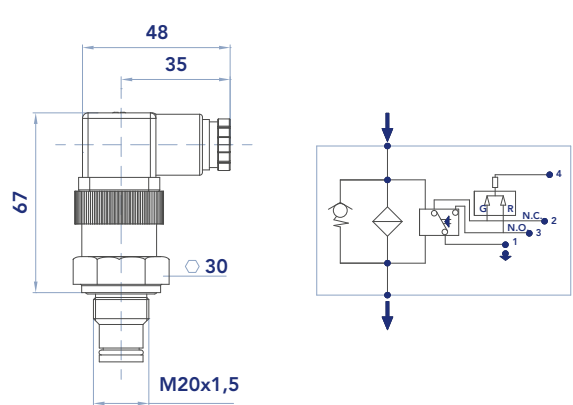


INDICATOR SERIE		DESCRIPTION	FOR RETURN FILTERS SERIES
NBR	FKM	Pressure gauge	
30	-	Scale 0÷600 kPa (0÷6 bar)	FRA - FRB - FRC FRF - FRH - GRF  
NBR	FKM	Pressure gauge	
32	-	Scale 0÷600 kPa (0÷6 bar)	FRA - FRB - FRC FRF - FRH - GRF  
NBR	FKM	Pressure switch	
P1	-	Setting 150 kPa (1,5 bar) - SPDT	FRA - FRB FRC - FRH  
P2	-	Setting 300 kPa (3 bar) - SPDT	FRF (special version, without bypass valve) 
P4	-	Setting 130 kPa (1,3 bar) - SPDT	FRF - GRF 
P6	-	Setting 200 kPa (2 bar) - SPDT	FRB 

RETURN FILTERS

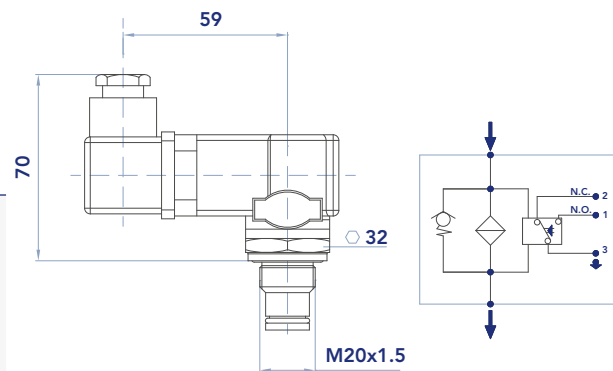
CLOGGING INDICATORS

INDICATOR SERIE DESCRIPTION FOR RETURN FILTERS SERIES

NBR	FKM	Differential VISUAL indicators	
5B	AB	Setting 130 kPa (1,3 bar)	FRF - GRF
5C	AC	Setting 200 kPa (2 bar)	FRD
			
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650			
NBR	FKM	Differential ELECTRICAL indicators	
6B	CB	Setting 130 kPa (1,3 bar)	FRF - GRF
6C	CC	Setting 200 kPa (2 bar)	FRD
			
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650			
NBR	FKM	Differential ELECTRICAL indicators with LED (24 V) for visual indication	
7B	EB	Setting 130 kPa (1,3 bar)	FRF - GRF
7C	EC	Setting 2 bar (200 kPa)	FRD - MRH
			
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650			

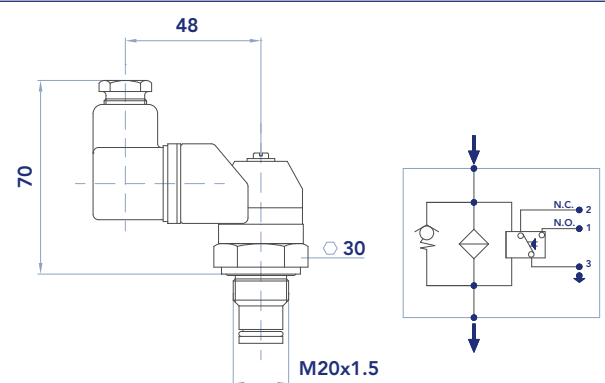
INDICATOR SERIE DESCRIPTION FOR RETURN FILTERS SERIES

NBR	FKM	Differential ELECTRICAL indicators with THERMOSTAT 30° C	
T0	DB	Setting 130 kPa (1,3 bar)	FRF - GRF
T1	DC	Setting 200 kPa (2 bar)	FRD



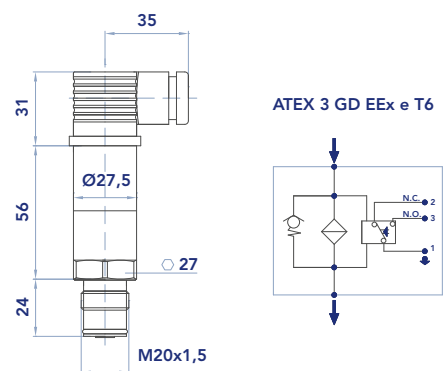
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	Differential VISUAL ELECTRICAL indicators	
70	E0	Setting 130 kPa (1,3 bar)	FRF - GRF
71	E1	Setting 200 kPa (2 bar)	FRD



SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

NBR	FKM	DIFFERENTIAL ELECTRICAL INDICATORS ATEX	
008.0239.2	-	Setting 130 kPa (1,3 bar)	FRF - GRF
008.0234.2	-	Setting 200 kPa (2 bar)	FRD



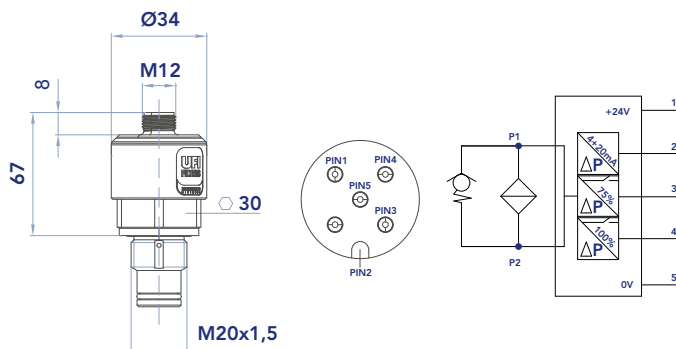
SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively
C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650

RETURN FILTERS

CLOGGING INDICATORS

INDICATOR SERIE DESCRIPTION FOR RETURN FILTERS SERIES

NBR **FKM** **ELECTRONICAL differential pressure clogging indicator**

008.0265.2	-	Setting 150 kPa (75%) - Setting 200kPa (100%) PNP-NO	FRD	
<p>PIN1:24V +/-10%. - PIN2: Analogue output 4-20mA - For input < 25%FS analogue signal output is constant at 4mA - Accuracy at 25°C, for input >25%FS =+/-5%FS max; - PIN3: Digital output 1 calibrated at 1,5bar - PNP - Max Load 0,2A - NO - PIN4: Digital output 2 calibrated at 2,0bar - PNP - Max Load 0,2A - NO - PIN5: 0V - GND Protection IP67 - Connector: M12x5PIN</p>				

OFF-LINE FILTERS

CLOGGING INDICATORS



INDICATOR SERIE	DESCRIPTION	FOR OFF-LINE FILTERS SERIES
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NBR	FKM	Differential VISUAL indicators	
5B	AB	Setting 130 kPa (1,3 bar)	FOF - UOW
NBR	FKM	Differential ELECTRICAL indicators	
6B	CB	Setting 130 kPa (1,3 bar)	FOF - UOW
		SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650	
NBR	FKM	Differential ELECTRICAL indicators with LED (24 V) for visual indication	
7B	EB	Setting 130 kPa (1,3 bar)	FOF - UOW
		SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650	

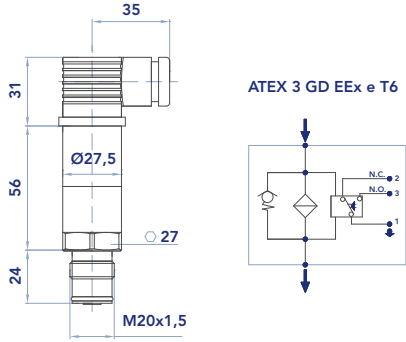


INDICATOR SERIE DESCRIPTION FOR OFF-LINE FILTERS SERIES

NBR	FKM	Differential ELECTRICAL indicators with THERMOSTAT 30° C	
T0	DB	Setting 130 kPa (1,3 bar)	FOF - UOW
		SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650	
NBR	FKM	Differential VISUAL ELECTRICAL indicators	
70	E0	Setting 130 kPa (1,3 bar)	FOF - UOW
		SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650	
NBR	FKM	Differential ELECTRICAL indicators ATEX	
008.0239.2	-	Setting 130 kPa (1,3 bar)	FOF - UOW
		SPDT differential switch. C.C. 14 - 30 V: > max resistive or inductive load 4 - 3 A respectively C.A. 125-250 V: > max resistive or inductive load 1 A - Protection IP65 - Connector DIN 43650	



INDICATOR SERIE DESCRIPTION FOR OFF-LINE FILTERS SERIES

NBR	FKM	ELECTRONICAL differential pressure clogging indicator	
008.0265.2	-	Setting 150 kPa (75%) - Setting 200kPa (100%) PNP-NO	<p style="text-align: center;">FOF</p> 
		PIN1:24V +/-10%. - PIN2: Analogue output 4-20mA - For input < 25%FS analogue signal output is constant at 4mA - Accuracy at 25°C, for input >25%FS =+/-5%FS max; - PIN3: Digital output 1 calibrated at 1,5bar – PNP – Max Load 0,2A – NO - PIN4: Digital output 2 calibrated at 2,0bar – PNP – Max Load 0,2A – NO - PIN5: 0V – GND Protection IP67 - Connector: M12x5PIN	

SUCTION FILTERS

CLOGGING INDICATORS



INDICATOR SERIE		DESCRIPTION	FOR SUCTION FILTERS SERIES
NBR	FKM	Vacuum gauge	
10	-	Vacuum gauge, rear connection	FSC - FSD - FSE
NBR	FKM	Vacuum gauge	
11	-	Vacuum gauge, bottom connection	FMA - FSC FSD - FSE
NBR	FKM	Vacuum switch	
91	-	Setting 20 kPa (0,2 bar) - SPDT	FMA - FSC FSD - FSE
		SPDT, Max voltage 250V - 50 Hz - Max current 6 A resistive, 1 A inductive - Protection IP65 connector DIN 43650	





Company with quality management system certified by DNV
ISO 9001 - IATF 16949

Company with environmental system certified by DNV
ISO 14001

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