HYDRAULIC FILTRATION
PRODUCTS

PASSION TO PERFORM

MPFILTRI®

A WORLDWIDE LEADER IN THE FIELD OF HYDRAULIC FILTRATION EQUIPMENT.

Our company started life in 1964, when Bruno Pasotto decided to attempt to cater for the requests of a market still to be fully explored, with the study, design, development, production and marketing of a vast range of filters for hydraulic equipment, capable of satisfying the needs of manufacturers in all sectors. The quality of our products, our extreme competitiveness compared with major international producers and our constant activities of research, design and development has made us a worldwide leader in the field of hydraulic circuit filtering.
Present for 50 years in the market, we have played a truly decisive role in defining our sector, and by now we are a group capable of controlling our entire chain of production, monitoring all manufacturing processes to guarantee superior quality standards and to provide concrete solutions for the rapidly evolving needs of customers and the market.

MARKET LEADER

Our work is based on a skillful interaction between advanced technology and fine workmanship, **customizing products according to specific market requests**, focusing strongly on innovation and quality, and following every step in the manufacturing of both standard and special products, fully respecting customer expectations.

Our customer-oriented philosophy, which enables us to satisfy all customer requests **rapidly** and **with personalized products**, makes us a **dynamic and flexible enterprise**. The possibility of constantly controlling and monitoring the entire production process is essential to allow us to guarantee the quality of our products.

WORLDWIDE PRESENCE

Our foreign Branches enable us to offer a diversified range of products that allow us to successfully face the aggressive challenge of international competition, and also to maintain a stable presence at a local level.

The Group boasts **8** **business branches**

TECHNOLOGY

Our constant **quest for excellence in quality and technological innovation** allows us to offer only the best solutions and services for applications in many fields, including general industry, test rigs, lubrication, heavy engineering, renewable energies, naval engineering, offshore engineering, aviation systems, emerging technologies and mobile plant (i.e. tractors, excavators, concrete pumps, platforms).

AND PRODUCTION

Our high level of technological expertise means **we can rely entirely on our own resources, without resorting to external providers.** This in turn enables us to satisfy a growing number of customer requests, also exploiting our constantly updated range of machines and equipment, featuring **fully-automated workstations** capable of **24-hour production**.

SUCTION FILTERS

Flow rates
up to 875 l/min

Mounting:
- Tank immersed
- In-Line
- In tank with shut off valve
- In tank with flooded suction

RETURN FILTERS

Flow rates
up to 3000 l/min

Pressure
up to 20 bar

Mounting:
- In-Line
- Tank top
- In single and duplex designs

RETURN / SUCTION FILTERS

Flow rates
up to 300 l/min

Pressure
up to 80 bar

Mounting:
- In-Line
- Tank top

SPIN-ON FILTERS

Flow rates
up to 365 l/min

Pressure
up to 35 bar

Mounting:
- In-Line
- Tank top

LOW & MEDIUM PRESSURE FILTERS

Flow rates
up to 3000 l/min

Pressure
up to 80 bar

Mounting:
- In-Line
- Parallel manifold version
- In single and duplex designs

HIGH PRESSURE FILTERS

Flow rates
up to 750 l/min

Pressure from 110 bar
up to 560 bar

Mounting:
- In-Line
- Manifold
- In single and duplex designs

PRODUCT RANGE

MP Filtri can offer a vast and articulated range of products for the global market, suitable for all industrial sectors using hydraulic equipment.
This includes filters (suction, in-line, pressure, stainless steel, spin-on and return) and structural components (motor/pump bell housings, transmission couplings, flexible inserts, damper rings, support feet, aluminium tanks, inspection hatches).

We can provide all the skills and solutions required by the modern hydraulics industry to monitor contamination levels and other fluid conditions.

Mobile filtration units and a full range of accessories allow us to supply everything necessary for complete hydraulic circuits.

STAINLESS STEEL HIGH PRESSURE FILTERS

Flow rates up to 125 l/min
Pressure from 320 bar
up to 1000 bar

Mounting:
- In-Line
- Manifold
- In single and duplex designs

CONTAMINATION MONITORING PRODUCTS

- Calibrated on test rigs manufactured and certified to ISO 11943 based on methods from ISO 11171
- Off-line and In-line particles counting up to 400 bar
- Bottle samplers
- RS 232 - RS 485 digital bus interfaces

MOBILE FILTRATION UNITS

Flow rates from 15 l/min
up to 200 l/min

POWER TRANSMISSION PRODUCTS

- Aluminium bell-housings for motors from 0.12 kW to 400 kW
- Couplings in Aluminium Cast Iron - Steel
- Damping rings
- Foot bracket
- Aluminium tanks
- Cleaning covers

ACCESSORIES

- Oil filler and air breather plugs
- Optical and electrical level gauges
- Pressure gauge valve selectors
- Pipe fixing brackets
- Pressure gauges

HYDRAULIC FILTRATION PRODUCTS

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Contamination management

INDEX

1 HYDRAULIC FLUIDS

The fluid is the vector that transmits power, energy within an oleodynamic circuit. In addition to transmitting energy through the circuit, it also performs additional functions such as lubrication, protection and cooling of the surfaces.
The classification of fluids used in hydraulic systems is coded in many regulatory references, different Standards.

The most popular classification criterion divides them into the following families:
- MINERAL OILS
  Commonly used oil deriving fluids.

- FIRE RESISTANT FLUIDS
  Fluids with intrinsic characteristics of incombustibility or high flash point.

- SYNTHETIC FLUIDS
  Modified chemical products to obtain specific optimized features.

- ECOLOGICAL FLUIDS
  Synthetic or vegetable origin fluids with high biodegradability characteristics.

The choice of fluid for an hydraulic system must take into account several parameters.
These parameters can adversely affect the performance of an hydraulic system, causing delay in the controls, pump cavitation, excessive absorption, excessive temperature rise, efficiency reduction, increased drainage, wear, jam/block or air intake in the plant.

The main properties that characterize hydraulic fluids and affect their choice are:
- DYNAMIC VISCOSITY
  It identifies the fluid's resistance to sliding due to the impact of the particles forming it.

- CINEMATIC VISCOSITY
  It is a widespread formal dimension in the hydraulic field.
  It is calculated with the ratio between the dynamic viscosity and the fluid density.
  Cinematic viscosity varies with temperature and pressure variations.

- VISCOSITY INDEX
  This value expresses the ability of a fluid to maintain viscosity when the temperature changes.
  A high viscosity index indicates the fluid's ability to limit viscosity variations by varying the temperature.

- FILTERABILITY INDEX
  It is the value that indicates the ability of a fluid to cross the filter materials.
  A low filterability index could cause premature clogging of the filter material.

- WORKING TEMPERATURE
  Working temperature affects the fundamental characteristics of the fluid.
  As already seen, some fluid characteristics, such as cinematic viscosity, vary with the temperature variation.
  When choosing a hydraulic oil, must therefore be taken into account of the environmental conditions in which the machine will operate.

- COMPRESSIBILITY MODULE
  Every fluid subjected to a pressure contracts, increasing its density.
  The compressibility module identifies the increase in pressure required to cause a corresponding increase in density.

- HYDROLYTIC STABILITY
  It is the characteristic that prevents galvanic pairs that can cause wear in the plant/system.

- ANTIOXIDANT STABILITY AND WEAR PROTECTION
  These features translate into the capacity of a hydraulic oil to avoid corrosion of metal elements inside the system.

- HEAT TRANSFER CAPACITY
  It is the characteristic that indicates the capacity of hydraulic oil to exchange heat with the surfaces and then cool them.

2 FLUID CONTAMINATION

Whatever the nature and properties of fluids, they are inevitably subject to contamination. Fluid contamination can have two origins:

- INITIAL CONTAMINATION
  Caused by the introduction of contaminated fluid into the circuit, or by incorrect storage, transport or transfer operations.

- PROGRESSIVE CONTAMINATION
  Caused by factors related to the operation of the system, such as metal surface wear, sealing wear, oxidation or degradation of the fluid, the introduction of contaminants during maintenance, corrosion due to chemical or electrochemical action between fluid and components, cavitation.
  The contamination of hydraulic systems can be of different nature:

- SOLID CONTAMINATION
  For example rust, slag, metal particles, fibers, rubber particles, paint particles
- or additives

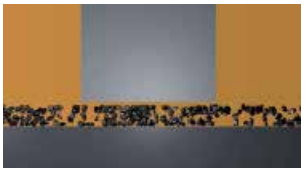
- LIQUID CONTAMINATION
  For example, the presence of water due to condensation or external infiltration or acids

- GASEOUS CONTAMINATION
  For example, the presence of air due to inadequate oil level in the tank, drainage in suction ducts, incorrect sizing of tubes or tanks.

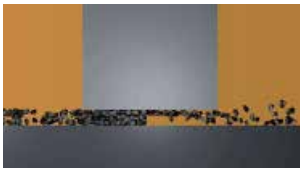
3 EFFECTS OF CONTAMINATION ON HYDRAULIC COMPONENTS

Solid contamination is recognized as the main cause of malfunction, failure and early degradation in hydraulic systems. It is impossible to delete it completely, but it can be effectively controlled by appropriate devices.

CONTAMINATION IN PRESENCE OF LARGE TOLERANCES



CONTAMINATION IN PRESENCE OF NARROW TOLERANCES



Solid contamination mainly causes surface damage and component wear.

- ABRASION OF SURFACES
  Cause of leakage through mechanical seals, reduction of system performance, failures.

- SURFACE EROSION
  Cause of leakage through mechanical seals, reduction of system performance, variation in adjustment of control components, failures.

- ADHESION OF MOVING PARTS
  Cause of failure due to lack of lubrication.

- DAMAGES DUE TO FATIGUE
  Cause of breakdowns and components breakdown.stem performance, failures.

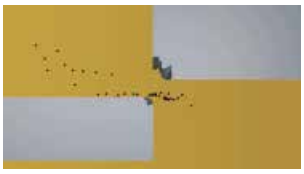
- SURFACE EROSION
  Cause of leakage through mechanical seals, reduction of system performance, variation in adjustment of control components, failures.

- ADHESION OF MOVING PARTS
  Cause of failure due to lack of lubrication.

- DAMAGES DUE TO FATIGUE
  Cause of breakdowns and components breakdown.

ABRASION

EROSION



ADHESION

FATIGUE

Liquid contamination mainly results in decay of lubrication performance and protection of fluid surfaces.

DISSOLVED WATER

- INCREASING FLUID ACIDITY
  Cause of surface corrosion and premature fluid oxidation

- GALVANIC COUPLE AT HIGH TEMPERATURES
  Cause of corrosion

FREE WATER - ADDITIONAL EFFECTS

- DECAY OF LUBRICANT PERFORMANCE
  Cause of rust and sludge formation, metal corrosion and increased solid contamination

- BATTERY COLONY CREATION
  Cause of worsening in the filterability feature

- ICE CREATION AT LOW TEMPERATURES
  Cause damage to the surface

- ADDITIVE DEPLETION
  Free water retains polar additives

Gaseous contamination mainly results in decay of system performance.

- CUSHION SUSPENSION
  Cause of increased noise and cavitation.

- FLUID OXIDATION
  Cause of corrosion acceleration of metal parts.

- MODIFICATION OF FLUID PROPERTIES (COMPRESSIBILITY MODULE, DENSITY, VISCOSITY)
  Cause of system's reduction of efficiency and of controllability. It is easy to understand how a system without proper contamination management is subject to higher costs than a system that is provided.

- MAINTENANCE
  Maintenance activities, spare parts, machine stop costs

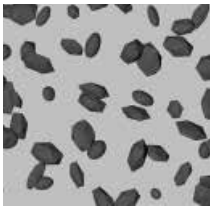
- ENERGY AND EFFICIENCY
  Efficiency and perfomance reduction due to friction, drainage, cavitation.

4 MEASURING THE SOLID CONTAMINATION LEVEL

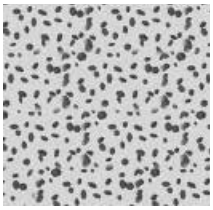
The level of contamination of a system identifies the amount of contaminant contained in a fluid.
This parameter refers to a unit volume of fluid.
The level of contamination may be different at different points in the system.
From the information in the previous paragraphs it is also apparent that the level of contamination is heavily influenced by the working conditions of the system, by its working years and by the environmental conditions.

What is the size of the contaminating particles that we must handle in our hydraulic circuit?

HUMAN HAIR
(75 µm)



MINIMUM DIMENSION
VISIBLE HUMAN EYES
(40 µm)



TYPICAL CONTAMINANT
DIMENSION IN A
HYDRAULIC CIRCUIT
(4÷14 µm)

Contamination level analysis is significant only if performed with a uniform and repeatable method, conducted with standard test methods and suitably calibrated equipment.
To this end, ISO has issued a set of standards that allowa to conduct tests and express the measured values in the following ways.

- GRAVIMETRIC LEVEL - ISO 4405

The level of contamination is defined by checking the weight of particles collected by a laboratory membrane. The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard.
The volume of fluid is filtered through the membrane by using a suitable suction system. The weight of the contaminant is determined by checking the weight of the membrane before and after the fluid filtration.

- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4406

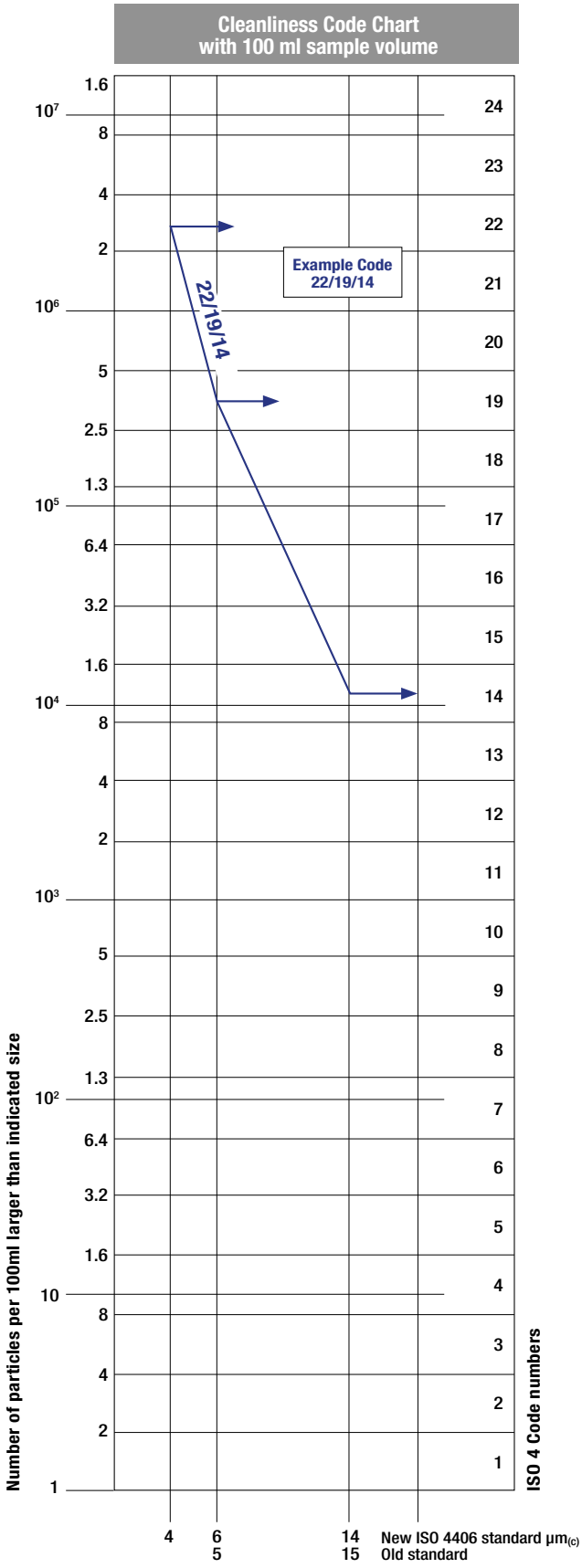
The level of contamination is defined by counting the number of particles of certain dimensions per unit of volume of fluid. Measurement is performed by Automatic Particle Counters (APC).
Following the count, the contamination classes are determined, corresponding to the number of particles detected in the unit of fluid.
The most common classification methods follow ISO 4406 and SAE AS 4059 (Aerospace Sector) regulations.
NAS 1638 is still used although obsolete.

Classification example according to ISO 4406
The code refers to the number of particles of the same size or greater than 4, 6 or 14 µm in a 1 ml fluid.

Class	Number of particles per ml	
	Over	Up to
28	1 300 000	2 500 000
27	640 000	1 300 000
26	320 000	640 000
25	160 000	320 000
24	80 000	160 000
23	40 000	80 000
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
7	0.64	1.3
6	0.32	0.64
5	0.16	0.32
4	0.08	0.16
3	0.04	0.08
2	0.02	0.04
1	0.01	0.02
0	0	0.01

> 4 $\mu m_{(c)}$ = 350 particles
> 6 $\mu m_{(c)}$ = 100 particles
> 14 $\mu m_{(c)}$ = 25 particles
16 / 14 / 12

ISO 4406:1999 Cleanliness Code System
Microscope counting examines the particles differently to APCs and the code is given with two scale numbers only.
These are at 5 µm and 15 µm equivalent to the 6 $\mu m_{(c)}$ and 14 $\mu m_{(c)}$ of APCs.



- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - SAE AS 4059-1 and SAE AS 4059-2

Classification example according to SAE AS 4059-1 and SAE AS 4059-2

The code, prepared for the aerospace industry, is based on the size, quantity, and particle spacing in a 100 ml fluid sample. The contamination classes are defined by numeric codes, the size of the contaminant is identified by letters (A-F).

It can be made a differential measurement (Table 1) or a cumulative measurement (Table 2)

Table 1 - Class for differential measurement

Class	Dimension of contaminant				
	6÷14 µm(c)	14÷21 µm(c)	21÷38 µm(c)	38÷70 µm(c)	>70 µm(c)
00	125	22	4	1	0
0	250	44	8	2	0
1	500	89	16	3	1
2	1 000	178	32	6	1
3	2 000	356	63	11	2
4	4 000	712	126	22	4
5	8 000	1 425	253	45	8
6	16 000	2 850	506	90	16
7	32 000	5 700	1 012	180	32
8	64 000	11 400	2 025	360	64
9	128 000	22 800	4 050	720	128
10	256 000	45 600	8 100	1 440	256
11	512 000	91 200	16 200	2 880	512
12	1 024 000	182 400	32 400	5 760	1 024

6÷14 µm(c) = 15 000 particles
14÷21 µm(c) = 2 200 particles
21÷38 µm(c) = 200 particles
38÷70 µm(c) = 35 particles
> 70 µm(c) = 3 particles
Class 6

Table 2 - Class for cumulative measurement

Class	Dimension of contaminant					
	>4 µm(c) A	>6 µm(c) B	>14 µm(c) C	>21 µm(c) D	>38 µm(c) E	>70 µm(c) F
000	195	76	14	3	1	0
00	390	152	27	5	1	0
0	780	304	54	10	2	0
1	1 560	609	109	20	4	1
2	3 120	1 217	217	39	7	1
3	6 250	2 432	432	76	13	2
4	12 500	4 864	864	152	26	4
5	25 000	9 731	1 731	306	53	8
6	50 000	19 462	3 462	612	106	16
7	100 000	38 924	6 924	1 224	212	32
8	200 000	77 849	13 849	2 449	424	64
9	400 000	155 698	27 698	4 898	848	128
10	800 000	311 396	55 396	9 796	1 696	256
11	1 600 000	622 792	110 792	19 592	3 392	512
12	3 200 000	1 245 584	221 584	39 184	6 784	1 024

> 4 µm(c) = 45 000 particles
> 6 µm(c) = 15 000 particles
> 14 µm(c) = 1 500 particles
> 21 µm(c) = 250 particles
> 38 µm(c) = 15 particles
> 70 µm(c) = 3 particle
Class from 2F to 4E

- CLASSES OF CONTAMINATION ACCORDING TO NAS 1638 (January 1964)

The NAS system was originally developed in 1964 to define contamination classes for the contamination contained within aircraft components.
The application of this standard was extended to industrial hydraulic systems simply because nothing else existed at the time.
The coding system defines the maximum numbers permitted of 100ml volume at various size intervals (differential counts) rather than using cumulative counts as in ISO 4406:1999. Although there is no guidance given in the standard on how to quote the levels, most industrial users quote a single code which is the highest recorded in all sizes and this convention is used on MP Filtri APC's.

The contamination classes are defined by a number (from 00 to 12) which indicates the maximum number of particles per 100 ml, counted on a differential basis, in a given size bracket.

Size Range Classes (in microns)

Maximum Contamination Limits per 100 ml					
Class	5÷15	15÷25	25÷50	50÷100	>100
00	125	22	4	1	0
0	250	44	8	2	0
1	500	89	16	3	1
2	1 000	178	32	6	1
3	2 000	356	63	11	2
4	4 000	712	126	22	4
5	8 000	1 425	253	45	8
6	16 000	2 850	506	90	16
7	32 000	5 700	1 012	180	32
8	64 000	11 400	2 025	360	64
9	128 000	22 800	4 050	720	128
10	256 000	45 600	8 100	1 440	256
11	512 000	91 200	16 200	2 880	512
12	1 024 000	182 400	32 400	5 760	1 024

5÷15 µm(c) = 42 000 particles
15÷25 µm(c) = 2 200 particles
25÷50 µm(c) = 150 particles
50÷100 µm(c) = 18 particles
> 100 µm(c) = 3 particles
Class NAS 8

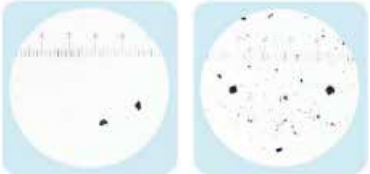
- CUMULATIVE DISTRIBUTION OF THE PARTICLES SIZE - ISO 4407

The level of contamination is defined by counting the number of particles collected by a laboratory membrane per unit of fluid volume. The measurement is done by a microscope.
The membrane must be cleaned, dried and desiccated, with fluid and conditions defined by the Standard. The fluid volume is filtered through the membrane, using a suitable suction system.
The level of contamination is identified by dividing the membrane into a predefined number of areas and by counting the contaminant particles using a suitable laboratory microscope.

MICROSCOPE CONTROL AND MEASUREMENT

COMPARISON PHOTOGRAPH'S

1 graduation = 10µm



ISO 4406:1999	Class 16/14/11	Class 22/20/17
SAE AS4059E Table 1	Class 5	Class 11
NAS 1638	Class 5	Class 11
SAE AS4059E Table 2	Class 6A/5B/5C	Class 12A/11B/11C

- CLEANLINESS CODE COMPARISON

Although ISO 4406:1999 standard is being used extensively within the hydraulics industry other standards are occasionally required and a comparison may be requested. The table below gives a very general comparison but often no direct comparison is possible due to the different classes and sizes involved.

ISO 4406:1999	SAE AS4059 Table 2	SAE AS4059 Table 1	NAS 1638
> 4 $\mu m_{(c)}$ 6 $\mu m_{(c)}$ 14 $\mu m_{(c)}$	> 4 $\mu m_{(c)}$ 6 $\mu m_{(c)}$ 14 $\mu m_{(c)}$	4-6 6-14 14-21 21-38 38-70 >70	5-15 15-25 25-50 50-100 >100
23 / 21 / 18	13A / 12B / 12C	12	12
22 / 20 / 17	12A / 11B / 11C	11	11
21 / 19 / 16	11A / 10B / 10C	10	10
20 / 18 / 15	10A / 9B / 9B	9	9
19 / 17 / 14	9A / 8B / 8C	8	8
18 / 16 / 13	8A / 7B / 7C	7	7
17 / 15 / 12	7A / 6B / 6C	6	6
16 / 14 / 11	6A / 5B / 5C	5	5
15 / 13 / 10	5A / 4B / 4C	4	4
14 / 12 / 09	4A / 3B / 3C	3	3

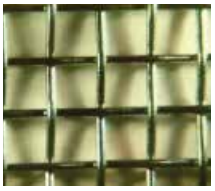
5 FILTRATION TECHNOLOGIES

Various mechanisms such as mechanical stoppage, magnetism, gravimetric deposit, or centrifugal separation can be used to reduce the level of contamination.
The mechanical stoppage method is most effective and can take place in two ways:

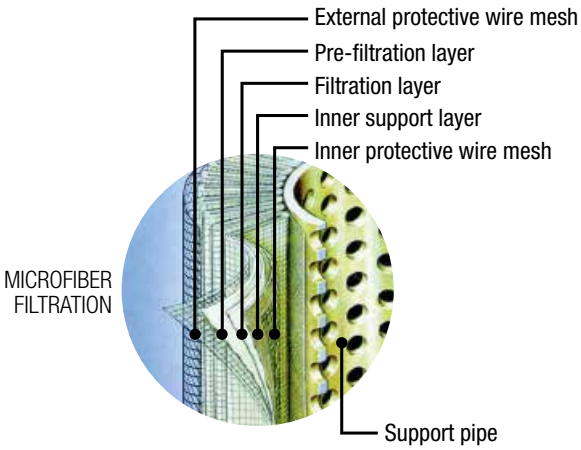
- SURFACE FILTRATION
  It is by direct interception. The filter prevents particles larger than the pores from continuing in the plant / system. Surface filters are generally manufactured with metal canvases or meshes.

- DEPTH FILTERING
  Filters are constructed by fiber interlacing. Such wraps form pathways of different shapes and sizes in which the particles remain trapped when they find smaller apertures than their diameter.
  Depth filters are generally produced with papers impregnated with phenolic resins, metal fibers or inorganic fibers.
  In inorganic fiber filtration, commonly called microfibre, the filtering layers are often overlapped in order to increase the ability to retain the contaminant.

WIRE MESH FILTRATION



PAPER FILTRATION



The filtration efficiency of metallic mesh filtrations is defined as the maximum particle size that can pass through the meshes of the filtering grid.
The efficiency of microfibre and paper filtration ($\beta_{x(c)}$) is defined through a lab test called Multipass Test. The efficiency value ($\beta_{x(c)}$) is defined as the ratio between the number of particles of certain dimensions detected upstream and downstream of the filter.

$$\frac{\text{Upstream particles number} > X\ \mu m_{(c)}}{\text{Downstream particles number} > X\ \mu m_{(c)}} = \beta_{x(c)}$$

Value ($\beta_{x(c)}$)	2	10	75	100	200	1000
Efficiency	50%	90%	98.7%	99%	99.5%	99.9%

Test conditions, such as type of fluid to be used (MIL-H-5606), type of contaminant to be used (ISO MTD), fluid viscosity, test temperature, are determined by ISO 16889.
In addition to the filtration efficiency value during the Multipass test, other important features, such as filtration stability (β stability) and dirt holding capacity (DHC), are also tested.
Poor filtration stability is the cause of the filtering quality worsening as the filter life rises. Low dirt holding capacity causes a reduction in the life of the filter.

Filtration ISO Standard Comparison	
MP Filtri Filter media code	$\beta_{x(C)}$ > 1000 ISO 16889
A03	5 $\mu m_{(c)}$
A06	7 $\mu m_{(c)}$
A10	10 $\mu m_{(c)}$
A16	15 $\mu m_{(c)}$
A25	21 $\mu m_{(c)}$

6 RECOMMENDED CONTAMINATION CLASSES

Any are the nature and the properties of fluids, they are inevitably subject to contamination. The level of contamination can be managed by using special components called filters.
Hydraulic components builders, knowing the problem of contamination, recommend the filtration level appropriate to the use of their products.

Example of recommended contamination levels

Piston pumps with fixed flow rate	•					
Piston pumps with variable flow rate			•			
Vane pumps with fixed flow rate		•				
Vane pumps with variable flow			•			
Engines	•					
Hydraulic cylinders	•					
Actuators					•	
Test benches						•
Check valve	•					
Directional valves	•					
Flow regulating valves	•					
Proportional valves				•		
Servo-valves					•	
Flat bearings			•			
Ball bearings				•		
ISO 4406 CODE	20/18/15	19/17/14	18/16/13	17/15/12	16/14/11	15/13/10
Recommended filtration $\beta x_{(c)} \geq 1.000$	$\beta_{20(c)}$ >1000	$\beta_{15(c)}$ >1000	$\beta_{10(c)}$ >1000	$\beta_{7(c)}$ >1000	$\beta_{7(c)}$ >1000	$\beta_{5(c)}$ >1000

The common classification of filters is determined by their position in the plant.

Types of filters:

Suction filters
They are positioned before the pump and are responsible for protecting the pump from dirty contaminants. It also provides additional flow guidance to the pump suction line.
Being subject to negligible working pressures are manufactured with simple and lightweight construction.
They are mainly produced with gross grade surface filtrations, mainly 60 ÷ 125 µm.
They can be equipped with a magnetic filter for retaining ferrous particles.
They are generally placed under the fluid head to take advantage of the piezometric thrust of the fluid and reduce the risk of cavitation.

There are two types of suction filters:
- IMMERSION FILTERS
  Simple filter element screwed on the suction pipe

- FILTERS WITH CONTAINER
  Container filters that are more bulky, but provide easier maintenance of the tank

Delivery (or Pressure) filters
They are positioned between the pump and most sensitive regulating and controlling components, such as servo valves or proportional valves, and are designed to ensure the class of contamination required by the components used in the circuit.
Being subjected to high working pressures are manufactured with more robust and articulated construction. In particular situations of corrosive environments or aggressive fluids can be made of stainless steel.
They are mainly produced with filtering depths of 3 ÷ 25 µm.
They can be manufactured with in-line connections, with plate or flange connections or directly integrated into the circuit control blocks / manifolds.
They can also be manufactured in duplex configuration to allow the contaminated section to be maintained even when the plant / system is in operation without interruption of the working cycle.

Return filters
They are positioned on the return line to the tank and perform the task of filtering the fluid from particles entering the system from the outside or generated by the wear of the components.
They are generally fixed to the reservoir (for this reason also called top tank mounted), positioned semi-immersed or completely immersed.
They are mainly produced with filtration depths of 10 ÷ 25 µm.
The positioning of the return filters must guarantee in all operating conditions that the fluid drainage takes place in immersed condition; this is to avoid creating foams in the tank that can cause malfunctions or cavitation in the pumps.
For the sizing of the return filters, account must be taken of the presence of accumulators or cylinders that can make the return flow considerably greater than the pump suction flow rate.
Being subject to contained working pressures are manufactured with simple and lightweight construction.
Normally it is possible to extract the filter element without disconnecting the filter from the rest of the system.

Combined filters
They are designed to be applied to systems with two or more circuits. They are commonly used in hydrostatic transmission machines where they have a dual filtration function of the return line and suction line of the hydrostatic transmission pump.
The filter is equipped with a valve that keeps the 0.5 bar pressure inside the filter. A portion of the fluid that returns to the tank is filtered by the return filter element, generally produced with absolute filtration, and returns to the transmission booster pump.
Only excess fluid returns to the tank through the valve.
The internal pressure of the filter and the absolute filtration help to avoid the cavitation phenomenon inside the pump.

Off-line filters
They are generally used in very large systems / plants, placed in a closed circuit independent from the main circuit. They remain in operation regardless of the operation of the main circuit and are crossed by a constant flow rate.
They can also be manufactured in duplex configuration to allow the contaminated section to be maintained even when the unit is in operation without interruption of the work cycle.

Venting filters
During the operation of the plants, the fluid level present in the reservoir changes continuously.
The result of this continuous fluctuation is an exchange of air with the outside environment.
The venting filter function, positioned on the tank, is to filter the air that enters the tank to compensate for fluid level variations.

7 FILTER CHOICE PARAMETERS

The choice of the filter system for an hydraulic system is influenced by several factors.
It is necessary to consider the characteristics of the various components present in the plant and their sensitivity to contamination.

It is also necessary to consider all the tasks that the filter will have to do within the plant:
- FLUID PROTECTION FROM CONTAMINATION
- PROTECTION OF OLEODYNAMIC COMPONENTS SENSITIVE TO CONTAMINATION
- PROTECTION OF OLEODINAMIC PLANTS FROM ENVIRONMENTAL WASTE
- PROTECTION OF OLEODINAMIC PLANTS FROM CONTAMINATION CAUSED BY COMPONENTS' FAILURES

The advantages of proper positioning and sizing of the filters are
- MORE RELIABILITY OF THE SYSTEM
- LONGER LIFE OF THE FLUID COMPONENTS
- REDUCTION OF STOP TIME
- REDUCTION OF FAILURE CASUALITIES

Each hydraulic filter is described by general features that identify the possibility of use in different applications.

- *MAXIMUM WORKING PRESSURE (Pmax)*
  The maximum working pressure of the filter must be greater than or equal to the pressure of the circuit section in which it will be installed.

- *PRESSURE DROP (ΔP)*
  The pressure drop depends on a number of factors, such as the working circuit temperature, the fluid viscosity, the filter element cleaning condition.

- *WORKING TEMPERATURE (T)*
  The working temperature deeply affect the choice of materials. Excessively high or low temperatures may adversely affect the strength of the materials or the characteristics of the seals.

- *FILTRATION EFFICIENCY (%) / FILTRATION RATIO ($\beta_{x(c)}$)*
  Filtration efficiency is the most important parameter to consider when selecting a filter.
  When choosing the filtration performances, the needs of the most sensitive components in the system must be considered.

- *FLUID TYPE*
  The type of fluid influences the choice of filters in terms of compatibility and viscosity. It is always mandatory to check the filterability.

- *PLACEMENT IN THE PLANT*
  The position of the filter in the system conditions the efficiency of all filter performances.

8 APPLICABLE STANDARDS FOR FILTER DEVELOPMENT

In order to obtain unique criteria for development and verification of the filters performance, specific regulations for the filters and filter elements testing have been issued by ISO. These norms describe the target, the methodology, the conditions and the presentation methods for the test results.

ISO 2941

Hydraulic fluid power -- Filter elements -- Verification of collapse/burst pressure rating

This Standard describes the method for testing the collapse / burst resistance of the filter elements.
The test is performed by crossing the contaminated fluid filter element at a predefined flow rate. The progressive clogging of the filter element, determined by contamination, causes an increase in differential pressure.

ISO 2942

Hydraulic fluid power -- Filter elements -- Verification of fabrication integrity and determination of the first bubble point

This Standard describes the method to verify the integrity of the assembled filter elements.
It can be used to verify the quality of the production process or the quality of the materials by verifying the pressure value of the first bubble point.

ISO 2943

Hydraulic fluid power -- Filter elements -- Verification of material compatibility with fluids

This Standard describes the method to verify the compatibility of materials with certain hydraulic fluids.
The test is carried out by keeping the element (the material sample) immersed in the fluid under high or low temperature conditions for a given period of time and verifying the retention of the characteristics.

ISO 3723

Hydraulic fluid power -- Filter elements -- Method for end load test

This Standard describes the method for verifying the axial load resistance of the filter elements.
After performing the procedure described in ISO 2943, the designed axial load is applied to the filter element. To verify the test results, then the test described in ISO 2941 is performed.

ISO 3968

Hydraulic fluid power -- Filters -- Evaluation of differential pressure versus flow characteristics

This Standard describes the method for checking the pressure drop across the filter.
The test is carried out by crossing the filter from a given fluid and by detecting upstream and downstream pressures.
Some of the parameters defined by the Standard are the fluid, the test temperature, the size of the tubes, the position of the pressure detection points.

ISO 16889

Hydraulic fluid power -- Filters -- Multi-pass method for evaluating filtration performance of a filter element

This Standard describes the method to check the filtration characteristics of the filter elements.
The test is performed by constant introduction of contaminant (ISO MTD).
The characteristics observed during the test are the filtration efficiency and the dirty holding capacity related to the differential pressure.

ISO 23181

Hydraulic fluid power -- Filter elements -- Determination of resistance to flow fatigue using high viscosity fluid

This Standard describes the method for testing the fatigue resistance of the filter elements.
The test is carried out by subjecting the filter to continuous flow variations, thus differential pressure, using a high viscosity fluid.

ISO 11170

Hydraulic fluid power -- Sequence of tests for verifying performance characteristics of filter elements

The Standard describes the method for testing the performance of filter elements. The protocol described by the regulations provides the sequence of all the tests described above in order to verify all the working characteristics (mechanical, hydraulic and filtration).

ISO 10771-1

Hydraulic fluid power -- Fatigue pressure testing of metal pressure-containing envelopes -- Test method

This Standard describes the method to check the resistance of the hydraulic components with pulsing pressure.
It can be applied to all metal components (excluding tubes) subject to cyclic pressure used in the hydraulic field.

FILTER SIZING

The correct filter sizing have to be based on the variable pressure drop depending by the application. For example, for the return filter the pressure drop have to be in the range 0.4 - 0.6 bar.

The pressure drop calculation is performed by adding together the value of the housing with the value of the filter element. The pressure drop in the housing is proportional to the fluid density (kg/dm³); all the graphs in the catalogue are referred to mineral oil with density of 0.86 kg/dm³.
The filter element pressure drop is proportional to its viscosity (mm²/s), the corrective factor Y is related to an oil viscosity different than 30 mm²/s.

Sizing data for single cartridge, head at top

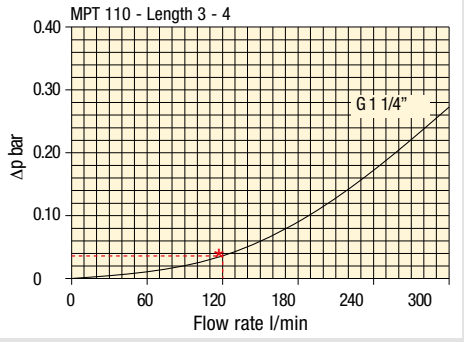
Δpc = Filter housing pressure drop [bar]
Δpe = Filter element pressure drop [bar]
Y = Multiplication factor Y (see correspondent table), depending on the filter element size, on the filter element lenght and on the filter media
Q = flow rate (l/min)
V1 reference viscosity = 30 mm²/s (cSt)
V2 = operating viscosity in mm²/s (cSt)
Δpe = Y : 1000 x Q x (V2/V1)
Δp Tot. = Δpc + Δpe

Calculation examples with HLP Mineral oil Variation in viscosity

Application data:
Top tank return filter
Filter with in-line connections
Pressure Pmax = 10 bar
Flow rate Q = 120 l/min
Viscosity V2 = 46 mm²/s (cSt)
Oil viscosity = 0.86 kg/dm³
Required filtration efficiency = 25 µm with absolute filtration
With bypass valve and 1 1/4" inlet connection
From the working pressure and the flow rate we understand it should be possible using the following top tank return filter series: MPT, MPH and FRI.
Let's proceed with MPT series.
The size 20 doesn't achieve the required flow rate, therefore we have to consider the size 100. The final version of size 100 (101, 104, 110, 120 and 114) will be then defined in function of the mounting characteristics.

Δpc = 0.03 bar (★ see graphic below, considering size 100 with the max available lenght to get the lowest pressure drop)
Δpe = (2.0 : 1000) x 120 x (46/30) = 0.37 bar
Δp Tot. = 0.03 + 0.37 = 0.4 bar

The selection is correct because the total pressure drop value is inside the admissible range for top tank return filters. It is of course possible trying to find a different solution, according to the mounting position or to other commercial need, repeating the previous steps while using a different series or lenght.



Filter housings Δp pressure drop.
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968. Δp varies proportionally with density.

Corrective factor

Corrective factor Y, to be used for the filter element pressure drop calculation. The values depend to the filter size and lenght and to the filter media.
Reference viscosity 30 mm²/s

Return filters

Filter element		Absolute filtration H Series					Nominal filtration N Series		
Type		A03	A06	A10	A16	A25	P10	P25	M25 M60 M90
MF 020	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	4.40
	2	29.20	24.12	8.00	7.22	5.00	3.33	2.85	2.00
	3	22.00	19.00	6.56	5.33	4.33	1.68	1.44	1.30
MF 030 MFX 030	1	74.00	50.08	20.00	16.00	9.00	6.43	5.51	3.40
MF 100 MFX 100	1	28.20	24.40	8.67	8.17	6.88	4.62	3.96	1.25
	2	17.33	12.50	6.86	5.70	4.00	3.05	2.47	1.10
	3	10.25	9.00	3.65	3.33	2.50	1.63	1.32	0.96
	4	6.10	5.40	2.30	2.20	2.00	1.19	0.96	0.82
MF 180 MFX 180	1	3.67	3.05	1.64	1.56	1.24	1.18	1.06	0.26
	2	1.69	1.37	0.68	0.54	0.51	0.43	0.39	0.12
MF 190 MFX 190	2	1.69	1.37	0.60	0.49	0.44	0.35	0.31	0.11
MF 400 MFX 400	1	3.20	2.75	1.39	1.33	1.06	0.96	0.87	0.22
	2	2.00	1.87	0.88	0.85	0.55	0.49	0.45	0.13
	3	1.90	1.60	0.63	0.51	0.49	0.39	0.35	0.11
MF 750 MFX 750	1	1.08	0.84	0.49	0.36	0.26	0.21	0.19	0.06
CU 025		78.00	48.00	28.00	24.00	9.33	9.33	8.51	1.25
CU 040		25.88	20.88	10.44	10.00	3.78	3.78	3.30	1.25
CU 100		15.20	14.53	5.14	4.95	2.00	2.00	0.17	1.10
CU 250		3.25	2.55	1.55	1.35	0.71	0.71	0.59	0.25
CU 630		1.96	1.68	0.85	0.72	0.42	0.42	0.36	0.09
CU 850		1.06	0.84	0.42	0.33	0.17	0.17	0.13	0.04
MR 100	1	19.00	17.00	6.90	6.30	4.60	2.94	2.52	1.60
	2	11.70	10.80	4.40	4.30	3.00	2.94	2.52	1.37
	3	7.80	6.87	3.70	3.10	2.70	2.14	1.84	1.34
	4	5.50	4.97	2.60	2.40	2.18	1.72	1.47	1.34
	5	4.20	3.84	2.36	2.15	1.90	1.60	1.37	1.34
MR 250	1	5.35	4.85	2.32	1.92	1.50	1.38	1.20	0.15
	2	4.00	3.28	1.44	1.10	1.07	0.96	0.83	0.13
	3	2.60	2.20	1.08	1.00	0.86	0.77	0.64	0.12
	4	1.84	1.56	0.68	0.56	0.44	0.37	0.23	0.11
MR 630	1	3.10	2.48	1.32	1.14	0.92	0.83	0.73	0.09
	2	2.06	1.92	0.82	0.76	0.38	0.33	0.27	0.08
	3	1.48	1.30	0.60	0.56	0.26	0.22	0.17	0.08
	4	1.30	1.20	0.48	0.40	0.25	0.21	0.16	0.08
	5	0.74	0.65	0.30	0.28	0.13	0.10	0.08	0.04
MR 850	1	0.60	0.43	0.34	0.25	0.13	0.12	0.09	0.03
	2	0.37	0.26	0.23	0.21	0.11	0.08	0.07	0.03
	3	0.27	0.18	0.17	0.17	0.05	0.04	0.04	0.02
	4	0.23	0.16	0.13	0.12	0.04	0.03	0.03	0.02

Corrective factor

Corrective factor Y, to be used for the filter element pressure drop calculation.
The values depend to the filter size and lenght and to the filter media.

Reference viscosity 30 mm²/s

Suction filters

Filter element		Nominal filtration N Series	
Type		P10	P25
SF 250		65	21

Return / Suction filters

Filter element		Absolute filtration		
Type		A10	A16	A25
RSX 116	1	5.12	4.33	3.85
	2	2.22	1.87	1.22
RSX 165	1	2.06	1.75	1.46
	2	1.24	1.05	0.96
	3	0.94	0.86	0.61

Low & Medium pressure filters

Filter element		Absolute filtration N-W Series					Nominal filtration N Series		
Type		A03	A06	A10	A16	A25	P10	P25	M25
CU 110	1	16.25	15.16	8.75	8.14	5.87	2.86	2.65	0.14
	2	12.62	10.44	6.11	6.02	4.15	1.60	1.49	0.12
	3	8.57	7.95	5.07	4.07	2.40	1.24	1.15	0.11
	4	5.76	4.05	2.80	2.36	1.14	0.91	0.85	0.05
CU 210	1	5.30	4.80	2.00	1.66	1.32	0.56	0.43	0.12
	2	3.44	2.95	1.24	1.09	0.70	0.42	0.35	0.09
	3	2.40	1.70	0.94	0.84	0.54	0.33	0.23	0.05
DN	016	7.95	7.20	3.00	2.49	1.98	0.84	0.65	0.18
	025	5.00	4.53	1.89	1.57	1.25	0.53	0.41	0.11
	040	3.13	2.66	1.12	0.98	0.63	0.38	0.32	0.08
CU 400	2	3.13	2.55	1.46	1.22	0.78	0.75	0.64	0.19
	3	2.15	1.70	0.94	0.78	0.50	0.40	0.34	0.10
	4	1.60	1.28	0.71	0.61	0.40	0.34	0.27	0.08
	5	1.00	0.83	0.47	0.34	0.20	0.24	0.19	0.06
	6	0.82	0.58	0.30	0.27	0.17	0.22	0.18	0.05
CU 900	1	0.86	0.63	0.32	0.30	0.21	-	-	0.05
CU 950	2	1.03	0.80	0.59	0.40	0.26	-	-	0.05
	3	0.44	0.40	0.27	0.18	0.15	-	-	0.02
MR 630	7	0.88	0.78	0.36	0.34	0.16	0.12	0.96	0.47

FILTER SIZING Corrective factor

Corrective factor Y, to be used for the filter element pressure drop calculation.
The values depend to the filter size and lenght and to the filter media.
Reference viscosity 30 mm²/s

High pressure filters

Filter element		Absolute filtration N - R Series					Nominal filtration N Series
Type		A03	A06	A10	A16	A25	M25
HP 011	1	332.71	250.07	184.32	152.36	128.36	-
	2	220.28	165.56	74.08	59.13	37.05	-
	3	123.24	92.68	41.48	33.08	20.72	-
	4	77.76	58.52	28.37	22.67	16.17	-
HP 039	1	70.66	53.20	25.77	20.57	14.67	4.90
	2	36.57	32.28	18.00	13.38	8.00	2.90
	3	26.57	23.27	12.46	8.80	5.58	2.20
HP 050	1	31.75	30.30	13.16	12.3	7.29	1.60
	2	24.25	21.26	11.70	9.09	4.90	1.40
	3	17.37	16.25	8.90	7.18	3.63	1.25
	4	12.12	10.75	6.10	5.75	3.08	1.07
	5	7.00	6.56	3.60	3.10	2.25	0.80
HP 065	1	58.50	43.46	23.16	19.66	10.71	1.28
	2	42.60	25.64	16.22	13.88	7.32	1.11
	3	20.50	15.88	8.18	6.81	3.91	0.58
HP 135	1	20.33	18.80	9.71	8.66	4.78	2.78
	2	11.14	10.16	6.60	6.38	2.22	1.11
	3	6.48	6.33	3.38	3.16	2.14	1.01
HP 320	1	10.88	9.73	5.02	3.73	2.54	1.04
	2	4.40	3.83	1.75	1.48	0.88	0.71
	3	2.75	2.11	1.05	0.87	0.77	0.61
	4	2.12	1.77	0.98	0.78	0.55	0.47
HP 500	1	4.44	3.67	2.30	2.10	1.65	0.15
	2	3.37	2.77	1.78	1.68	1.24	0.10
	3	2.22	1.98	1.11	1.09	0.75	0.08
	4	1.81	1.33	0.93	0.86	0.68	0.05
	5	1.33	1.15	0.77	0.68	0.48	0.04

Filter element		Absolute filtration N Series					Nominal filtration N Series
Type		A03	A06	A10	A16	A25	M25
HF 320	1	3.65	2.95	2.80	1.80	0.90	0.38
	2	2.03	1.73	1.61	1.35	0.85	0.36
	3	1.84	1.42	1.32	1.22	0.80	0.35

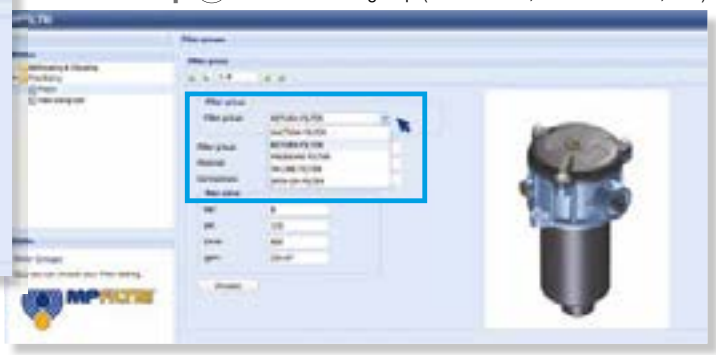
Stainless steel high pressure filters

Filter element		Absolute filtration N Series				
Type		A03	A06	A10	A16	A25
HP 011	1	332.71	250.07	184.32	152.36	128.36
	2	220.28	165.56	74.08	59.13	37.05
	3	123.24	92.68	41.48	33.08	20.72
	4	77.76	58.52	28.37	22.67	16.17
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	0.88	5.58
HP 050	1	31.75	30.30	13.16	12.3	7.29
	2	24.25	21.26	11.70	9.09	4.90
	3	17.37	16.25	8.90	7.18	3.63
	4	12.12	10.75	6.10	5.75	3.08
	5	7.00	6.56	3.60	3.10	2.25
HP 135	1	20.33	18.80	9.71	8.66	4.78
	2	11.14	10.16	6.60	6.38	2.22
	3	6.48	6.33	3.38	3.16	2.14

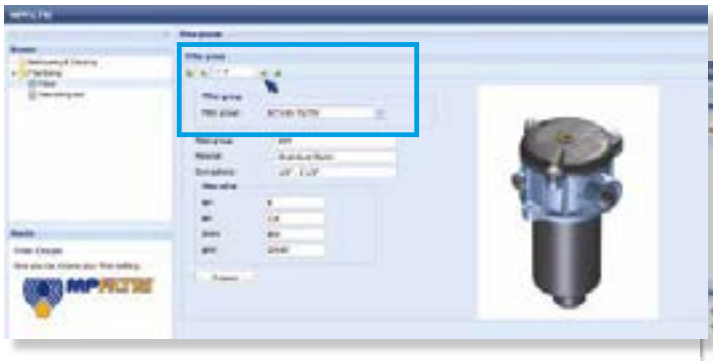
Filter element		Absolute filtration H - U Series				
Type		A03	A06	A10	A16	A25
HP 011	1	424.58	319.74	235.17	194.44	163.78
	2	281.06	211.25	94.53	75.45	47.26
	3	130.14	97.50	43.63	34.82	21.81
	4	109.39	82.25	36.79	29.37	18.40
HP 039	2	70.66	53.20	25.77	20.57	14.67
	3	36.57	32.28	18.00	13.38	8.00
	4	26.57	23.27	12.46	8.80	5.58
HP 050	1	47.33	34.25	21.50	20.50	14.71
	2	29.10	25.95	14.04	10.90	5.88
	3	20.85	19.50	10.68	8.61	4.36
	4	14.55	12.90	7.32	6.90	3.69
	5	9.86	9.34	6.40	4.80	2.50
HP 135	1	29.16	25.33	13.00	12.47	5.92
	2	14.28	11.04	7.86	7.60	4.44
	3	8.96	7.46	4.89	4.16	3.07

Step 1 Select "FILTERS"

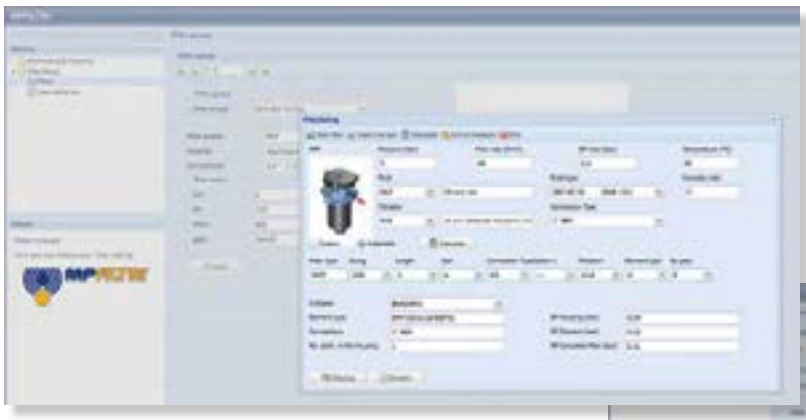
Step 2 Choose filter group (Return Filter, Pressure Filter, etc.)



Step 3 Choose filter type (MPF, MPT, etc.) in function of the max working pressure and the max flow rate



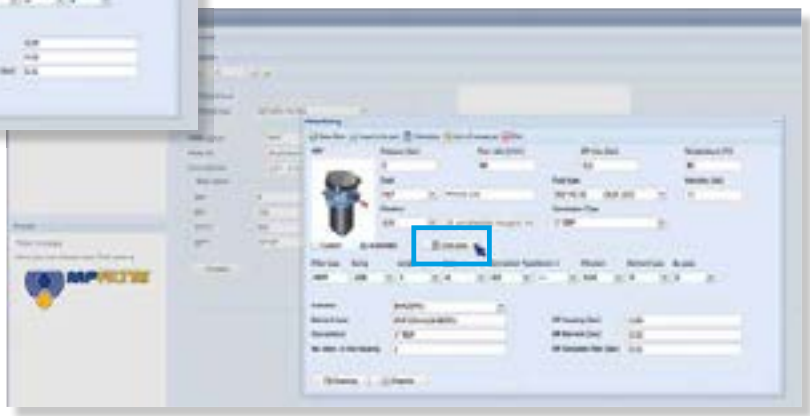
Step 4 Push "PROCEED"



Step 5

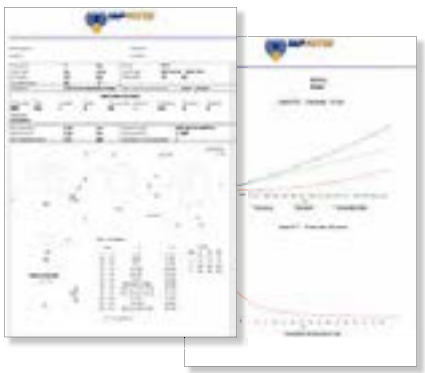
Insert all application data to calculate the filter size following the sequence:

- working pressure
- working flow rate
- working pressure drop
- working temperature
- fluid material and fluid type
- filtration media
- connection type



Step 6

Push "CALCULATE" to have result; in case of any mistake, the system will advice which parameter is out of range to allow to modify/adjust the selection



Step 7

Download PDF

Datasheet "Report.aspx" pushing the button "Drawing"

Suction filters are used as safety filters to protect pumps from gross contamination which can cause them to grip.

They are available in 2 styles:
- Suction Strainer (STR, MPA, MPM)
- SF2 external filters, for mounting semi-immersed under the oil level

SF2 semi-immersed filters, which shut off oil flow while the filter element is being replaced, replace the butterfly valves usually used for servicing hydraulic pumps.

FILTER SIZING

For the proper corrective factor Y see chapter at page 21

Suction filters

STR & MPA - MPM series

Flow rate up to 875 l/min

Technical data

Suction filters **Flow rate up to 875 l/min**

STR materials
1 - Connection: Polyamide, GF reinforced
2 - Core tube: Tinned Steel
3 - Wire mesh
4 - End cap: Polyamide, GF reinforced
5 - Bypass valve: Polyamide, GF reinforced - Steel

MPA - MPM materials
1 - Connection: Aluminium
2 - Magnetic column
3 - Tie rod: Galvanized Steel
4 - End cap: Galvanized Steel
5 - Core tube: Galvanized Steel
6 - Filter media: Wire mesh
7 - Bottom: Galvanized Steel
8 - Washer: Galvanized Steel
9 - Self-locking nut: Galvanized Steel - Nylon

Bypass valve
Opening pressure 30 kPa (0.3 bar)

Elements
Fluid flow through the filter element from OUT to IN.

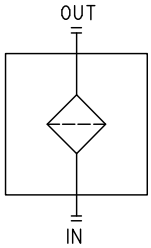
Temperature
From -25 °C to +110 °C

Weights [kg]

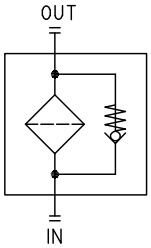
STR	see page 31
MPA - MPM	see page 33

Hydraulic symbols

STR - MPA - MPM
Style S



STR
Style B



STR

Without bypass

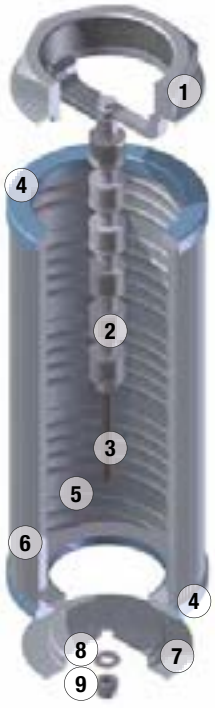
With bypass

MPA

Without magnetic column

MPM

With magnetic column

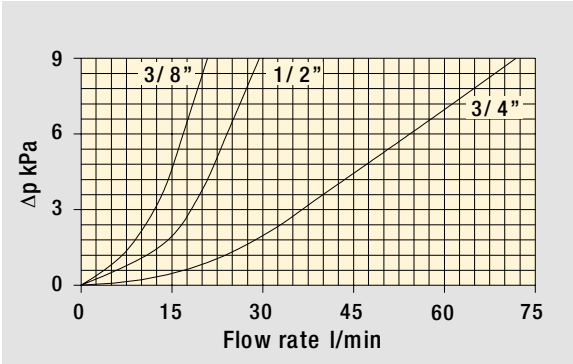


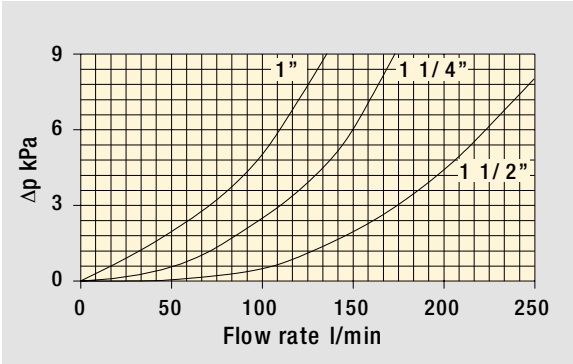
Pressure drop

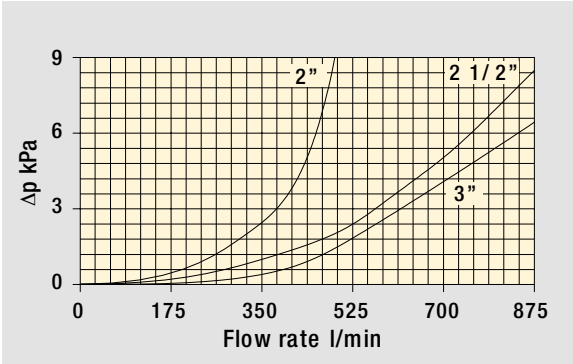
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.

Δp varies proportionally with density.

Filters pressure drop Δp in function of connection type







STR

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	STR045	1	B	G1	M60	P01
Configuration example 2:	STR100	4	S	G2	M250	P01

Element series and size

STR045
STR050
STR065
STR070
STR086
STR100
STR140
STR150

Connection nominal diameter

	STR045	STR050	STR065	STR070	STR086	STR100	STR140	STR150
1	3/8”	3/8”	1/2”	1/2”	1 1/2”	1 1/4”	1 1/2”	2”
2	1/2”	1/2”	3/4”	3/4”	2”	1 1/4”	2”	2 1/2”
3	-	-	3/4”	3/4”	1 1/2”	1 1/2”	2”	3”
4	-	-	1”	1”	2”	2”	2 1/2”	-
5	-	-	-	-	1 1/2”	1 1/2”	3”	-
6	-	-	-	1/2”	2”	-	3”	-

Valves

S	Without bypass
B	With bypass 6 bar

Connection type

G1	Thread GAS
G2	Thread NPT

Filtration rating (filter media)

M25	Wire mesh	25 µm
M60	Wire mesh	60 µm
M90	Wire mesh	90 µm
M250	Wire mesh	250 µm

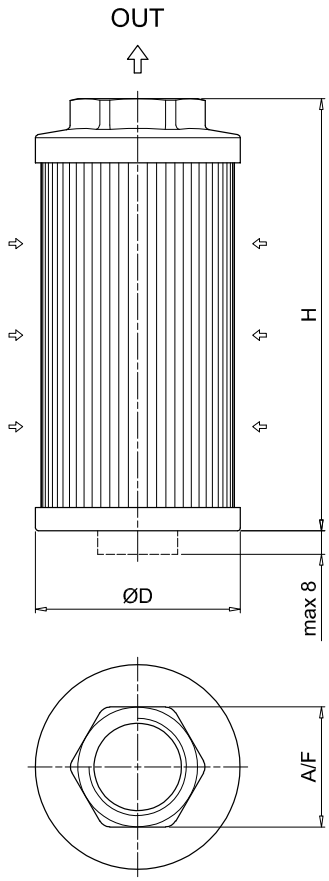
Execution

P01	MP Filtri standard
Pxx	Customized

OTHER INFORMATION

Conditions of packaging

Filter size	Pcs. per box
045	12
050	12
065	6
070	6
086	6
100	6
140	1
150	1



STR					
Filter size	Nominal diameter	Ø D [mm]	H [mm]	A / F [mm]	Weight [kg]
045	1	46	105	30	0.15
	2	46	105	30	0.19
050	1	52	79	30	0.11
	2	52	79	30	0.11
065	1	65	110	41	0.19
	2	65	110	41	0.22
	3	65	144	41	0.24
	4	65	144	41	0.22
070	1	70	95	41	0.18
	2	70	95	41	0.17
	3	70	141	41	0.23
	4	70	141	41	0.22
	6	70	141	41	0.24
086	1	86	143	69	0.33
	2	86	143	69	0.30
	3	86	201	69	0.43
	4	86	201	69	0.40
	5	86	261	69	0.53
	6	86	261	69	0.50
100	1	99	137	69	0.47
	2	99	227	69	0.58
	3	99	227	69	0.55
	4	99	227	69	0.51
	5	99	137	69	0.43
140	1	130	160	69	0.70
	2	130	160	69	0.68
	3	130	262	69	0.94
	4	130	272	101	1.10
	5	130	272	101	1.00
	6	130	330	101	1.17
150	1	150	150	70	0.34
	2	150	212	90	0.37
	3	150	272	100	0.40

MPA-MPM

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPA | 030 | G1 | M60 | P01

Configuration example 2: MPM | 430 | G2 | M250 | P01

Element series

MPA	Without magnetic column
MPM	With magnetic column

Size - Connection nominal diameter

012	3/8”
015	1/2”
025	1/2”
030	3/4”
045	3/4”
050	1”
075	1”
095	1 1/4”
120	1 1/4”
150	1 1/2”
180	1 1/2”
220	2”
280	2”
300	2 1/2”
380	2”
430	3”

Connection type

G1	Thread GAS
G2	Thread NPT

Filtration rating (filter media)

M25	Wire mesh 25 µm
M60	Wire mesh 60 µm
M90	Wire mesh 90 µm
M250	Wire mesh 250 µm

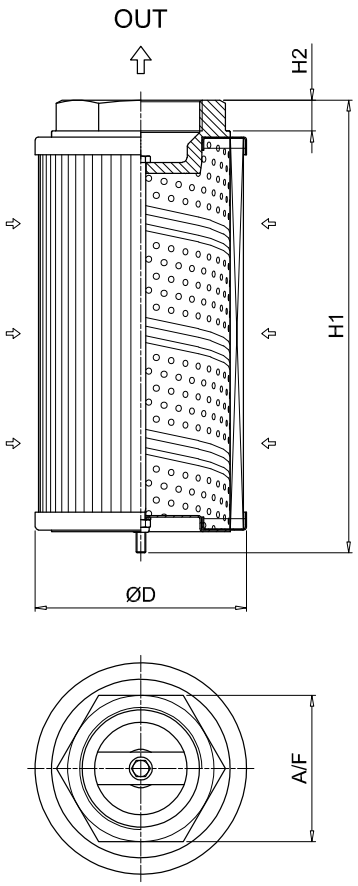
Execution

P01	MP Filtri standard
Pxx	Customized

OTHER INFORMATION

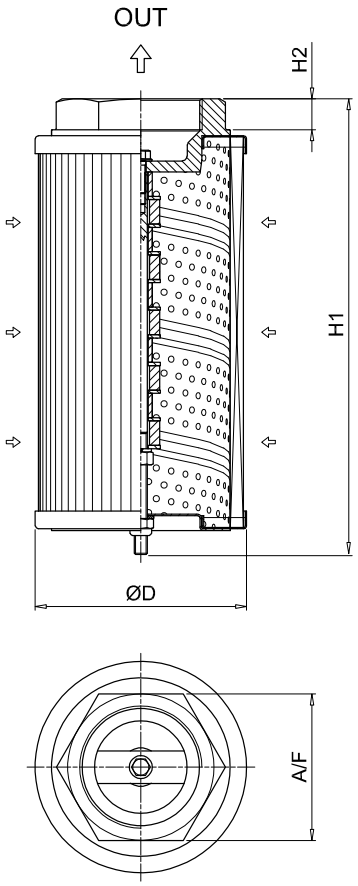
Conditions of packaging

Size	Pcs. per box
012	12
015	6
025	6
030	6
045	6
050	6
075	6
095	6
120	6
150	6
180	1
220	1
280	1
300	1
380	1
430	1



MPA

Filter size	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
012	50	98	16	28	0.17
015	50	98	16	28	0.17
025	70	113	16	28	0.27
030	70	115	18	42	0.36
045	70	160	18	42	0.39
050	70	160	18	42	0.35
075	99	145	18	42	0.54
095	99	148	20	60	0.63
120	99	239	20	60	0.95
150	99	239	20	60	0.91
180	130	174	20	60	0.98
220	130	162	13	80	1.00
280	130	272	13	80	1.60
300	130	281	20	90	1.67
380	130	322	13	80	1.60
430	130	335	22	106	1.93



MPM

Filter size	ØD [mm]	H1 [mm]	H2 [mm]	A/F [mm]	Weight [kg]
012	50	98	16	28	0.17
015	50	98	16	28	0.17
025	70	113	16	28	0.27
030	70	115	18	42	0.36
045	70	160	18	42	0.39
050	70	160	18	42	0.35
075	99	148	18	42	0.54
095	99	154	20	60	0.63
120	99	244	20	60	0.95
150	99	244	20	60	0.91
180	130	174	20	60	0.98
220	130	163	13	80	1.00
280	130	273	13	80	1.60
300	130	282	20	90	1.67
380	130	323	13	80	1.60
430	130	336	22	106	1.93

SF2 250-350 series

Flow rate up to 160 l/min

Technical data

Suction filters **Flow rate up to 160 l/min**

Filter housing materials
- Filter body: Aluminium
- Cover: Polyamide, GF reinforced
- Valve: Polyamide, GF reinforced - Steel
- Anti-Emptying valve: Steel

Bypass valve
Opening pressure 30 kPa (0.3 bar)

Elements
Fluid flow through the filter element from IN to OUT

Note
SF2 250-350 filters mounting, see the drawings on page 39 and following.

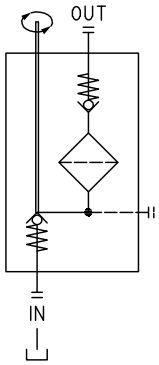
Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Weights [kg]

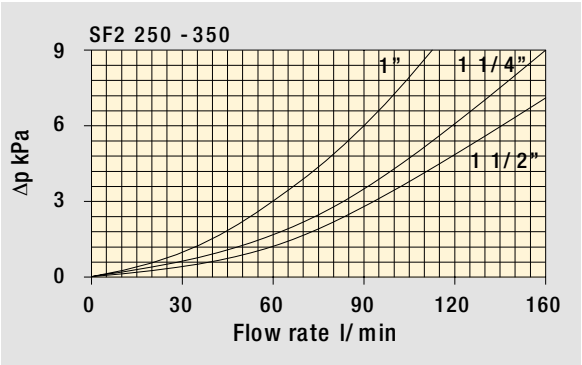
SF2 250	2.6
SF2 350	2.6

Hydraulic symbols

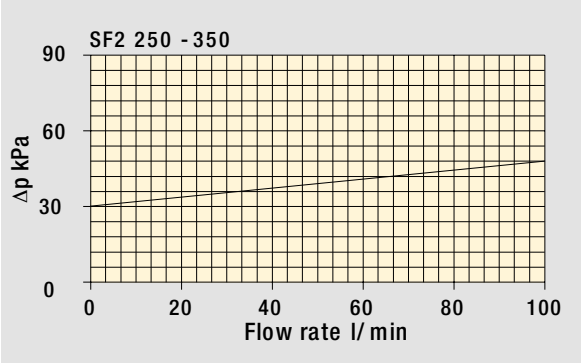


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop



Bypass valve pressure drop



SF2 250-350

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: SF2250 | W | F2 | R | M25 | P01

Configuration example 2: SF2350 | A | G1 | S | P25 | P01

Series and size

SF2250

SF2350

Seals and treatments		Filtration rating Mxx	Filtration rating Pxx
A	NBR	•	•
V	FPM	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	
Z	FPM compatible with fluids HFA-HFB-HFC	•	

Connections		Aux (only SF2350)	SF2250	SF2350
G1	G1 1/2”	G1”	•	•
G2	1 1/2” NPT	-	•	
G3	SAE 24 - 1 7/8” - 12 UN	SAE 16 - 1 5/16” - 12 UN	•	•
G4	G1 1/4”	-	•	
G5	1 1/4” NPT	-	•	
G6	SAE 20 - 1 5/8” - 12 UN	-	•	
G7	G1”	-	•	
G8	1” NPT	-	•	
G9	SAE 16 - 1 5/16” - 12 UN	-	•	
F1	1 1/2” SAE 3000 psi/M	-	•	
F2	1 1/2” SAE 3000 psi/UNC	-	•	

Bypass valve and magnetic column

R	With bypass, with magnetic column	**Q**	Without bypass, with magnetic column
S	With bypass, without magnetic column	**H**	Without bypass, without magnetic column

Filtration rating (filter media)

M25	Wire mesh 25 µm
M60	Wire mesh 60 µm
M90	Wire mesh 90 µm
M250	Wire mesh 250 µm

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: SF250 | M25 | W | P01

Element series and size

SF250

Filtration rating (filter media)

M25	Wire mesh 25 µm
M60	Wire mesh 60 µm
M90	Wire mesh 90 µm
M250	Wire mesh 250 µm

Seals and treatments		Filtration rating Mxx	Filtration rating Pxx
N	NBR	•	•
V	FPM	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	
Z	FPM compatible with fluids HFA-HFB-HFC	•	

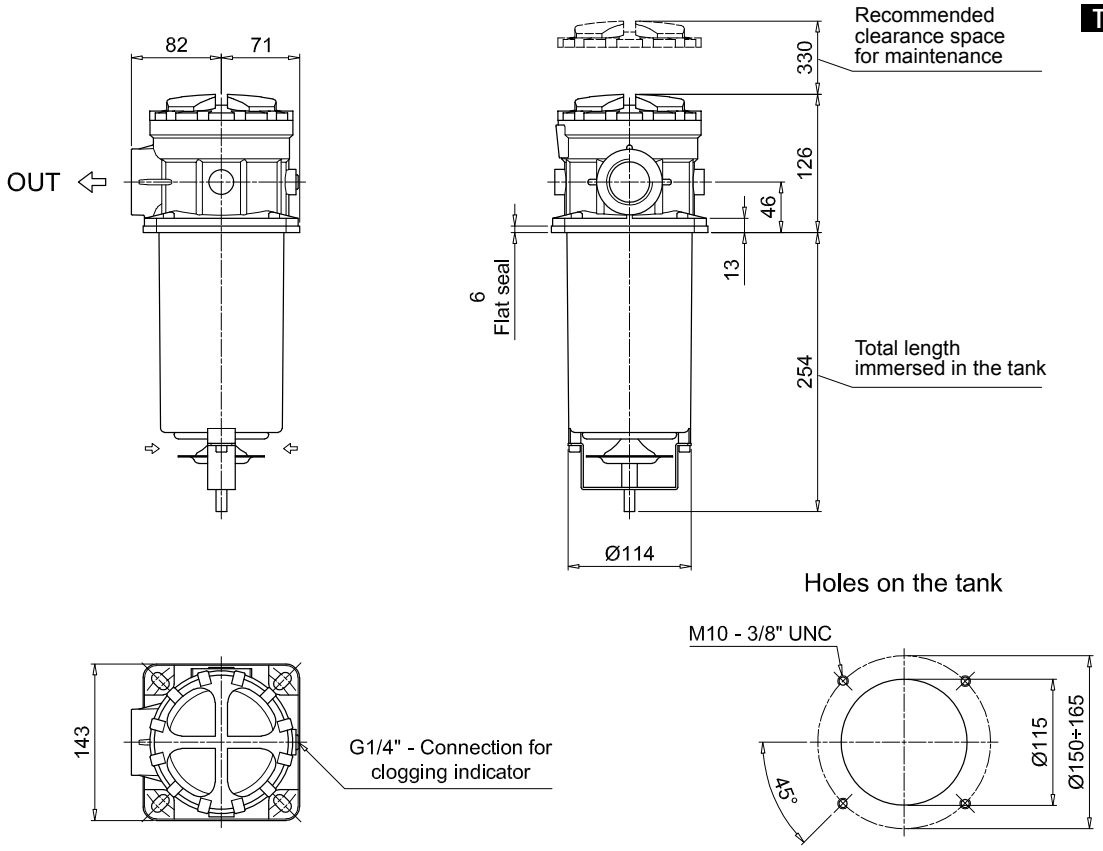
Execution

P01	MP Filtri standard
Pxx	Customized

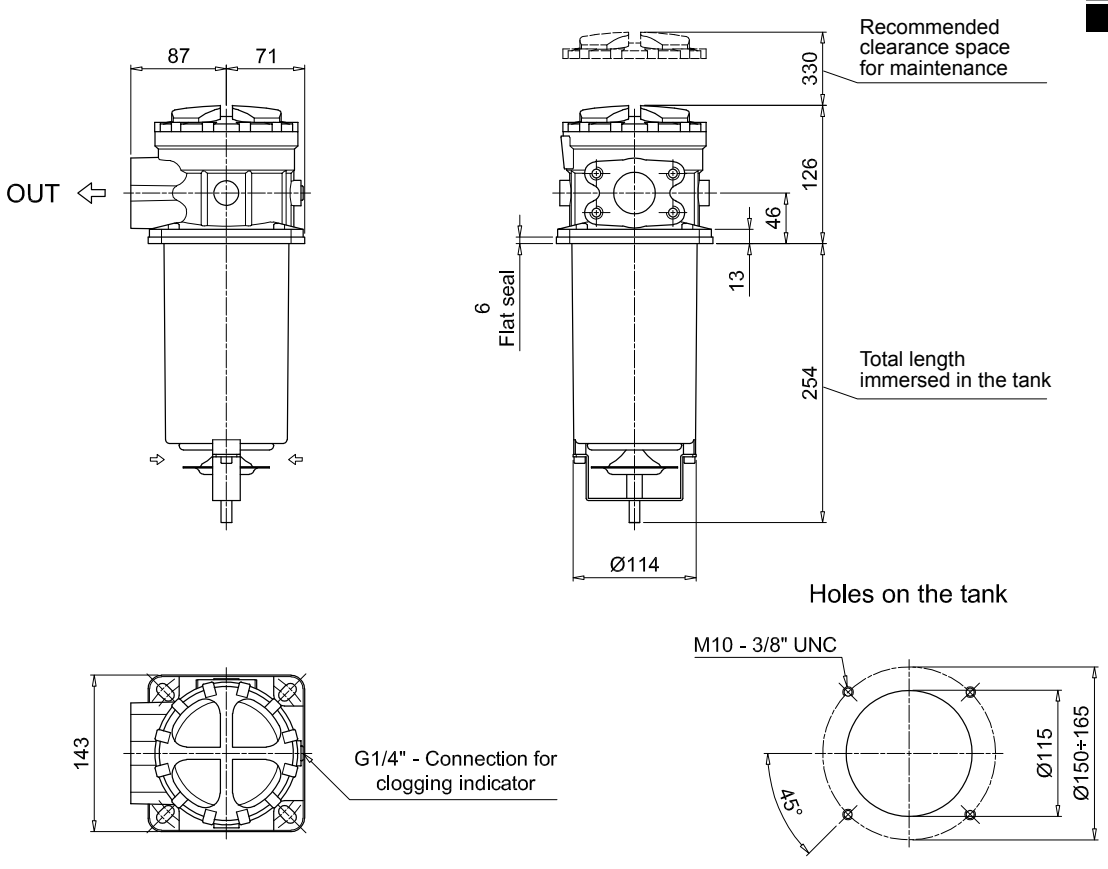
ACCESSORIES

Clogging indicators		page
VVA	Axial vacuum gauge	55
VVR	Radial vacuum gauge	55
VEA	Electrical vacuum indicator	54
VLA	Electrical / visual vacuum indicator	54

SF2 250
Threaded connections "G"



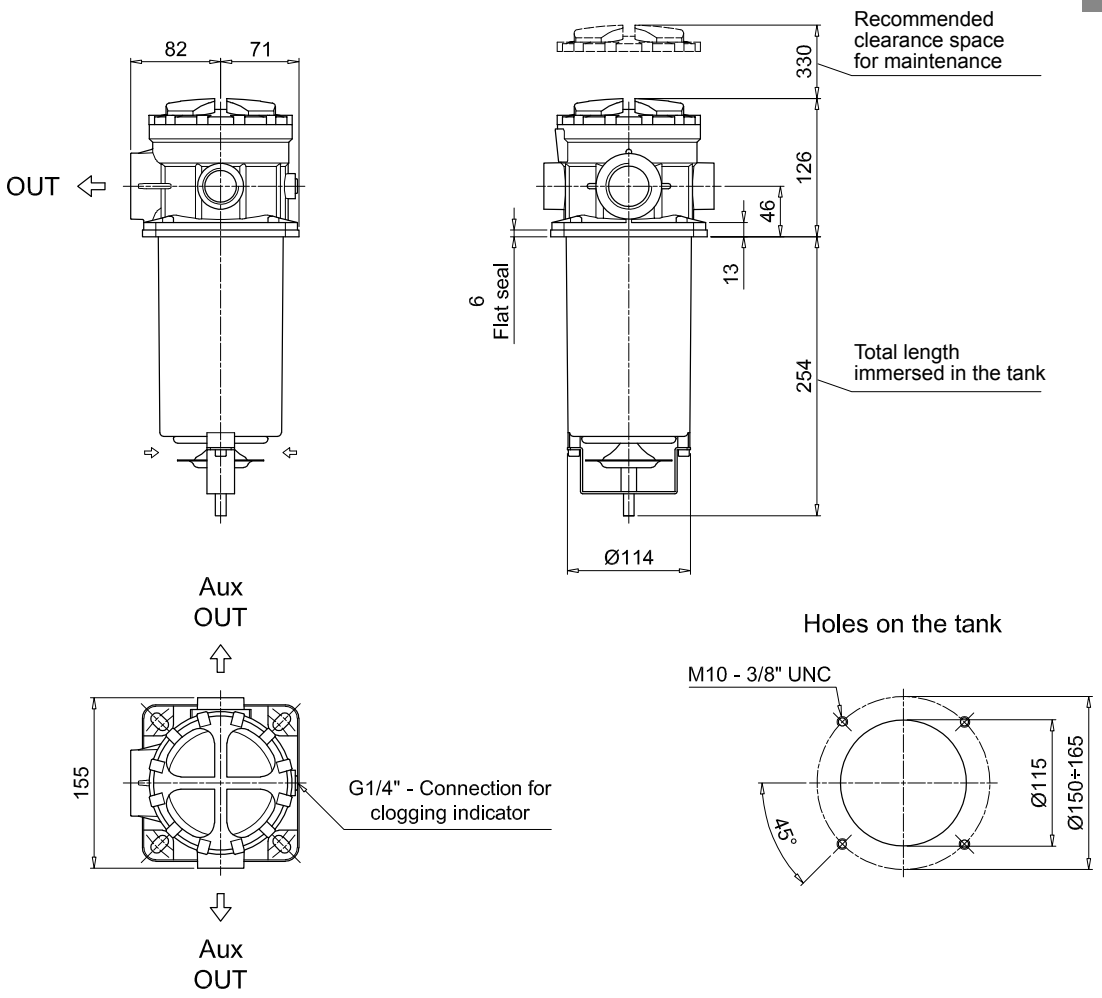
SF2 250
Flange connections "F"



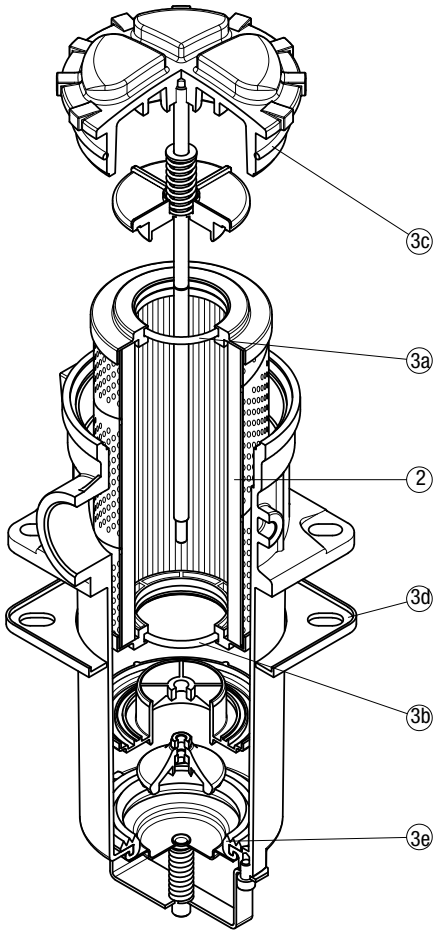
SF2 250-350

Dimensions

SF2 350



Order number for spare parts



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
SF2 250 - 350	See order table	02050586	02050587

SF2 500 series

Flow rate up to 800 l/min

Technical data

Suction filters **Flow rate up to 800 l/min**

Filter housing materials
- Housing:
  Anodized Aluminium
  Steel (chemical heat treatment): only for SF2 535 - 540

- Cover:
  Anodized Aluminium
  Steel (chemical heat treatment): only for SF2 535 - 540

- Optional flange:
  Anodized Aluminium

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Elements
Fluid flow through the filter element from IN to OUT.

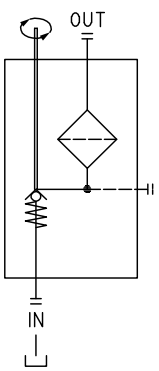
Note
SF2 500 filters mounting, see the drawings
on page 47 and following.

Weights [kg]

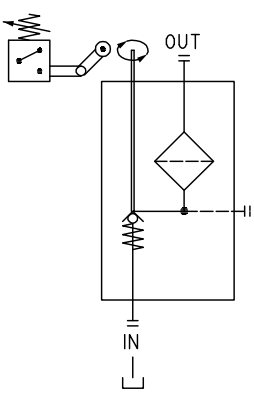
SF2 500-501	4.0
SF2 503	4.8
SF2 504	5.8
SF2 505	6.0
SF2 510	7.2
SF2 535	17
SF2 540	19

Hydraulic symbols

SF2 500 S-M

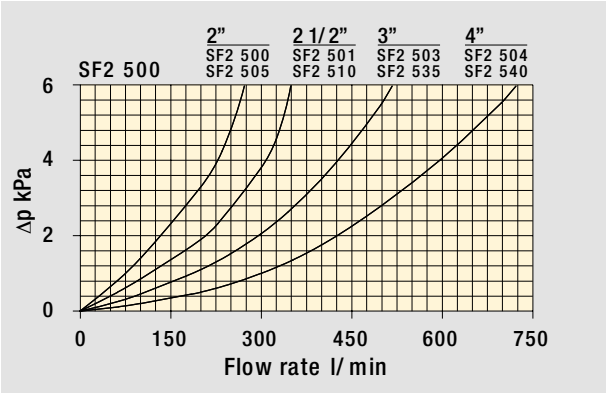


SF2 500 D-K



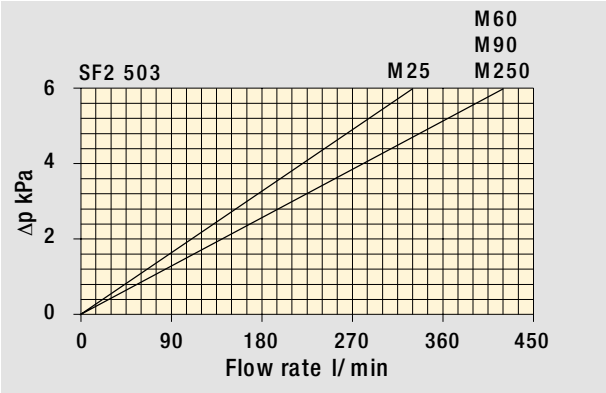
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

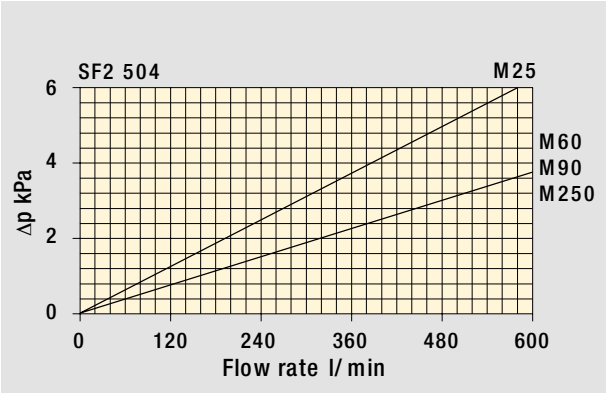
Filter housings Δp pressure drop

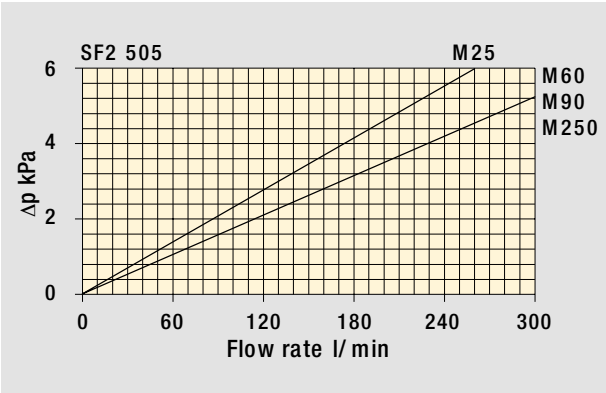


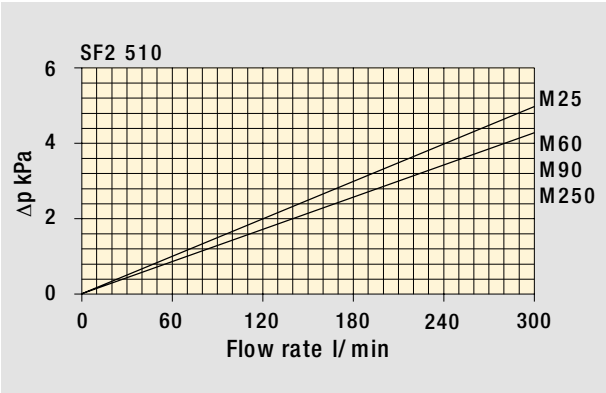
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.

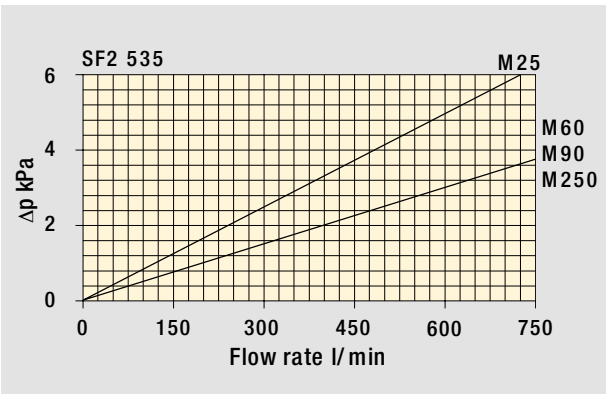
Filter element Δp pressure drop

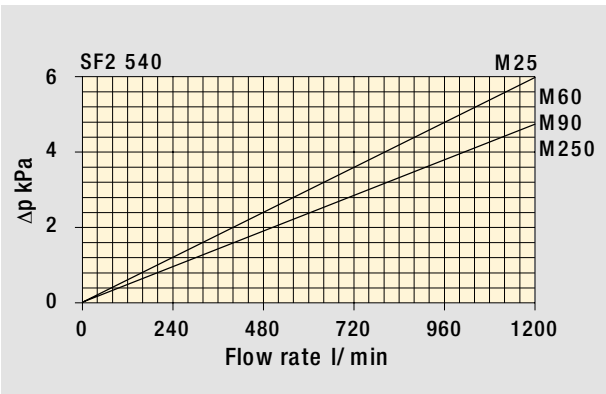












Designation & Ordering code

COMPLETE FILTER

Configuration example 1: SF2500 | W | F1 | D | M25 | P01
Configuration example 2: SF2535 | A | F2 | C | M60 | P01

Series and size

- **SF2500**
- **SF2501**
- **SF2503**
- **SF2504**
- **SF2505**
- **SF2510**
- **SF2535**
- **SF2540**

Seals and treatments		Filtration rating Mxx	Pxx
A	NBR	•	•
V	FPM	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	
Z	FPM compatible with fluids HFA-HFB-HFC	•	

Connections

	SF2500 - SF2505	SF2501 - SF2510	SF2503 - SF2535	SF2504 - SF2540
F1	2” SAE 3000 psi/M	2 1/2” SAE 3000 psi/M	3” SAE 3000 psi/M	4” SAE 3000 psi/M
F2	2” SAE 3000 psi/UNC	2 1/2” SAE 3000 psi/UNC	3” SAE 3000 psi/UNC	4” SAE 3000 psi/UNC
C1	Hose barb 2”/M	Hose barb 2 1/2”/M	Hose barb 3”/M	Hose barb 4”/M

Microswitch and Handweel

		SF2500 - SF2501	SF2503 - SF2504	SF2505 - SF2510	SF2535 - SF2540
S	Without microswitch, without handwheel	•	•	•	•
C	With microswitch, without handwheel			•	•
D	With microswitch, with Nylon handwheel	•	•		
K	With microswitch, with steel handwheel	•	•		
M	Without microswitch, with Nylon handwheel	•	•		

Filtration rating (filter media)

- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **M250** Wire mesh 250 µm

Execution

- **P01** MP Filtri standard
- **Pxx** Customized

FILTER ELEMENT

Configuration example 1: SF510 | M25 | W | P01
Configuration example 2: SF535 | M60 | | P01

Element series and size

	SF2500	SF2501	SF2503	SF2504	SF2505	SF2510	SF2535	SF2540
SF503			•					
SF504				•				
SF505					•			
SF510	•	•				•		
SF535							•	
SF540								•

Filtration rating (filter media)

- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **M250** Wire mesh 250 µm

Seals and treatments		Filtration rating Mxx	Pxx
	Standard version	•	•
W	Compatible with fluids HFA-HFB-HFC	•	

Execution

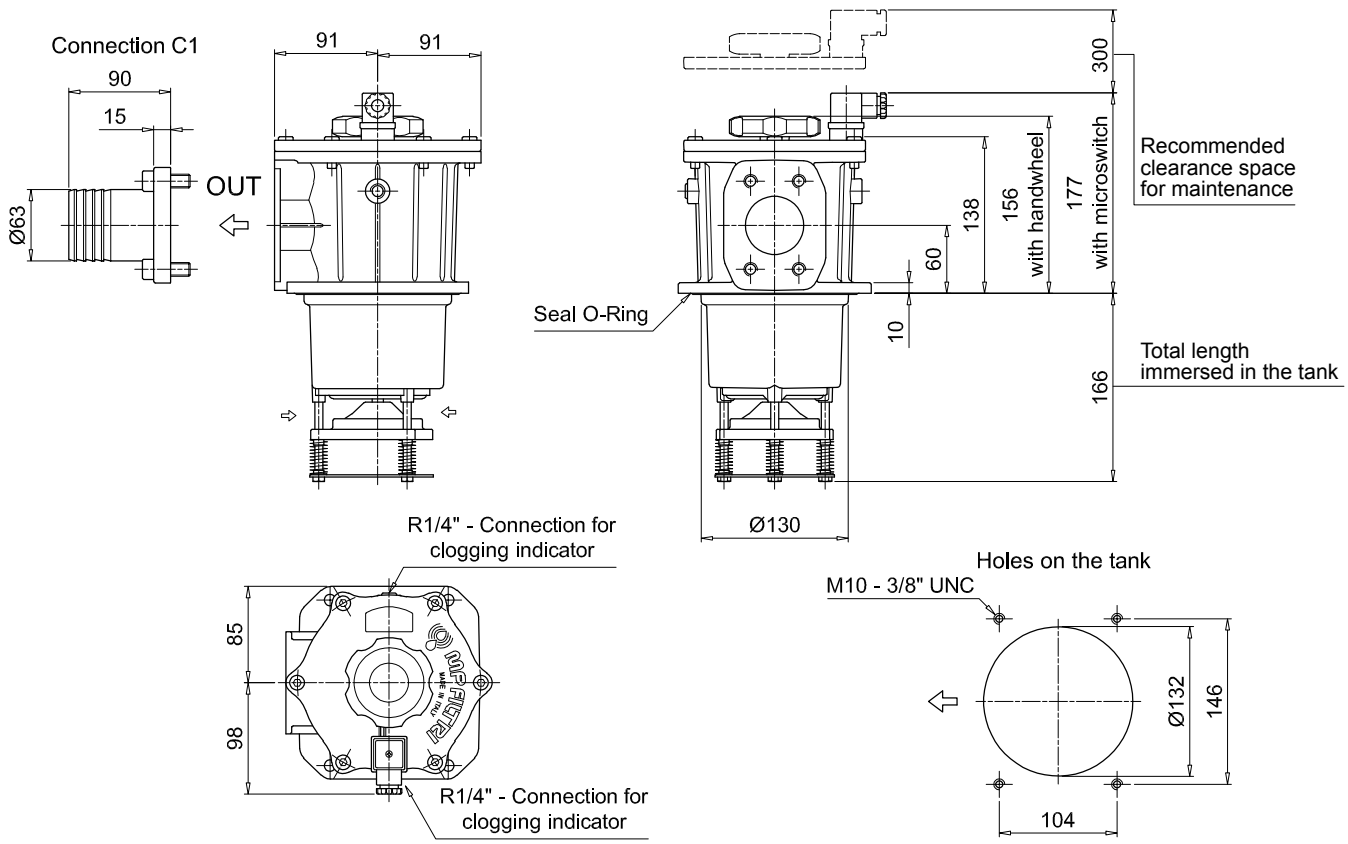
- **P01** MP Filtri standard
- **Pxx** Customized

ACCESSORIES

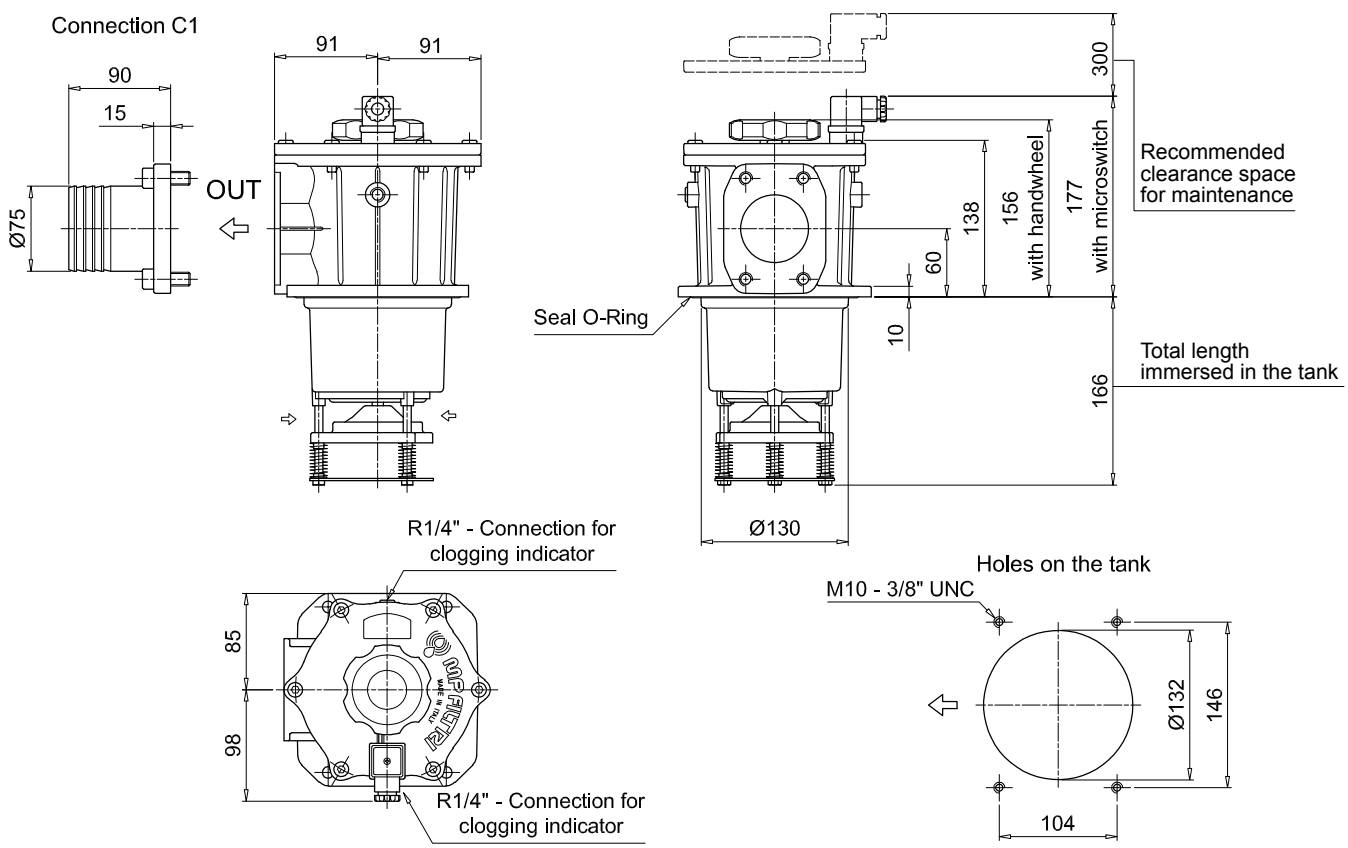
Clogging indicators		page
VVA	Axial vacuum gauge	55
VVR	Radial vacuum gauge	55
VEA	Electrical vacuum indicator	54
VLA	Electrical / visual vacuum indicator	54

Dimensions

SF2500

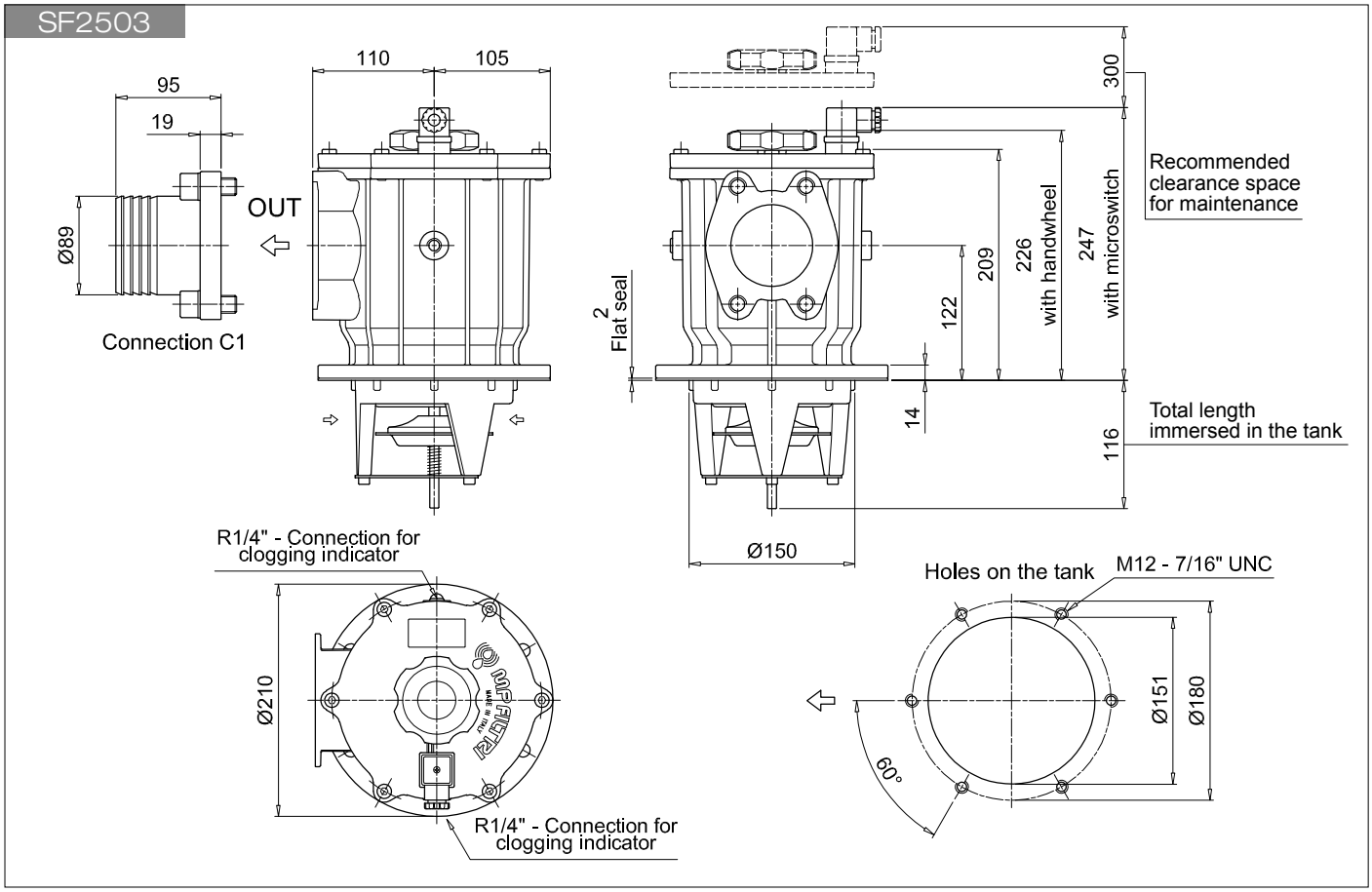


SF2501

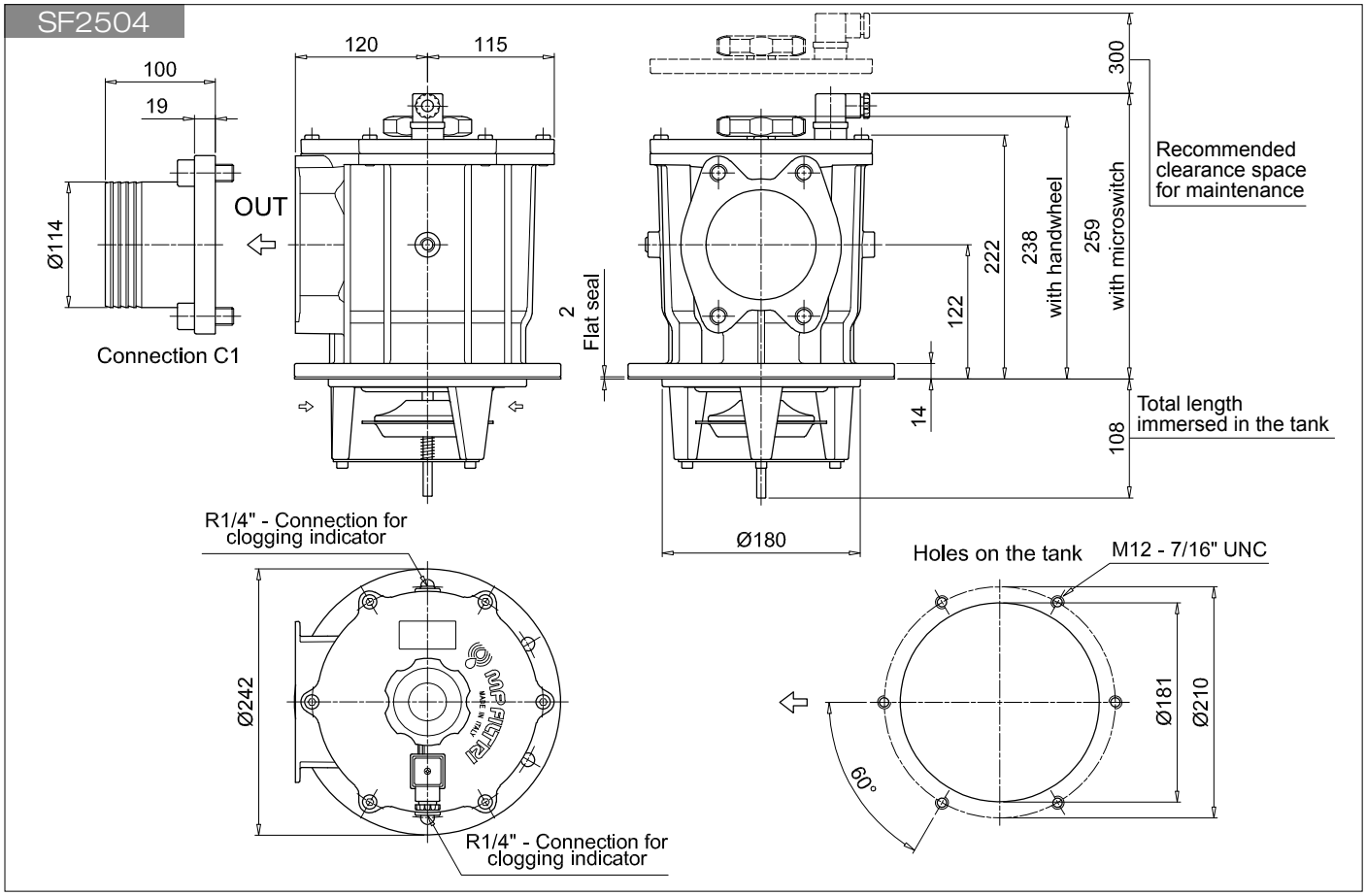


Dimensions

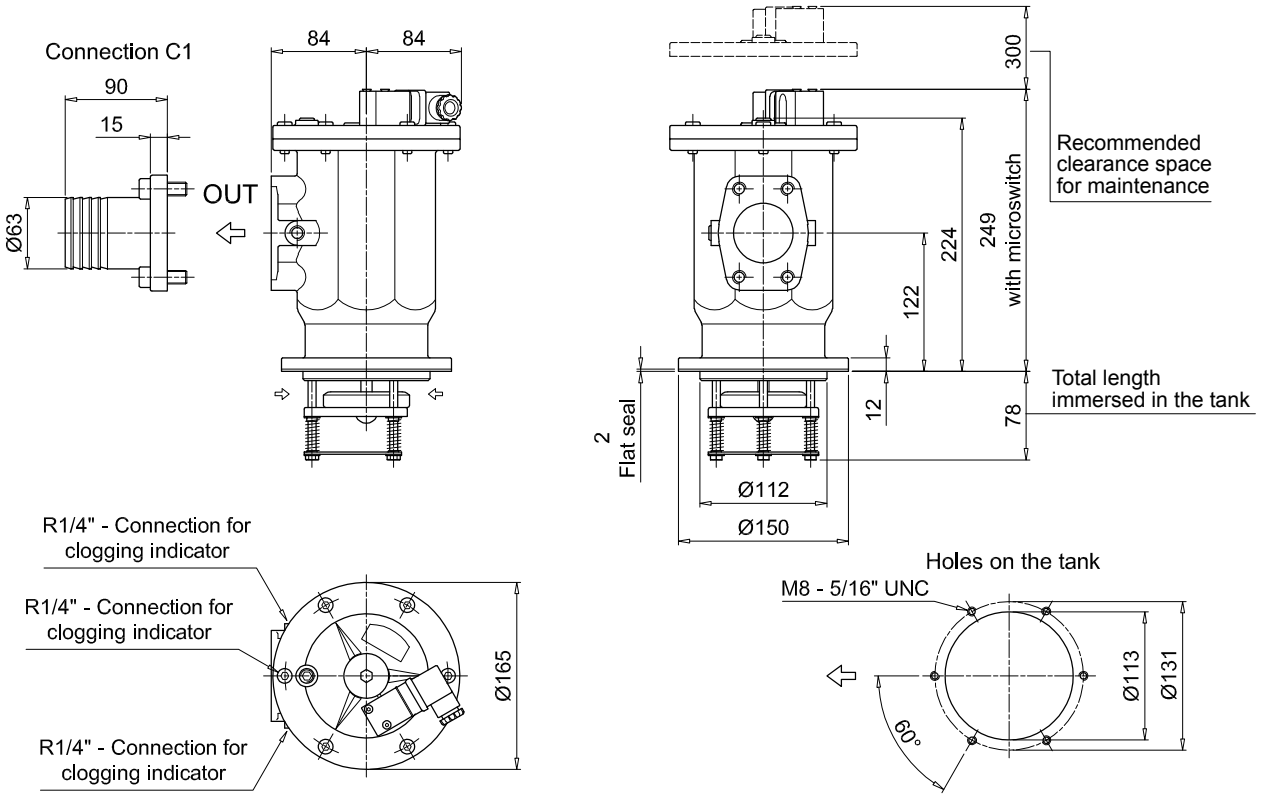
SF2503



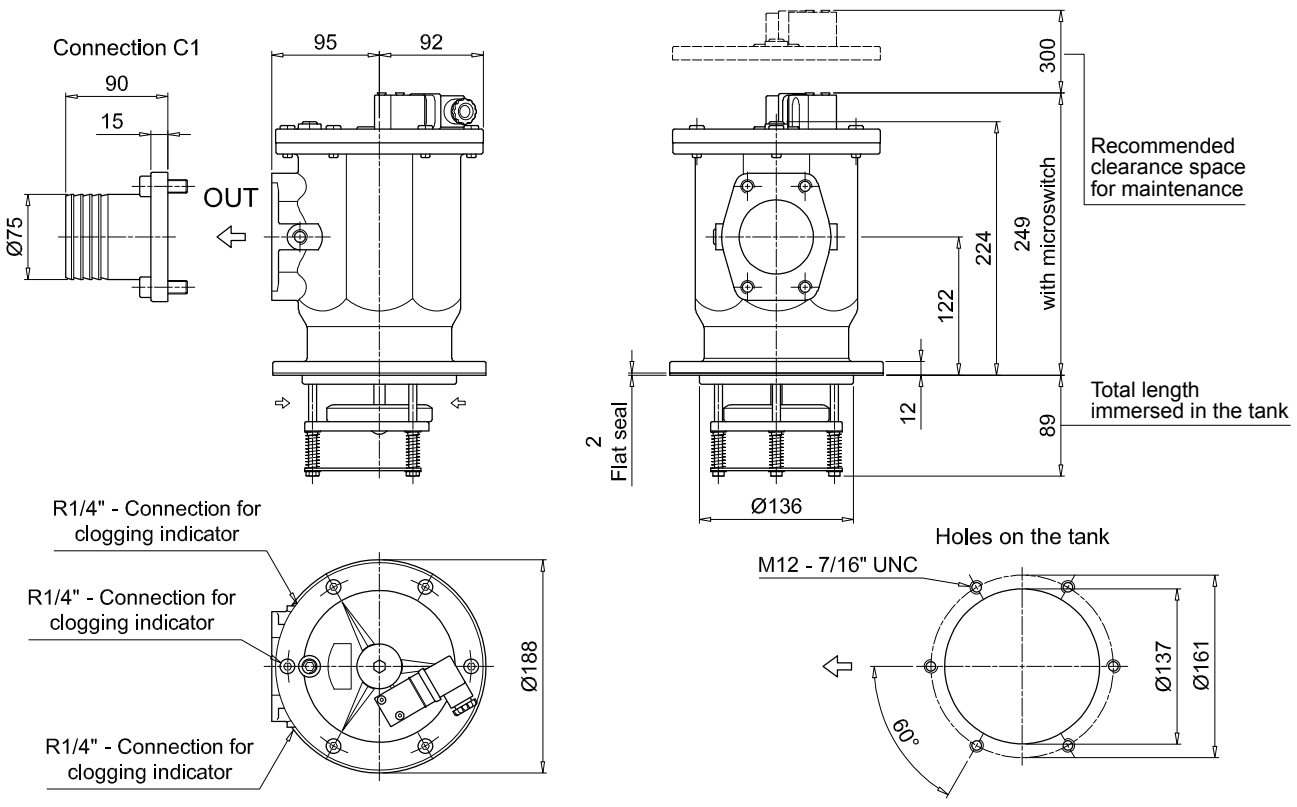
SF2504



SF2505

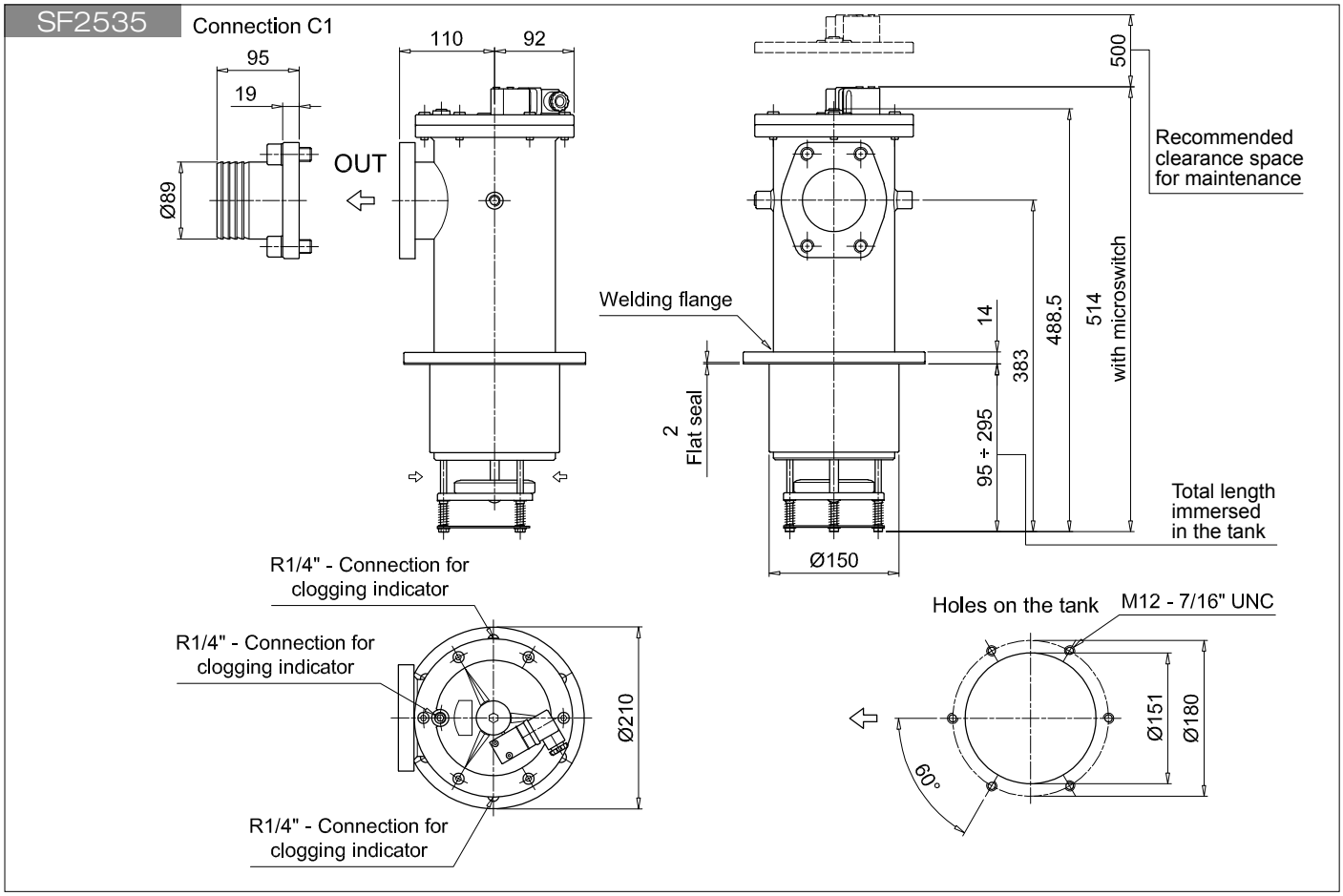


SF2510

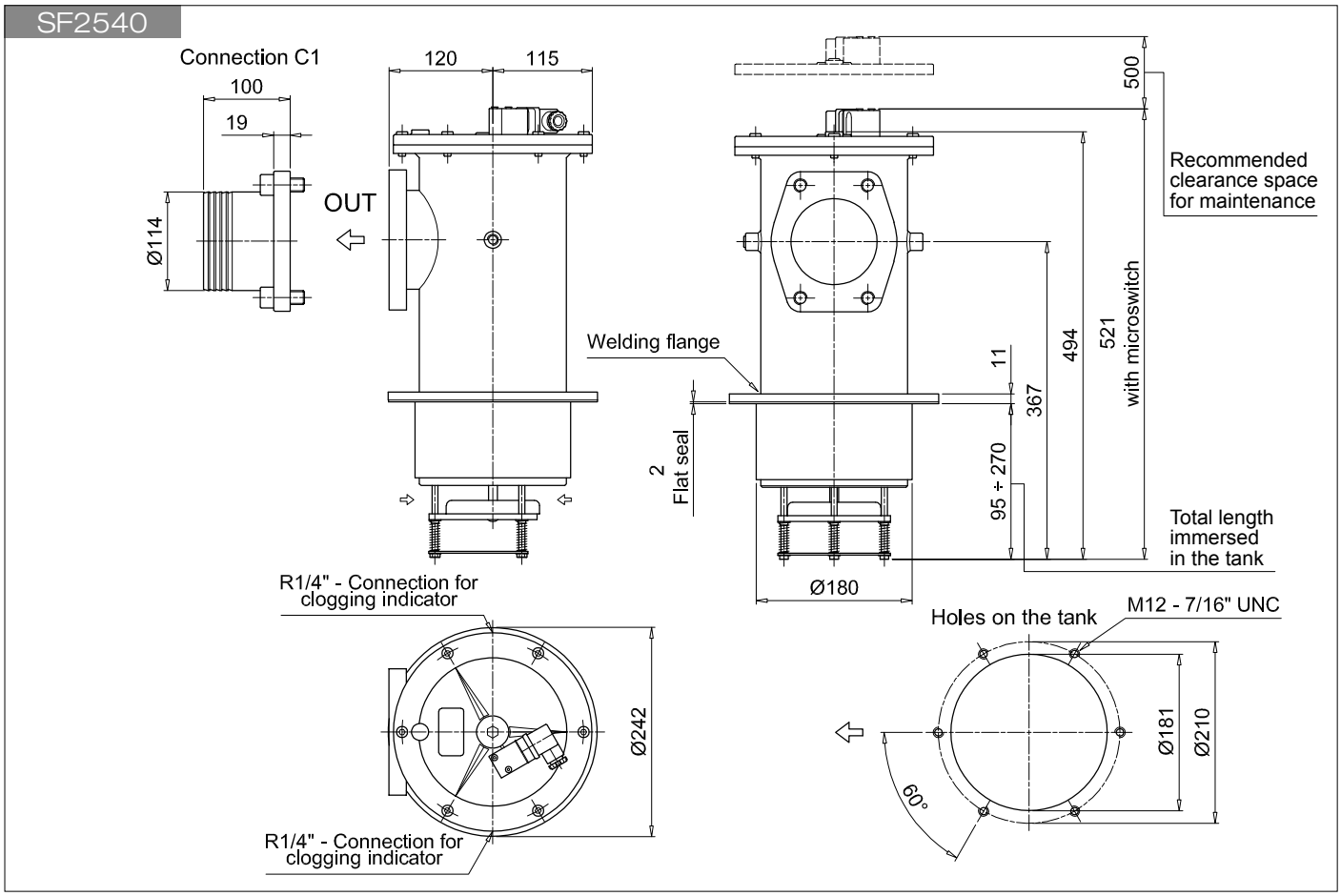


Dimensions

SF2535

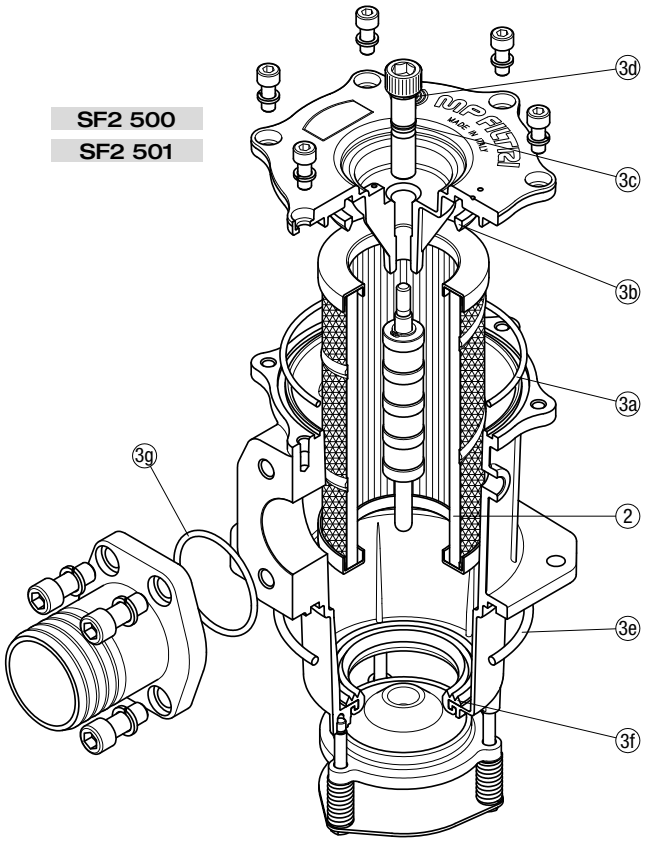


SF2540

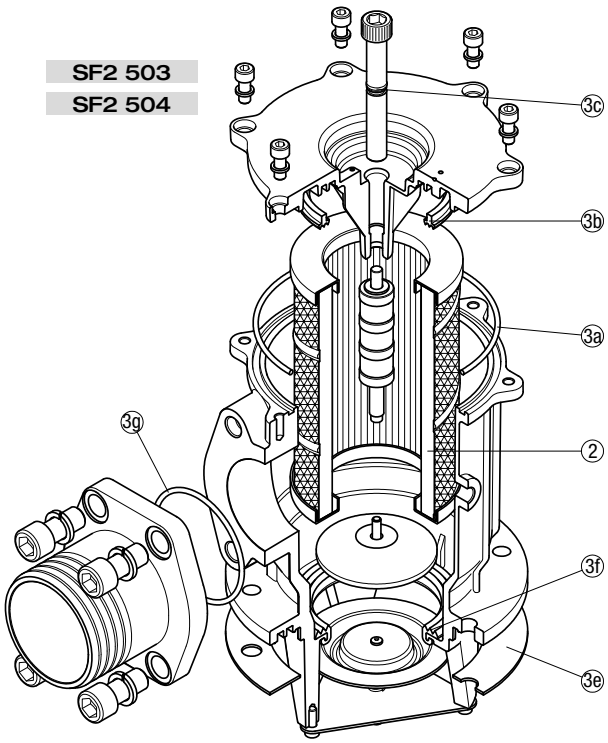


Order number for spare parts

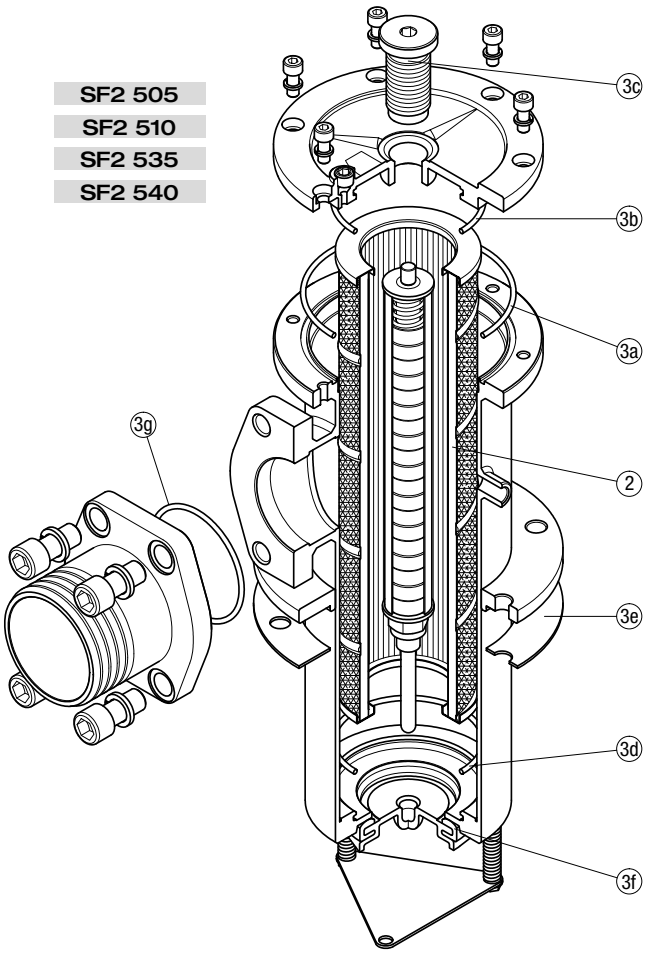
SF2 500
SF2 501



SF2 503
SF2 504



SF2 505
SF2 510
SF2 535
SF2 540



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)	
Filter series	Filter element	Seal Kit code number NBR	FPM
SF2 500	See order table	02050141	02050142
SF2 501		02050143	02050144
SF2 503		02050070	02050071
SF2 504		02050072	02050073
SF2 505		02050043	02050044
SF2 510		02050045	02050046
SF2 535		02050051	02050052
SF2 540		02050053	02050054

Clogging indicators

Vacuum indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.
This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

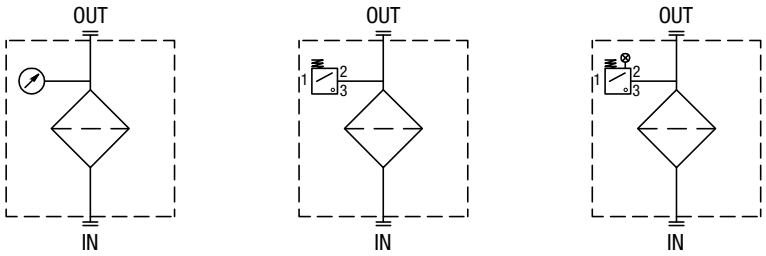
The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply vacuum indicators with a visual, electrical or both signals.

Suitable indicator types

VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficency of the filter element.
They measure the pressure downstream of the filter element.
Standard items are produced with R 1/4" EN 10226 connection.
Available products with R 1/8" EN 10226 to be fitted on MPS series.



Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator
SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540	VVA16P01 VVR16P01	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01

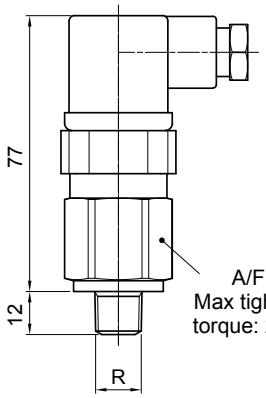
VACUUM INDICATORS

Dimensions

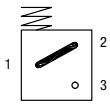
VE*50

Electrical Vacuum Indicator

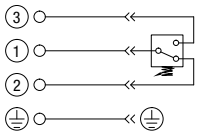
R	Ordering code
EN 10226 - R1/4"	VE A 21 A A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

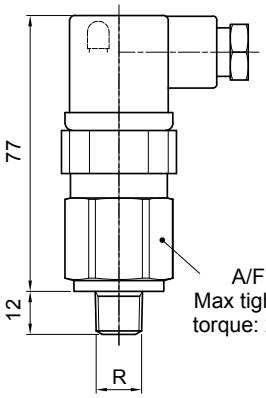
Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc; 4 A / 30 Vdc; 5 A / 125 Vac; 4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

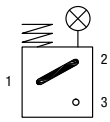
VL*51 - VL*52 - VL*53

Electrical/Visual Vacuum Indicator

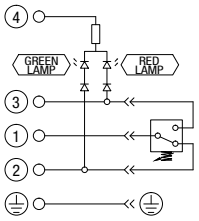
R	Ordering code
EN 10226 - R1/4"	VL A 21 A A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Brass - Nylon
- Seal: NBR

Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

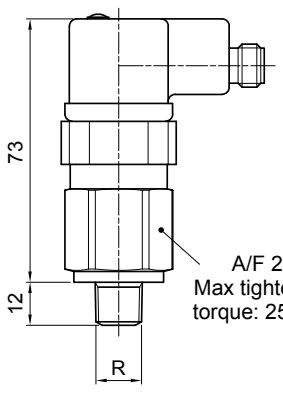
Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 115 Vdc	4 A / 230 Vac

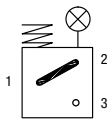
VL*71

Electrical/Visual Vacuum Indicator

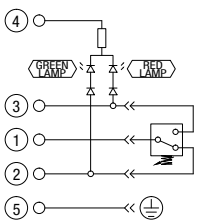
Connections	Indicator code
EN 10226 - R1/4"	VL A 21 A A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

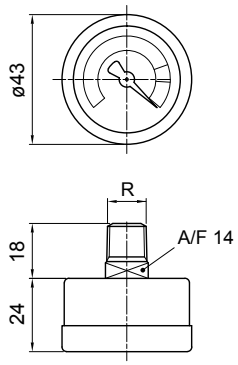
Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

VVA

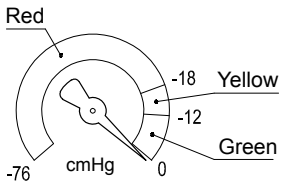
Axial Vacuum Gauge

R	Ordering code
EN 10226 - R1/4"	VV A 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

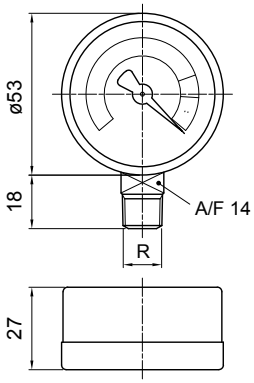
Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

VVR

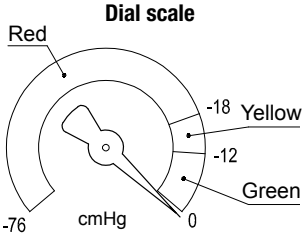
Radial Vacuum Gauge

R	Ordering code
EN 10226 - R1/4"	VV R 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

DESIGNATION & ORDERING CODE

Configuration example 1:	VE	A	21	A	A	50	P01
Configuration example 2:	VL	A	21	A	A	71	P01
Configuration example 3:	VV	R	16				P01

Series

VE Electrical vacuum indicator
VL Electrical/Visual vacuum indicator
VV Vacuum gauge

Type VE - VL

A Connection EN 10226 - R1/4"

Type VV

A Axial connection EN 10226 - R1/4"
R Radial connection EN 10226 - R1/4"

Vacuum setting	VE	VL	VV
16 0.16 bar			•
21 0.21 bar	•	•	

Seals	VE	VL	VV
A NBR	•	•	

Thermostat	VE	VL	VV
A Without	•	•	

Electrical connections	VE	VL	VV
50 Connection EN 175301-803	•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc		•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc		•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•	

Option

P01 MP Filtri standard
Pxx Customized

Return filters are used as process and safety filters to protect pumps and hydraulic circuits from contamination as per ISO 4406.

They are available in 4 styles:

- **MPF tank top semi-immersed filter with external / internal oil flow; standard filter element disassembly**
- **MPT tank top semi-immersed filter with external / internal oil flow; easy filter element disassembly without any specific tool**
- **MFB bowl assembly fully immersed filter**
- **MPH tank top semi-immersed filter with internal / external oil flow, therefore keeping the dirt inside the bowl and not on the filter element; standard filter element disassembly, magnetic filter element as option**
- **MPI semi-immersed filter element specifically designed to be mounted directly on the oil tank; magnetic filter element as option**
- **FRI the oldest tank top semi-immersed return filter manufactured by MP FILTRI, with external / internal oil flow; available in the single or duplex versions with outlet connection, it can be used also as in-line filter**
- **RF2 semi-immersed under-head filter with external / internal oil flow; easy filter element disassembly without any specific tool.**

FILTER SIZING

For the proper corrective factor Y see chapter at page 20

Return filters

MYCLEAN

THE NEW FILTER CONCEPT

MPFX
MPTX
MFBX
MFX
series

NEW FILTER ELEMENT WITH EXCLUSIVE INTERFACE CONNECTION

- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only filter elements MP Filtri can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.

Filter element featuring our UNIQUE end cap with polygonal design.

UNIQUE polygonal spigot fitting within the filter bowl.

The products identified as MPFX, MPTX, MFBX and MFX are protected by one or more of the following patent applications:

European Patent Pending: n° 16181725.9
Italian Patent Pending: n° 102015000040473
US Patent Pending: n° 15/224,337
Canadian Patent Pending: n° 2,937,258

MPFX series

Maximum pressure up to 8 bar - Flow rate up to 750 l/min

MPFX GENERAL INFORMATION

Technical data

Return filter **Maximum pressure up to 8 bar - Flow rate up to 750 l/min**

Filter housing materials
- Head: Aluminium
- Cover: Nylon (only for: MPF 020-030-100-104-110)
  Aluminium (the other insert assemblies)
- Bowl: Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: up to 800 kPa (8 bar)

Temperature
From -25 °C to +110 °C

Bypass valve
- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 300 kPa (3 bar)

Note
MPFX filters are provided for vertical mounting

Δp element type
- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN.

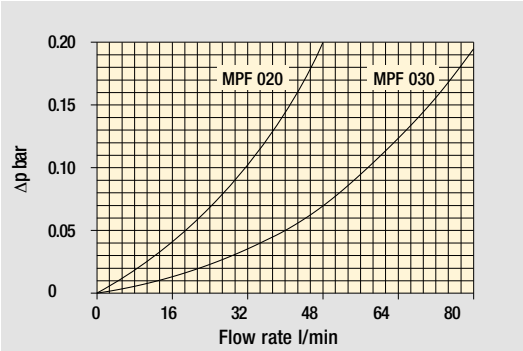
Weights [kg] and volumes [dm³]

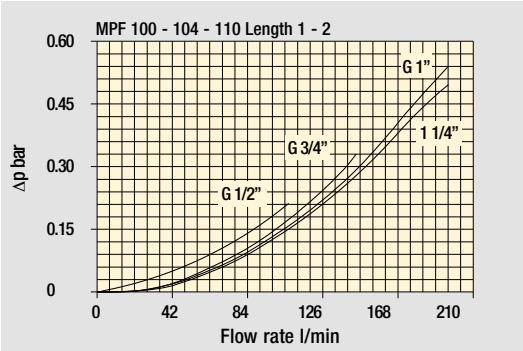
	Weights [kg]					Volumes [dm³]				
	Lenght	1	2	3	4	Lenght	1	2	3	4
MPFX 030		0.40	-	-	-		0.29	-	-	-
MPFX 100		0.61	0.64	0.67	0.74		0.64	0.85	1.20	1.65
MPFX 104		0.82	0.96	1.02	1.25		0.64	0.85	1.20	1.65
MPFX 110		0.64	0.68	0.71	0.78					
MPFX 181		2.20	3.00	-	-		2.50	4.00	-	-
MPFX 182		2.30	3.10	-	-		2.50	4.00	-	-
MPFX 184		2.55	3.45	-	-		2.65	4.45	-	-
MPFX 191		-	3.00	-	-		-	4.25	-	-
MPFX 192		-	3.10	-	-		-	4.25	-	-
MPFX 194		-	3.45	-	-		-	4.45	-	-
MPFX 400		3.35	3.65	3.90	-		3.70	4.60	5.40	-
MPFX 410		3.55	3.85	4.10	-		3.70	4.60	5.40	-
MPFX 450-451		3.95	4.25	4.50	-		3.70	4.60	5.40	-
MPFX 750		6.30	-	-	-		8.45	-	-	-

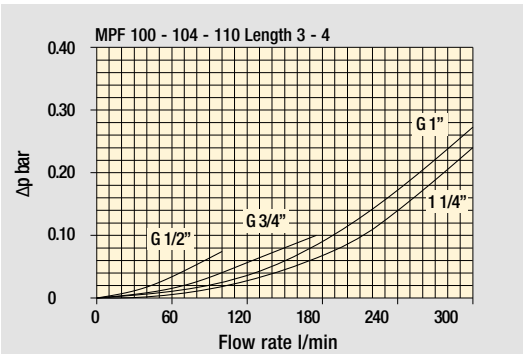
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

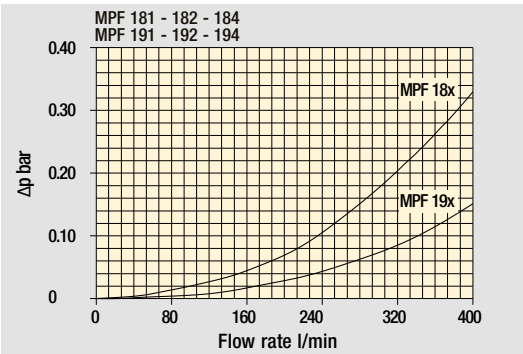
Pressure drop

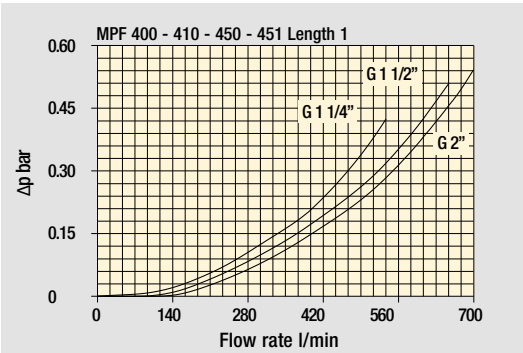
Filter housings Δp pressure drop

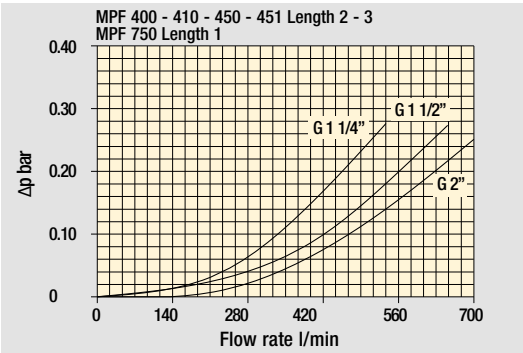




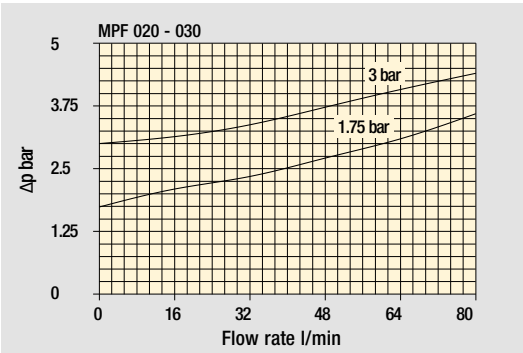


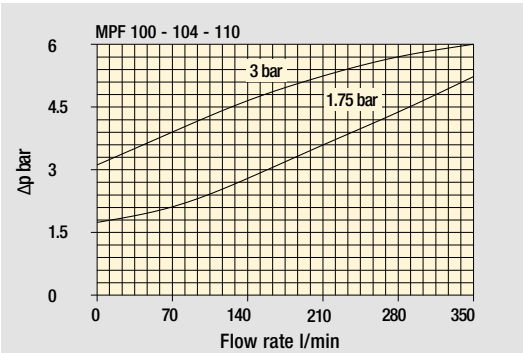


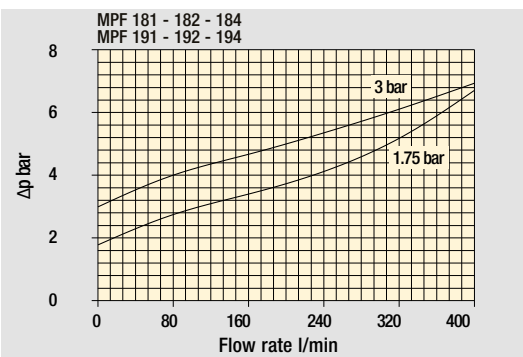


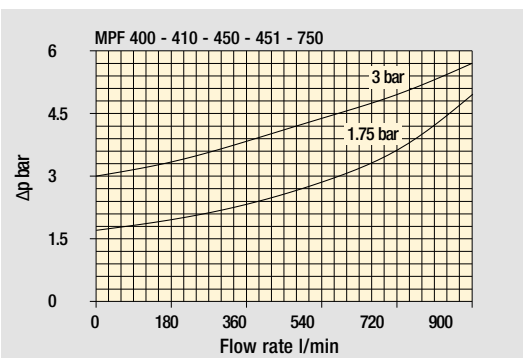


Bypass valve pressure drop



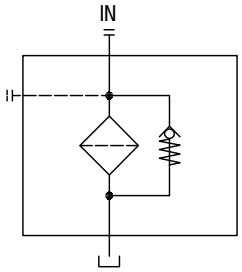




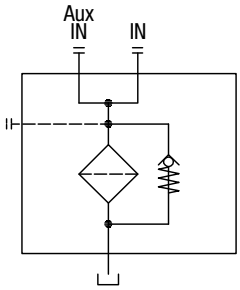


Hydraulic symbols

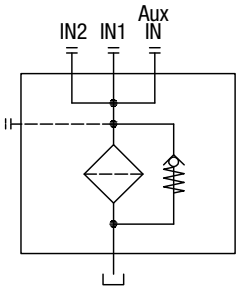
Style
1 connection



Style
2 connections



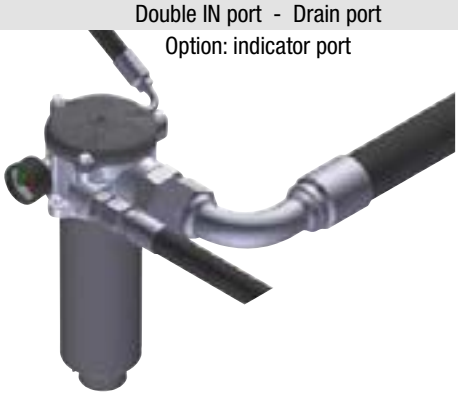
Style
3 connections



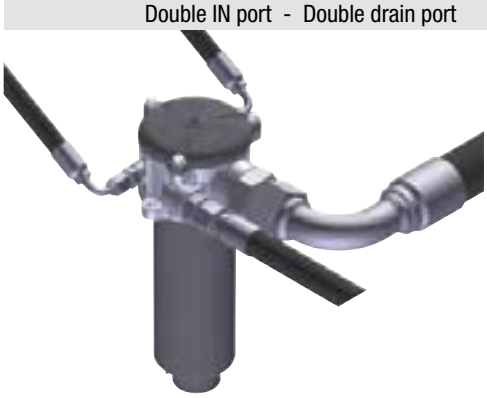
Standard - Single IN port

Double IN port
Option: double indicator port

Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



MPFX MPFX030

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPFX030 | 1 | V | G1 | M25 | N | B | P01

Configuration example 2: MPFX030 | 1 | A | G4 | A10 | H | E | P01

Series and size

MPFX030 Filter element with private spigot

Length

1

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections

G1	G1/2”
G4	1/2” NPT
G7	SAE 8 - 3/4” - 16 UNF

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1: MFX030 | 1 | M25 | N | V | | P01

Configuration example 2: MFX030 | 1 | A10 | H | B | E | P01

Element series and size

MFX030 Filter element with private spigot

Element length

1

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

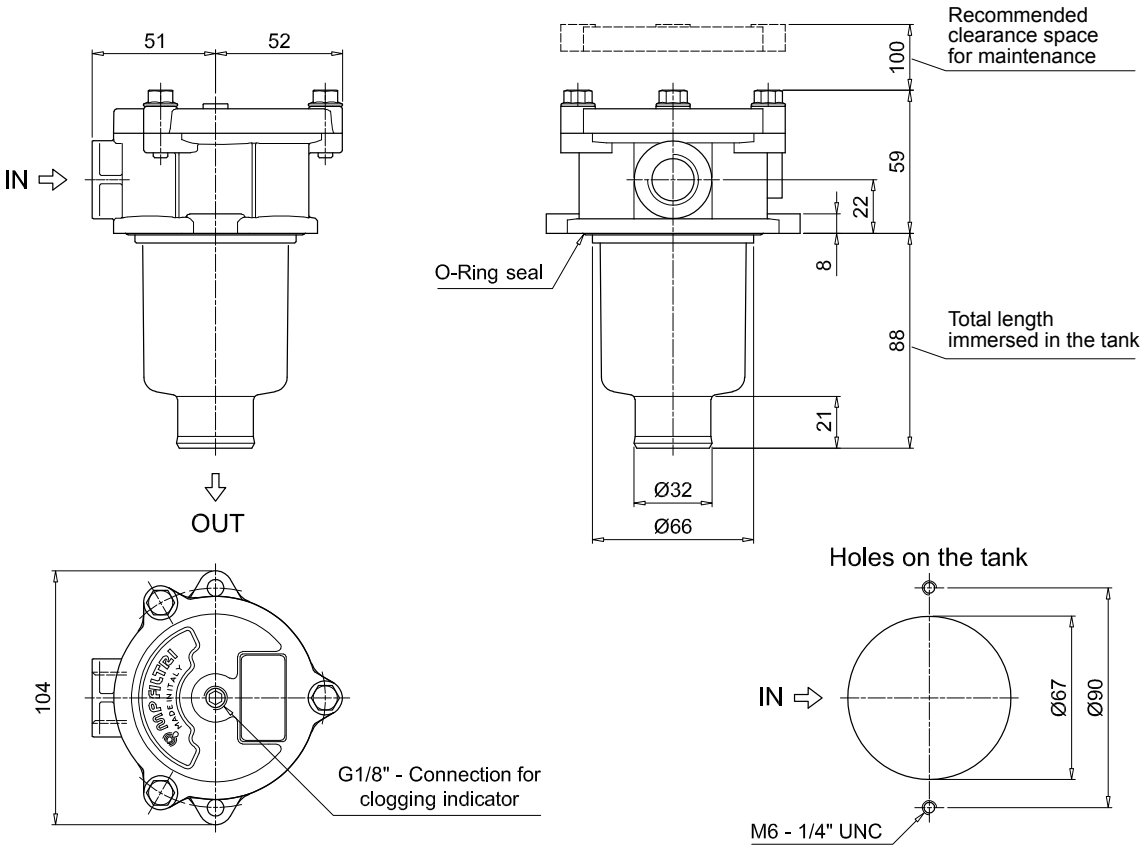
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
T5	Filler plug M30x1.5	225

MPFX030


51
52
IN
OUT
Recommended clearance space for maintenance
100
59
22
8
O-Ring seal
88
Total length immersed in the tank
21
Ø32
Ø66
104
G1/8" - Connection for clogging indicator
Holes on the tank
IN
Ø67
Ø90
M6 - 1/4" UNC

MPFX MPFX100 - MPFX104

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPFX100 | 2 | W | G3 | A06 | W | B | P01

Configuration example 2: MPFX104 | 4 | A | G8 | P10 | N | E | P01

Series and size

MPFX100 | **MPFX104** Filter element with private spigot

Length

1 | **2** | **3** | **4**

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections	Size 100	Size 104
G1 G1/2”	•	•
G2 G3/4”	•	•
G3 G1”	•	•
G4 1/2” NPT	•	•
G5 3/4” NPT	•	•
G6 1” NPT	•	•

Connections	Size 100	Size 104
G7 SAE 8 - 3/4” - 16 UNF	•	•
G8 SAE 12 - 1 1/16” - 12 UN	•	•
G9 SAE 16 - 1 5/16” - 12 UN	•	•
G10 G1 1/4”	•	
G11 1 1/4” NPT	•	
G12 SAE 20 - 1 5/8” - 12 UN	•	

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1: MFX100 | 2 | A06 | W | B | | P01

Configuration example 2: MFX100 | 4 | P10 | N | B | E | P01

Element series and size

MFX100 Filter element with private spigot

Element length

1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

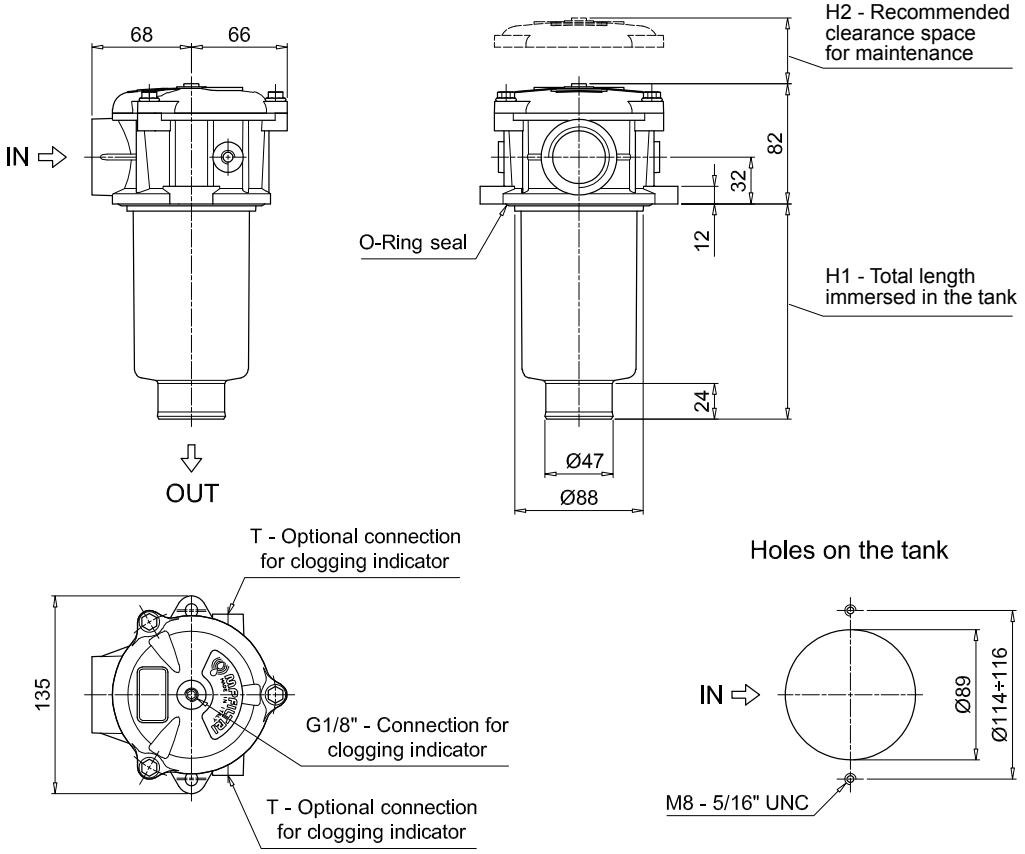
Indicators	page
BVA Axial pressure gauge	216
BVR Radial pressure gauge	216
BVP Visual pressure indicator with automatic reset	217
BVQ Visual pressure indicator with manual reset	217

Indicators	page
BEA Electrical pressure indicator	215
BEM Electrical pressure indicator	215
BLA Electrical / visual pressure indicator	215-216

Additional features	page
TE Extension tube	224
DFS Diffuser with fast lock connection	225

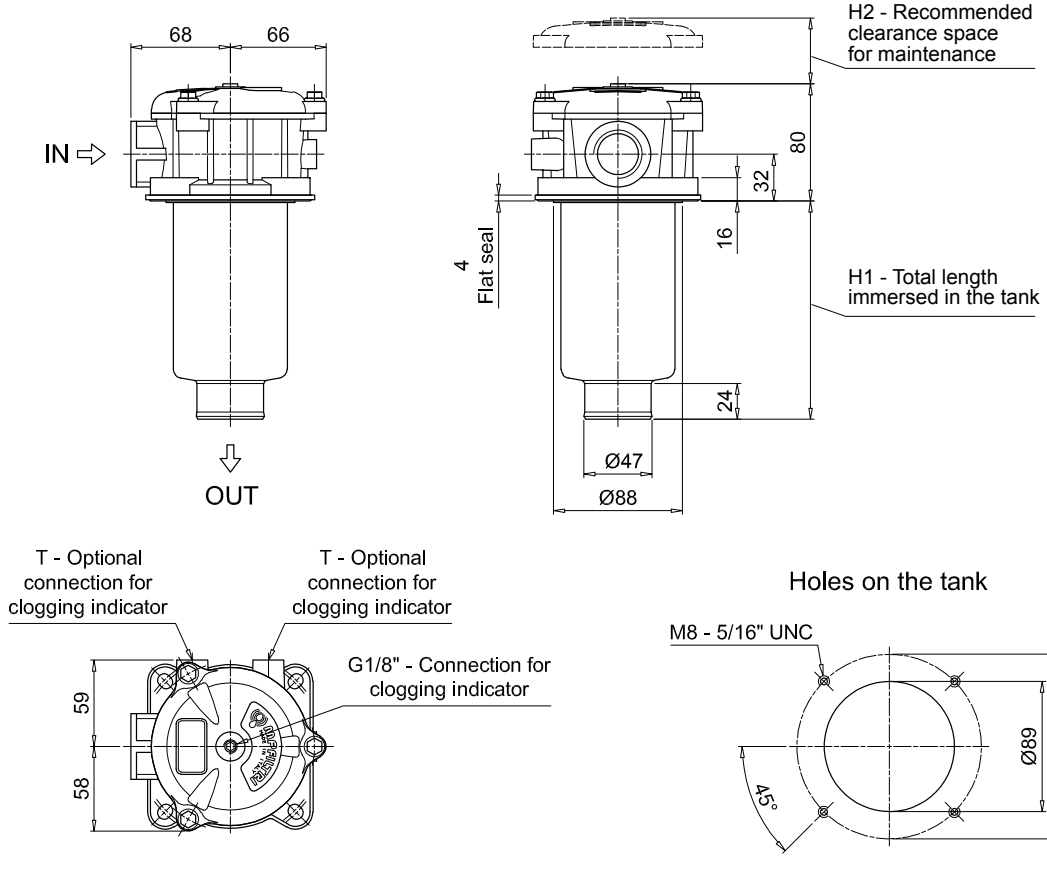
Additional features	page
T5 Filler plug M30x1.5	225
DPT Dipstick	225

Dimensions



MPFX100

Filter length	H1 [mm]	H2 [mm]
1	102	120
2	147	170
3	225	250
4	327	350



MPFX104

Filter length	H1 [mm]	H2 [mm]
1	100	120
2	145	170
3	223	250
4	325	350

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX110	3	Z	G4	2	M25	W	B	P01
Configuration example 2:	MPFX110	4	A	G8	1	P10	N	E	P01

Series and size

MPFX110 Filter element with private spigot

Length

1 | **2** | **3** | **4** |

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Main Connections		Aux size 1	Aux size 2
G1	G1/2"	G3/8"	G1/2"
G2	G3/4"		
G3	G1"		
G4	1/2" NPT	3/8" NPT	1/2" NPT
G5	3/4" NPT		
G6	1" NPT		

Main Connections		Aux size 1	Aux size 2
G7	SAE 8 - 3/4" - 16 UNF	SAE 6 - 9/16"- 18 UNF	SAE 8 - 3/4"- 16 UNF
G8	SAE 12 - 1 1/16" - 12 UN		
G9	SAE 16 - 1 5/16" - 12 UN		
G10	G1 1/4"	G3/8"	G1/2"
G11	1 1/4" NPT	3/8" NPT	1/2" NPT
G12	SAE 20 - 1 5/8" - 12 UN	SAE 6 - 9/16"- 18 UNF	SAE 8 - 3/4"- 16 UNF

Aux connection - see previous table

1	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX100	3	M25	W	V		P01
Configuration example 2:	MFX100	4	P10	N	B	E	P01

Element series and size

MFX100 Filter element with private spigot

Element length

1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

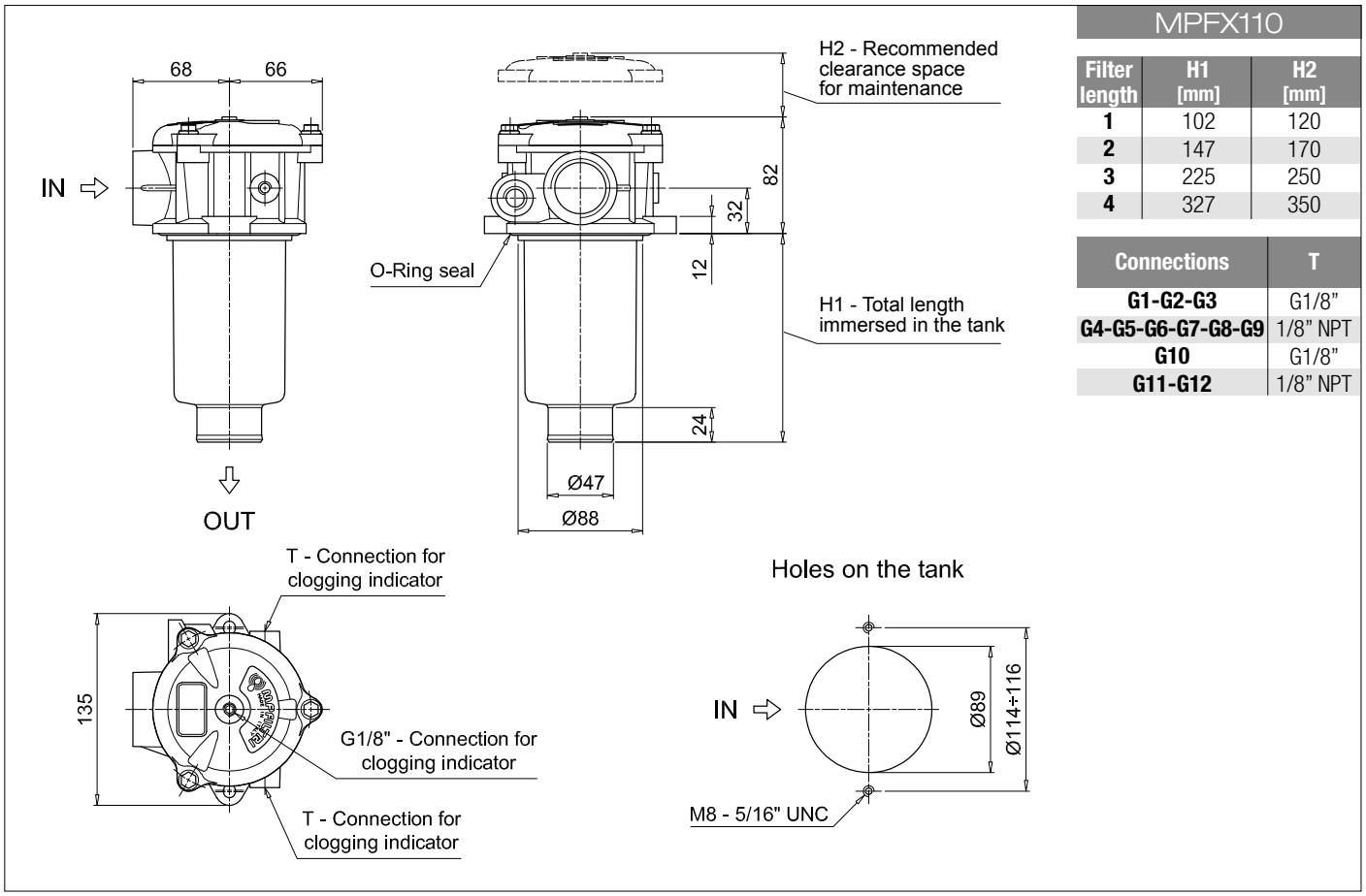
Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225

		page
T5	Filler plug M30x1.5	225
DPT	Dipstick	225

Dimensions



MPFX110		
Filter length	**H1 [mm]**	**H2 [mm]**
1	102	120
2	147	170
3	225	250
4	327	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT
G10	G1/8"
G11-G12	1/8" NPT

MPFX MPFX181 - MPFX191

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPFX181 | 1 | A | G1 | A25 | H | E | P01
Configuration example 2: MPFX191 | 2 | V | G2 | P10 | N | B | P01

Series and size

MPFX181 | **MPFX191** Filter element with private spigot

Length	Size 181	Size 191
1	•	
2	•	•

Seals and treatments

A	NBR		**B**	NBR	flat seal on head
V	FPM		**D**	FPM	flat seal on head
W	NBR	head anodized	**L**	NBR	head anodized, flat seal on head
Z	FPM	head anodized	**M**	FPM	head anodized, flat seal on head

Connections

G1	G1 1/4"	**G5**	1 1/2" NPT
G2	G1 1/2"	**G7**	SAE 20 - 1 5/8" - 12 UN
G4	1 1/4" NPT	**G8**	SAE 24 - 1 7/8" - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1: MFX180 | 1 | A25 | H | B | E | P01
Configuration example 2: MFX180 | 2 | P10 | N | V | | P01

Element series and size

MFX180 Filter element with private spigot

Element length

1

2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

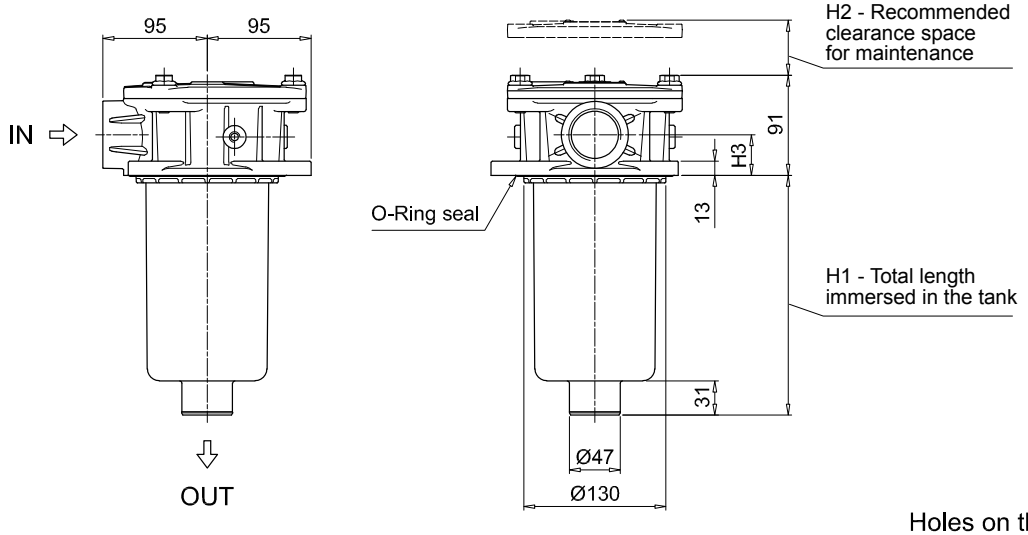
Indicators

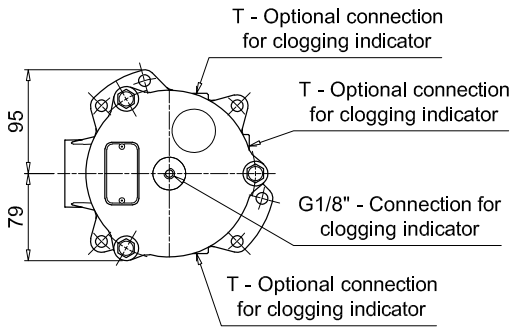
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

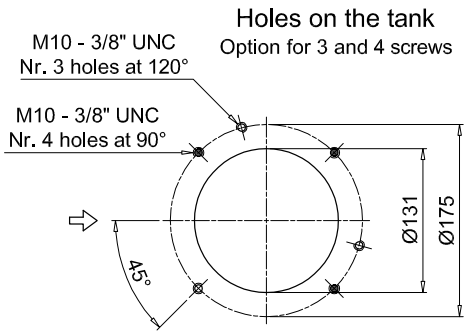
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
T5	Filler plug M30x1.5	225



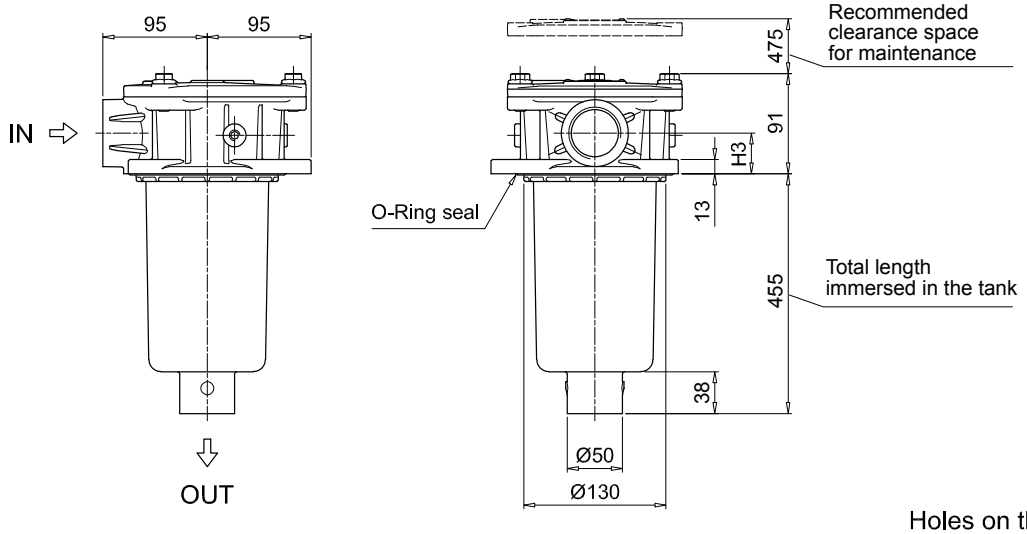


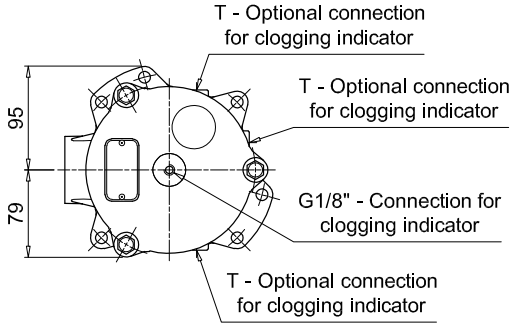


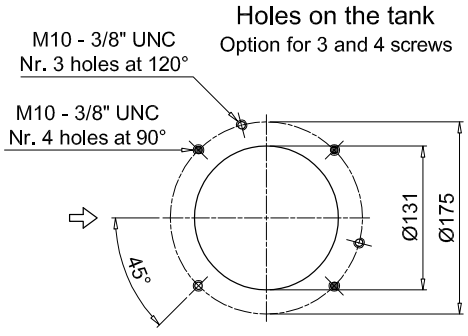
MPFX181

Filter length	H1 [mm]	H2 [mm]
1	235	255
2	448	475

Connections	H3 [mm]
G1 - G4 - G7	35
G2 - G5 - G8	37







MPFX191

Connections	H3 [mm]
G1 - G4 - G7	35
G2 - G5 - G8	37

MPFX MPFX182 - MPFX192

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX182	1	A	G1	1	A25	H	E	P01
Configuration example 2:	MPFX192	2	V	G2	2	P10	N	B	P01

Series and size

MPFX182 | **MPFX192** Filter element with private spigot

Length	Size 182	Size 192
1	•	
2	•	•

Seals and treatments

A	NBR		**B**	NBR	flat seal on head
V	FPM		**D**	FPM	flat seal on head
W	NBR	head anodized	**L**	NBR	head anodized, flat seal on head
Z	FPM	head anodized	**M**	FPM	head anodized, flat seal on head

Main Connections		Aux size 1	Aux size 2
G1	G1 1/4"	G1/2"	G3/4"
G4	1 1/4" NPT	1/2" NPT	3/4" NPT
G7	SAE 20 - 1 5/8" - 12 UN	SAE 8 - 3/16"- 16 UNF	SAE 12 - 1 1/16"- 12 UN

Aux connection - see previous table

1	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX180	1	A25	H	B	E	P01
Configuration example 2:	MFX180	2	P10	N	V		P01

Element series and size

MFX180 Filter element with private spigot

Element length

1

2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

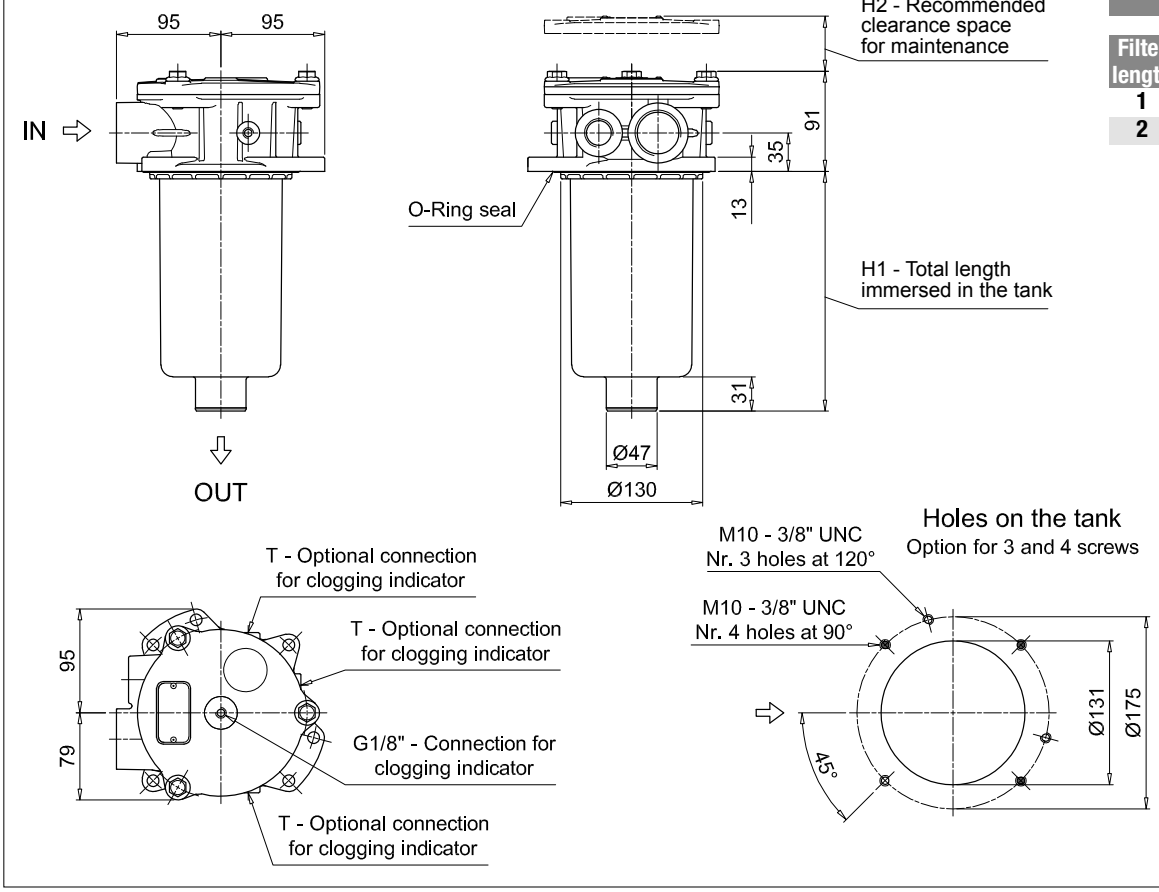
Additional features		page
TE	Extension tube	224
T5	Filler plug M30x1.5	225

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

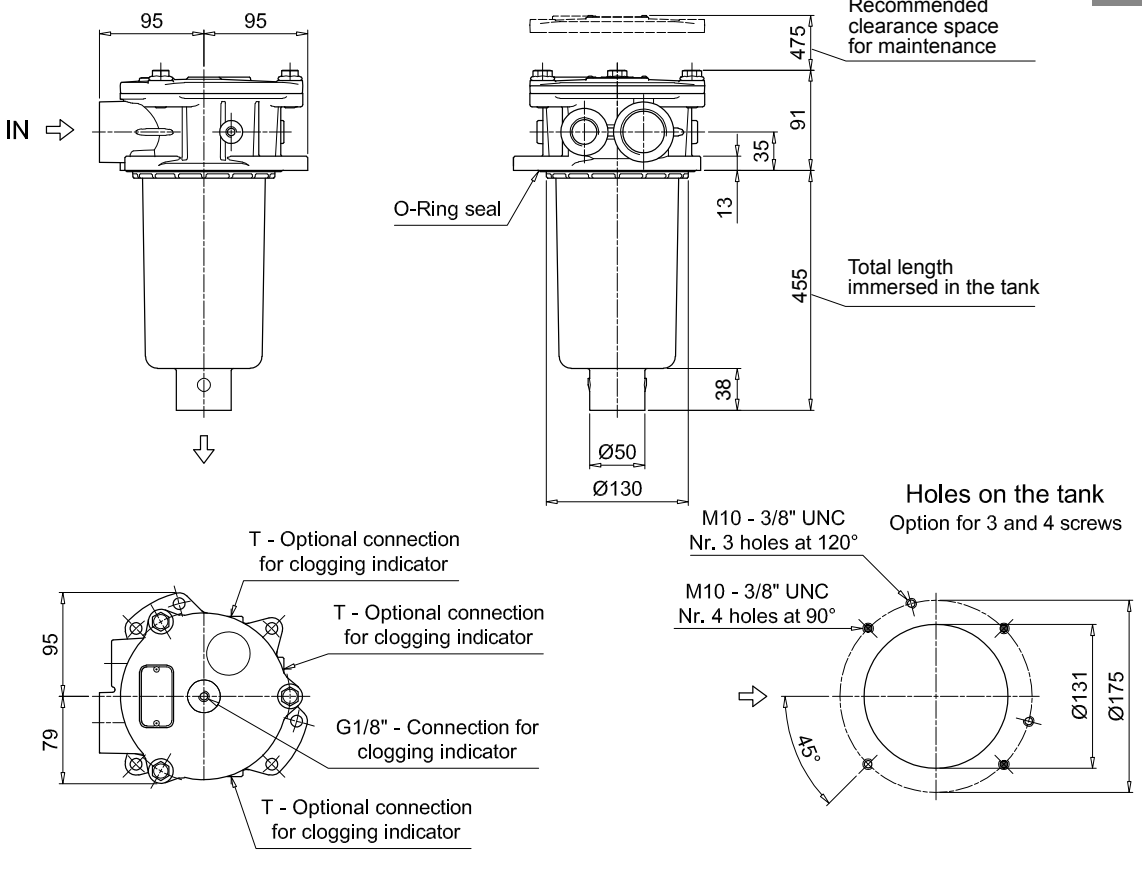
Dimensions

MPFX182

Filter length	H1 [mm]	H2 [mm]
1	235	255
2	448	475



MPFX192



Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX184	1	A	G1	A25	H	E	P01
Configuration example 2:	MPFX194	2	V	F3	P10	N	B	P01

Series and size

MPFX184 | **MPFX194** Filter element with private spigot

Length

	Size 184	Size 194
1	•	
2	•	•

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Main Connections		Rear connections
G1	G1 1/4"	-
G2	G1 1/4"	G1 1/4"
G4	1 1/4" NPT	-
G5	1 1/4" NPT	1 1/4" NPT
G7	SAE 20 - 1 5/8" - 12 UN	-
G8	SAE 20 - 1 5/8" - 12 UN	SAE 20 - 1 5/8" - 12 UN
G10	SAE 24 - 1 7/8" - 12 UN	-
G11	SAE 24 - 1 7/8" - 12 UN	SAE 20 - 1 5/8" - 12 UN

Main Connections		Rear connections
G13	G1 1/2"	-
G14	G1 1/2"	G1 1/4"
G15	1 1/2" NPT	-
G16	1 1/2" NPT	1 1/4" NPT
F1	1 1/2" SAE 3000 psi/M	-
F2	1 1/2" SAE 3000 psi/UNC	-
F3	1 1/2" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M
F4	1 1/2" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX180	1	A25	H	B	E	P01
Configuration example 2:	MFX180	2	P10	N	V		P01

Element series and size

MFX180 Filter element with private spigot

Element length

1

2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

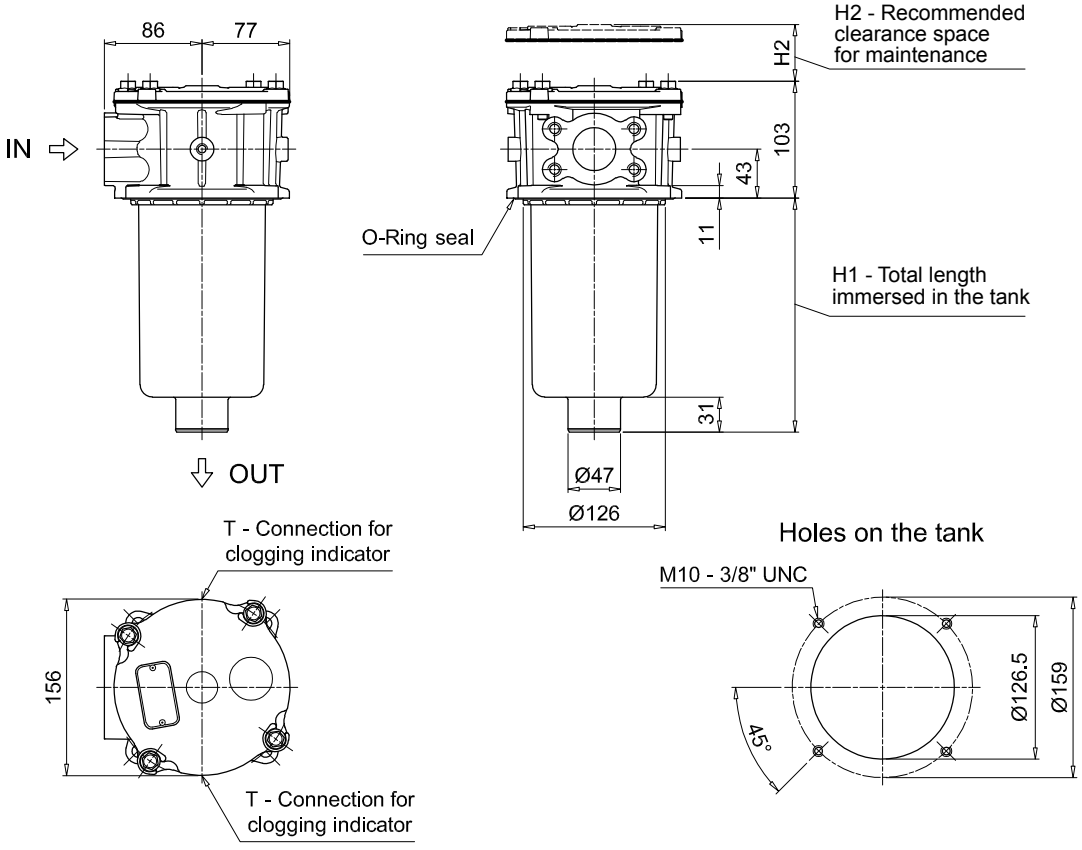
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
T5	Filler plug M30x1.5	225

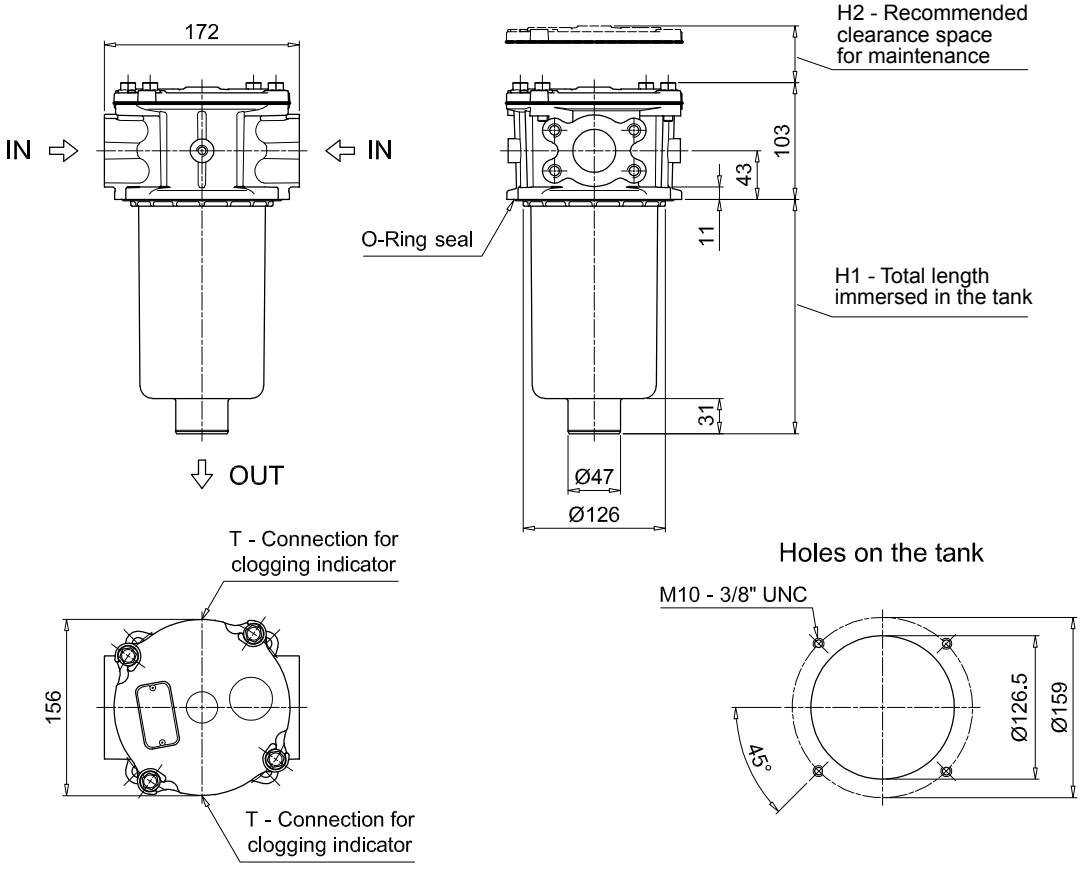


MPFX184

1 connection port

Filter length	H1 [mm]	H2 [mm]
1	232	260
2	445	480

Connection type	T
G1	G1/8"
G4 - G7 - G10	1/8" NPT
G13	G1/8"
G15 - F1 - F2	1/8" NPT



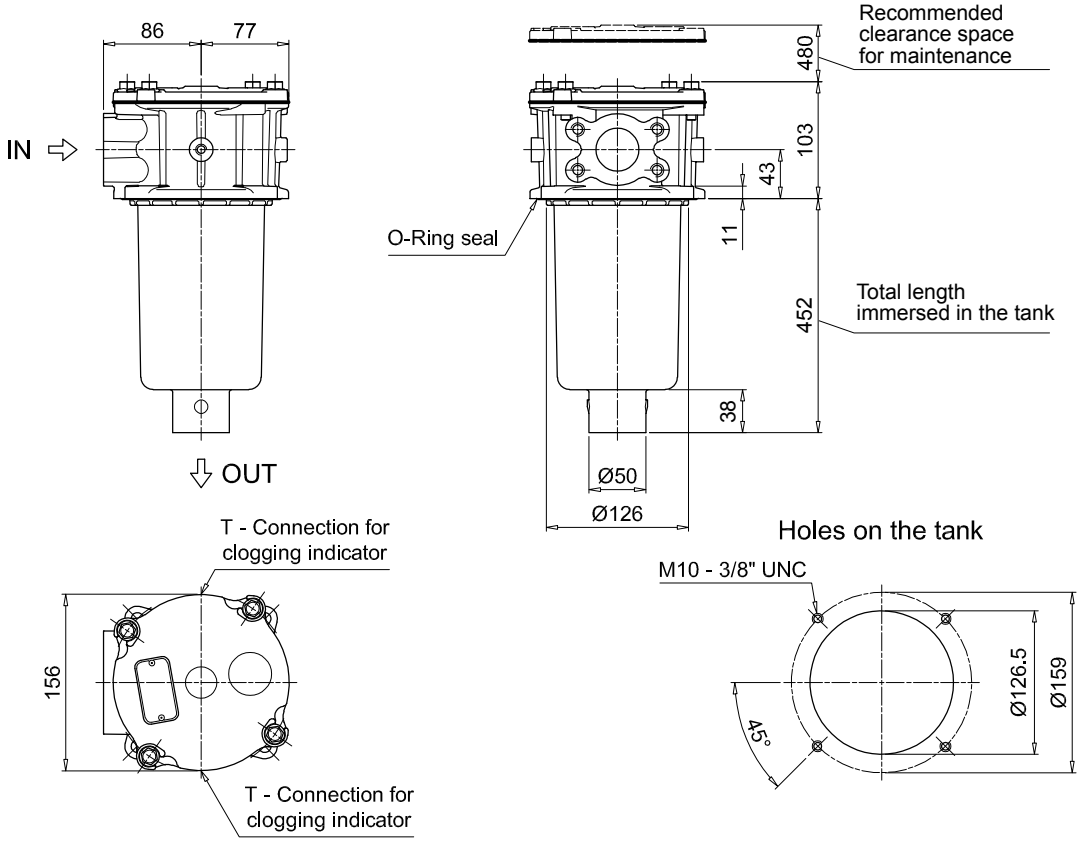
MPFX184

2 connection ports

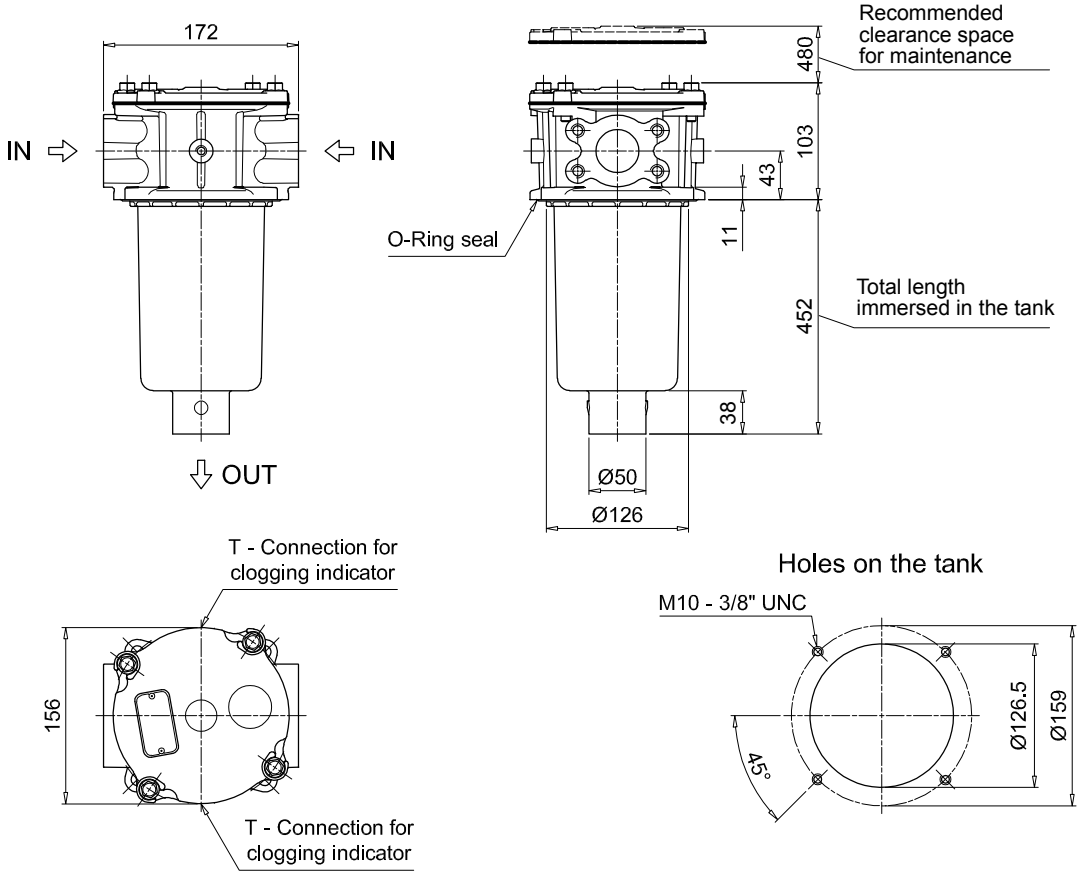
Filter length	H1 [mm]	H2 [mm]
1	232	260
2	445	480

Connection type	T
G2	G1/8"
G5 - G8 - G11	1/8" NPT
G14	G1/8"
G16 - F3 - F4	1/8" NPT

Dimensions



MPFX194	
1 connection port	
Connections	**T**
G1	G1/8"
G4 - G7 - G10	1/8" NPT
G13	G1/8"
G15 - F1 - F2	1/8" NPT



MPFX194	
2 connection ports	
Connections	**T**
G2	G1/8"
G5 - G8 - G11	1/8" NPT
G14	G1/8"
G16 - F3 - F4	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX400	1	A	G9	A25	H	B	P01
Configuration example 2:	MPFX400	2	V	G4	P10	N	E	P01

Series and size

MPFX400 Filter element with private spigot

Length

1 | **2** | **3** |

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections

G1	G1 1/4”	**G6**	2” NPT
G2	G1 1/2”	**G7**	SAE 20 - 1 5/8” - 12 UN
G3	G2”	**G8**	SAE 24 - 1 7/8” - 12 UN
G4	1 1/4” NPT	**G9**	SAE 32 - 2 1/2” - 12 UN
G5	1 1/2” NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX400	1	A25	H	B		P01
Configuration example 2:	MFX400	2	P10	N	V	E	P01

Element series and size

MFX400 Filter element with private spigot

Element length

1 | **2** | **3** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

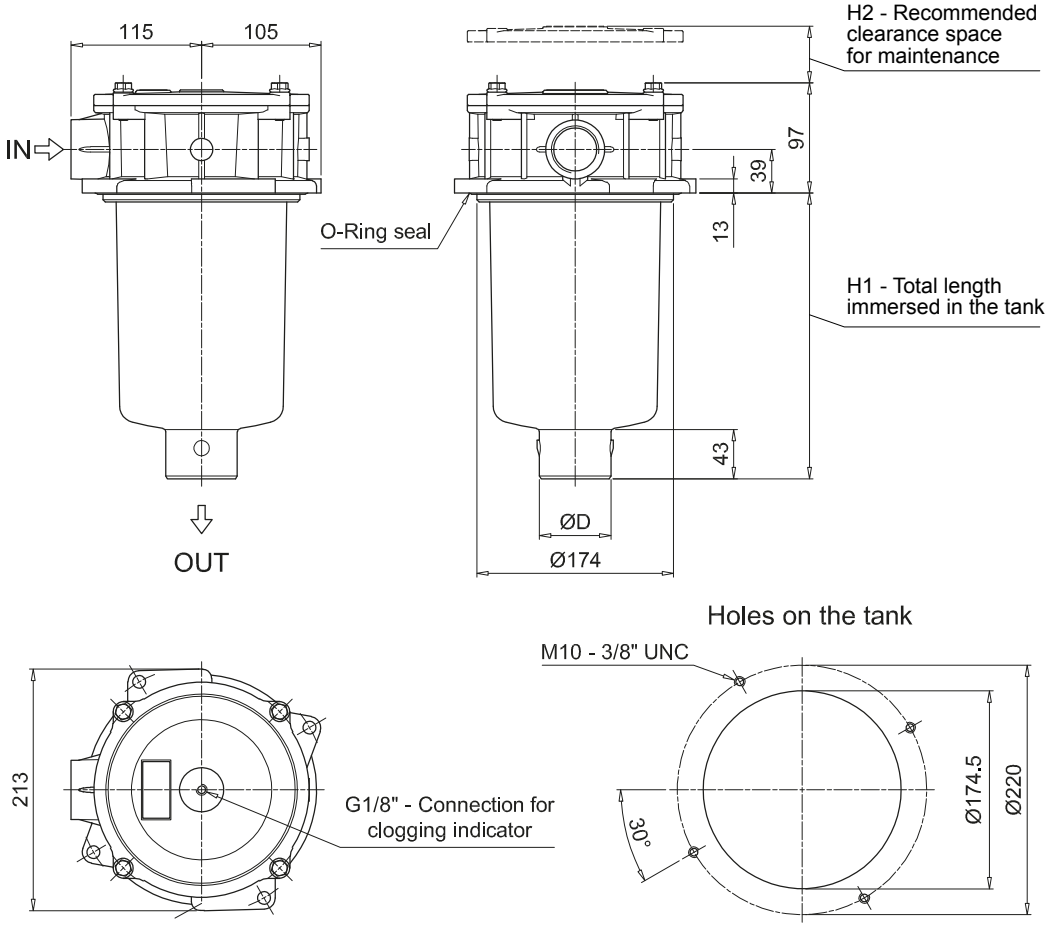
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
T5	Filler plug M30x1.5	225

Dimensions



MPFX400

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX410	1	V	G4	1	P10	N	E	P01
Configuration example 2:	MPFX410	1	A	G9	1	A25	H	B	P01

Series and size

MPFX410 Filter element with private spigot

Length

1 | **2** | **3** |

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Main Connections		Aux size 1
G1	G1 1/4"	G1"
G4	1 1/4" NPT	1" NPT
G7	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16"- 12 UN

Aux connection - see previous table

1	Aux size 1

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX400	1	P10	N	V	E	P01
Configuration example 2:	MFX400	1	A25	H	B		P01

Element series and size

MFX400 Filter element with private spigot

Element length

1 | **2** | **3** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

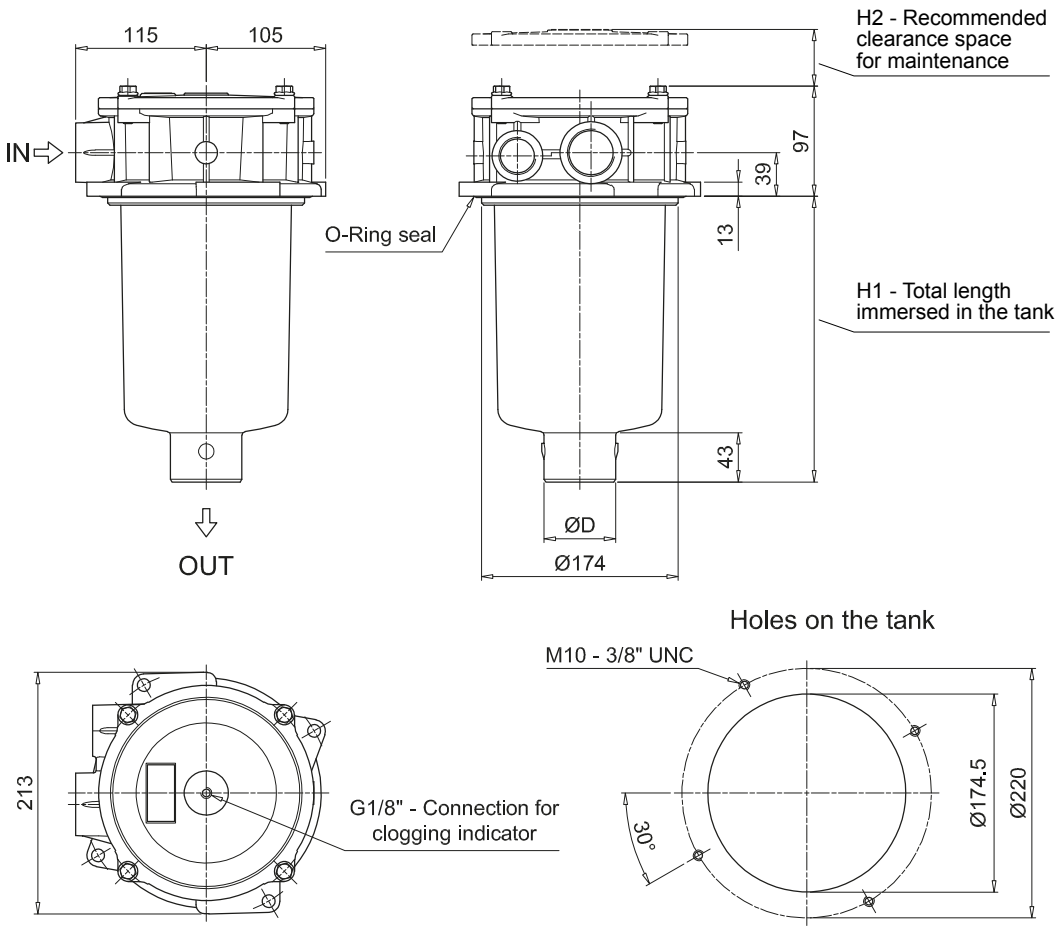
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
T5	Filler plug M30x1.5	225

Dimensions



MPFX410

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

MPFX MPFX450 - MPFX451 - MPFX750

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPFX450	1	A	G1	A25	H	B	P01
Configuration example 2:	MPFX750	1	V	F	P10	N	E	P01

Series and size

MPFX450 | **MPFX451** | **MPFX750** Filter element with private spigot

Length	MPFX 450	MPFX 451	MPFX 750
1	•	•	•
2	•	•	
3	•	•	

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Connections		Aux (only size 451)
G1	G2”	G3/4”
G4	2” NPT	3/4” NPT
G7	SAE 32 - 2 1/2” - 12 UN	SAE 12 - 1 1/16” - 12 UN
F1	2” SAE 3000 psi/M	G3/4”
F2	2” SAE 3000 psi/UN	3/4” NPT

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve	
E	3 bar
B	1.75 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MFX400	1	A25	H	B		P01
Configuration example 2:	MFX750	1	P10	N	V	E	P01

Element series and size

MFX400 | **MFX750** Filter element with private spigot

Element length	MPFX 450	MPFX 451	MPFX 750
1	•	•	•
2	•	•	
3	•	•	

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals	
B	NBR
V	FPM

Bypass valve	
E	3 bar
	1.75 bar

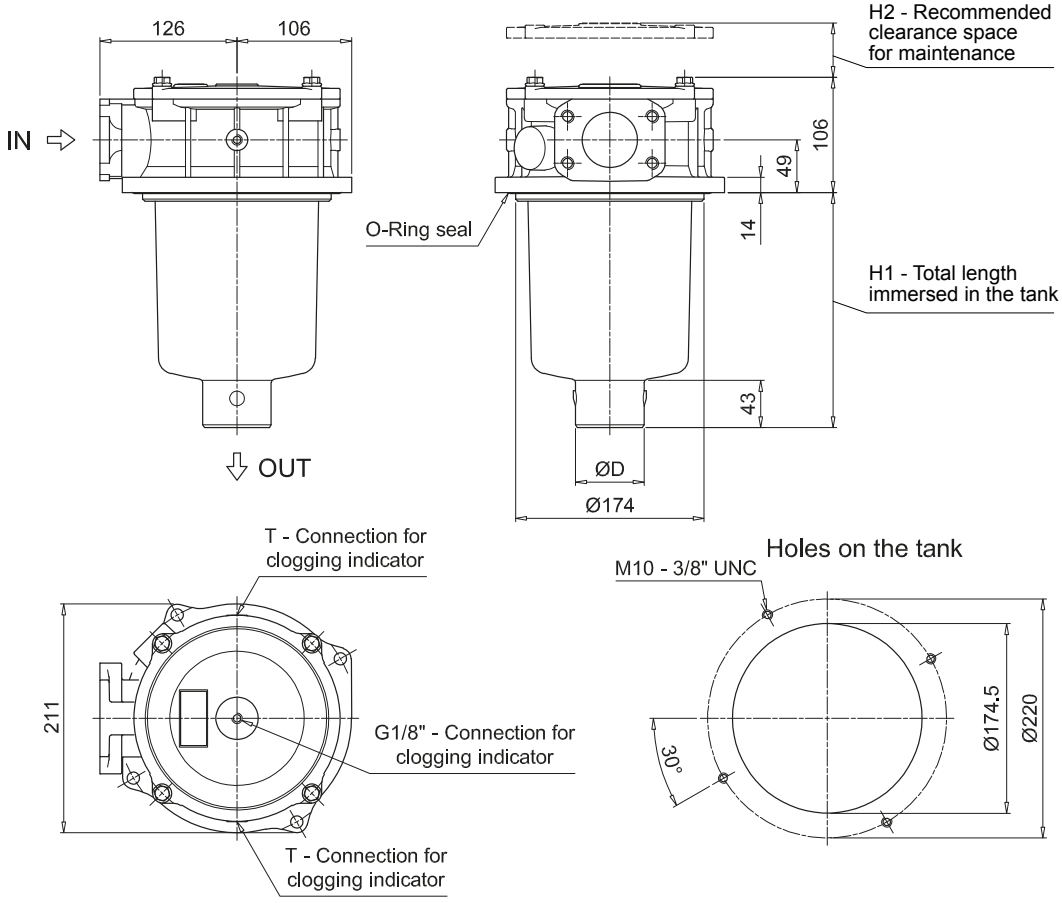
Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
T5	Filler plug M30x1.5	225

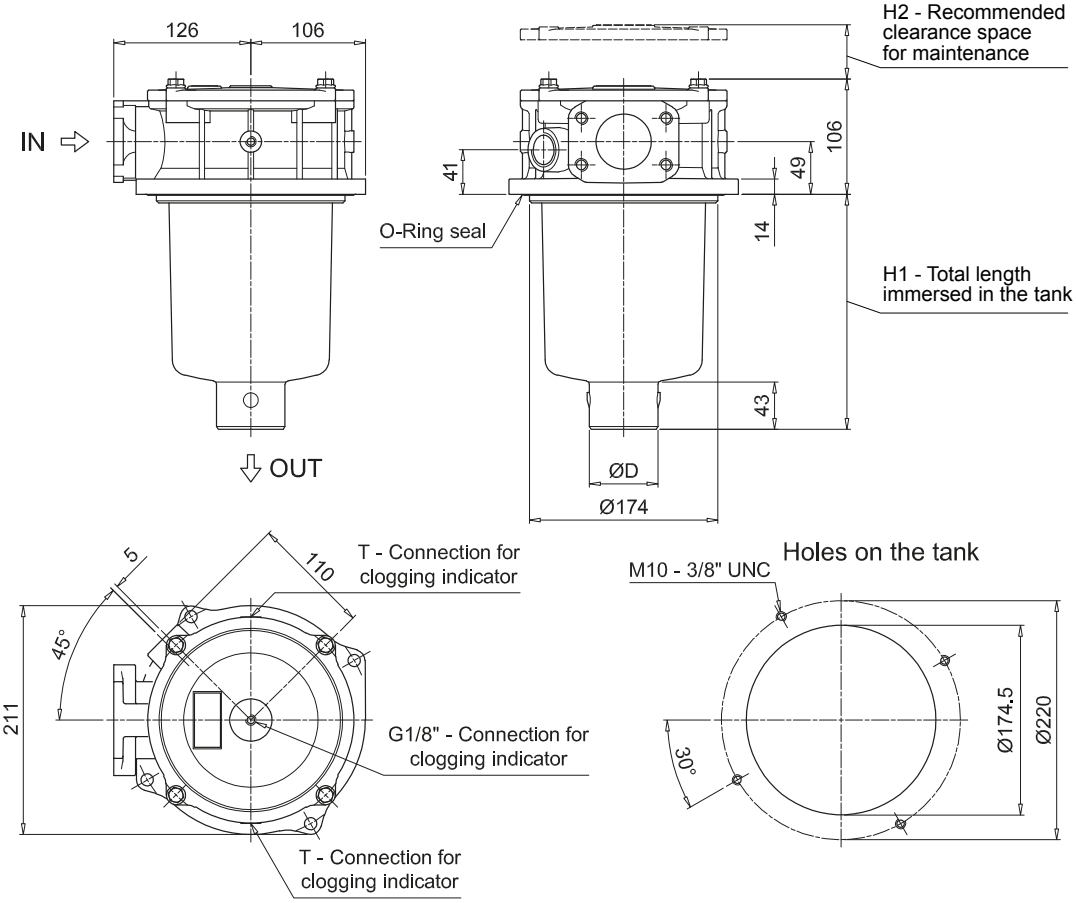
Dimensions



MPFX450

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

Connections	T
G1	G1/8"
G4 - G7	1/8" NPT
F1	G1/8"
F2	1/8" NPT



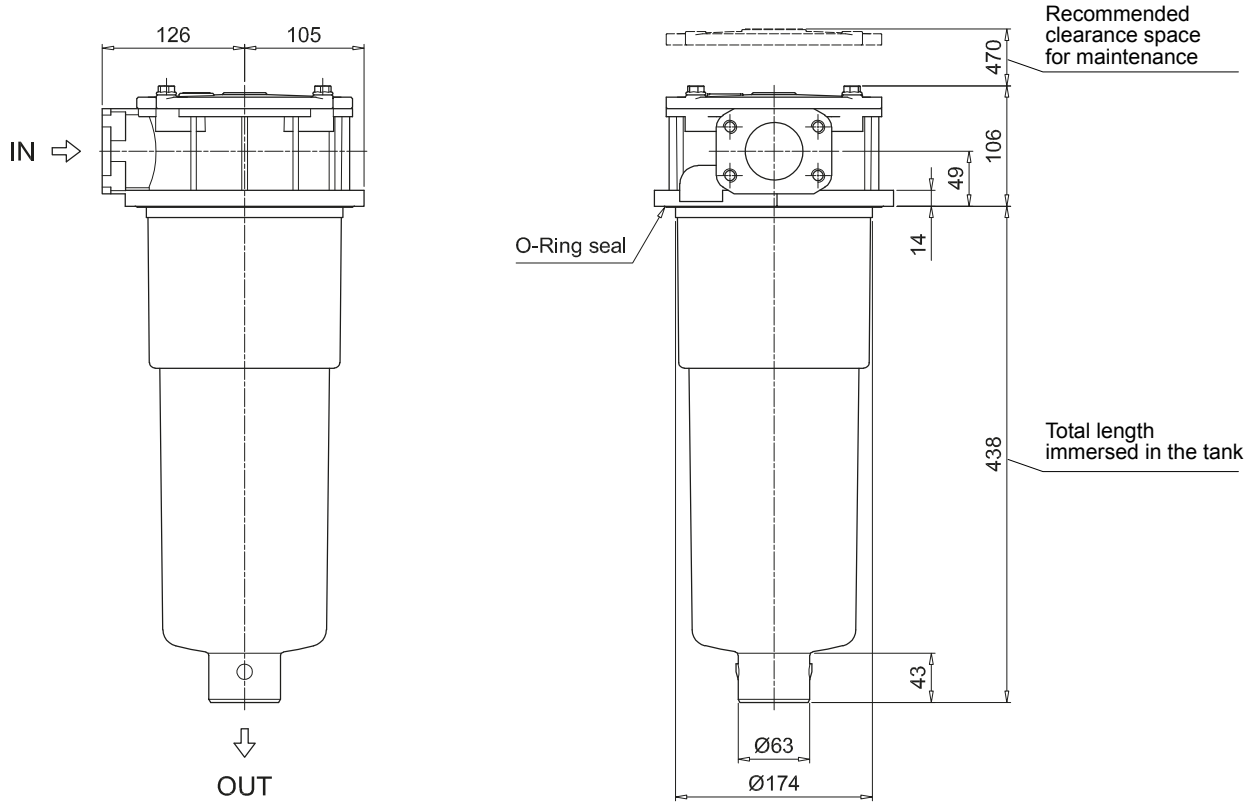
MPFX451

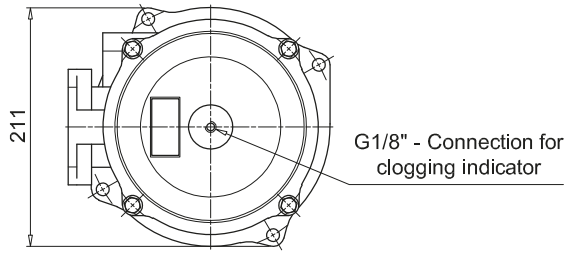
Filter length	H1 [mm]	H2 [mm]	D [mm]
1	187	210	50
2	252	270	63
3	300	315	63

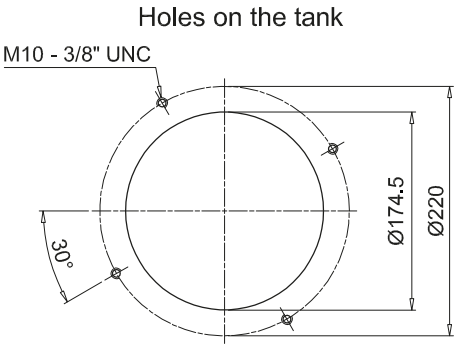
Connections	T
G1	G1/8"
G4 - G7	1/8" NPT
F1	G1/8"
F2	1/8" NPT

Dimensions

MPFX750

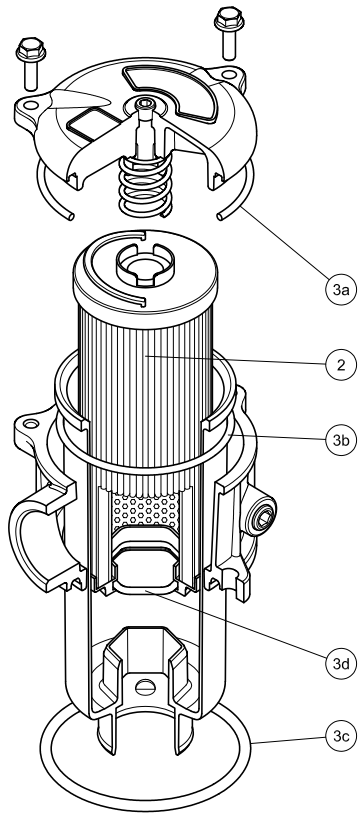




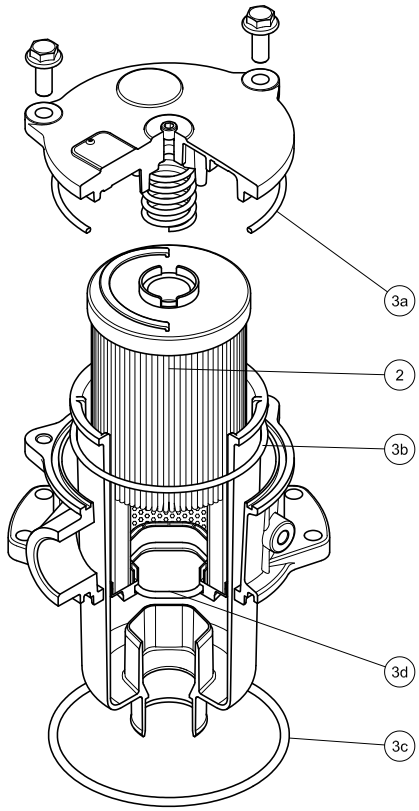


Order number for spare parts

MPFX 100



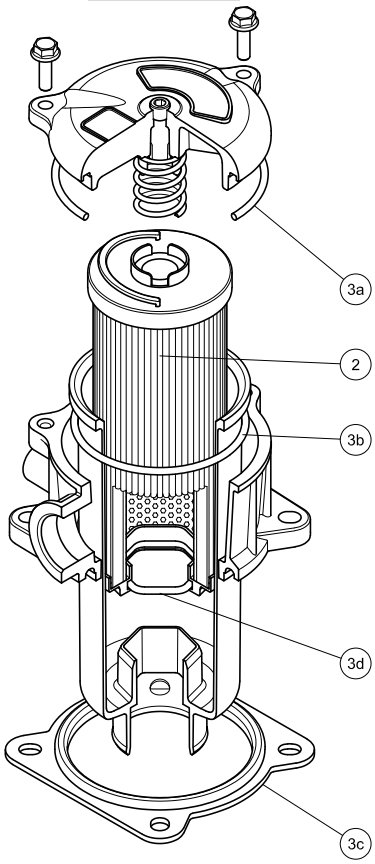
MPFX 181



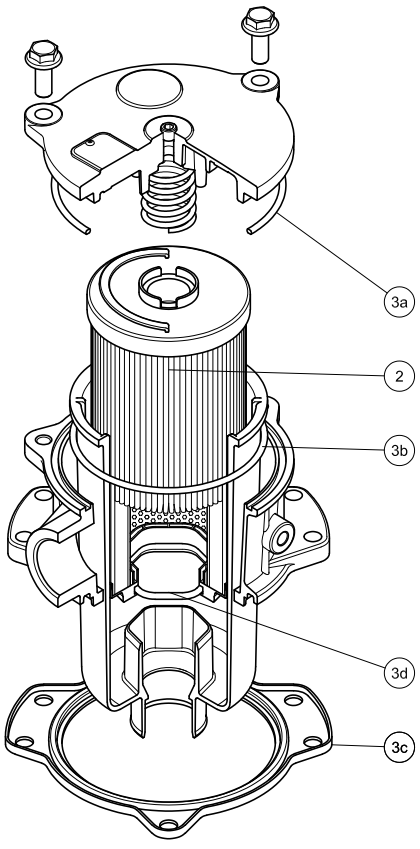
O-RING SEAL

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPFX 030	See order table	02050675	02050676
MPFX 100-110		02050677	02050678
MPFX 181-182		02050681	02050682
MPFX 184		02050685	02050686
MPFX 191-192		02050683	02050684
MPFX 194		02050687	02050688
MPFX 400-410		02050695	02050696
MPFX 450-451		02050697	02050698
MPFX 750		02050699	02050700

MPFX 104



MPFX 181



FLAT SEAL

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPFX 104	See order table	02050679	02050680
MPFX 181-182		02050691	02050692
MPFX 191-192		02050693	02050694

MPTX series

Maximum pressure up to 8 bar - Flow rate up to 300 l/min

MPTX GENERAL INFORMATION

Technical data

Return filter **Maximum pressure up to 8 bar - Flow rate up to 300 l/min**

Filter housing materials
- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: 800 kPa (8 bar)

Temperature
From -25 °C to +110 °C

Bypass valve
- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 300 kPa (3 bar)

Note
MPTX filters are provided for vertical mounting

Δp element type
- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN.

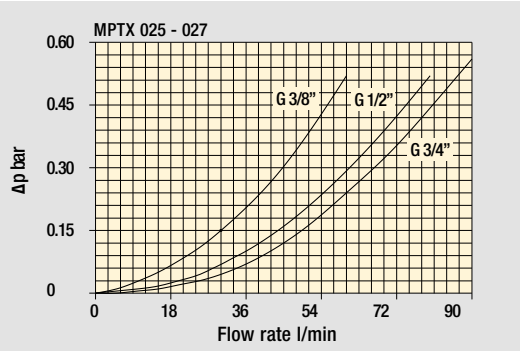
Weights [kg] and volumes [dm³]

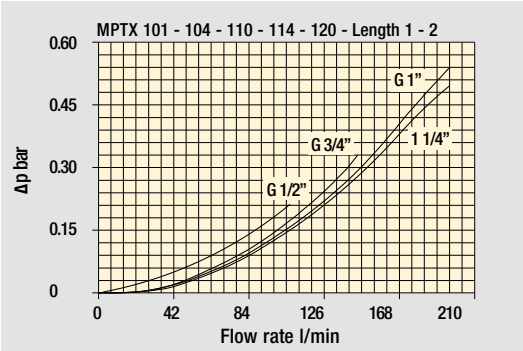
	Weights [kg]					Volumes [dm³]				
	Length	1	2	3	4	Length	1	2	3	4
MPTX 025		0.41	0.45	0.50	-		0.24	0.35	0.42	-
MPTX 027		0.44	0.48	0.55	-		0.24	0.35	0.42	-
MPTX 101		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
MPTX 104		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
MPTX 110-120		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
MPTX 114		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74

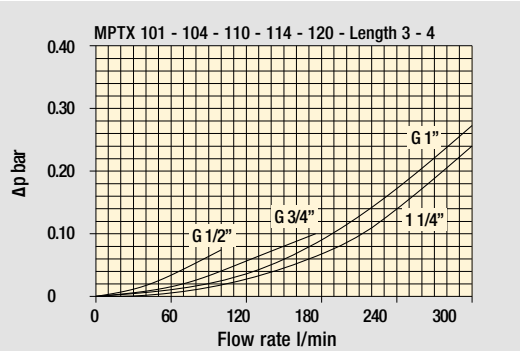
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

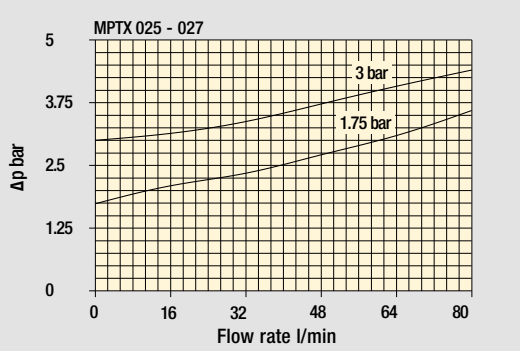
Filter housings Δp pressure drop

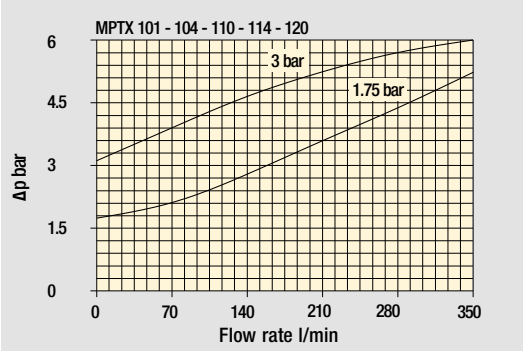




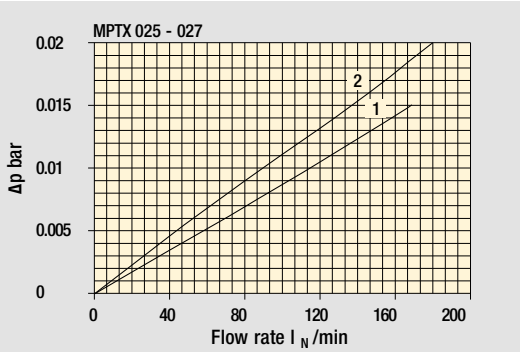


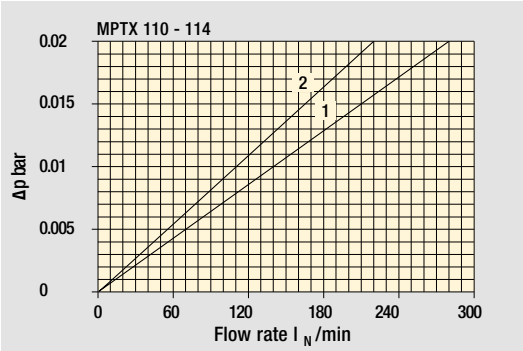
Bypass valve pressure drop





Air breather pressure drop

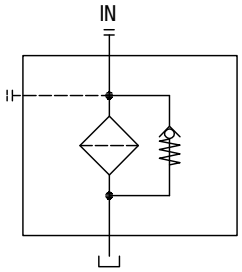




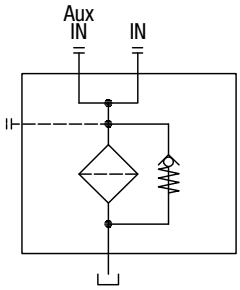
1 C With air breather 10 µm
2 D With anti-splash and SAP50 10 µm

Hydraulic symbols

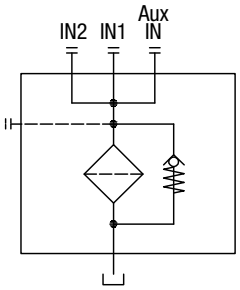
Style
1 connection



Style
2 connections



Style
3 connections



Multifunction

MPT 025 -027

Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

Multiport - Multifunction

MPT 110

Standard - Single IN Port	Double IN Port - Double indicator port	Double IN Port - Indicator port	Double IN Port
		 Option: drain port	 Option: double drain port

MPT 120

Triple IN port

Option:
double drain port

MPTX MPTX025 - MPTX027

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPTX025	1	S	A	G3	A10	E	P01
Configuration example 2:	MPTX027	3	C	W	G6	A03	B	P01

Series and size

MPTX025 | **MPTX027** Filter element with private spigot

Length

1 | **2** | **3**

Air breather

S	Without air breather
C	With air breather 10 µm
D	With anti-splash and air breather SAP050 10 µm
P	With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized (filter element compatible with fluids HFA-HFB-HFC)	•	•	
Z	FPM head anodized (filter element compatible with fluids HFA-HFB-HFC)	•	•	

Connections

G1	G3/8”	**G6**	3/4” NPT
G2	G1/2”	**G7**	SAE 6 - 9/16” - 18 UNF
G3	G3/4”	**G8**	SAE 8 - 3/4” - 16 UNF
G4	3/8” NPT	**G9**	SAE 12 - 1 1/16” - 12 UN
G5	1/2” NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 2:	MFX020	1	A10	H	B	E	P01
Configuration example 1:	MFX020	3	A03	H	W		P01

Element series and size

MFX020 Filter element with private spigot

Element length

1 | **2** | **3**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

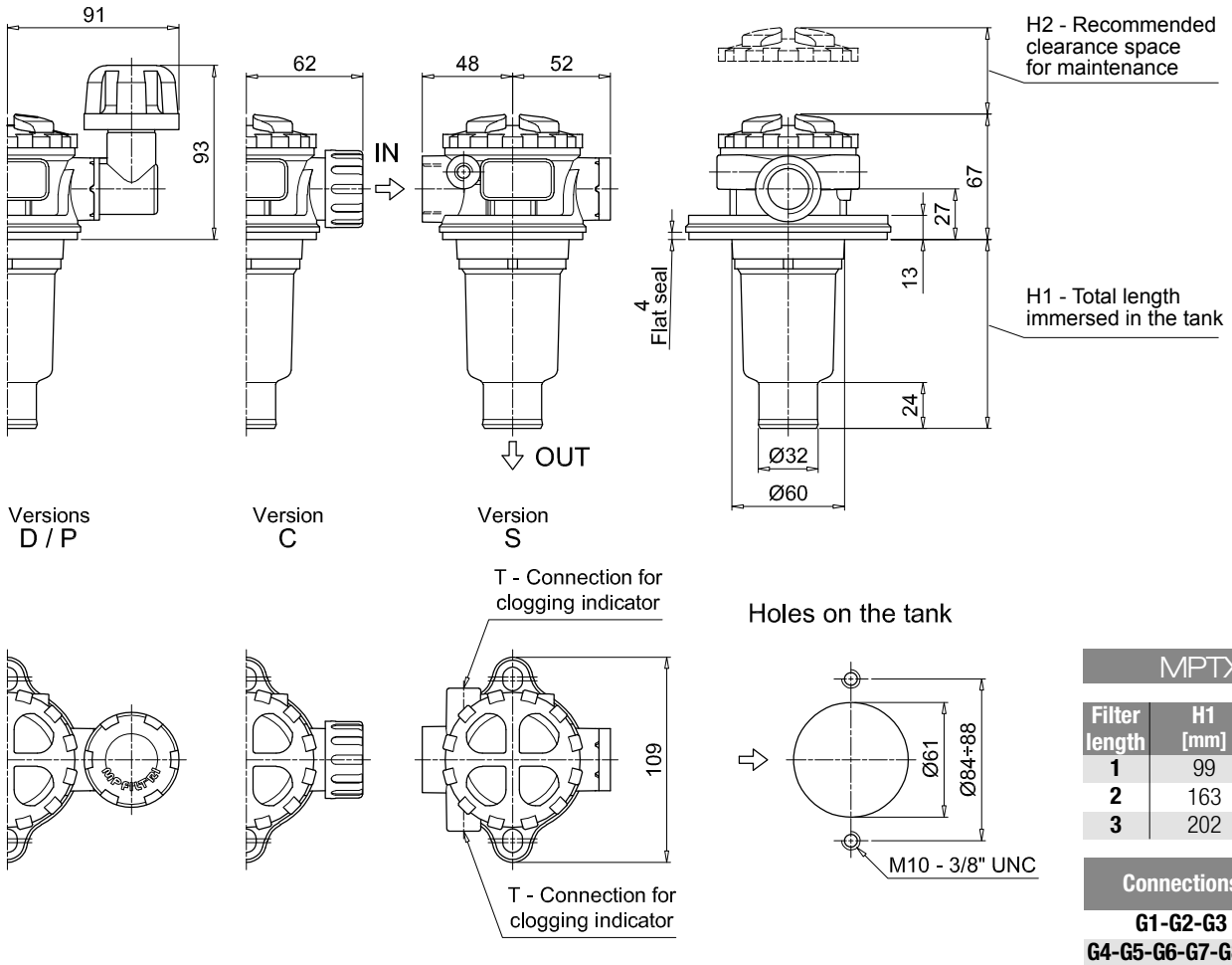
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
DPT	Dipstick	225

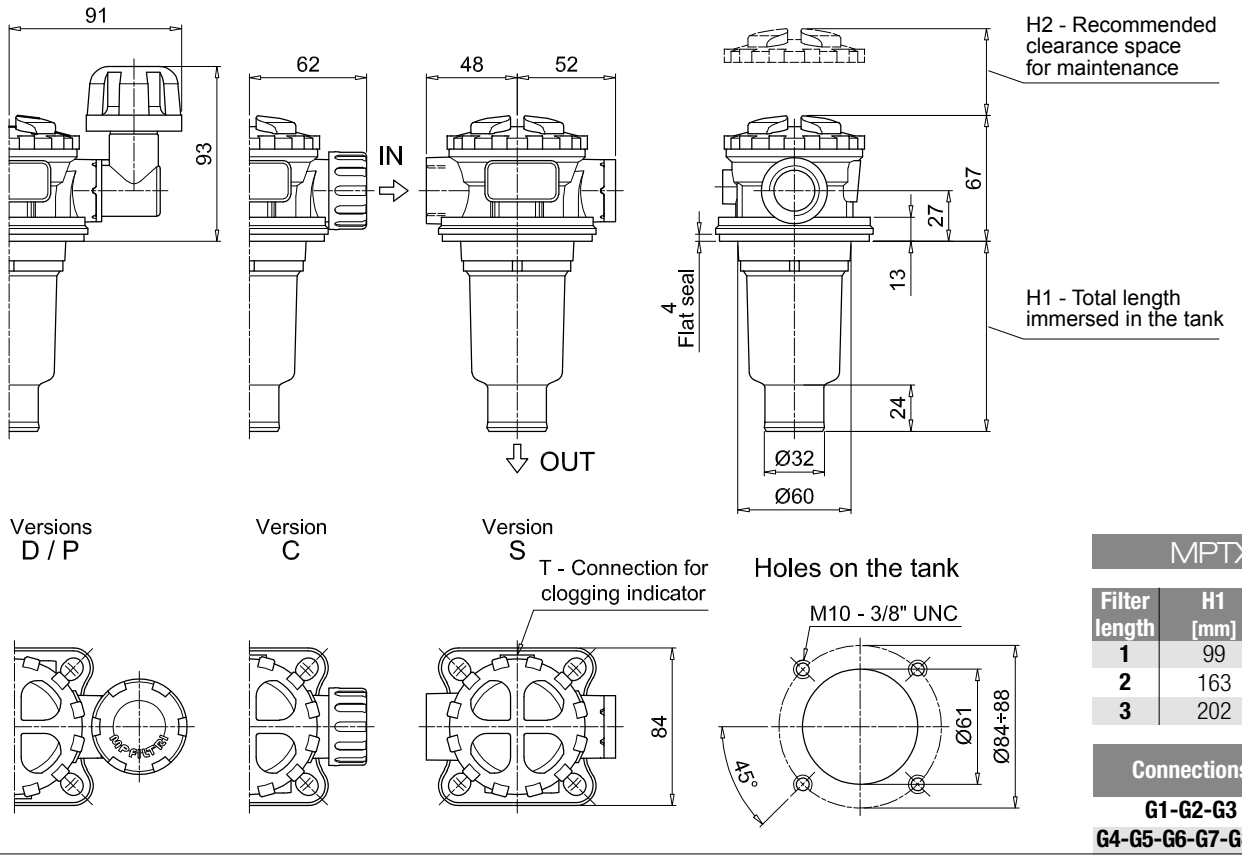
Dimensions



MPTX025

Filter length	H1 [mm]	H2 [mm]
1	99	130
2	163	195
3	202	230

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPTX027

Filter length	H1 [mm]	H2 [mm]
1	99	130
2	163	195
3	202	230

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPTX MPTX101 - MPTX104 - MPTX114

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPTX101	4	S	A	G3	A10	E	P01
Configuration example 2:	MPTX114	3	C	W	G6	A03	B	P01

Series and size

MPTX101 | **MPTX104** | **MPTX114** Filter element with private spigot

Length

1 | **2** | **3** | **4**

Air breather

		MPTX101	MPTX104	MPTX114
S	Without air breather	•	•	•
C	With air breather 10 µm			•
D	With anti-splash and air breather SAP050 10 µm			•
P	With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar			•

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections

G1	G3/4"	**G6**	1 1/4" NPT
G2	G1"	**G7**	SAE 12 - 1 1/16" - 12 UN
G3	G1 1/4"	**G8**	SAE 16 - 1 5/16" - 12 UN
G4	3/4" NPT	**G9**	SAE 20 - 1 5/8" - 12 UN
G5	1" NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 2:	MFX100	4	A10	H	B	E	P01
Configuration example 1:	MFX100	3	A03	W	B		P01

Element series and size

MFX100 Filter element with private spigot

Element length

1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

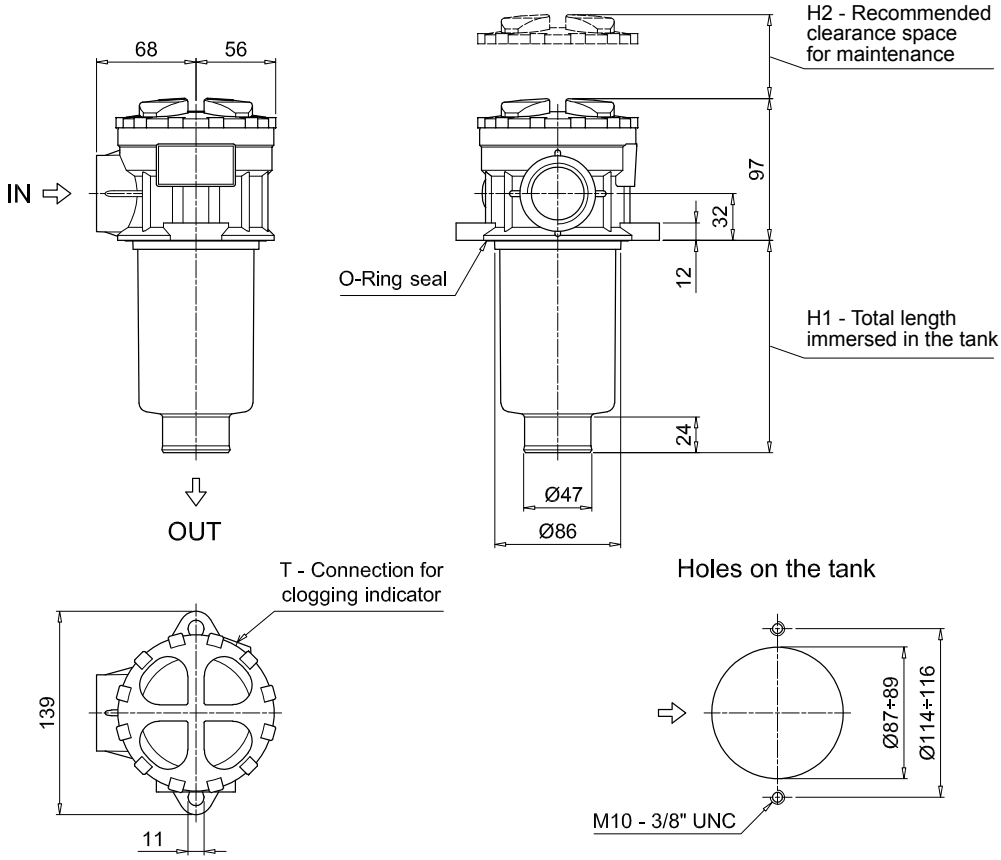
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

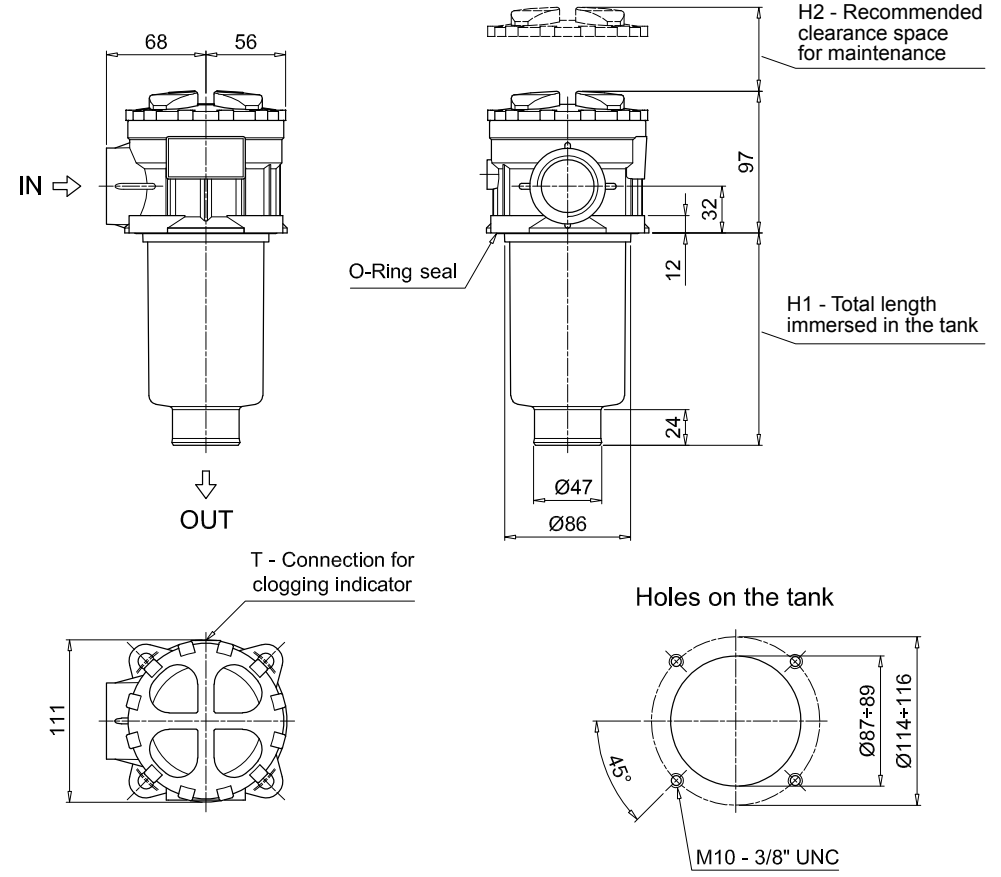
Dimensions



MPTX101

Filter length	H1 [mm]	H2 [mm]
1	101	120
2	146	170
3	224	250
4	326	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPTX104

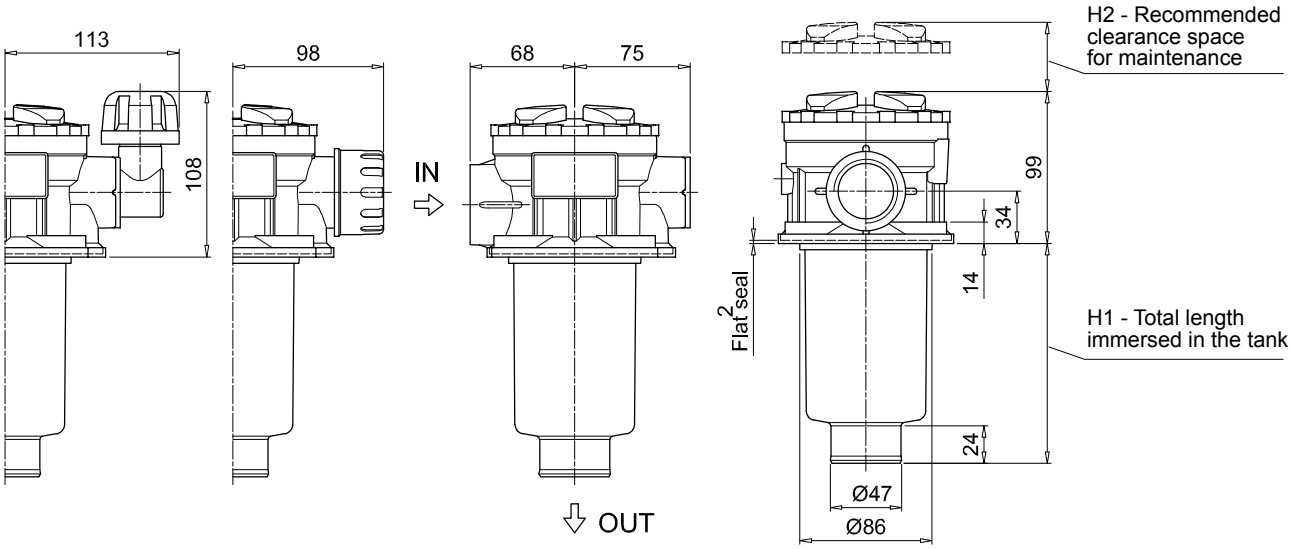
Filter length	H1 [mm]	H2 [mm]
1	101	120
2	146	170
3	224	250
4	326	350

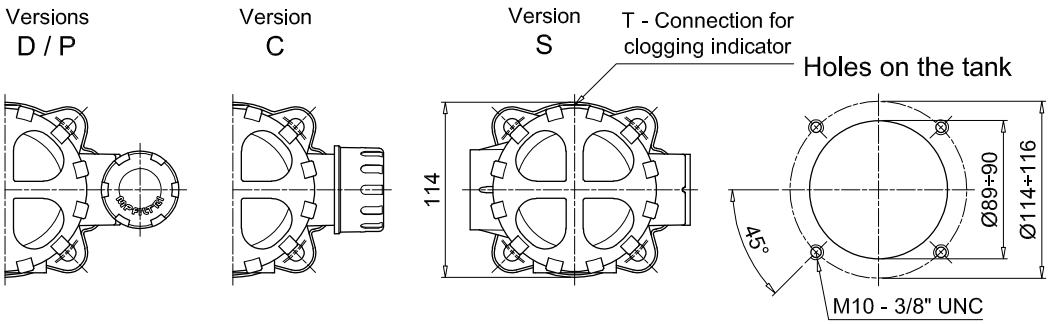
Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

Dimensions

MPTX114		
Filter length	**H1 [mm]**	**H2 [mm]**
1	99	120
2	144	170
3	222	250
4	324	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT





Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPTX110	3	P	V	G4	1	M25	B	P01
Configuration example 2:	MPTX110	1	S	A	G1	0	A06	E	P01

Series and size
MPTX110 Filter element with private spigot

Length
1 | **2** | **3** | **4**

Air breather
S Without air breather
C With air breather 10 µm
D With anti-splash and air breather SAP050 10 µm
P With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Aux size 1	Aux size 2
G1	G3/4"	G3/8"	G1/2"
G2	G1"		
G3	G1 1/4"		
G4	3/4" NPT	3/8" NPT	1/2" NPT
G5	1" NPT		

Main Connections		Aux size 2	Aux size 2
G6	1 1/4" NPT	3/8" NPT	1/2" NPT
G7	SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
G8	SAE 16 - 1 5/16" - 12 UN		
G9	SAE 20 - 1 5/8" - 12 UN		

Aux connection - see previous table
0 Not machined **1** Aux size 1 **2** Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve
E 3 bar
B 1.75 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1:	MFX100	3	M25	N	V		P01
Configuration example 2:	MFX100	1	A06	H	B	E	P01

Element series and size
MFX100 Filter element with private spigot

Element length
1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals
B NBR
V FPM

Bypass valve
E 3 bar
1.75 bar

Execution
P01 MP Filtri standard
Pxx Customized

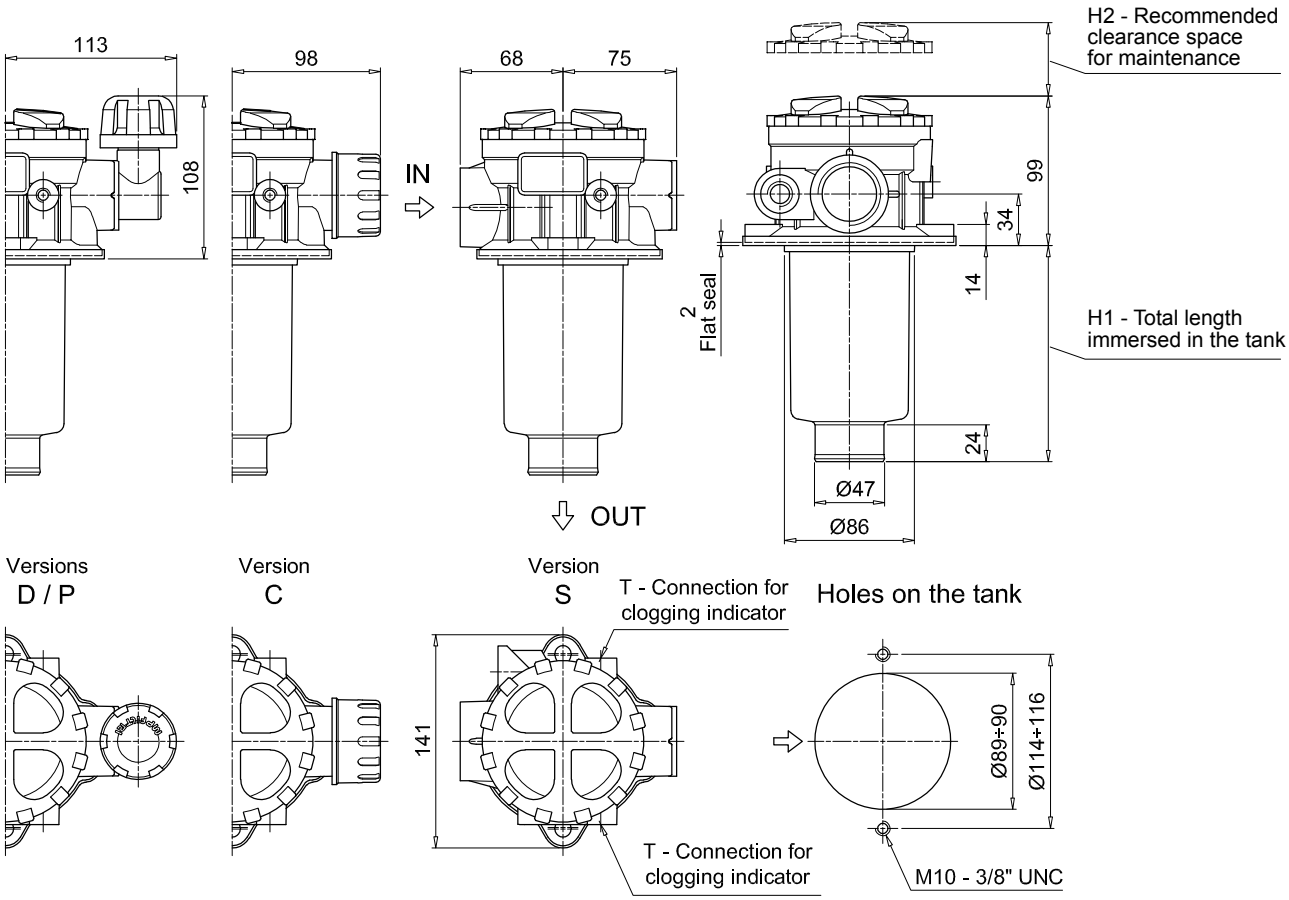
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

MPTX110		
Filter length	**H1 [mm]**	**H2 [mm]**
1	99	120
2	144	170
3	222	250
4	324	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPTX120	3	V	G4	1	M25	B	P01
Configuration example 2:	MPTX120	1	A	G1	0	A06	E	P01

Series and size

MPTX120 Filter element with private spigot

Length

1 | **2** | **3** | **4** |

Seals and treatments

		Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Filtration rating

Main Connections		Rear connections	Aux size 1	Aux size 2
G1	G3/4"	G3/4"	G3/8"	G1/2"
G2	G1"	G1"		
G3	G1 1/4"	G3/4"		
G4	3/4" NPT	3/4" NPT	3/8" NPT	1/2" NPT
G5	1" NPT	1" NPT		
G6	1 1/4" NPT	3/4" NPT		
G7	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
G8	SAE 16 - 1 5/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN		
G9	SAE 20 - 1 5/8" - 12 UN	SAE 12 - 1 1/16" - 12 UN		

Aux connection - see previous table

0 Not machined **1** Aux size 1 **2** Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E 3 bar
B 1.75 bar

Execution

P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1:	MFX100	3	M25	N	V		P01
Configuration example 2:	MFX100	1	A10	H	B	E	P01

Element series and size

MFX100 Filter element with private spigot

Element length

1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Filter media

Seals

B NBR
V FPM

Bypass valve

E 3 bar
1.75 bar

Execution

P01 MP Filtri standard
Pxx Customized

ACCESSORIES

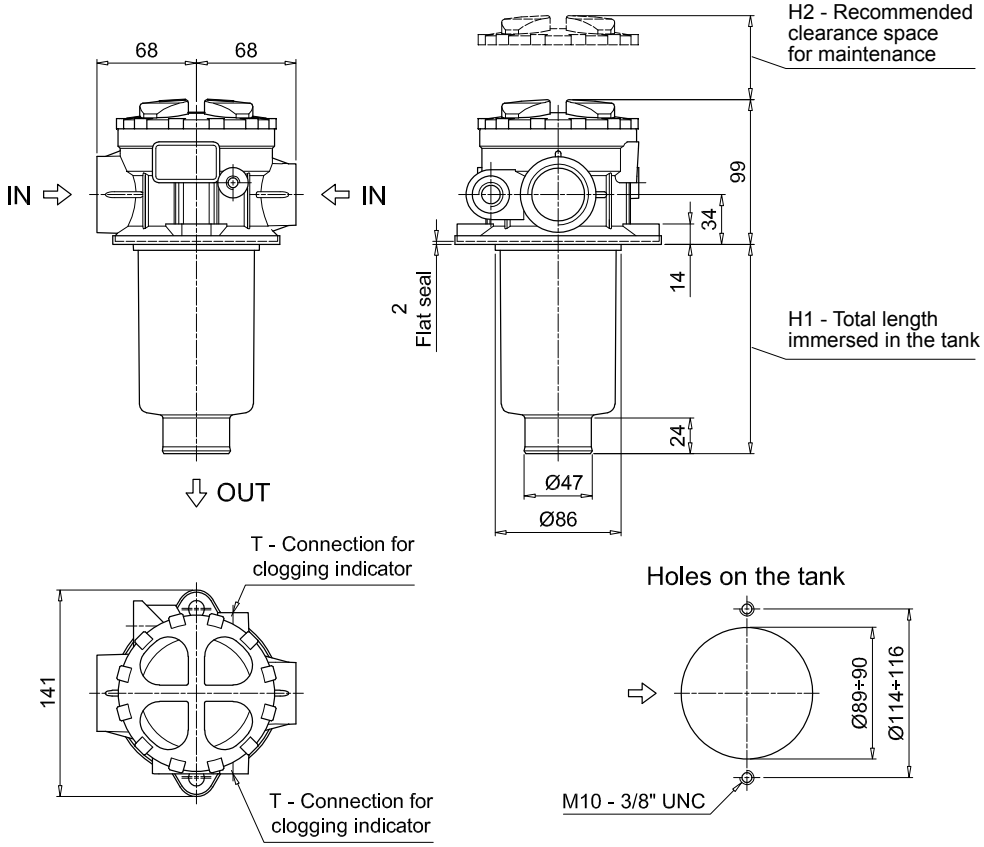
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

Dimensions



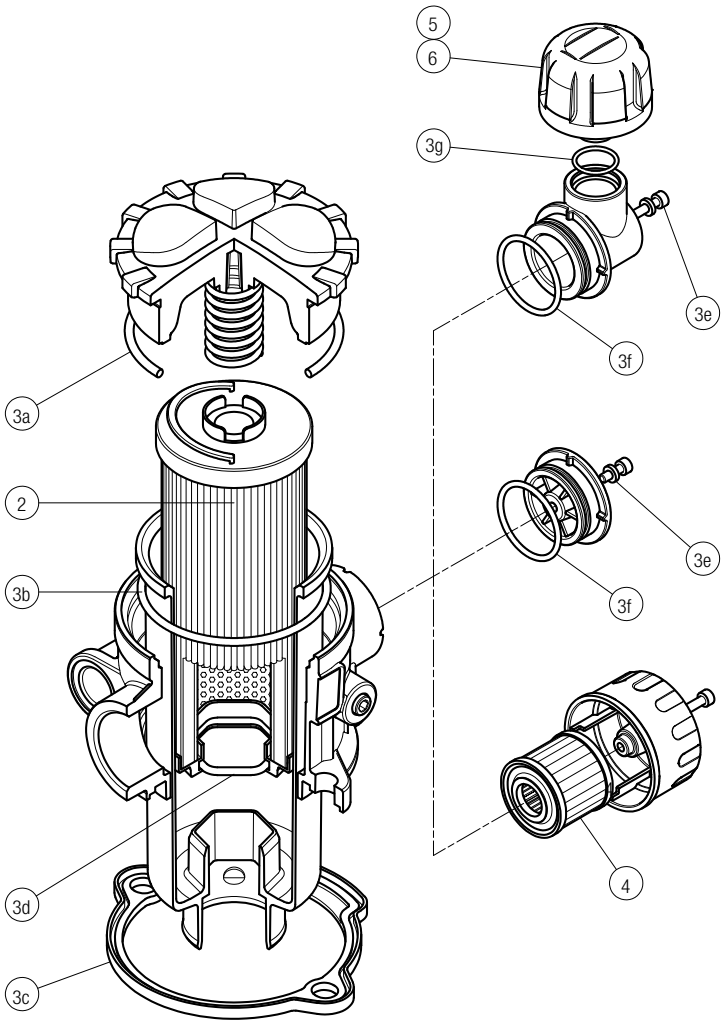
MPTX120		
Filter length	**H1 [mm]**	**H2 [mm]**
1	99	120
2	144	170
3	222	250
4	324	350

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPTX SPARE PARTS

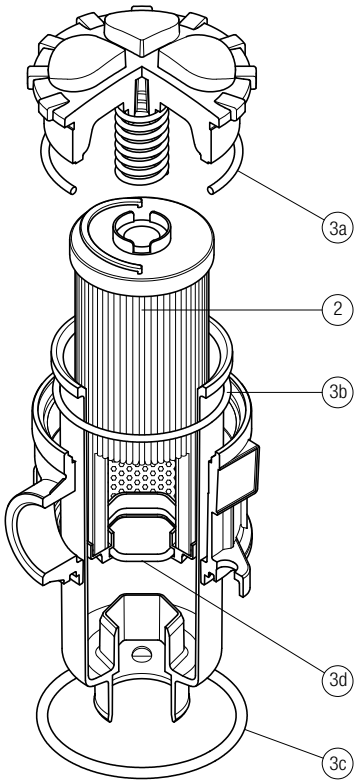
Order number for spare parts

MPTX 025 - 027 - 110



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Air breather filter element - version: C**	**D**	**P**
MPTX 025	See order table	02050701	02050702	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 027		02050703	02050704	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPTX 110		02050709	02050710	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

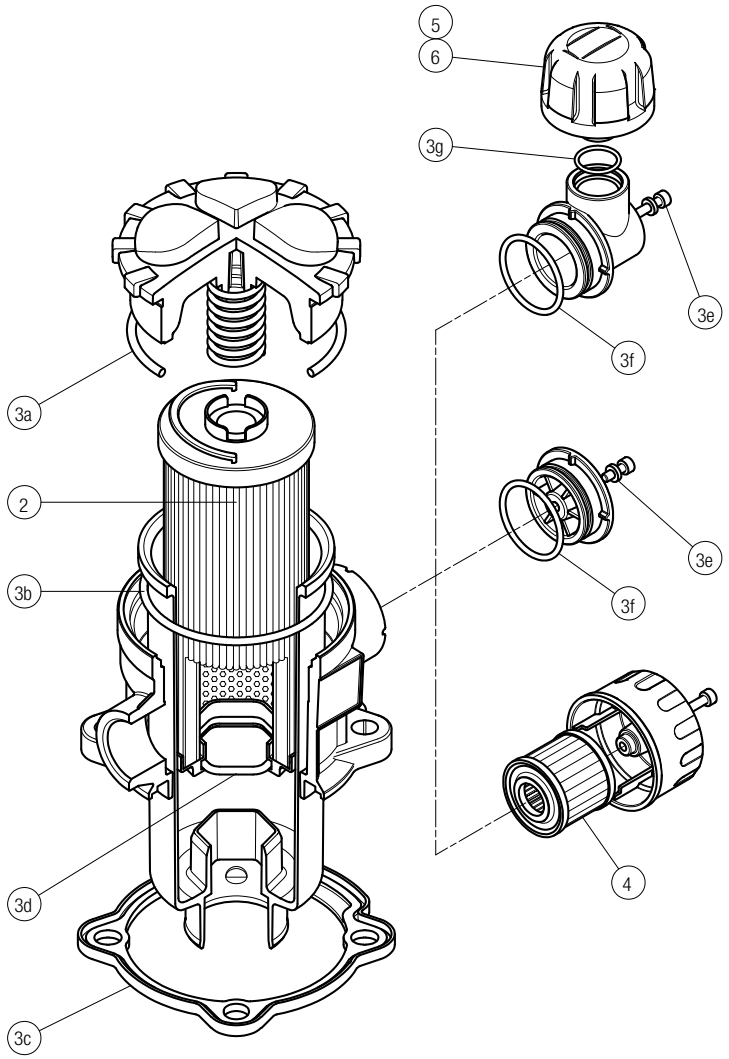
MPTX 101S - 104S



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPTX 101S-104S	See order table	02050705	02050706

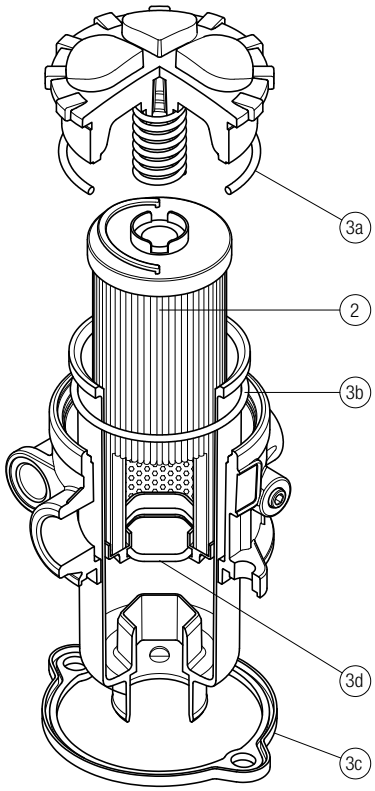
Order number for spare parts

MPTX 114



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number NBR	FPM	Air breather filter element - version: C	D	P
MPTX 114	See order table	02050707	02050708	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µmm SAP50G3L03A1P01

MPTX 120



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPTX 120	See order table	02050711	02050712

MFBX series
BOWL ASSEMBLY

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MFBX180 | 2 | V | 1 | M25 | H | B | P01

Configuration example 2: MFBX100 | 1 | A | 2 | A10 | N | E | P01

Series and size

MFBX020 | MFBX030 | MFBX100 | MFBX180 | MFBX190

Filter element with private spigot

Length	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190
1	•	•	•	•	
2	•		•	•	•
3	•		•		
4			•		

Seals

A NBR

V FPM

Version	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190
1 Without cover	•	•	•	•	•
2 With flanged cover type MPF		•	•	•	•
3 With threaded cover type MPT	•		•		

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E 3 bar
B 1.75 bar

Execution

P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1: MFX180 | 2 | M25 | H | V | | P01

Configuration example 2: MFX100 | 1 | A10 | N | B | E | P01

Element series and size

MFX020 | MFX030 | MFX100 | MFBX180

Filter element with private spigot

Element length	MFX020	MFX030	MFX100	MFX180	MFX190
1	•	•	•	•	
2	•		•	•	•
3	•		•		
4			•		

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		

Seals

B NBR
V FPM

Bypass valve

E 3 bar
1.75 bar

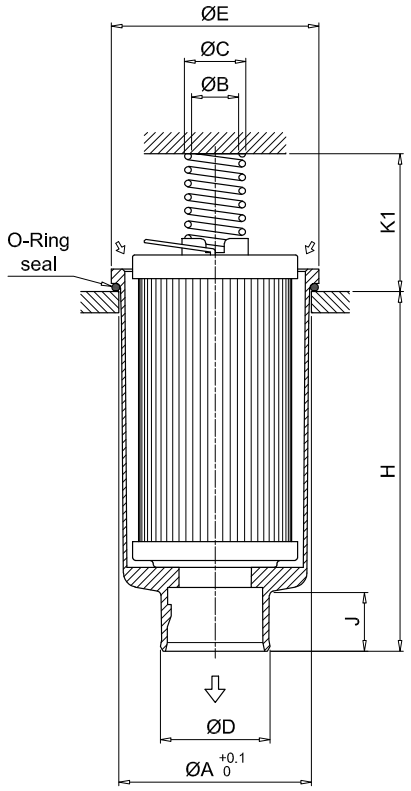
Execution

P01 MP Filtri standard
Pxx Customized

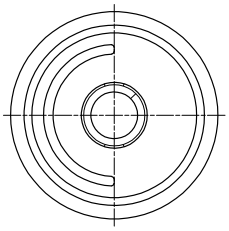
ACCESSORIES

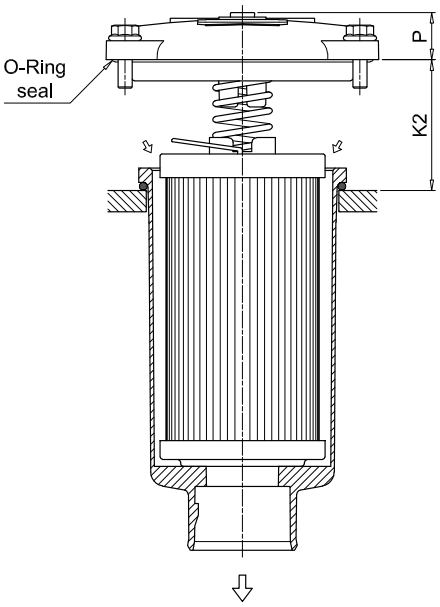
Additional features	MFBX020	MFBX030	MFBX100	MFBX180	MFBX190	page
TE Extension tube	•	•	•	•	•	224
DFS Diffuser with fast lock connection			•			225

MFBX

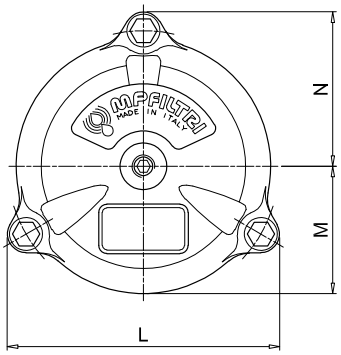


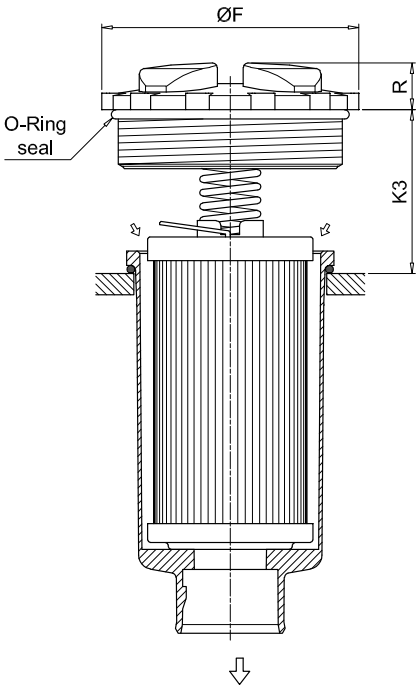
Version 1



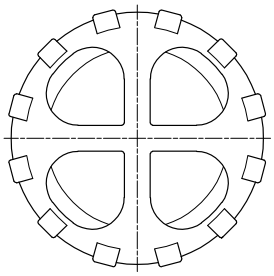


Version 2



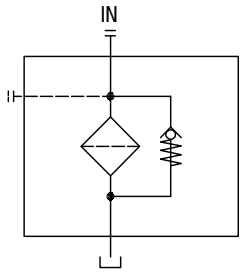


Version 3

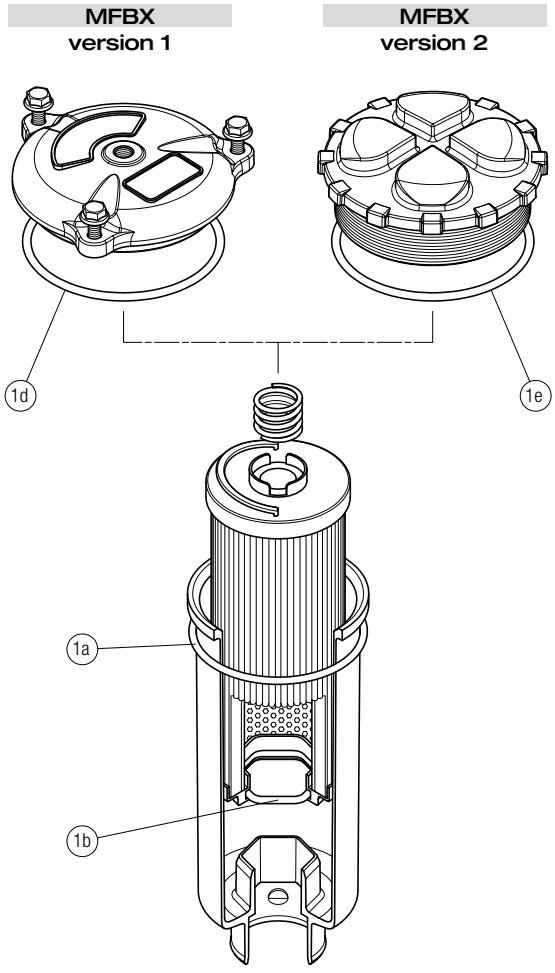


Filter size	Filter lenght	ø A [mm]	ø B [mm]	ø C [mm]	ø D [mm]	ø E [mm]	ø F [mm]	H [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
020	1	52	20.5	26	32	56	75	111	24	42	-	36	-	-	-	-	18
	2	52	20.5	26	32	56	75	175	24	42	-	36	-	-	-	-	18
	3	52	20.5	26	32	56	75	214	24	42	-	36	-	-	-	-	18
030	1	60.5	20	25.5	32	68	-	93	21	33	35	-	92	42	52	18	-
100	1	80.5	20	26	47	88	111	109	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	47	88	111	154	24	58	55	69	116	54	66	20	20
	3	80.5	20	26	47	88	111	232	24	58	55	69	116	54	66	20	20
	4	80.5	20	26	47	88	111	334	24	58	55	69	116	54	66	20	20
180	1	112.5	26	33.5	47	121	-	234	31	58	69	-	159	76	95	21	-
	2	112.5	26	33.5	47	121	-	447	31	58	69	-	159	76	95	21	-
190	2	112.5	26	33.5	50	121	-	454	38	58	69	-	159	76	95	21	-

Hydraulic symbol



Order number for spare parts



Item:	Q.ty: 1 pc. 1 (1a ÷ 1d)	
Filter series	Seal Kit code number NBR	FPM
MFBX 020	02050713	02050714
MFBX 030	02050715	02050716
MFBX 100	02050717	02050718
MFBX 180-190	02050719	02050720

MPF series

Maximum pressure up to 8 bar - Flow rate up to 750 l/min

Technical data

Return filter **Maximum pressure up to 8 bar - Flow rate up to 750 l/min**

Filter housing materials
- Head: Aluminium
- Cover: Nylon (only for: MPF 020-030-100-104-110) Aluminium (the other insert assemblies)
- Bowl: Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: up to 800 kPa (8 bar)

Temperature
From -25 °C to +110 °C

Bypass valve
- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 300 kPa (3 bar)

Note
MPF filters are provided for vertical mounting

Δp element type
- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN.

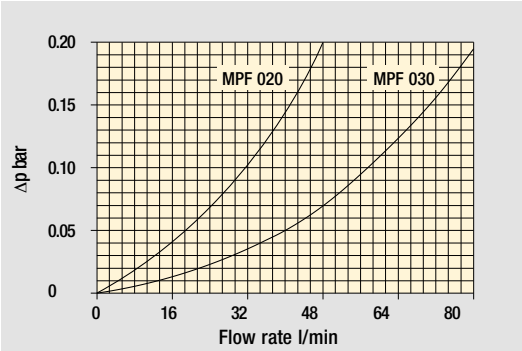
Weights [kg] and volumes [dm³]

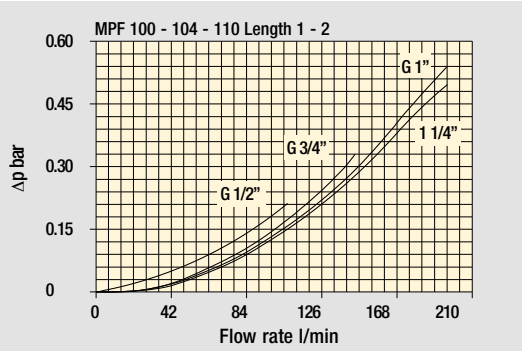
	Weights [kg]					Volumes [dm³]				
	Lenght	1	2	3	4	Lenght	1	2	3	4
MPF 020		0.30	-	-	-		0.26	-	-	-
MPF 030		0.40	-	-	-		0.29	-	-	-
MPF 100		0.61	0.64	0.67	0.74		0.64	0.85	1.20	1.65
MPF 104		0.82	0.96	1.02	1.25		0.64	0.85	1.20	1.65
MPF 110		0.64	0.68	0.71	0.78					
MPF 181		2.20	3.00	-	-		2.50	4.00	-	-
MPF 182		2.30	3.10	-	-		2.50	4.00	-	-
MPF 184		2.55	3.45	-	-		2.65	4.45	-	-
MPF 191		-	3.00	-	-		-	4.25	-	-
MPF 192		-	3.10	-	-		-	4.25	-	-
MPF 194		-	3.45	-	-		-	4.45	-	-
MPF 400		3.35	3.65	3.90	-		3.70	4.60	5.40	-
MPF 410		3.55	3.85	4.10	-		3.70	4.60	5.40	-
MPF 450-451		3.95	4.25	4.50	-		3.70	4.60	5.40	-
MPF 750		6.30	-	-	-		8.45	-	-	-

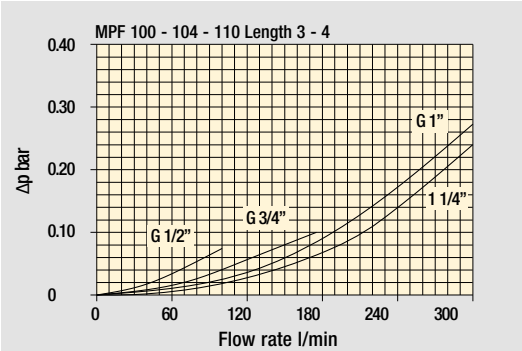
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

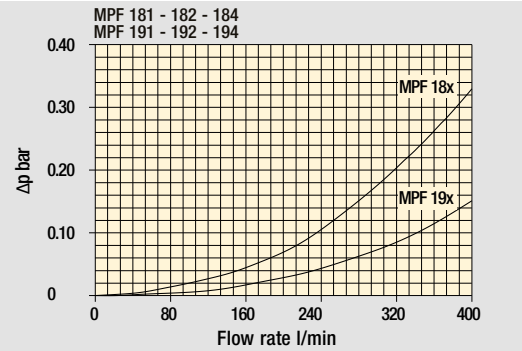
Pressure drop

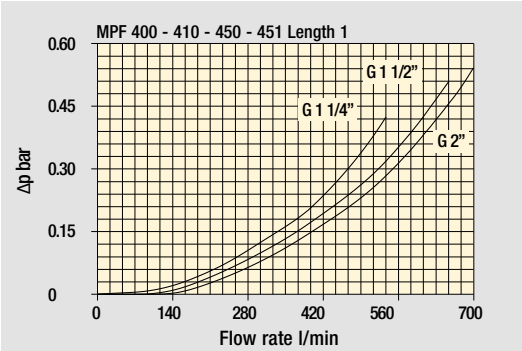
Filter housings Δp pressure drop

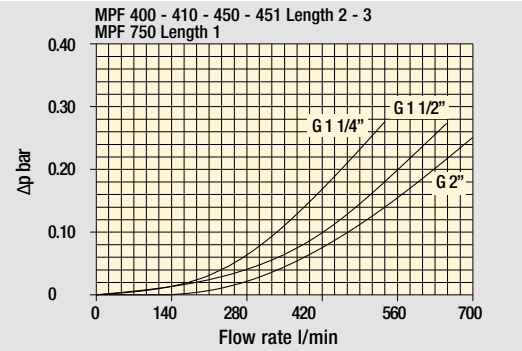




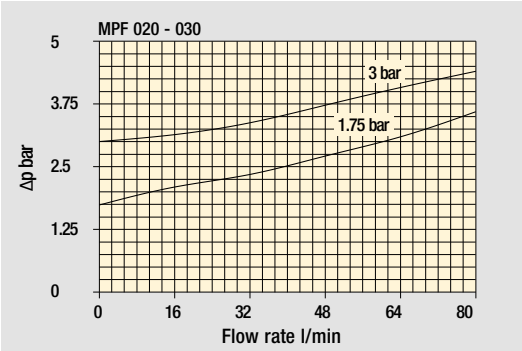


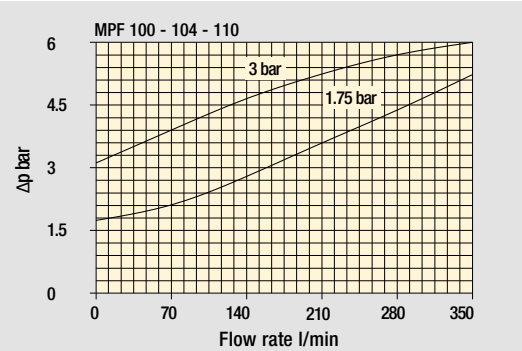


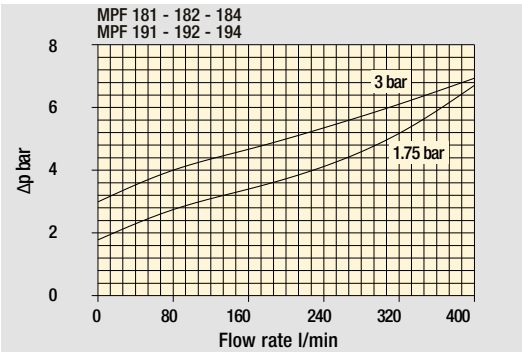


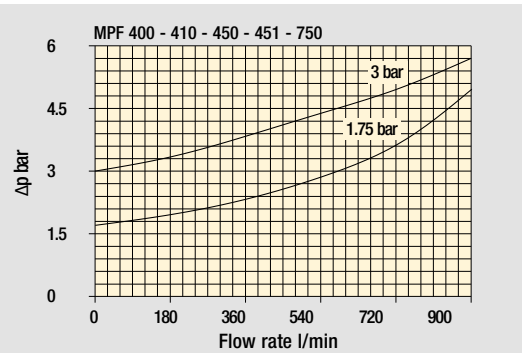


Bypass valve pressure drop



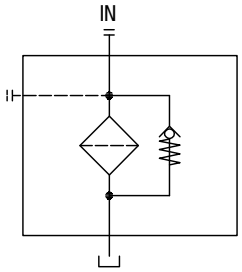




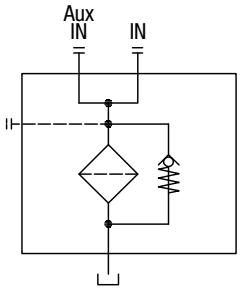


Hydraulic symbols

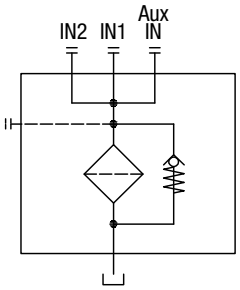
Style
1 connection



Style
2 connections



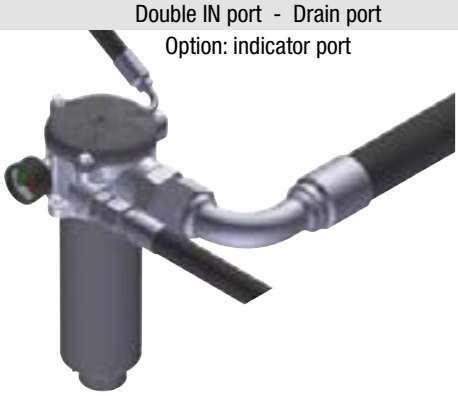
Style
3 connections



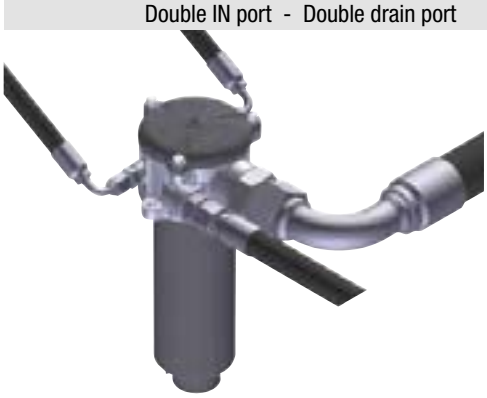
Standard - Single IN port

Double IN port
Option: double indicator port

Double IN port - Drain port
Option: indicator port



Double IN port - Double drain port



MPF MPF020 - MPF030

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF020	1	A	P1	A10	H	E	P01
Configuration example 2:	MPF030	1	V	G1	M25	N	B	P01

Series and size

MPF020 **MPF030** Filter element with standard spigot

Length

1

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections

		Size 20	Size 30
P1	Hose barb ø12	•	
G1	G1/2"		•
G4	1/2" NPT		•
G7	SAE 8 - 3/4" - 16 UNF		•

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF030	1	A10	H	B	E	P01
Configuration example 2:	MF030	1	M25	N	V		P01

Element series and size

MF030 Filter element with standard spigot

Element length

1

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

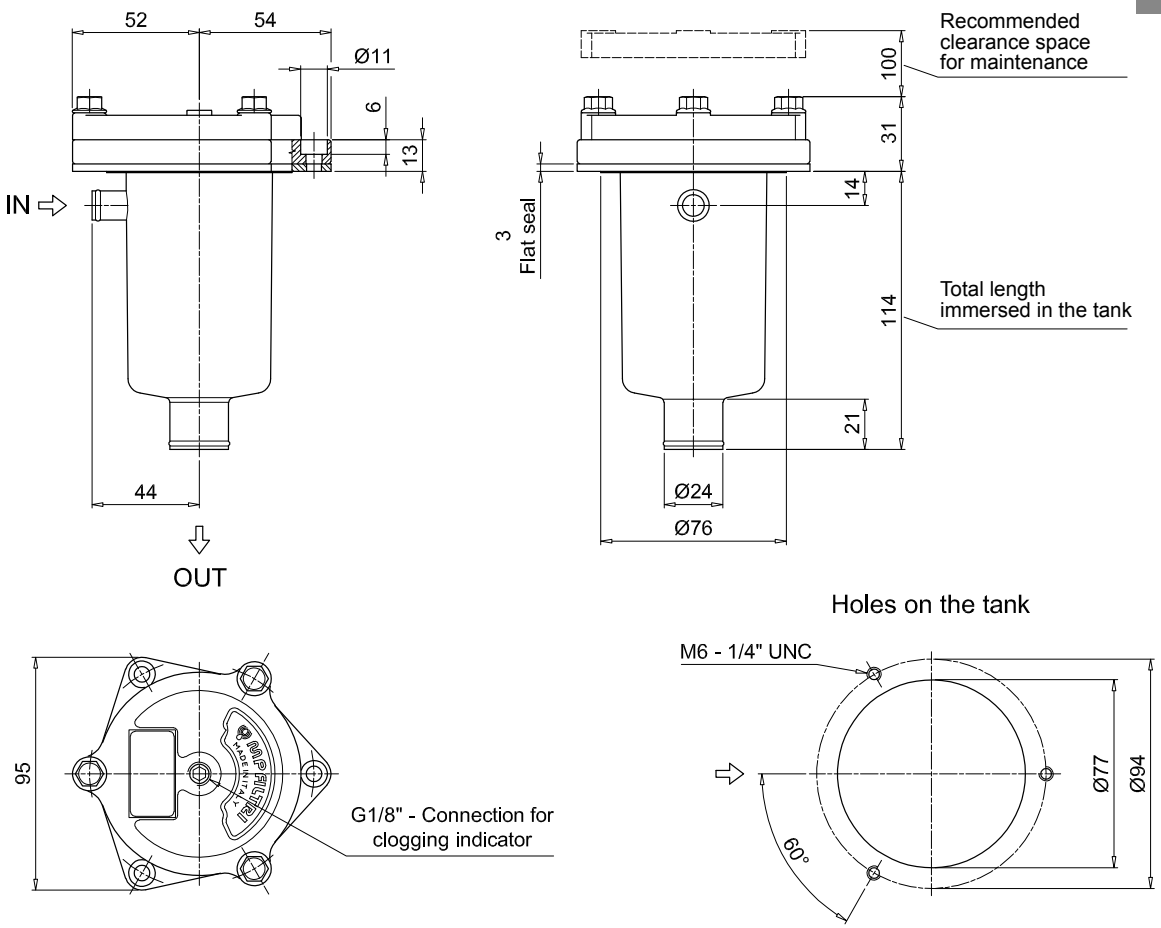
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

Additional features

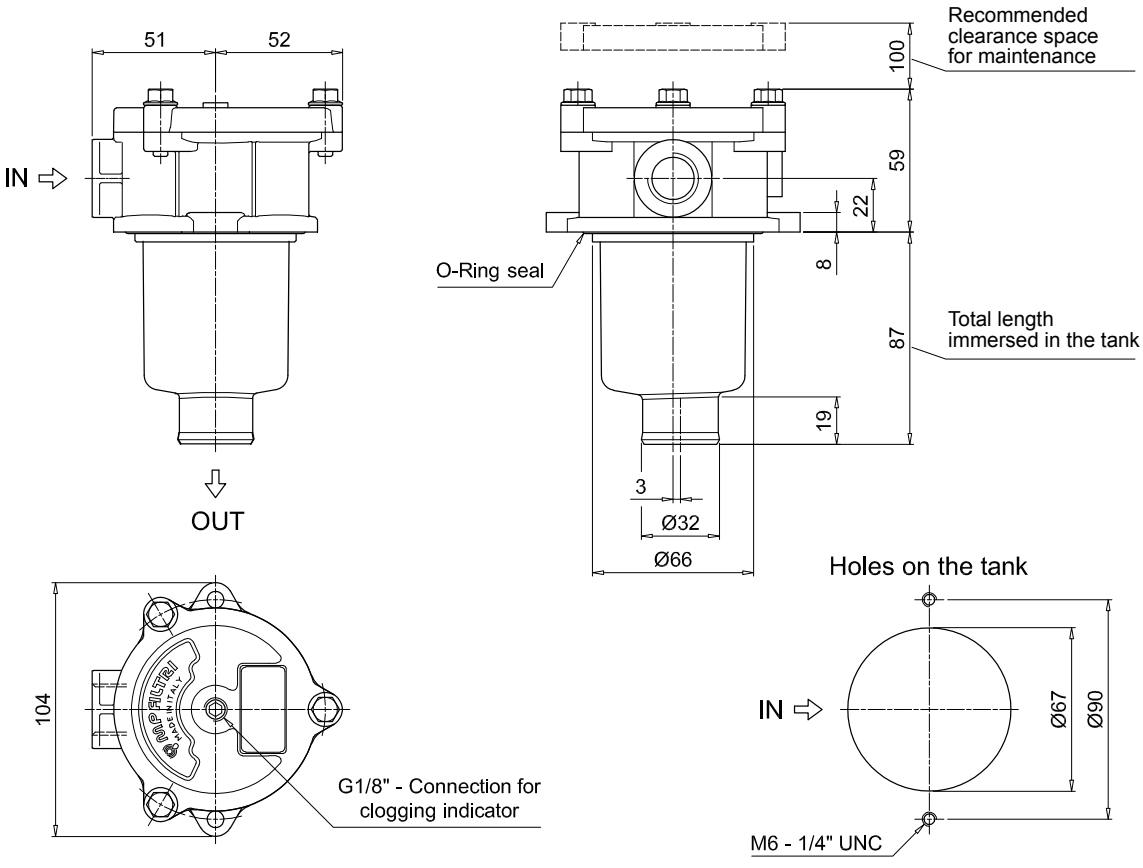
		page
TE	Extension tube	224
T5	Filler plug M30x1.5	225

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

MPF020



MPF030



Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF100	2	W	G3	A06	W	B	P01
Configuration example 2:	MPF104	4	A	G8	P10	N	E	P01

Series and size

MPF100 | **MPF104** Filter element with standard spigot

Length

1 | **2** | **3** | **4**

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections	Size 100	Size 104
G1 G1/2”	•	•
G2 G3/4”	•	•
G3 G1”	•	•
G4 1/2” NPT	•	•
G5 3/4” NPT	•	•
G6 1” NPT	•	•

Connections	Size 100	Size 104
G7 SAE 8 - 3/4” - 16 UNF	•	•
G8 SAE 12 - 1 1/16” - 12 UN	•	•
G9 SAE 16 - 1 5/16” - 12 UN	•	•
G10 G1 1/4”	•	
G11 1 1/4” NPT	•	
G12 SAE 20 - 1 5/8” - 12 UN	•	

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF100	2	A06	W	B		P01
Configuration example 2:	MF100	4	P10	N	B	E	P01

Element series and size

MF100 Filter element with standard spigot

Element length

1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

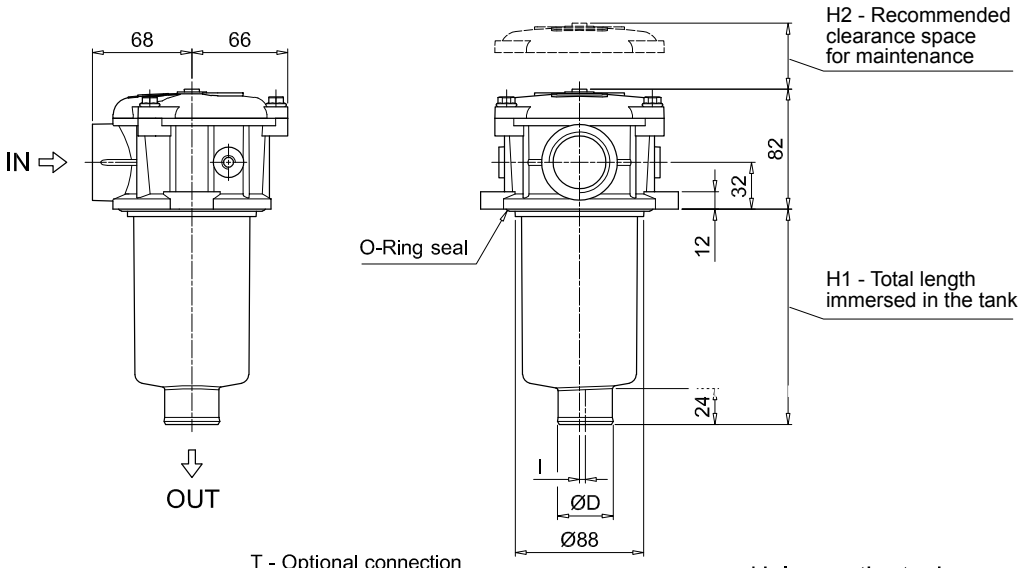
ACCESSORIES

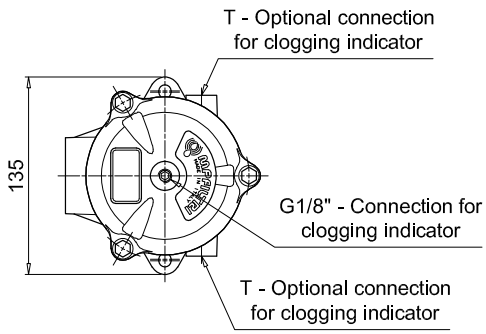
Indicators	page
BVA Axial pressure gauge	216
BVR Radial pressure gauge	216
BVP Visual pressure indicator with automatic reset	217
BVQ Visual pressure indicator with manual reset	217

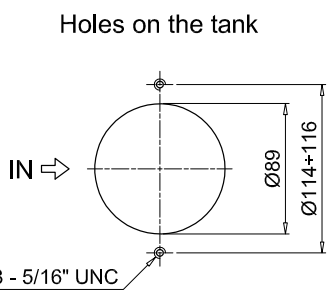
Indicators	page
BEA Electrical pressure indicator	215
BEM Electrical pressure indicator	215
BLA Electrical / visual pressure indicator	215-216

Additional features	page
TE Extension tube	224
DFS Diffuser with fast lock connection	225

Additional features	page
T5 Filler plug M30x1.5	225
DPT Dipstick	225

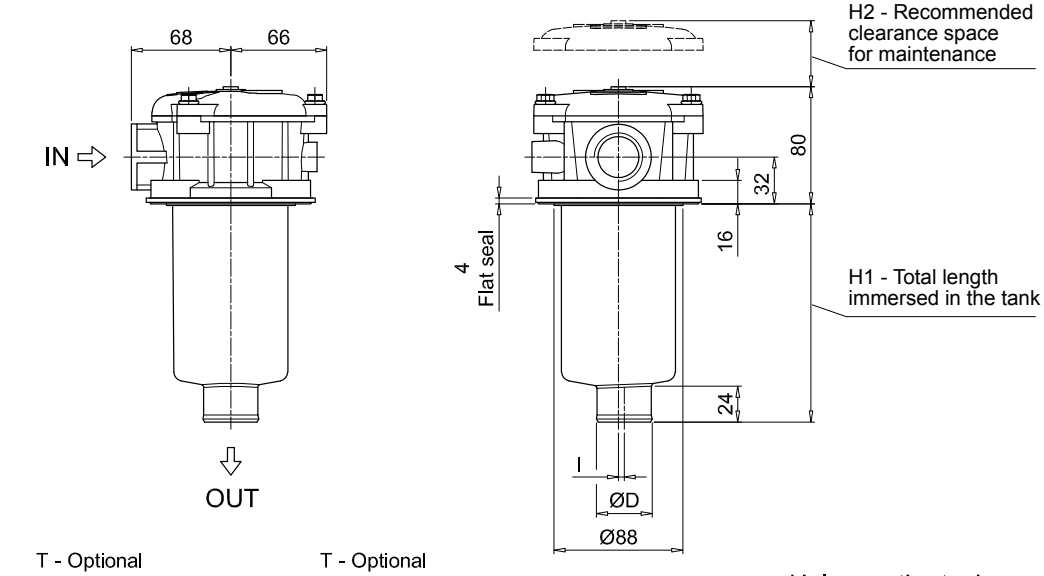


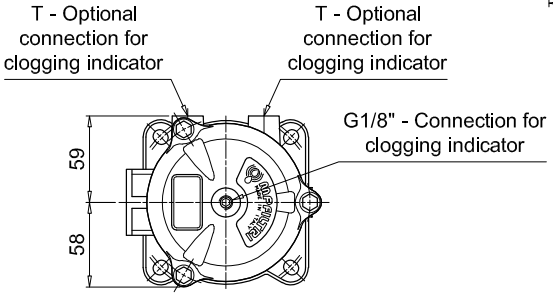


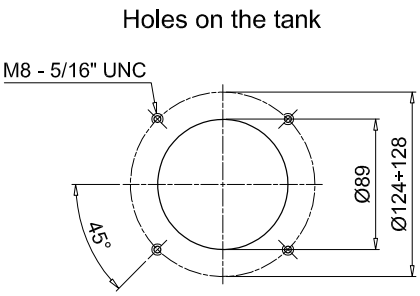


MPF100

Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	100	120	38	4
2	147	170	38	4
3	225	250	47	-
4	327	350	47	2.5







MPF104

Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	98	120	38	4
2	145	170	38	4
3	223	250	47	-
4	325	350	47	2.5

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF110	2	A	G2	1	A16	H	E	P01
Configuration example 2:	MPF110	4	V	G12	1	M60	N	B	P01

Series and size

MPF110 Filter element with standard spigot

Length

1 | **2** | **3** | **4** |

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Main Connections		Aux size 1	Aux size 2
G1	G1/2"	G3/8"	G1/2"
G2	G3/4"		
G3	G1"		
G4	1/2" NPT	3/8" NPT	1/2" NPT
G5	3/4" NPT		
G6	1" NPT		

Main Connections		Aux size 1	Aux size 2
G7	SAE 8 - 3/4" - 16 UNF	SAE 6 - 9/16"- 18 UNF	SAE 8 - 3/4"- 16 UNF
G8	SAE 12 - 1 1/16" - 12 UN		
G9	SAE 16 - 1 5/16" - 12 UN		
G10	G1 1/4"	G3/8"	G1/2"
G11	1 1/4" NPT	3/8" NPT	1/2" NPT
G12	SAE 20 - 1 5/8" - 12 UN	SAE 6 - 9/16"- 18 UNF	SAE 8 - 3/4"- 16 UNF

Aux connection - see previous table

1	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF100	2	A16	H	B	E	P01
Configuration example 2:	MF100	4	M60	N	V		P01

Element series and size

MF100 Filter element with standard spigot

Element length

1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

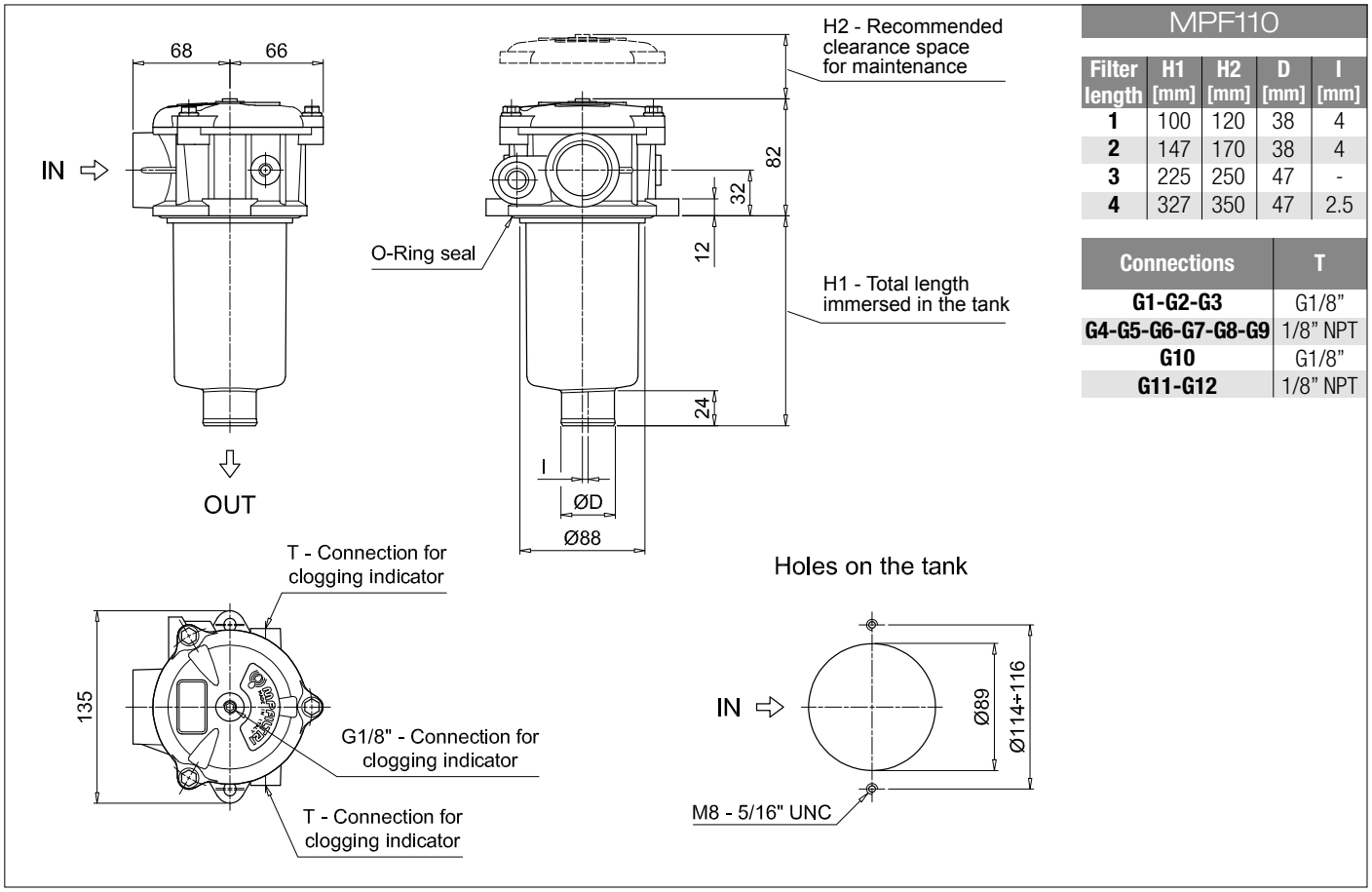
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
T5	Filler plug M30x1.5	225
DPT	Dipstick	225

Dimensions



MPF110				
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**	**I [mm]**
1	100	120	38	4
2	147	170	38	4
3	225	250	47	-
4	327	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT
G10	G1/8"
G11-G12	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF181	1	A	G1	A25	H	E	P01
Configuration example 2:	MPF191	2	V	G2	P10	N	B	P01

Series and size

MPF181 | **MPF191** Filter element with standard spigot

Length

	Size 181	Size 191
1	•	
2	•	•

Seals and treatments

A	NBR	**B**	NBR flat seal on head
V	FPM	**D**	FPM flat seal on head
W	NBR head anodized	**L**	NBR head anodized, flat seal on head
Z	FPM head anodized	**M**	FPM head anodized, flat seal on head

Connections

G1	G1 1/4"	**G5**	1 1/2" NPT
G2	G1 1/2"	**G7**	SAE 20 - 1 5/8" - 12 UN
G4	1 1/4" NPT	**G8**	SAE 24 - 1 7/8" - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF180	1	A25	H	B	E	P01
Configuration example 2:	MF190	2	P10	N	V		P01

Element series and size

MF180 | **MF190** Filter element with standard spigot

Element length

	Size 180	Size 190
1	•	
2	•	•

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

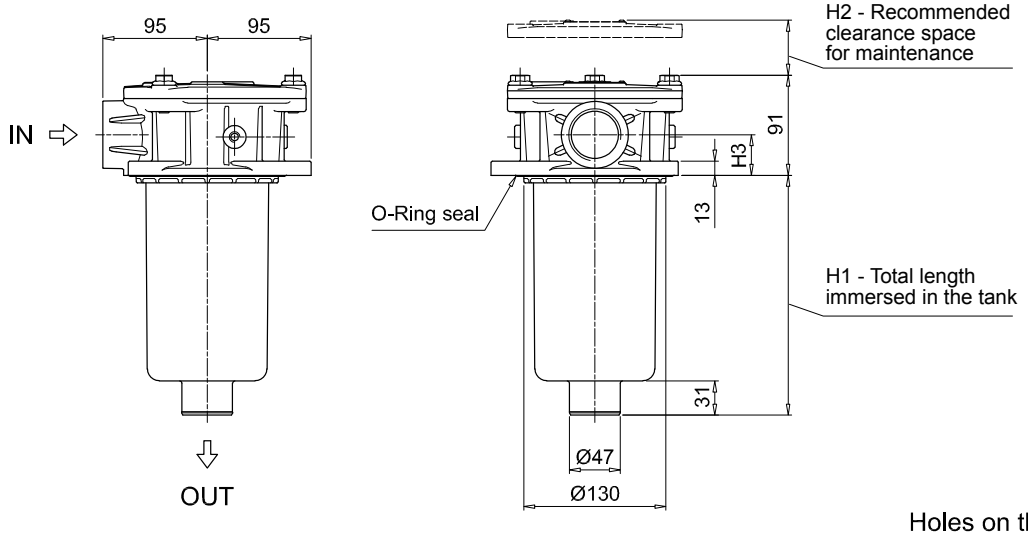
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

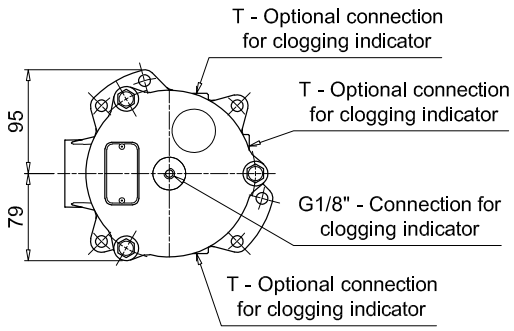
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

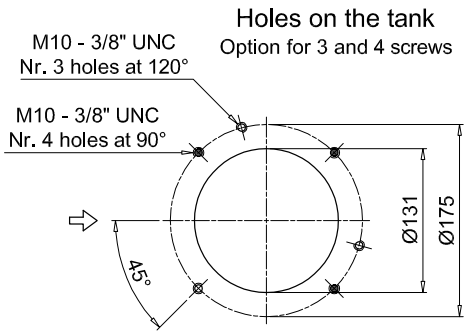
Additional features

		page
TE	Extension tube	224
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

Dimensions



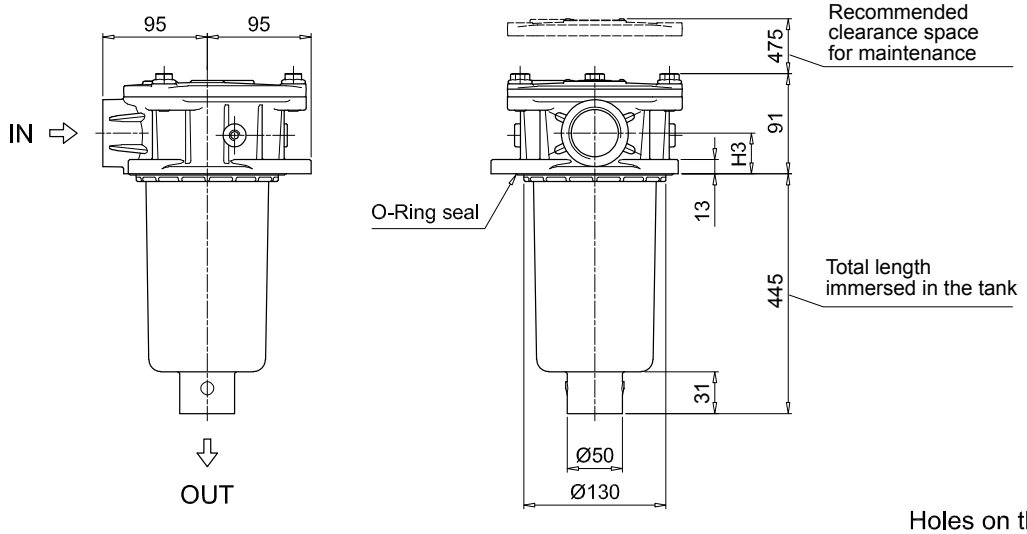


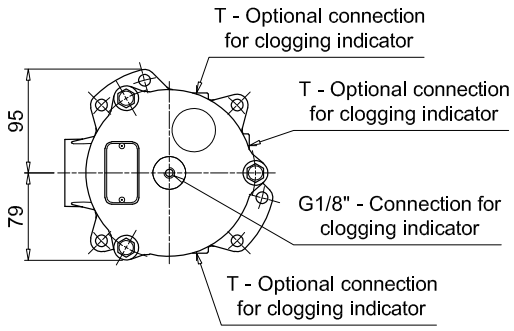


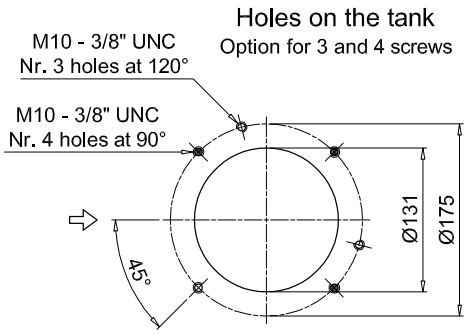
MPF181

Filter length	H1 [mm]	H2 [mm]
1	235	255
2	448	475

Connections	H3 [mm]
G1 - G4 - G7	35
G2 - G5 - G8	37







MPF191

Connections	H3 [mm]
G1 - G4 - G7	35
G2 - G5 - G8	37

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF182	1	A	G1	1	A25	H	E	P01
Configuration example 2:	MPF192	2	V	G2	2	P10	N	B	P01

Series and size

MPF182 | **MPF192** Filter element with standard spigot

Length	Size 182	Size 192
1	•	
2	•	•

Seals and treatments

A	NBR		**B**	NBR	flat seal on head
V	FPM		**D**	FPM	flat seal on head
W	NBR	head anodized	**L**	NBR	head anodized, flat seal on head
Z	FPM	head anodized	**M**	FPM	head anodized, flat seal on head

Main Connections		Aux size 1	Aux size 2
G1	G1 1/4"	G1/2"	G3/4"
G4	1 1/4" NPT	1/2" NPT	3/4" NPT
G7	SAE 20 - 1 5/8" - 12 UN	SAE 8 - 3/16"- 16 UNF	SAE 12 - 1 1/16"- 12 UN

Aux connection - see previous table

1	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve	
E	3 bar
B	1.75 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF180	1	A25	H	B	E	P01
Configuration example 2:	MF190	2	P10	N	V		P01

Element series and size

MF180 | **MF190** Filter element with standard spigot

Element length	Size 180	Size 190
1	•	
2	•	•

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals	
B	NBR
V	FPM

Bypass valve	
E	3 bar
	1.75 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

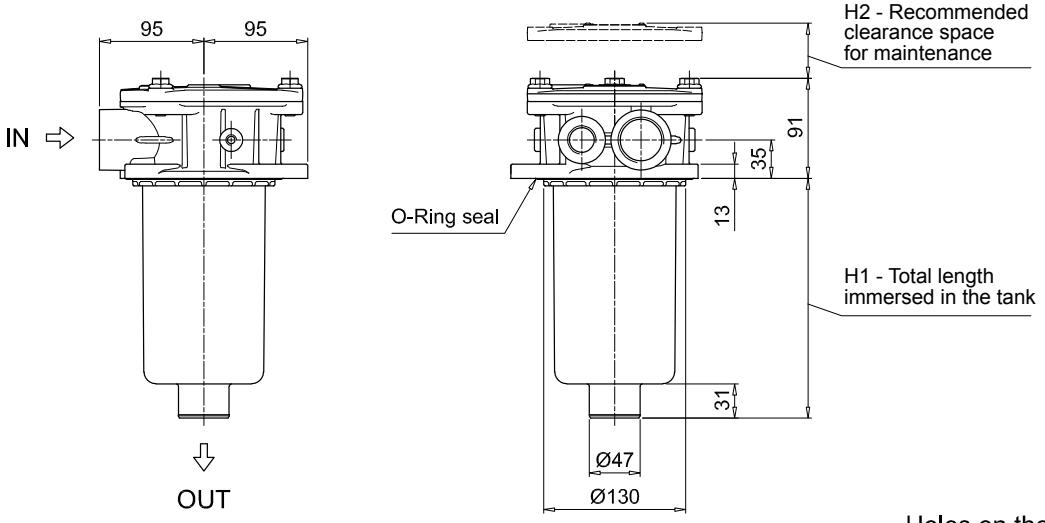
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

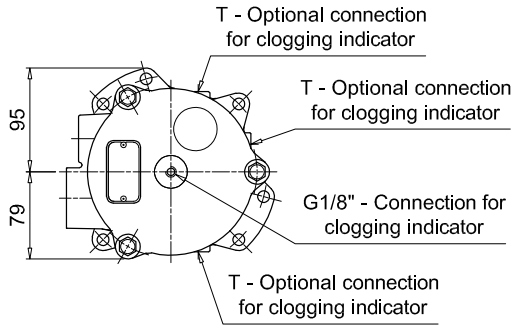
Additional features		page
TE	Extension tube	224
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

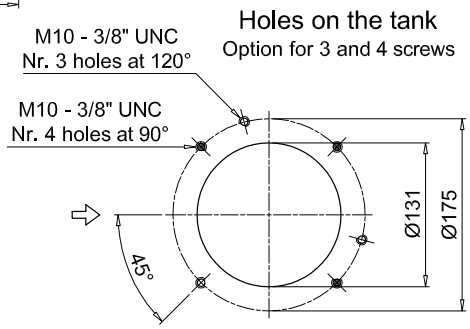
Dimensions

MPF182

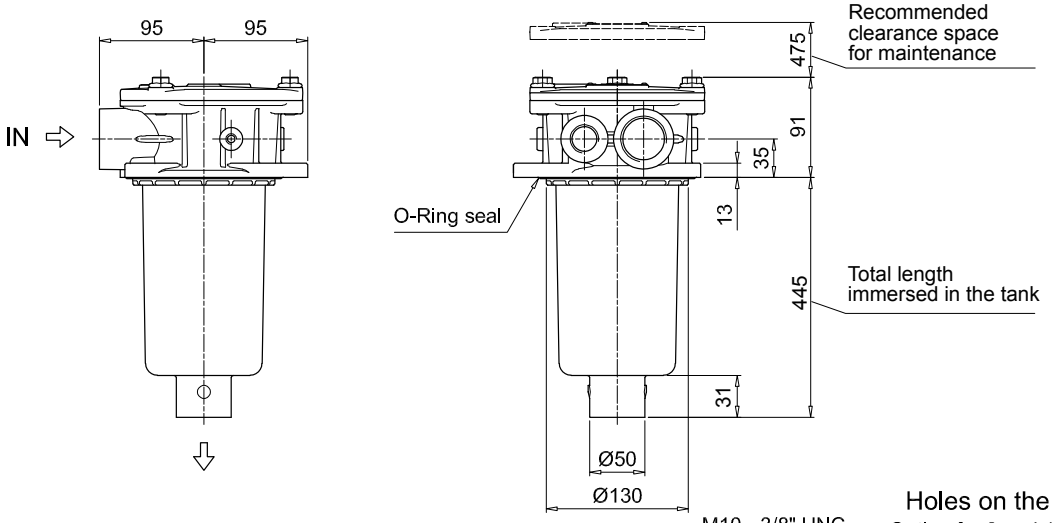
Filter length	H1 [mm]	H2 [mm]
1	235	255
2	448	475

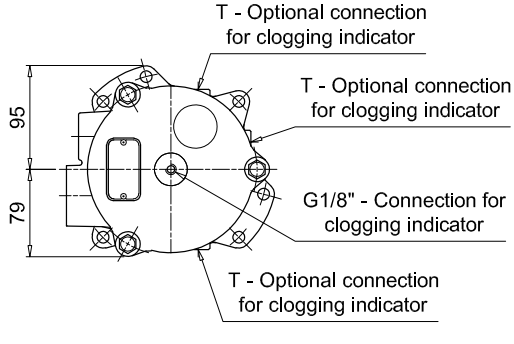


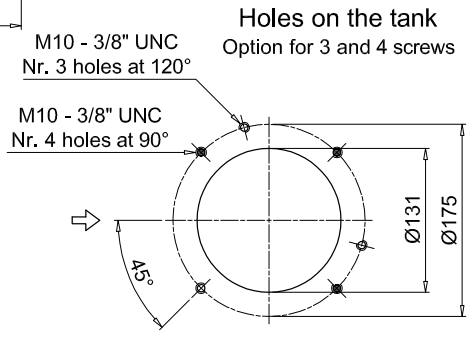




MPF192







Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPF184 | 1 | A | G1 | A25 | H | E | P01

Configuration example 2: MPF194 | 2 | V | F3 | P10 | N | B | P01

Series and size

MPF184 | **MPF194** Filter element with standard spigot

Length	Size 184	Size 194
1	•	
2	•	•

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Main Connections		Rear connections
G1	G1 1/4"	-
G2	G1 1/4"	G1 1/4"
G4	1 1/4" NPT	-
G5	1 1/4" NPT	1 1/4" NPT
G7	SAE 20 - 1 5/8" - 12 UN	-
G8	SAE 20 - 1 5/8" - 12 UN	SAE 20 - 1 5/8" - 12 UN
G10	SAE 24 - 1 7/8" - 12 UN	-
G11	SAE 24 - 1 7/8" - 12 UN	SAE 20 - 1 5/8" - 12 UN

Main Connections		Rear connections
G13	G1 1/2"	-
G14	G1 1/2"	G1 1/4"
G15	1 1/2" NPT	-
G16	1 1/2" NPT	1 1/4" NPT
F1	1 1/2" SAE 3000 psi/M	-
F2	1 1/2" SAE 3000 psi/UNC	-
F3	1 1/2" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M
F4	1 1/2" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1: MF180 | 1 | A25 | H | B | E | P01

Configuration example 2: MF190 | 2 | P10 | N | V | | P01

Element series and size

MF180 | **MF190** Filter element with standard spigot

Element length	Size 180	Size 190
1	•	
2	•	•

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR

Bypass valve

E	3 bar

Execution

P01	MP Filtri standard

ACCESSORIES

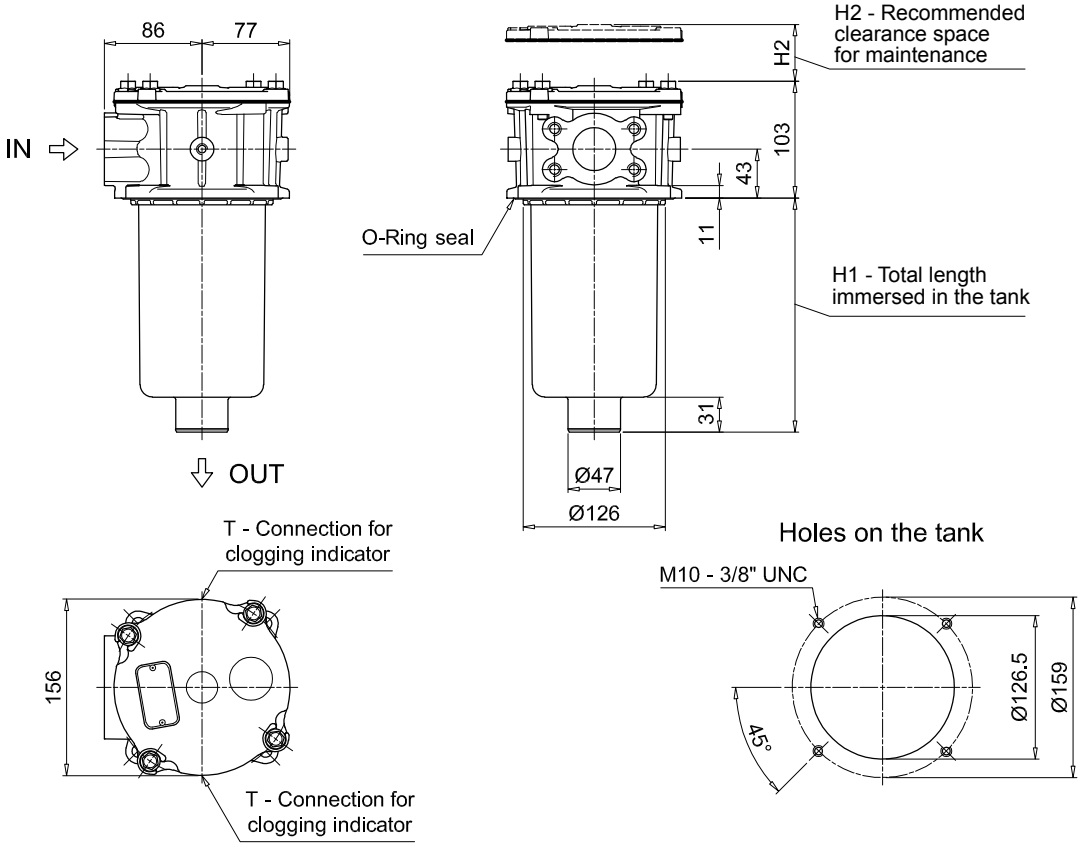
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

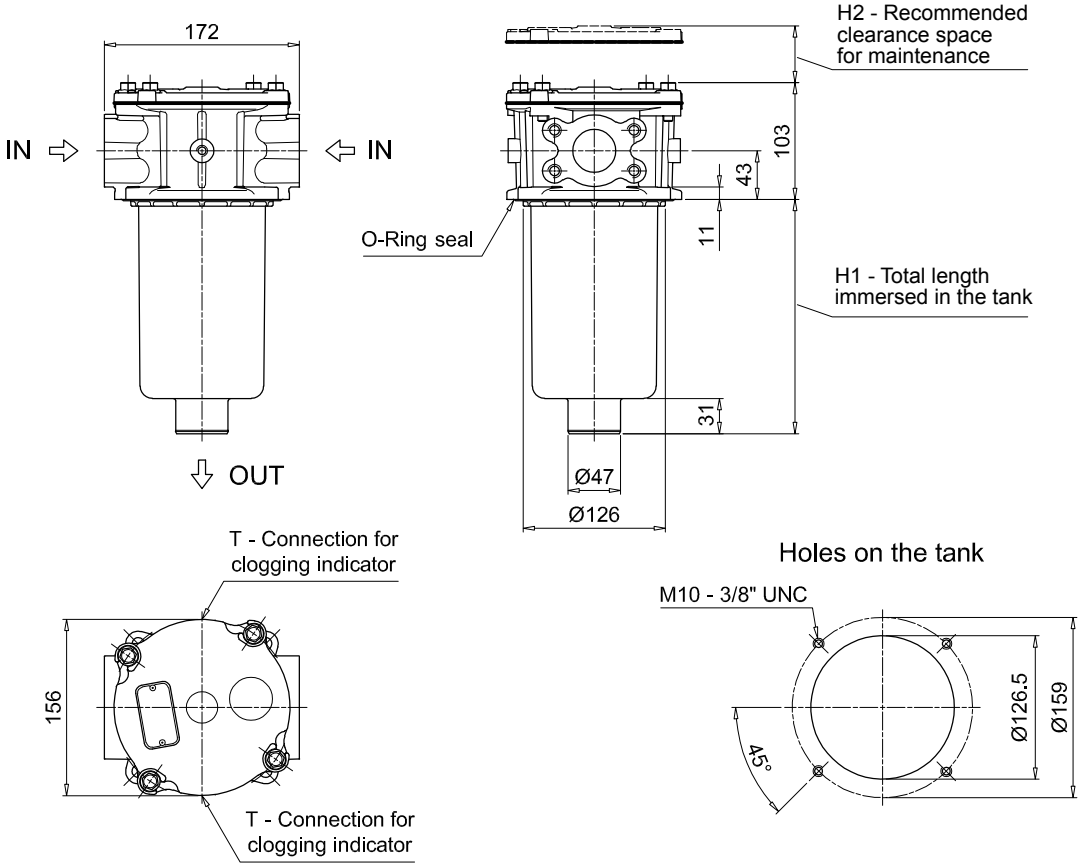


MPF184

1 connection port

Filter length	H1 [mm]	H2 [mm]
1	232	260
2	445	480

Connection type	T
G1	G1/8"
G4 - G7 - G10	1/8" NPT
G13	G1/8"
G15 - F1 - F2	1/8" NPT



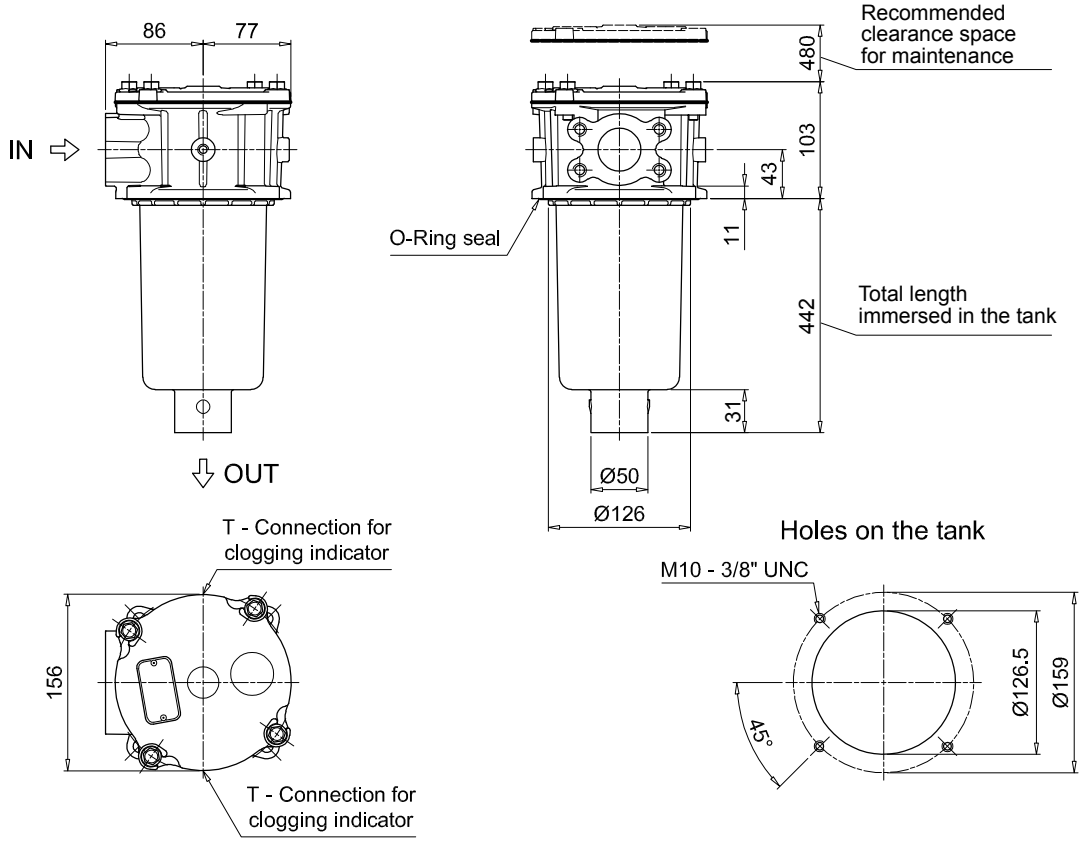
MPF184

2 connection ports

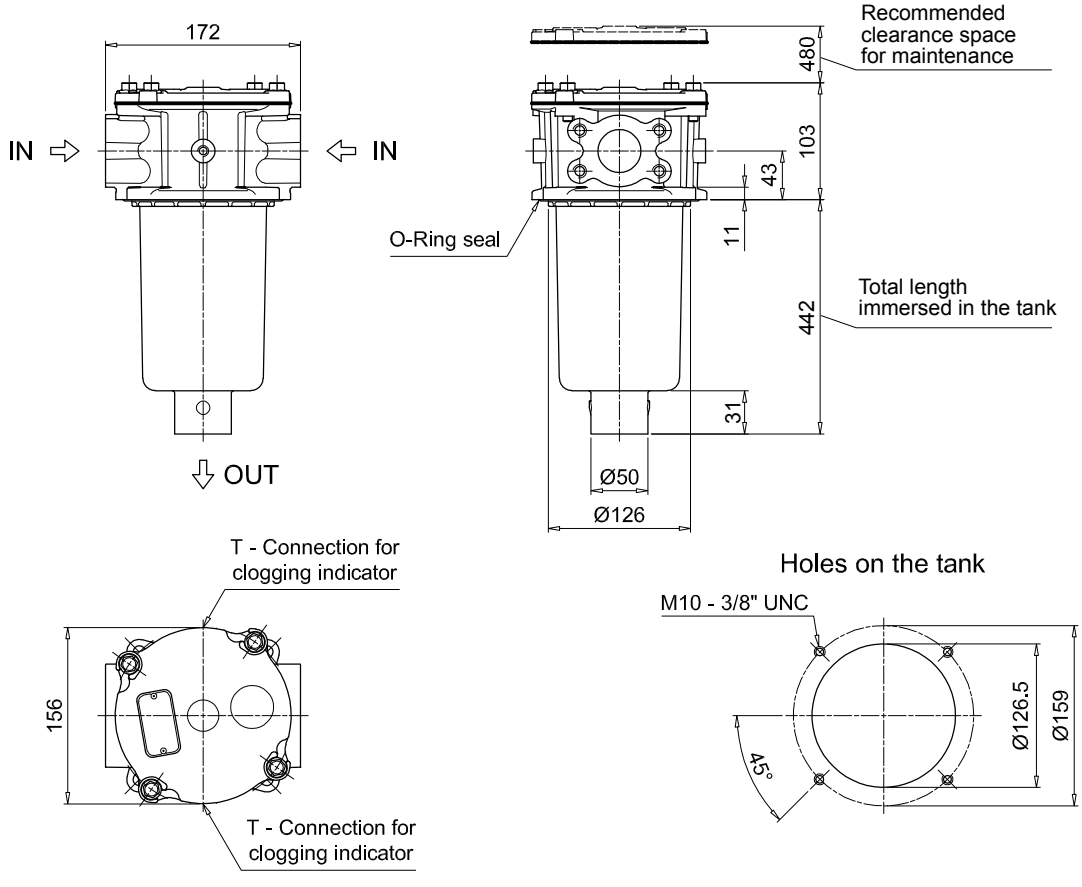
Filter length	H1 [mm]	H2 [mm]
1	232	260
2	445	480

Connection type	T
G2	G1/8"
G5 - G8 - G11	1/8" NPT
G14	G1/8"
G16 - F3 - F4	1/8" NPT

Dimensions



MPF194	
1 connection port	
Connections	**T**
G1	G1/8"
G4 - G7 - G10	1/8" NPT
G13	G1/8"
G15 - F1 - F2	1/8" NPT



MPF194	
2 connection ports	
Connections	**T**
G2	G1/8"
G5 - G8 - G11	1/8" NPT
G14	G1/8"
G16 - F3 - F4	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF400	1	A	G9	A25	H	B	P01
Configuration example 2:	MPF400	2	V	G4	P10	N	E	P01

Series and size

MPF400 Filter element with standard spigot

Length

1 | **2** | **3**

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Connections

G1	G1 1/4”	**G6**	2” NPT
G2	G1 1/2”	**G7**	SAE 20 - 1 5/8” - 12 UN
G3	G2”	**G8**	SAE 24 - 1 7/8” - 12 UN
G4	1 1/4” NPT	**G9**	SAE 32 - 2 1/2” - 12 UN
G5	1 1/2” NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF400	1	A25	H	B		P01
Configuration example 2:	MF400	2	P10	N	V	E	P01

Element series and size

MF400 Filter element with standard spigot

Element length

1 | **2** | **3**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

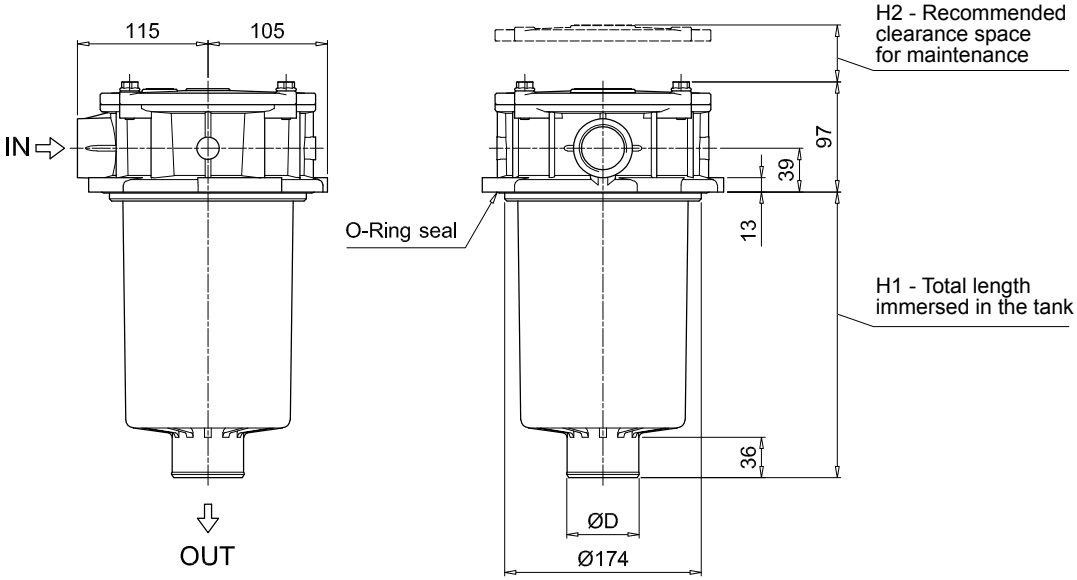
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

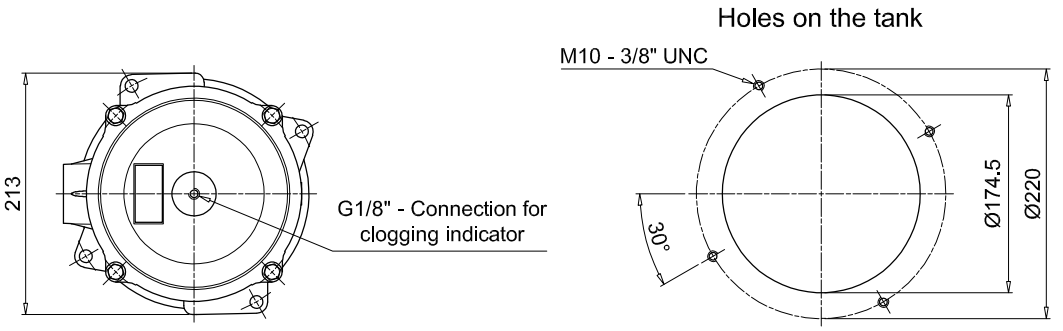
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

Dimensions





MPF400

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPF410	1	A	G9	1	A25	H	B	P01
Configuration example 2:	MPF410	1	V	G4	1	P10	N	E	P01

Series and size

MPF410 Filter element with standard spigot

Length

1 | **2** | **3** |

Seals and treatments

A	NBR
V	FPM
W	NBR head anodized
Z	FPM head anodized

Main Connections		Aux size 1
G1	G1 1/4"	G1"
G4	1 1/4" NPT	1" NPT
G7	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16"- 12 UN

Aux connection - see previous table

1	Aux size 1

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		**Axx**	**Mxx**	**Pxx**
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF400	1	A25	H	B		P01
Configuration example 2:	MF400	1	P10	N	V	E	P01

Element series and size

MF400 Filter element with standard spigot

Element length

1 | **2** | **3** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

		Filter media		
Element Δp		**Axx**	**Mxx**	**Pxx**
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

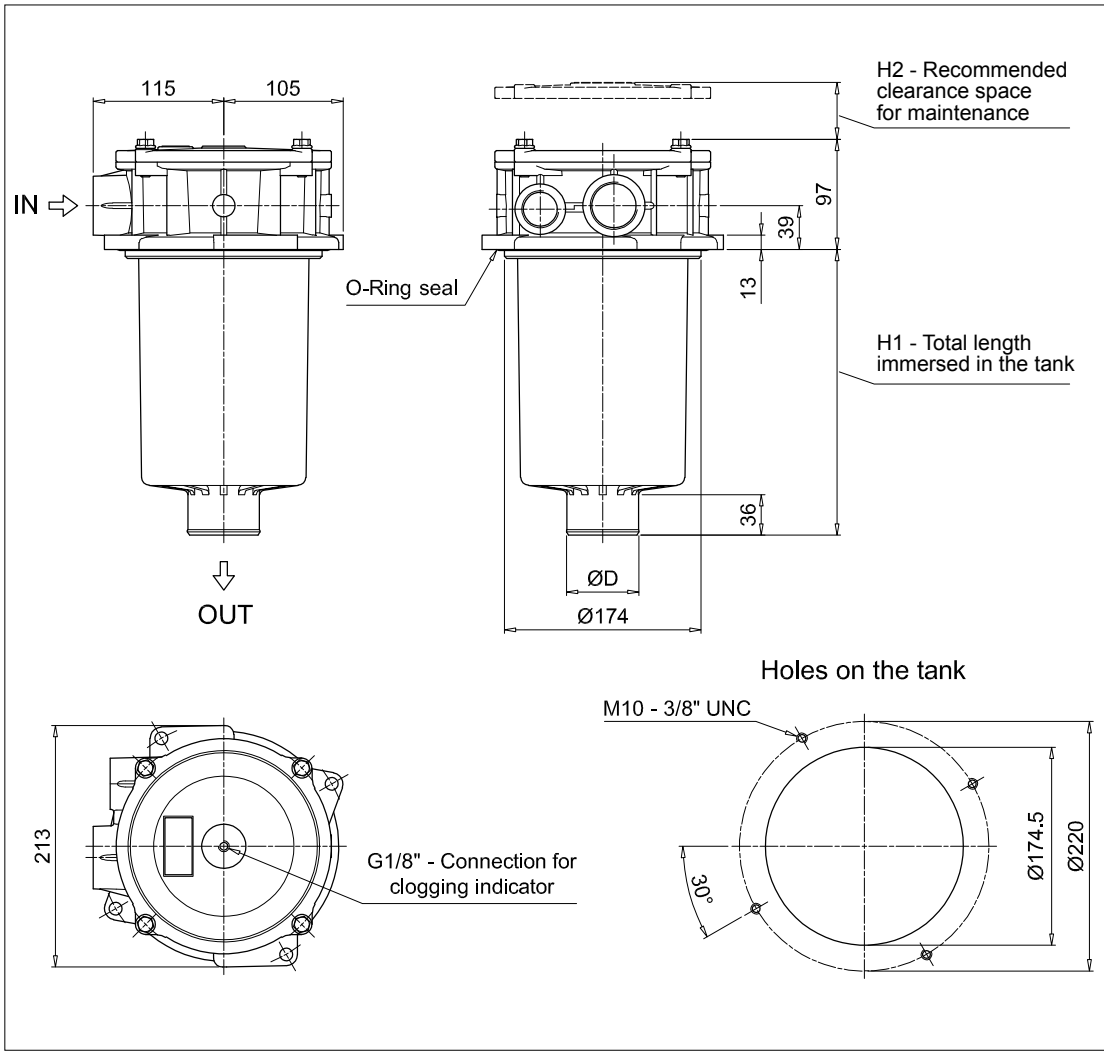
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

Dimensions



MPF410

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

MPF MPF450 - MPF451 - MPF750

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPF450 | 1 | A | G1 | A25 | H | B | P01
Configuration example 2: MPF750 | 1 | V | F | P10 | N | E | P01

Series and size

MPF450 | **MPF451** | **MPF750** Filter element with standard spigot

Length	MPF 450	MPF 451	MPF 750
1	•	•	•
2	•	•	
3	•	•	

Seals and treatments

A	NBR	**W**	NBR head anodized
V	FPM	**Z**	FPM head anodized

Connections	Aux (only size 451)
G1 G2”	G3/4”
G4 2” NPT	3/4” NPT
G7 SAE 32 - 2 1/2” - 12 UN	SAE 12 - 1 1/16” - 12 UN
F1 2” SAE 3000 psi/M	G3/4”
F2 2” SAE 3000 psi/UN	3/4” NPT

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve	
E	3 bar
B	1.75 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1: MF400 | 1 | A25 | H | B | P01
Configuration example 2: MFX50 | 1 | P10 | N | V | E | P01

Element series and size

MF400 | **MF750** Filter element with standard spigot

Element length	MPF 450	MPF 451	MPF 750
1	•	•	•
2	•	•	
3	•	•	

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals	
B	NBR
V	FPM

Bypass valve	
E	3 bar
	1.75 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

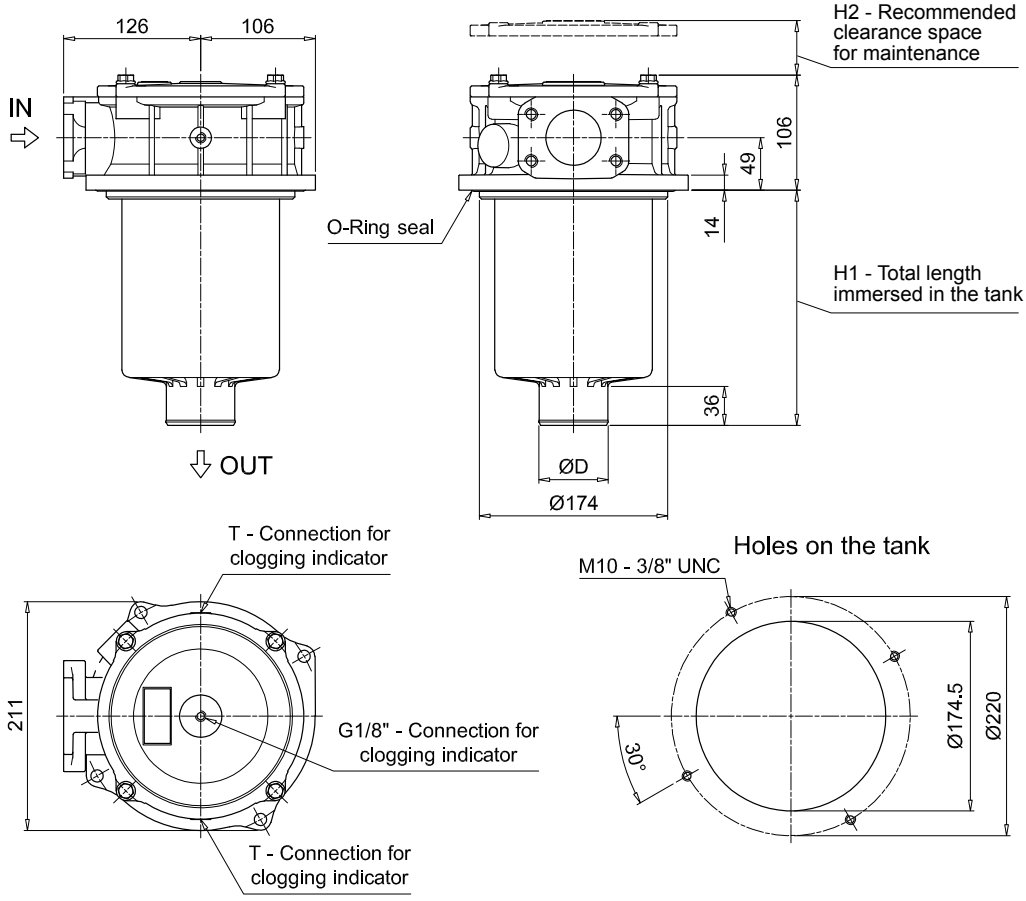
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
Sxx	Extension tube	224
T5	Filler plug M30x1.5	225

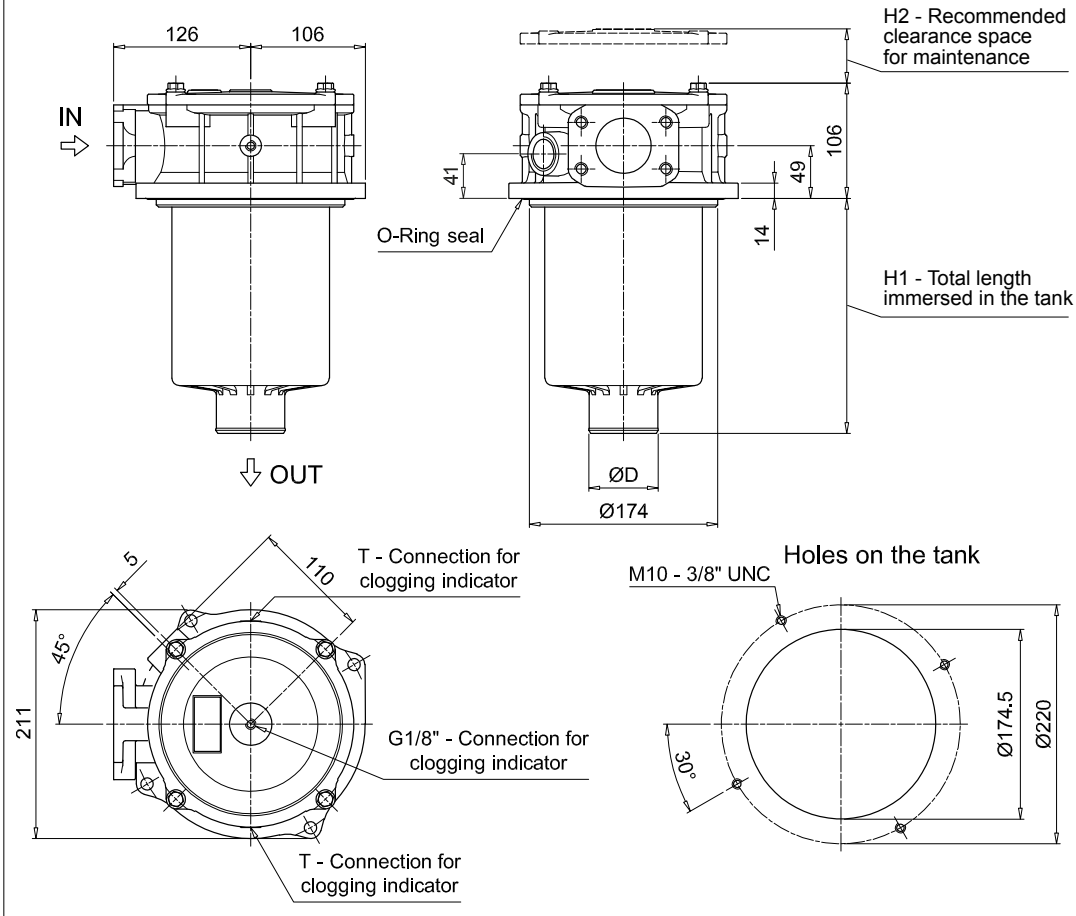
Dimensions



MPF450

Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

Connections	T
G1	G1/8"
G4 - G7	1/8" NPT
F1	G1/8"
F2	1/8" NPT



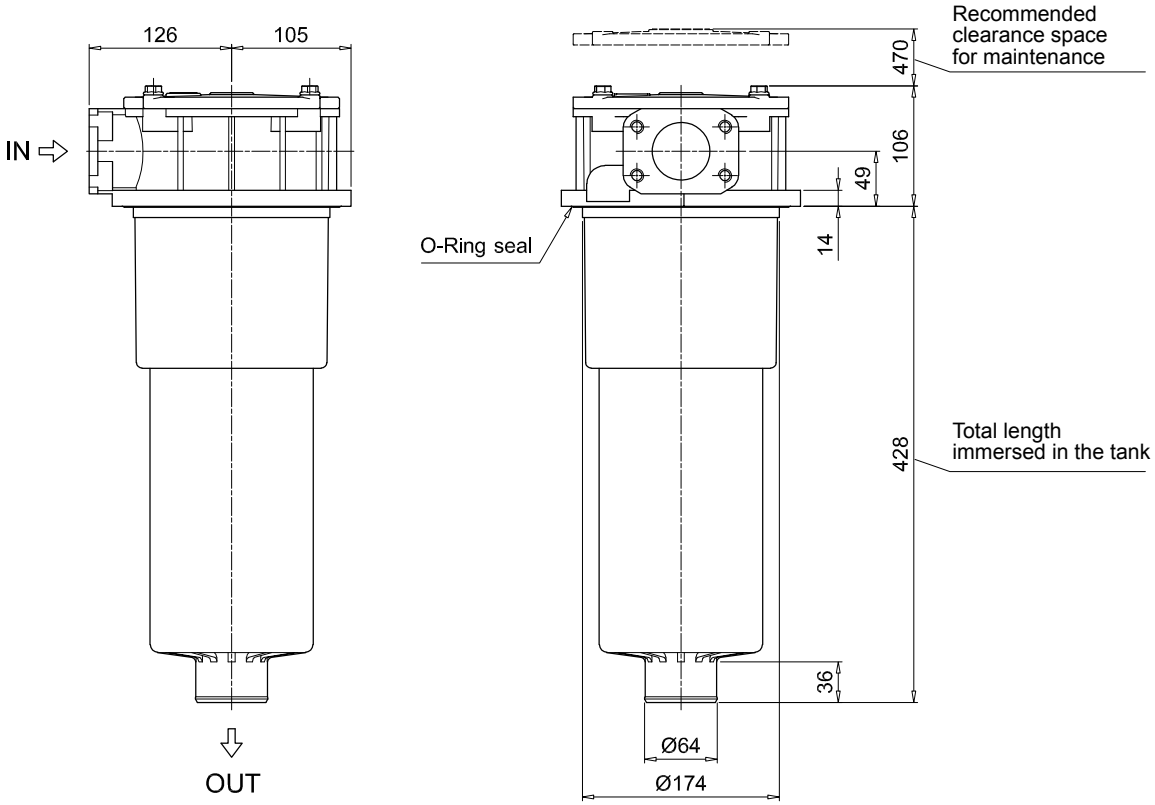
MPF451

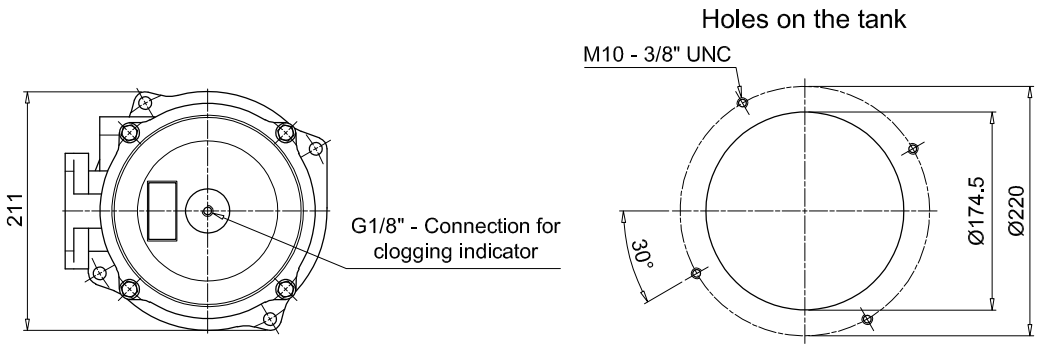
Filter length	H1 [mm]	H2 [mm]	D [mm]
1	180	210	51
2	240	270	64
3	290	315	64

Connections	T
G1	G1/8"
G4 - G7	1/8" NPT
F1	G1/8"
F2	1/8" NPT

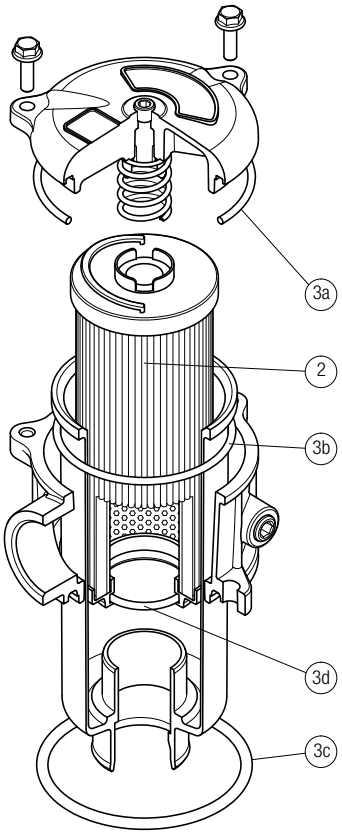
Dimensions

MPF750

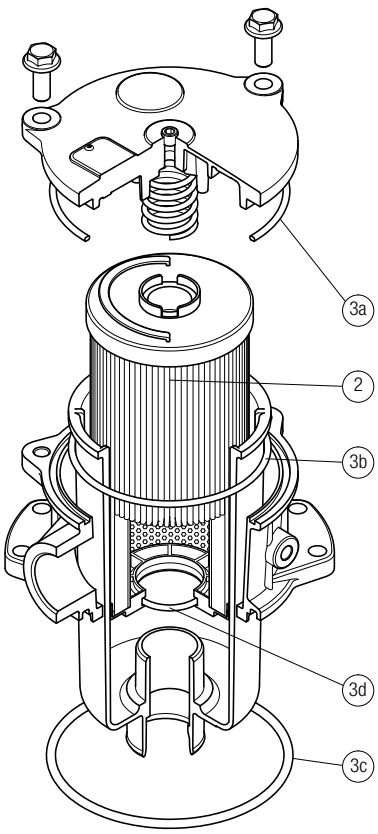




MPF 100



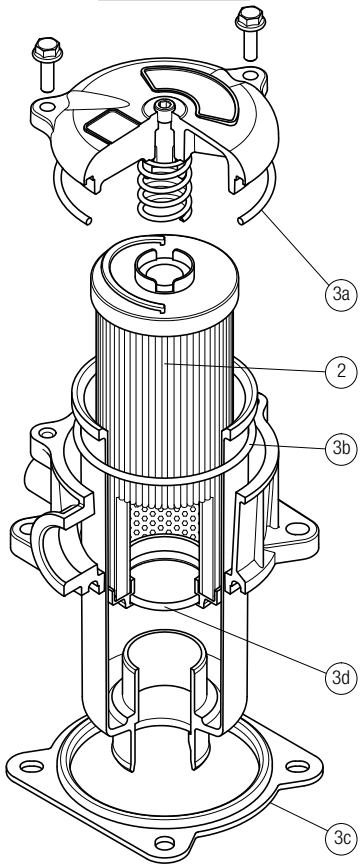
MPF 181



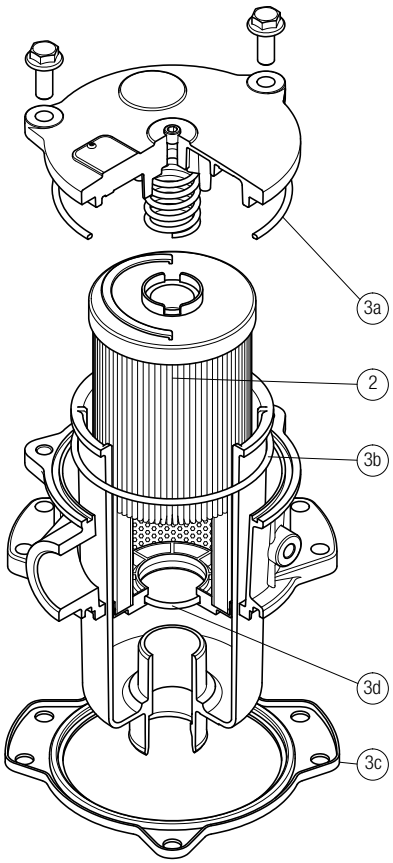
O-RING SEAL

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPF 030	See order table	02050055	02050056
MPF 100-110		02050057	02050058
MPF 181-182		02050059	02050060
MPF 184		02050455	02050456
MPF 191-192		02050457	02050458
MPF 194		02050459	02050460
MPF 400-410		02050061	02050062
MPF 450-451		02050461	02050462
MPF 750		02050106	02050107

MPF 104



MPF 181



FLAT SEAL

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPF 020	See order table	02050438	02050439
MPF 104		02050350	02050408
MPF 181-182		02050659	02050660
MPF 191-192		02050661	02050662

MPT series

Maximum pressure up to 8 bar - Flow rate up to 300 l/min

Technical data

Return filter **Maximum pressure up to 8 bar - Flow rate up to 300 l/min**

Filter housing materials
- Head: Aluminium
- Cover: Nylon
- Bowl: Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: 800 kPa (8 bar)

Temperature
From -25 °C to +110 °C

Bypass valve
- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 300 kPa (3 bar)

Note
MPT filters are provided for vertical mounting

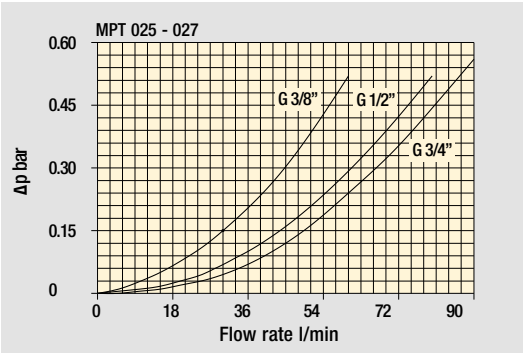
Δp element type
- Microfibre filter elements - series H: 10 bar
- Fluid flow through the filter element from OUT to IN.

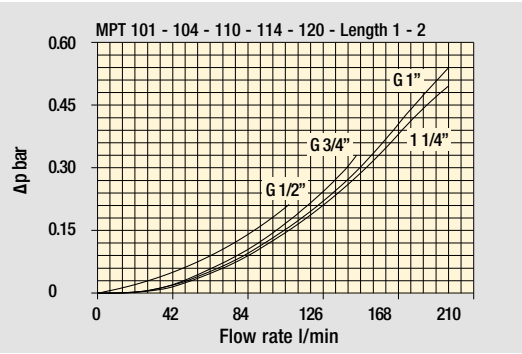
Weights [kg] and volumes [dm³]

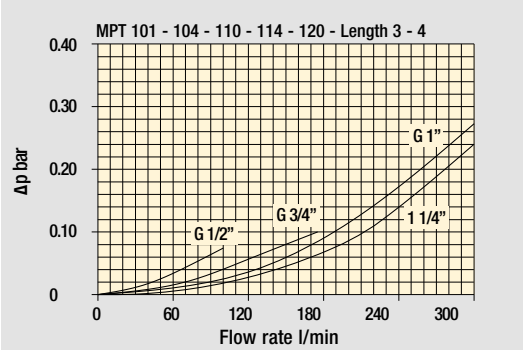
	Weights [kg]					Volumes [dm³]				
	Length	1	2	3	4	Length	1	2	3	4
MPT 025		0.41	0.45	0.50	-		0.24	0.35	0.42	-
MPT 027		0.44	0.48	0.55	-		0.24	0.35	0.42	-
MPT 101		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
MPT 104		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74
MPT 110-120		1.00	1.05	1.15	1.40		0.72	0.93	1.28	1.74
MPT 114		1.10	1.15	1.25	1.50		0.72	0.93	1.28	1.74

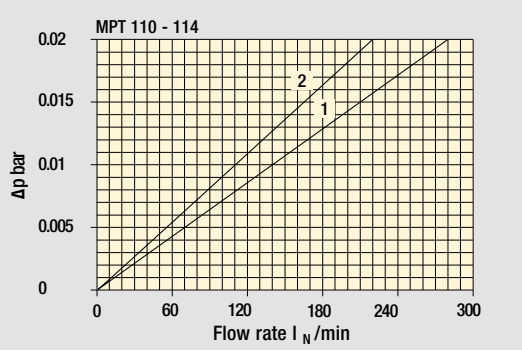
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop

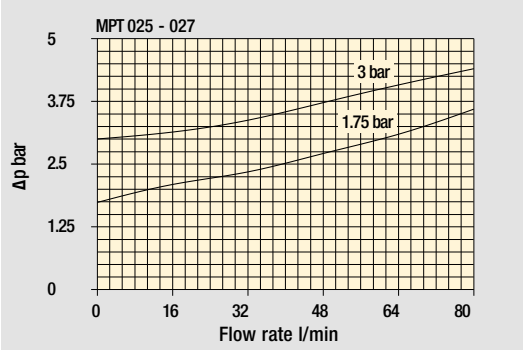


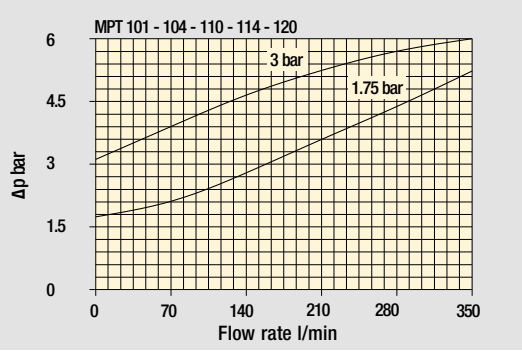




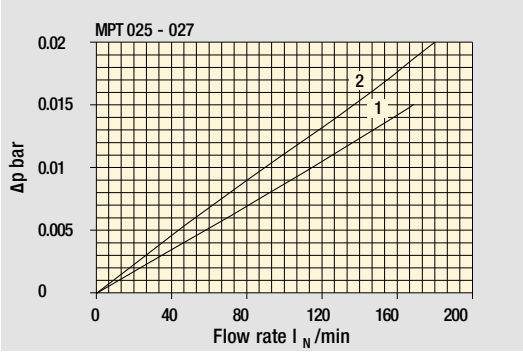


Bypass valve pressure drop





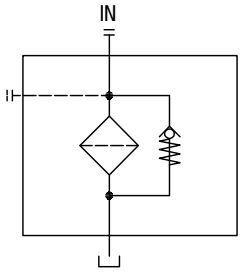
Air breather pressure drop



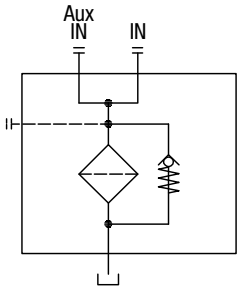
1 C With air breather 10 µm
2 D With anti-splash and SAP50 10 µm

Hydraulic symbols

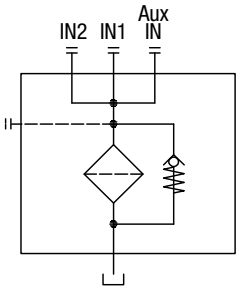
Style
1 connection



Style
2 connections



Style
3 connections



Multifunction

MPT 025 -027

Air breather port plugged Indicator port	Air breather standard Indicator port	Anti-splash air breather & pressurized Double indicator port
		

Multiport - Multifunction

MPT 110

Standard - Single IN Port	Double IN Port - Double indicator port	Double IN Port - Indicator port	Double IN Port
		 Option: drain port	 Option: double drain port

MPT 120

Triple IN port

Option:
double drain port

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPT025	1	S	A	G3	A10	E	P01
Configuration example 2:	MPT027	3	C	W	G6	A03	B	P01

Series and size

MPT025 **MPT027** Filter element with standard spigot

Length

1 | **2** | **3**

Air breather

S	Without air breather
C	With air breather 10 µm
D	With anti-splash and air breather SAP050 10 µm
P	With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized (filter element compatible with fluids HFA-HFB-HFC)	•	•	
Z	FPM head anodized (filter element compatible with fluids HFA-HFB-HFC)	•	•	

Connections

G1	G3/8”	**G6**	3/4” NPT
G2	G1/2”	**G7**	SAE 6 - 9/16” - 18 UNF
G3	G3/4”	**G8**	SAE 8 - 3/4” - 16 UNF
G4	3/8” NPT	**G9**	SAE 12 - 1 1/16” - 12 UN
G5	1/2” NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF020	1	A10	H	B	E	P01
Configuration example 2:	MF020	3	A03	H	W		P01

Element series and size

MF020 Filter element with standard spigot

Element length

1 | **2** | **3**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

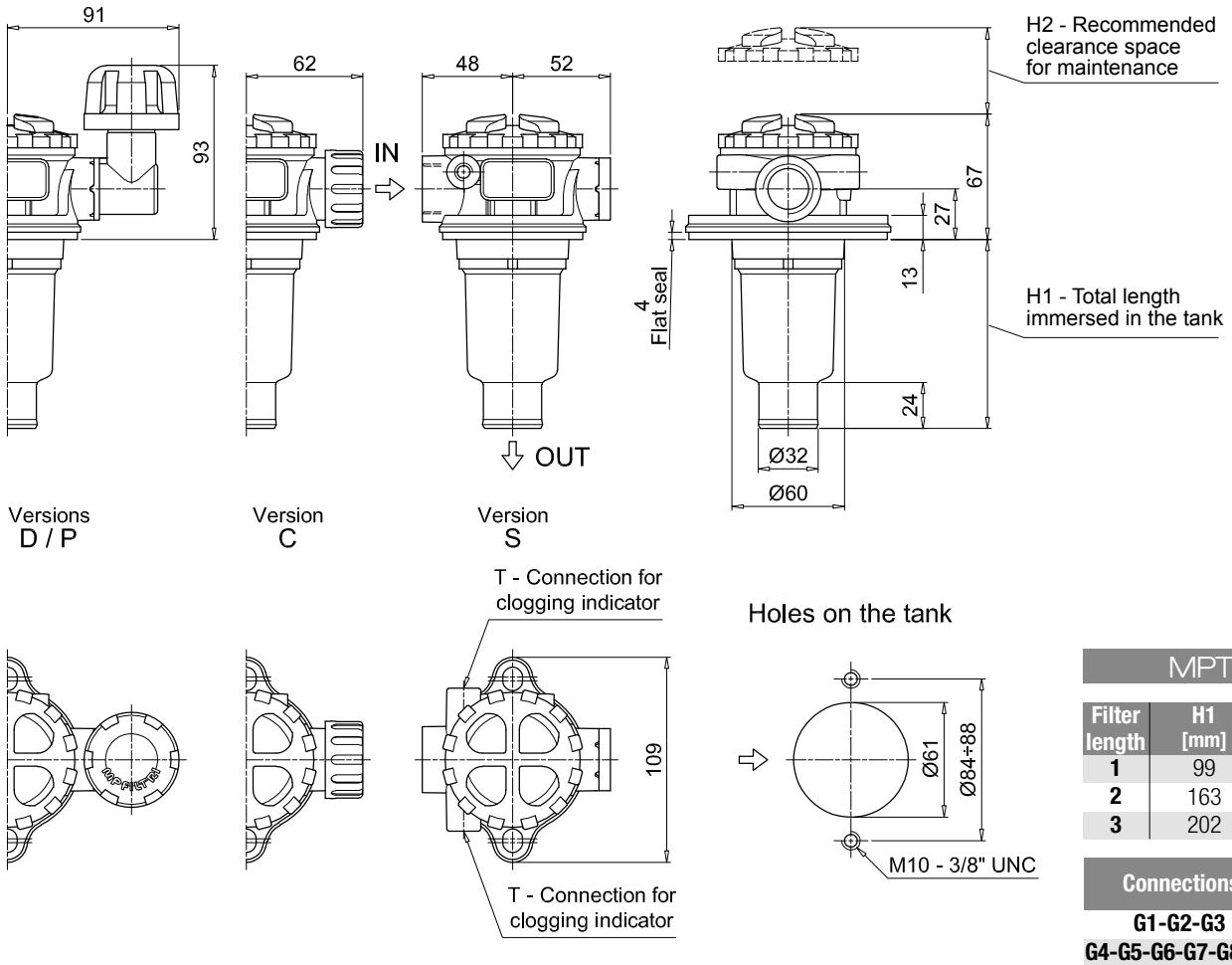
		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

Additional features

		page
TE	Extension tube	224
DPT	Dipstick	225

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

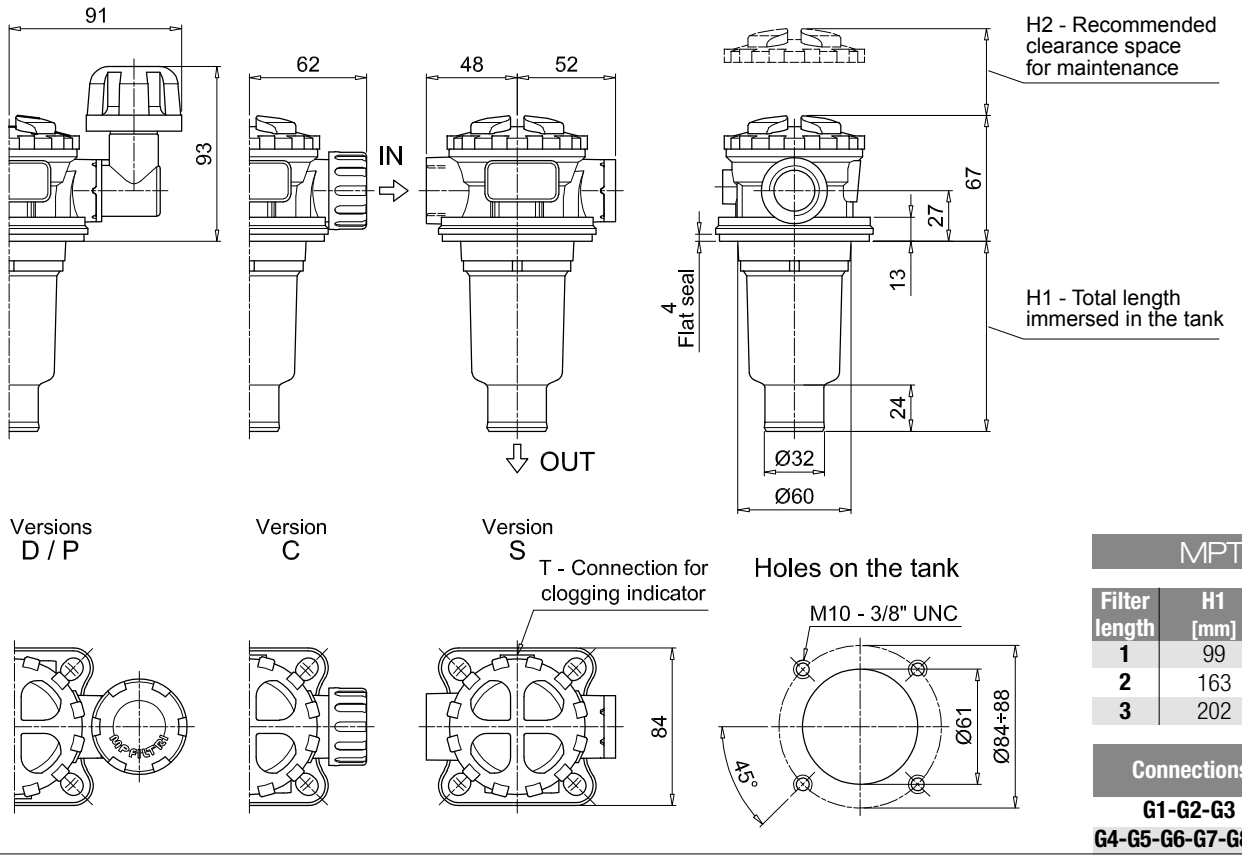
Dimensions



MPT025

Filter length	H1 [mm]	H2 [mm]
1	99	130
2	163	195
3	202	230

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPT027

Filter length	H1 [mm]	H2 [mm]
1	99	130
2	163	195
3	202	230

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPT MPT101 - MPT104 - MPT114

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPT101	4	S	A	G3	A10	E	P01
Configuration example 2:	MPT114	3	C	W	G6	A03	B	P01

Series and size

MPT101 | **MPT104** | **MPT114** Filter element with standard spigot

Length

1 | **2** | **3** | **4**

Air breather

		MPT101	MPT104	MPT114
S	Without air breather	•	•	•
C	With air breather 10 µm			•
D	With anti-splash and air breather SAP050 10 µm			•
P	With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar			•

Filtration rating

Seals and treatments

		Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections

G1	G3/4"	**G6**	1 1/4" NPT
G2	G1"	**G7**	SAE 12 - 1 1/16" - 12 UN
G3	G1 1/4"	**G8**	SAE 16 - 1 5/16" - 12 UN
G4	3/4" NPT	**G9**	SAE 20 - 1 5/8" - 12 UN
G5	1" NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E	3 bar
B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	MF100	4	A10	H	B	E	P01
Configuration example 2:	MF100	3	A03	W	B		P01

Element series and size

MF100 Filter element with standard spigot

Element length

1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Filter media

Element Δp

		Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B	NBR
V	FPM

Bypass valve

E	3 bar
	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

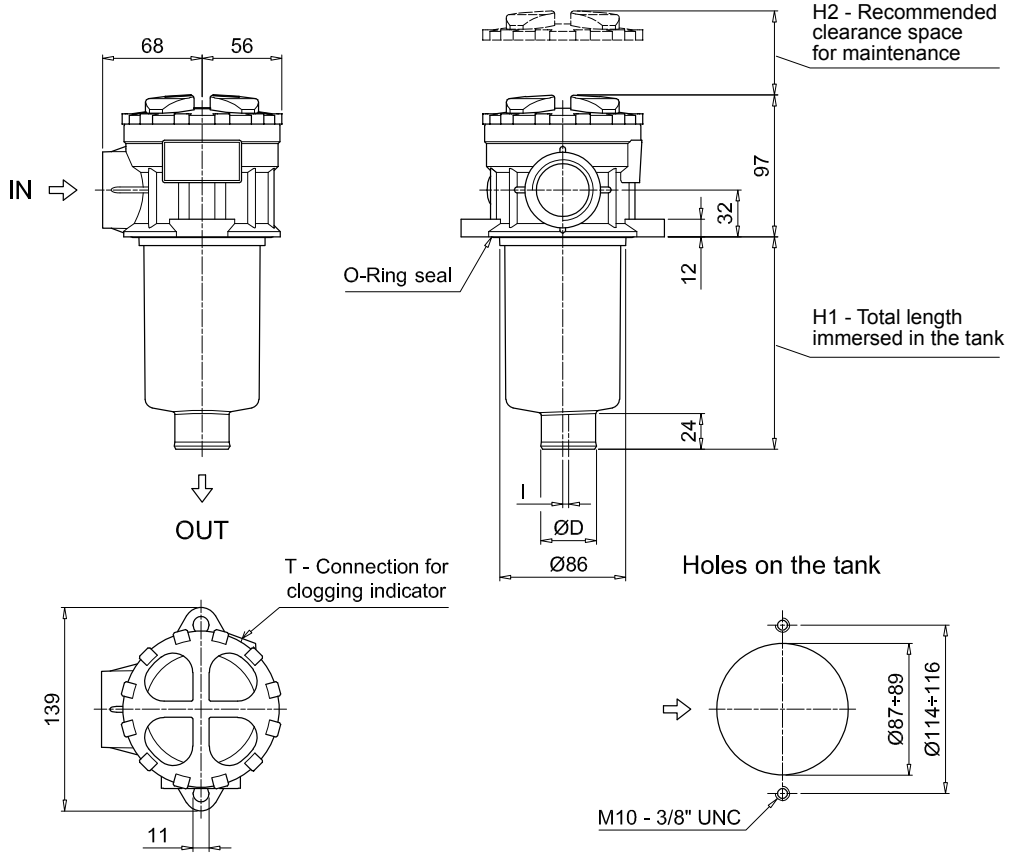
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features

		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

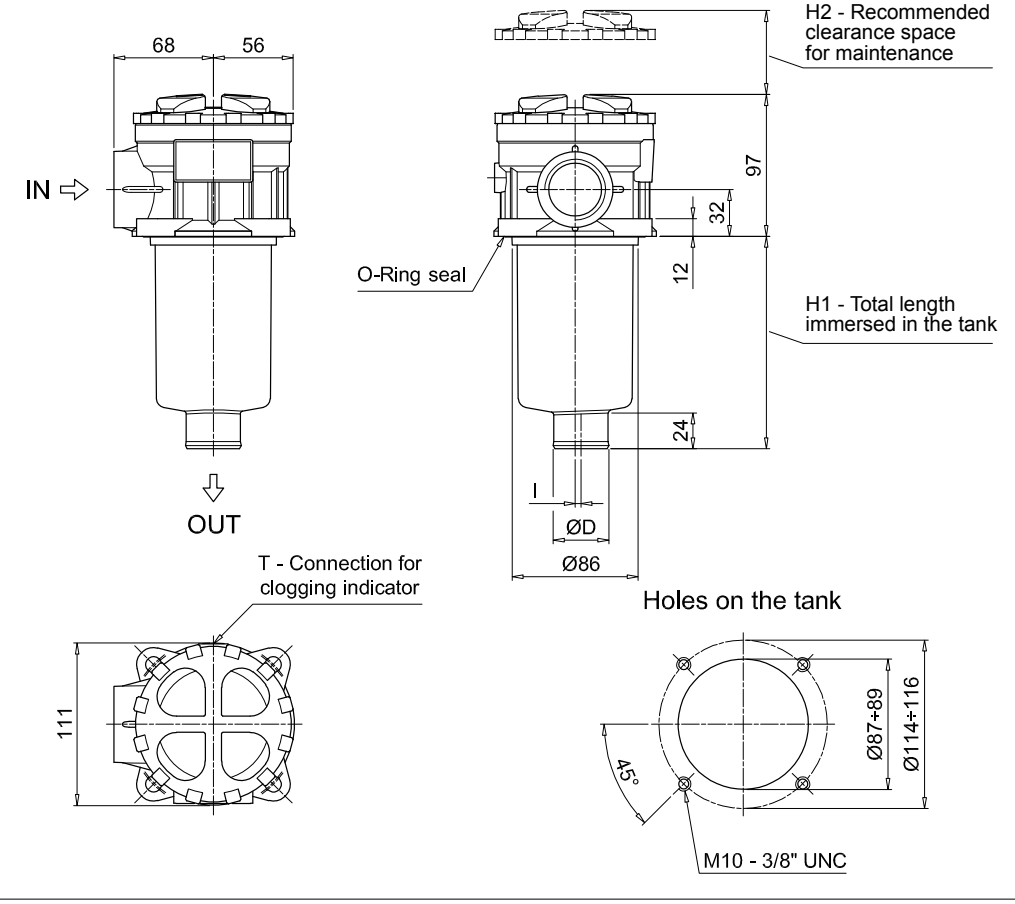
Dimensions



MPT101

Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	99	120	38	4
2	146	170	38	4
3	224	250	47	-
4	326	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPT104

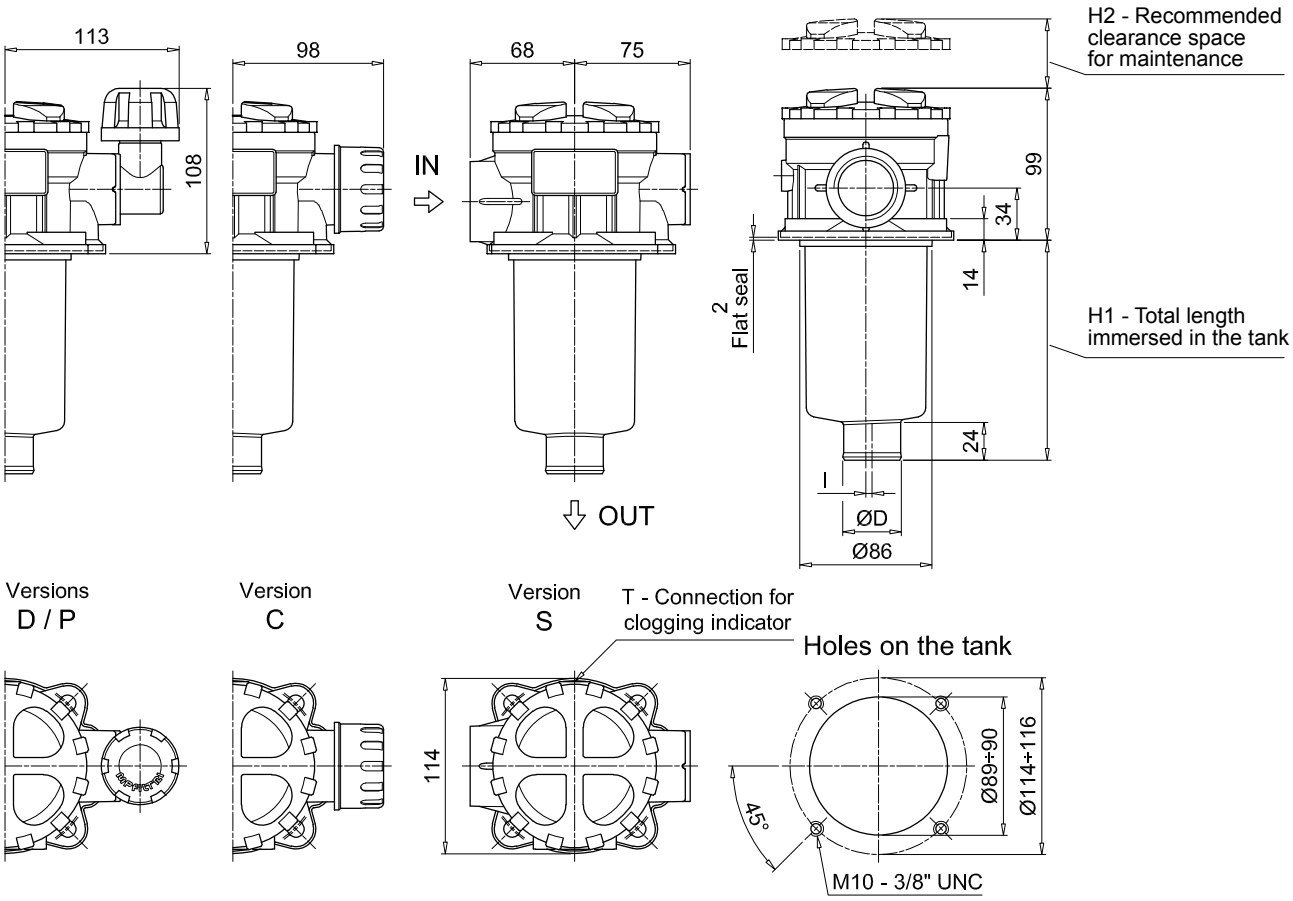
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	99	120	38	4
2	146	170	38	4
3	224	250	47	-
4	326	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

Dimensions

MPT114				
Filter length	H1 [mm]	H2 [mm]	D [mm]	I [mm]
1	97	120	38	4
2	144	170	38	4
3	222	250	47	-
4	324	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPT MPT110

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPT110	1	S	A	G1	0	A06	E	P01
Configuration example 2:	MPT110	3	P	V	G4	1	M25	B	P01

Series and size
MPT110 Filter element with standard spigot

Length
1 | **2** | **3** | **4** |

Air breather
S Without air breather
C With air breather 10 µm
D With anti-splash and air breather SAP050 10 µm
P With anti-splash and air breather SAP050 10 µm, pressurization 0.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Aux size 1	Aux size 2
G1	G3/4"	G3/8"	G1/2"
G2	G1"		
G3	G1 1/4"		
G4	3/4" NPT	3/8" NPT	1/2" NPT
G5	1" NPT		

Main Connections		Aux size 2	Aux size 2
G6	1 1/4" NPT	3/8" NPT	1/2" NPT
G7	SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
G8	SAE 16 - 1 5/16" - 12 UN		
G9	SAE 20 - 1 5/8" - 12 UN		

Aux connection - see previous table
0 Not machined **1** Aux size 1 **2** Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve
E 3 bar
B 1.75 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1:	MF100	1	A06	H	B	E	P01
Configuration example 2:	MF100	3	M25	N	V		P01

Element series and size
MF100 Filter element with standard spigot

Element length
1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

		Filter media Axx	Mxx	Pxx
N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals
B NBR
V FPM

Bypass valve
E 3 bar
1.75 bar

Execution
P01 MP Filtri standard
Pxx Customized

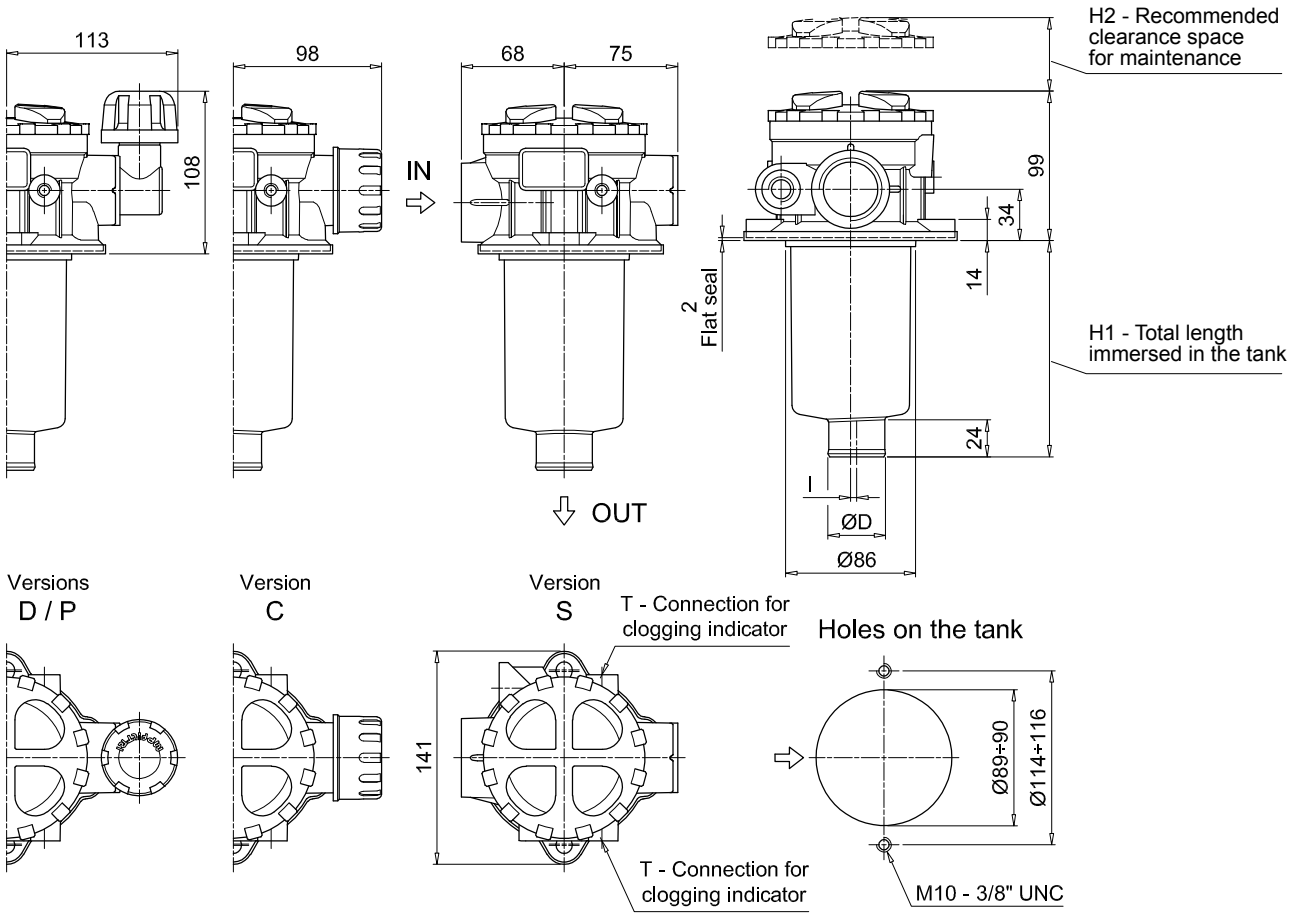
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

MPT110				
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**	**I [mm]**
1	97	120	38	4
2	144	170	38	4
3	222	250	47	-
4	324	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPT120 | 1 | A | G1 | 0 | A06 | E | P01

Configuration example 2: MPT120 | 3 | V | G4 | 1 | M25 | B | P01

Series and size

MPT120 Filter element with standard spigot

Length

1 | **2** | **3** | **4**

Seals and treatments — Filtration rating: Axx | Mxx | Pxx

A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Rear connections	Aux size 1	Aux size 2
G1	G3/4”	G3/4”	G3/8”	G1/2”
G2	G1”	G1”		
G3	G1 1/4”	G3/4”		
G4	3/4” NPT	3/4” NPT	3/8” NPT	1/2” NPT
G5	1” NPT	1” NPT		
G6	1 1/4” NPT	3/4” NPT		
G7	SAE 12 - 1 1/16” - 12 UN	SAE 12 - 1 1/16” - 12 UN	SAE 6 - 9/16” - 18 UNF	SAE 8 - 3/4” - 16 UNF
G8	SAE 16 - 1 5/16” - 12 UN	SAE 16 - 1 5/16” - 12 UN		
G9	SAE 20 - 1 5/8” - 12 UN	SAE 12 - 1 1/16” - 12 UN		

Aux connection - see previous table

0 Not machined **1** Aux size 1 **2** Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Bypass valve

E 3 bar

B 1.75 bar

Execution

P01 MP Filtri standard

Pxx Customized

FILTER ELEMENT

Configuration example 1: MF100 | 1 | A06 | H | B | E | P01

Configuration example 2: MF100 | 3 | M25 | N | V | | P01

Element series and size

MF100 Filter element with standard spigot

Element length

1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp — Filter media: Axx | Mxx | Pxx

N	10 bar		•	•
H	10 bar	•		
W	10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Seals

B NBR

V FPM

Bypass valve

E 3 bar

1.75 bar

Execution

P01 MP Filtri standard

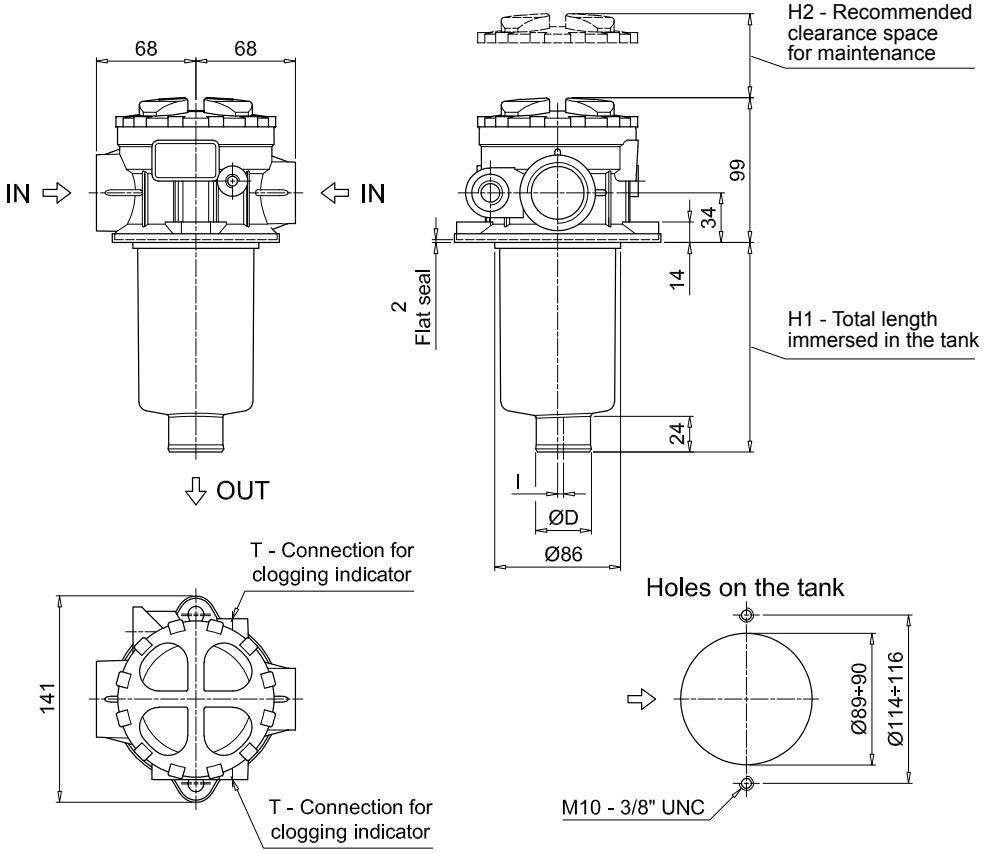
Pxx Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
TE	Extension tube	224
DFS	Diffuser with fast lock connection	225
DPT	Dipstick	225

Dimensions

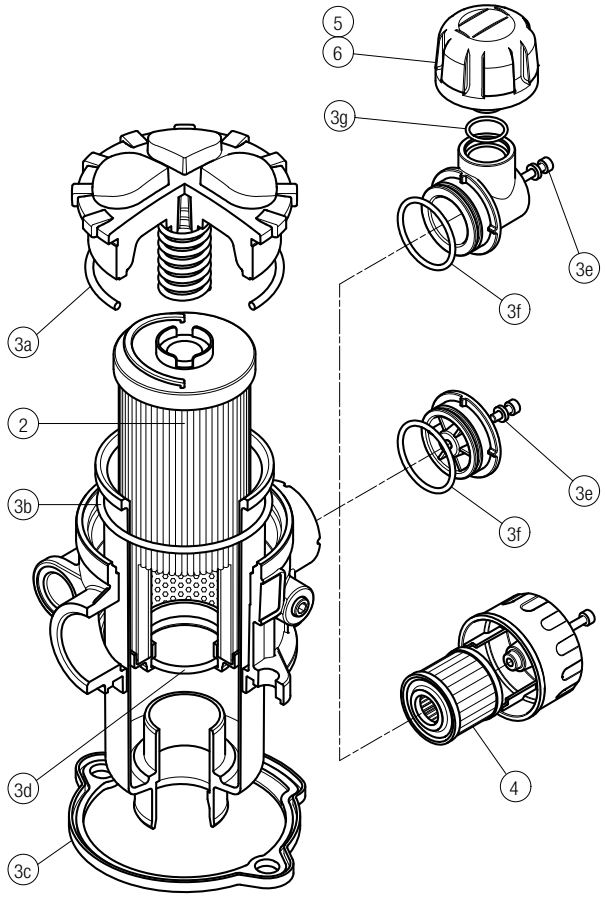


MPT120				
Filter length	**H1 [mm]**	**H2 [mm]**	**D [mm]**	**l [mm]**
1	97	120	38	4
2	147	170	38	4
3	222	250	47	-
4	324	350	47	2.5

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

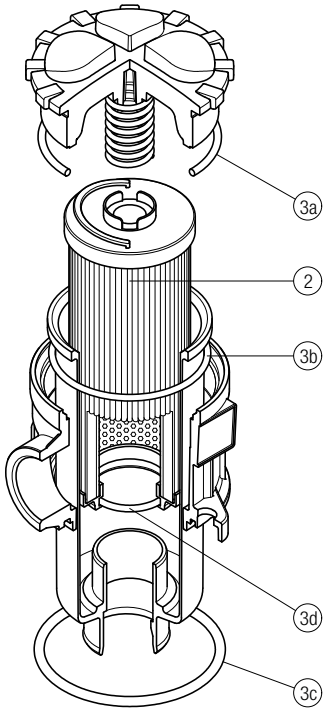
Order number for spare parts

MPT 025 - 027 - 110



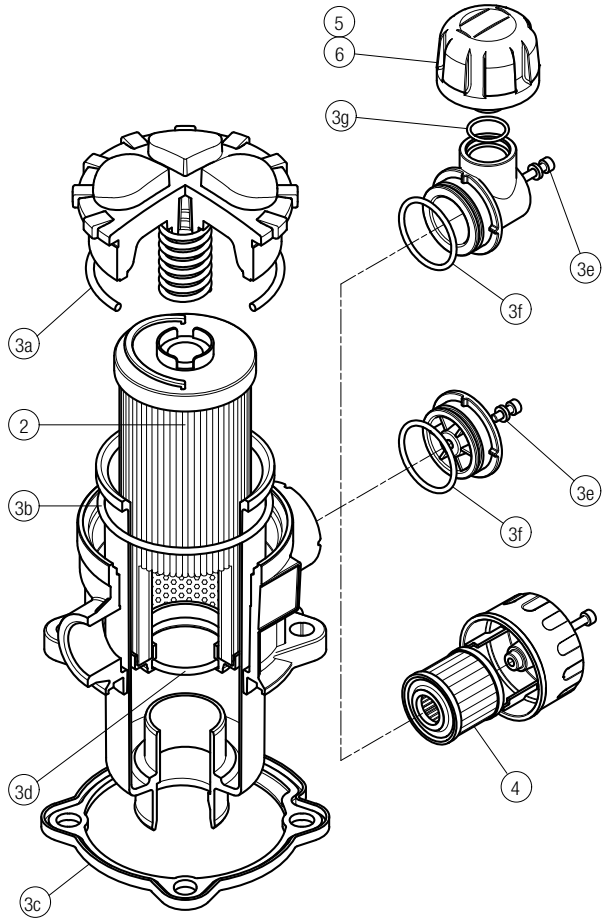
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number NBR	FPM	Air breather filter element - version: C	D	P
MPT 025	See order table	02050557	02050558	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 027		02050559	02050560	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPT 110		02050561	02050562	10 µm A5L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

MPT 101S - 104S



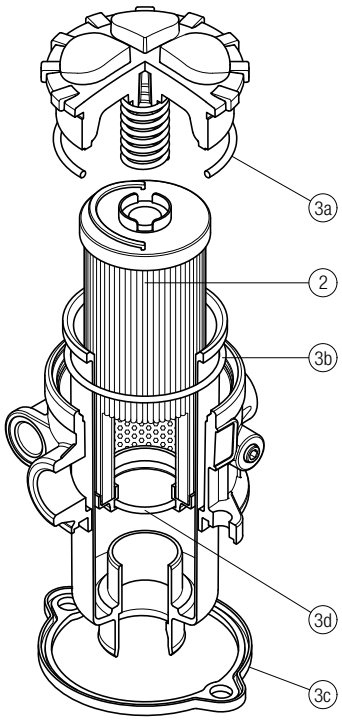
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPT 101S-104S	See order table	02050466	02050467

MPT 114



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Air breather filter element - version: C	Air breather filter element - version: D	Air breather filter element - version: P
MPT 114	See order table	02050580	02050581	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01

MPT 120



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM
MPT 120	See order table	02050563	02050564

MFB series
BOWL ASSEMBLY

Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MFB100 | 1 | A | 2 | A10 | H | E | P01

Configuration example 2: MFB180 | 2 | V | 1 | M25 | N | B | P01

Series and size

MFB020 | **MFB030** | **MFB100** | **MFB180** | **MFB190**

Filter element with private spigot

Length	MFB020	MFB030	MFB100	MFB180	MFB190
1	•	•	•	•	
2	•		•	•	•
3	•		•		
4			•		

Seals

A NBR

V FPM

Version	MFB020	MFB030	MFB100	MFB180	MFB190
1 Without cover	•	•	•	•	•
2 With flanged cover type MPF		•	•	•	•
3 With threaded cover type MPT	•		•		

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		
W 10 bar, compatible with fluids HFA, HFB and HFC	•	•	

Bypass valve

E 3 bar
B 1.75 bar

Execution

P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1: MF100 | 1 | A10 | H | B | E | P01

Configuration example 2: MF180 | 2 | M25 | N | V | | P01

Element series and size

MF020 | **MF030** | **MF100** | **MF180** | **MF190**

Filter element with private spigot

Element length	MF020	MF030	MF100	MF180	MF190
1	•	•	•	•	
2	•		•	•	•
3	•		•		
4			•		

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp	Filter media Axx	Mxx	Pxx
N 10 bar		•	•
H 10 bar	•		

Seals

B NBR
V FPM

Bypass valve

E 3 bar
1.75 bar

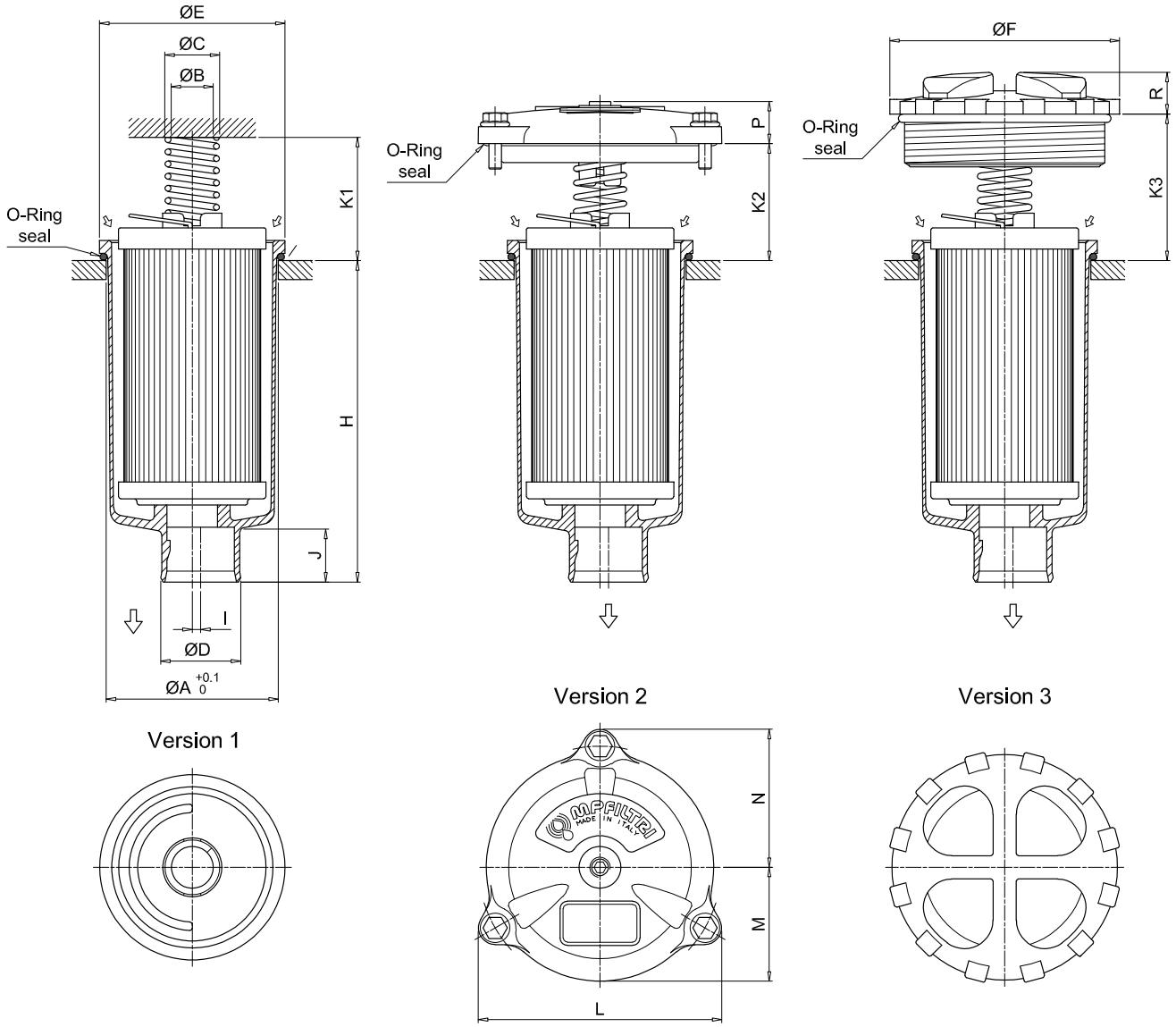
Execution

P01 MP Filtri standard
Pxx Customized

ACCESSORIES

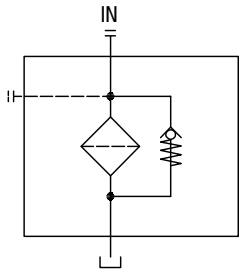
Additional features	MFB020	MFB030	MFB100	MFB180	MFB190	page
TE Extension tube	•	•	•	•	•	224
DFS Diffuser with fast lock connection			•			225

MFB

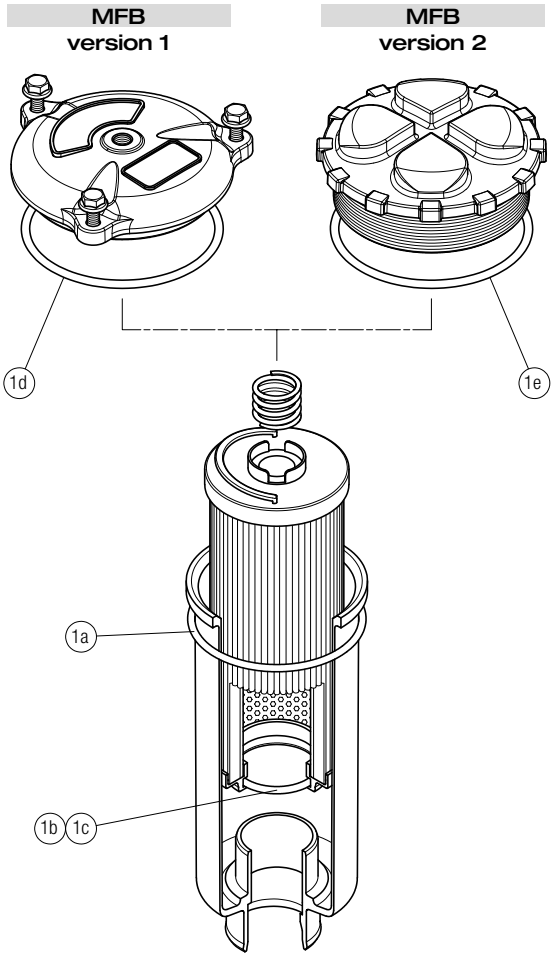


Filter size	Filter lenght	ø A [mm]	ø B [mm]	ø C [mm]	ø D [mm]	ø E [mm]	ø F [mm]	H [mm]	I [mm]	J [mm]	K1 [mm]	K2 [mm]	K3 [mm]	L [mm]	M [mm]	N [mm]	P [mm]	R [mm]
020	1	52	20.5	26	32	56	75	111	0	24	42	-	36	-	-	-	-	18
	2	52	20.5	26	32	56	75	175	0	24	42	-	36	-	-	-	-	18
	3	52	20.5	26	32	56	75	214	0	24	42	-	36	-	-	-	-	18
030	1	60.5	20	25.5	32	68	-	92	3	21	33	35	-	92	42	52	18	-
100	1	80.5	20	26	38	88	111	107	4	24	58	55	69	116	54	66	20	20
	2	80.5	20	26	38	88	111	154	4	24	58	55	69	116	54	66	20	20
	3	80.5	20	26	47	88	111	232	0	24	58	55	69	116	54	66	20	20
	4	80.5	20	26	47	88	111	334	2.5	24	58	55	69	116	54	66	20	20
180	1	112.5	26	33.5	47	121	-	234	0	31	58	58	69	159	76	95	21	-
	2	112.5	26	33.5	47	121	-	447	0	31	58	58	69	159	76	95	21	-
190	2	112.5	26	33.5	50	121	-	454	0	38	58	58	69	159	76	95	21	-

Hydraulic symbol



Order number for spare parts



Item:	Q.ty: 1 pc. 1 (1a ÷ 1e)	
Filter series	Seal Kit code number NBR	FPM
MFB 020	02050572	02050573
MFB 030	02050574	02050575
MFB 100	02050555	02050556
MFB 180	02050576	02050577
MFB 190	02050578	02050579

MPH series & MPI series

Maximum pressure up to 10 bar - Flow rate up to 3000 l/min

Technical data

Return filter **Maximum pressure up to 10 bar - Flow rate up to 3000 l/min**

Filter housing materials

- Head:
  Aluminium: MPH 104-110-114-120-250
  Anodised Aluminium: MPH 630-850
  Painted Aluminium: MPH 660

- Cover:
  Nylon: MPH 104-110-114-120
  Aluminium: MPH 250
  Anodised Aluminium: MPH 630
  Painted Aluminium: MPH 660
  Steel: MPH 850

- Insert assembly:
  Nylon (only for: MPH 104-110-114-120)
  Aluminium (the other insert assemblies)

- Diffuser:
  Zinc Plated Steel (excluded MPH 850)
  Tinned Steel: MPH 850

- Valve:
  Phosphated Steel

Pressure

Working pressure: 1 MPa (10 bar)

Bypass valve

- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 250 kPa (2.5 bar) (except for MPH 850)

Δp element type

- Microfibre filter elements - series MR: 10 bar
- Fluid flow through the filter element from IN to OUT.

Seals

- Standard NBR series A
- Optional FPM series V

Temperature

From -25 °C to +110 °C

Note

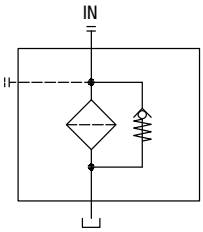
MPH filters are provided
for vertical mounting

Weights [kg] and volumes [dm³]

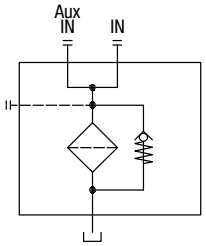
	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
MPH 104-110		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPH 114-120		1.60	1.70	1.80	2.20	2.60		1.60	1.70	1.80	2.20	2.60
MPH 250		3.60	3.90	4.20	5.60	-		4.40	4.40	5.40	8.00	-
MPH 630		6.50	7.00	7.40	8.50	10.50		7.30	9.00	11.00	13.00	19.20
MPH 660		-	-	-	11.50	14.00		-	-	-	14.60	21.00
MPH 850		32.00	35.00	38.00	42.00	-		13.00	16.50	21.00	25.00	-

Hydraulic symbols

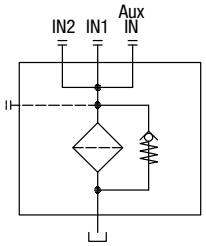
Style
1 connection



Style
1 connections



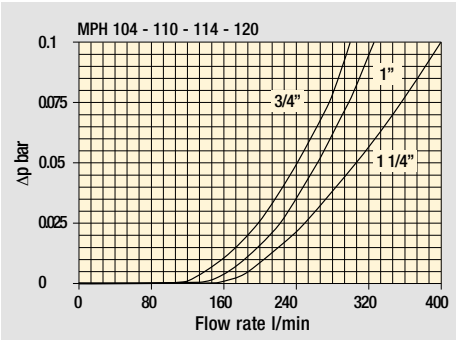
Style
3 connection

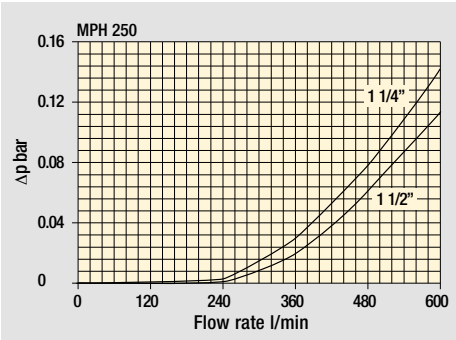


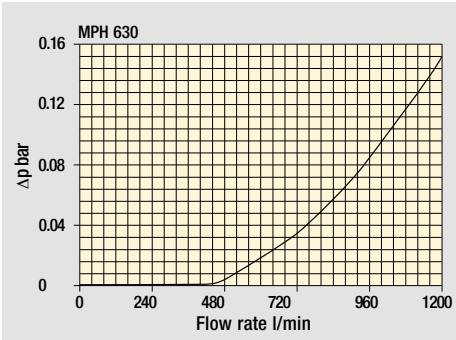
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

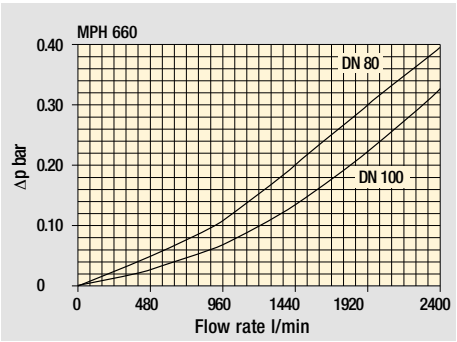
Pressure drop

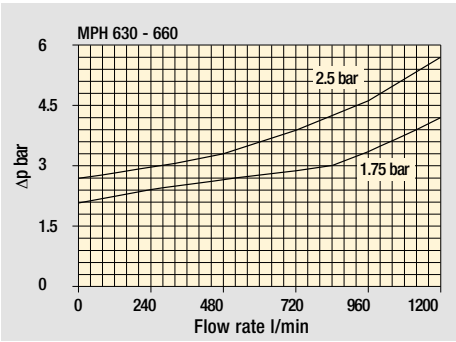
Filter housings Δp pressure drop

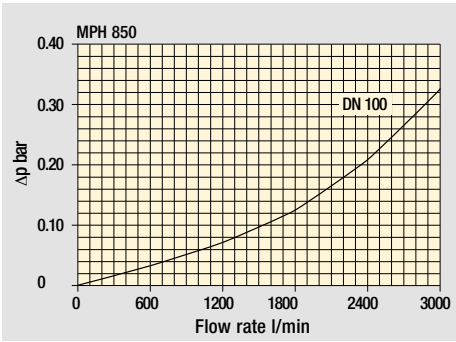


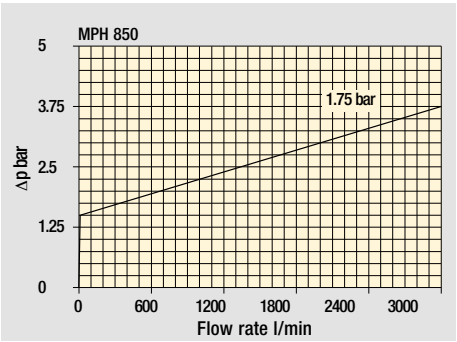




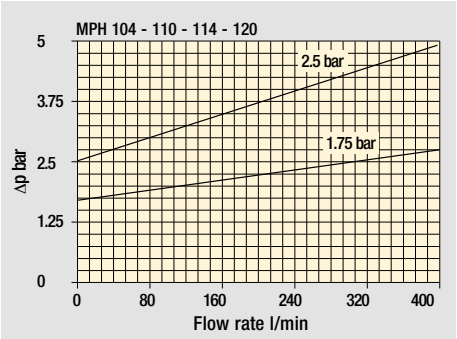


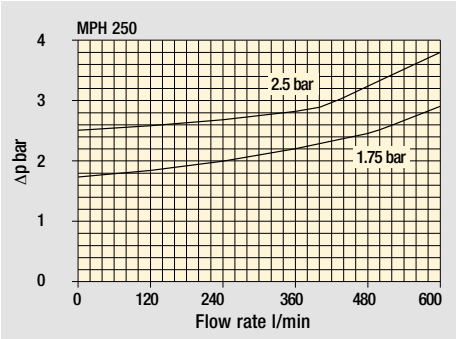




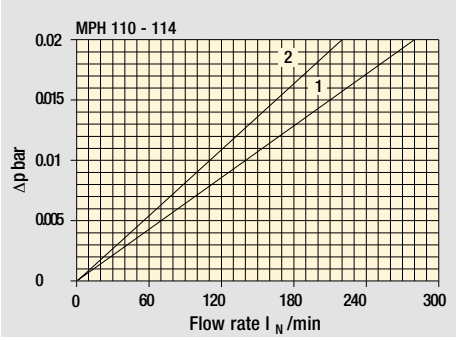


Bypass valve pressure drop





Air breather pressure drop



1 C With air breather 10 µm
2 D With anti-splash and SAP50 10 µm

MPH MPH104 - MPH114

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPH104	1	S	D	S	A	G1	A10	P01
Configuration example 2:	MPH114	3	C	E	C	Z	G6	M60	P01

Series and size
MPH104
MPH114

Length
1 | **2** | **3** | **4** | **5**

Bypass valve
S Without bypass
C 1.75 bar
E 2.5 bar

Diffuser and magnetic column
D With diffuser, with magnetic column
F With diffuser, without magnetic column
O Without diffuser, with magnetic column
E Without diffuser, without magnetic column

Air breather	MPH104	MPH114
S Without air breather	•	•
C With air breather 10 µm		•
D With anti-splash and air breather SAP050 10 µm		•
P With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar		•

Seals and treatments	Filtration rating Axx	Mxx	Pxx
A NBR	•	•	•
V FPM	•	•	•
W NBR head anodized	•	•	
Z FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections

G1	G3/4"	**G6**	1 1/4" NPT
G2	G1"	**G7**	SAE 12 - 1 1/16" - 12 UN
G3	G1 1/4"	**G8**	SAE 16 - 1 5/16" - 12 UN
G4	3/4" NPT	**G9**	SAE 20 - 1 5/8" - 12 UN
G5	1" NPT		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example 1:	MR100	1	A10	A	P01
Configuration example 2:	MR100	3	M60	V	P01

Element series and size
MR100

Element length
1 | **2** | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals
A NBR
V FPM

Execution
P01 MP Filtri standard
Pxx Customized

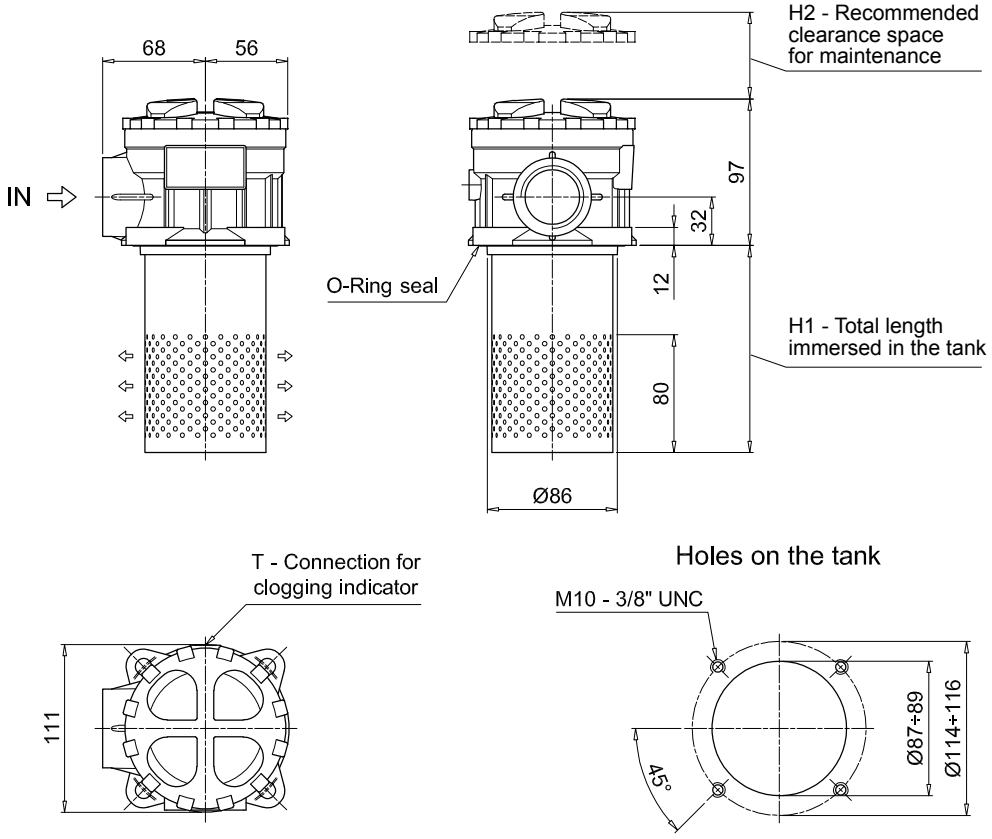
ACCESSORIES

Indicators	page
BVA Axial pressure gauge	216
BVR Radial pressure gauge	216
BVP Visual pressure indicator with automatic reset	217
BVQ Visual pressure indicator with manual reset	217

Additional features	page
DPT Dipstick	225

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

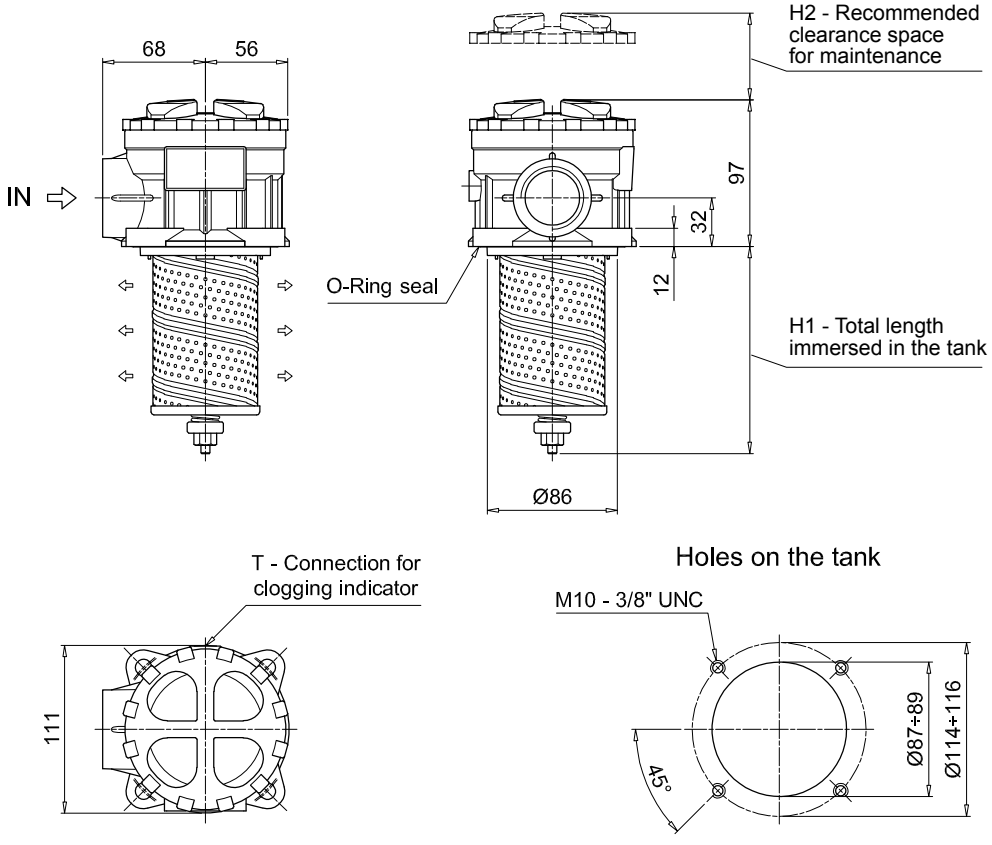
Dimensions



MPH104
with diffuser

Filter length	H1 [mm]	H2 [mm]
1	190	255
2	190	255
3	240	305
4	340	405
5	440	505

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

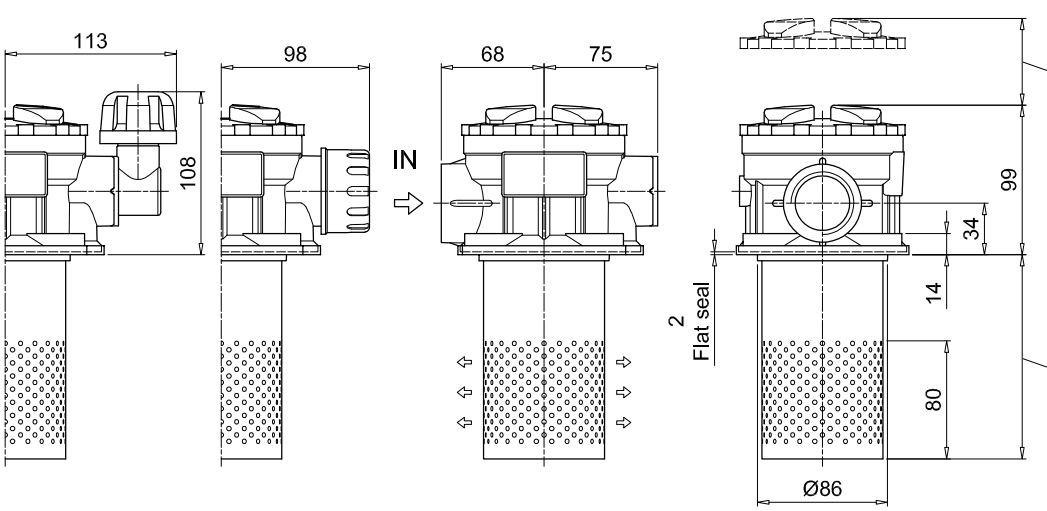


MPH104
without diffuser

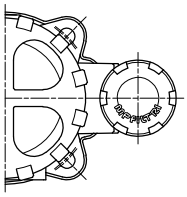
Filter length	H1 [mm]	H2 [mm]
1	131	190
2	175	235
3	225	285
4	325	385
5	425	485

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

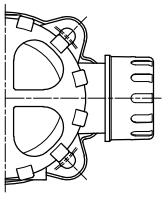
Dimensions



Versions D / P

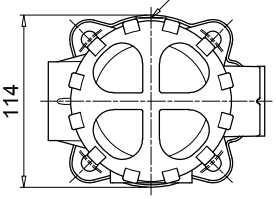


Version C

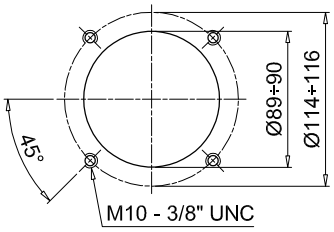


Version S

T - Connection for clogging indicator



Holes on the tank

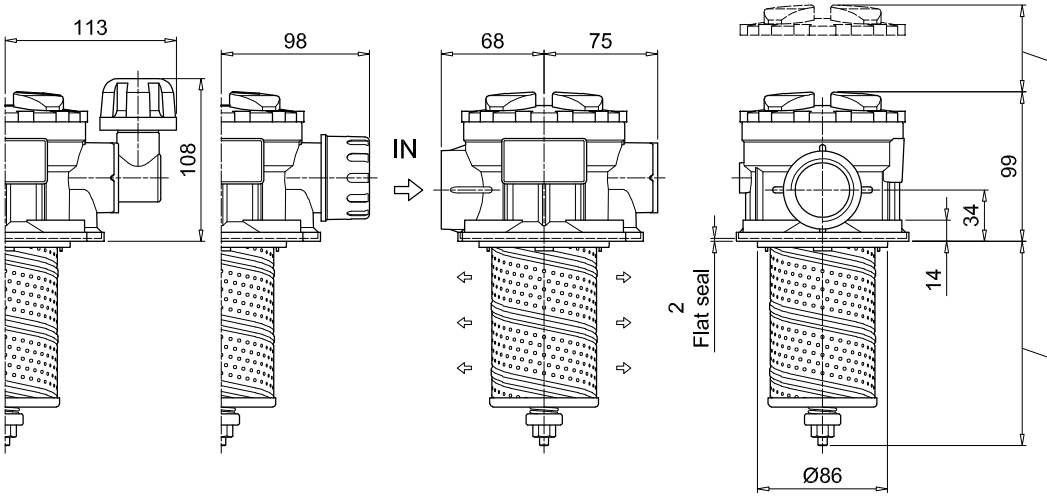


MPH114

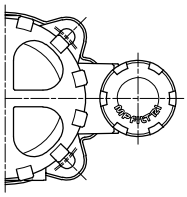
with diffuser

Filter length	H1 [mm]	H2 [mm]
1	188	255
2	188	255
3	238	305
4	338	405
5	438	505

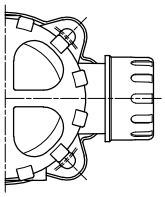
Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



Versions D / P

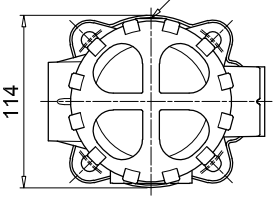


Version C

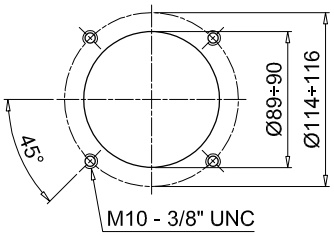


Version S

T - Connection for clogging indicator



Holes on the tank



MPH114

without diffuser

Filter length	H1 [mm]	H2 [mm]
1	129	190
2	173	235
3	223	285
4	323	385
5	423	485

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

Designation & Ordering code

COMPLETE FILTER

Configuration example: MPH110 | 1 | S | D | S | A | G1 | 1 | A10 | P01

Series and size
MPH110

Length
1 | **2** | **3** | **4** | **5**

Bypass valve

S	Without bypass	**C**	1.75 bar	**E**	2.5 bar

Diffuser and magnetic column

D	With diffuser, with magnetic column
F	With diffuser, without magnetic column
O	Without diffuser, with magnetic column
E	Without diffuser, without magnetic column

Air breather

S	Without air breather
C	With air breather 10 µm
D	With anti-splash and air breather SAP050 10 µm
P	With anti-splash and air breather SAP050 10 µm pressurization 0.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Aux size 1	Aux size 2
G1	G3/4"	G3/8"	G1/2"
G2	G1"		
G3	G1 1/4"		
G4	3/4" NPT	3/8" NPT	1/2" NPT
G5	1" NPT		
G6	1 1/4" NPT		

Main Connections		Aux size 1	Aux size 2
G7	SAE 12 - 1 1/16" - 12 UN	SAE 6 - 9/16" - 18 UNF	SAE 8 - 3/4" - 16 UNF
G8	SAE 16 - 1 5/16" - 12 UN		
G9	SAE 20 - 1 5/8" - 12 UN		

Aux connection - see previous table

0	Not machined	**1**	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: MR100 | 1 | A10 | A | P01

Element series and size
MR100

Element length
1 | **2** | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

A	NBR
V	FPM

Execution

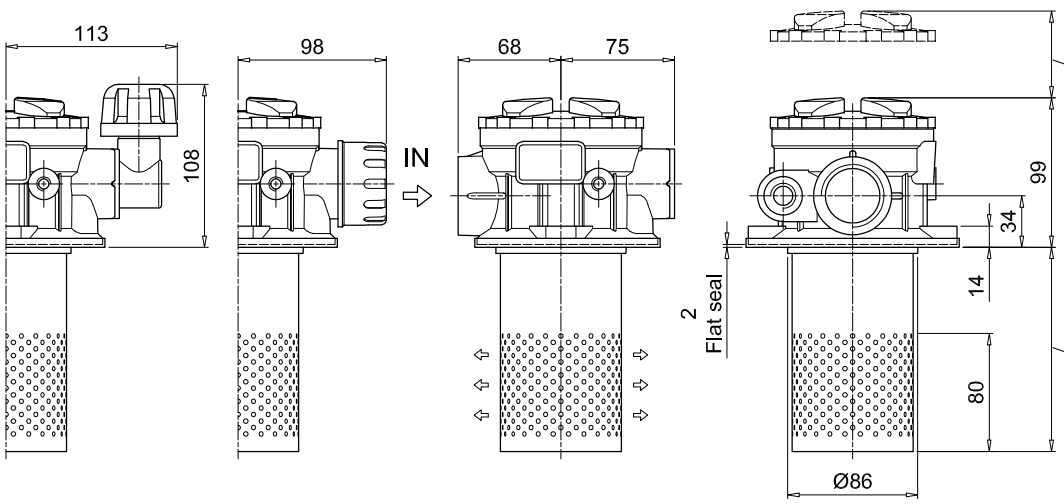
P01	MP Filtri standard
Pxx	Customized

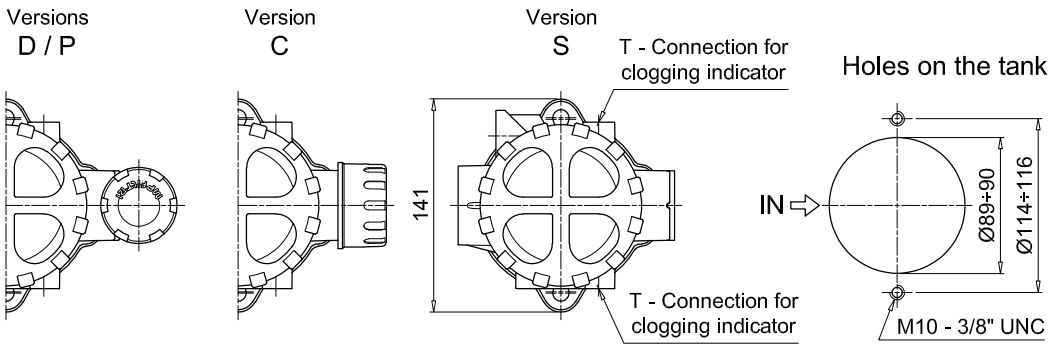
ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Additional features		page
DPT	Dipstick	225



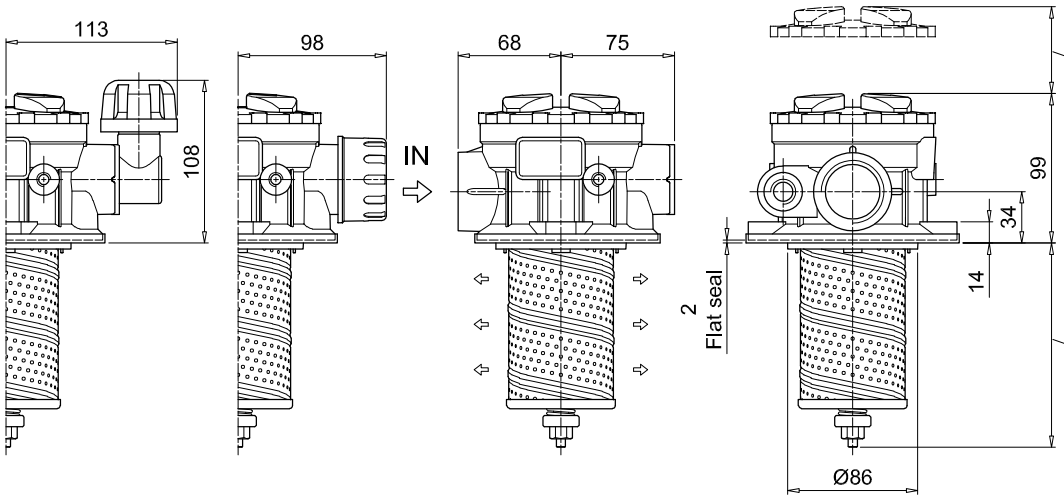


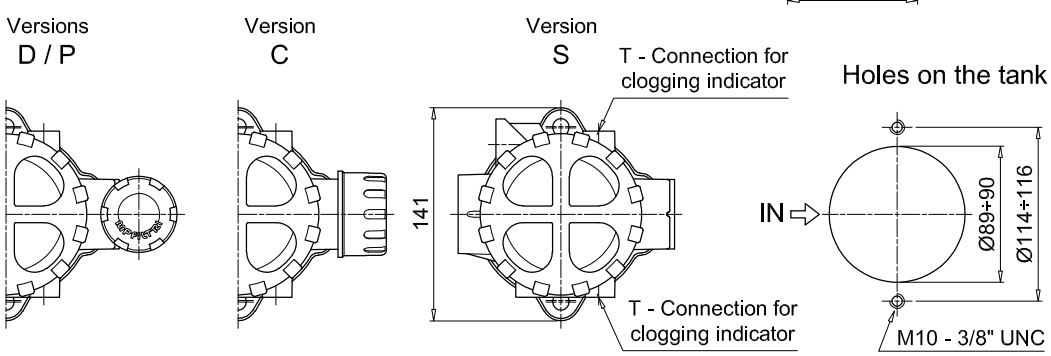
MPH114

with diffuser

Filter length	H1 [mm]	H2 [mm]
1	188	255
2	188	255
3	238	305
4	338	405
5	438	505

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT





MPH114

without diffuser

Filter length	H1 [mm]	H2 [mm]
1	129	190
2	173	235
3	223	285
4	323	385
5	423	485

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPH MPH120

Designation & Ordering code

COMPLETE FILTER

Configuration example: MPH120 | 1 | S | D | A | G1 | 1 | A10 | P01

Series and size
MPH120

Length
1 | **2** | **3** | **4** | **5**

Bypass valve

S	Without bypass	**C**	1.75 bar	**E**	2.5 bar

Diffuser and magnetic column

D	With diffuser, with magnetic column
F	With diffuser, without magnetic column
O	Without diffuser, with magnetic column
E	Without diffuser, without magnetic column

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Rear connections	Aux size 1	Aux size 2
G1	G3/4”	G3/4”	G3/8”	G1/2”
G2	G1”	G1”		
G3	G1 1/4”	G3/4”		
G4	3/4” NPT	3/4” NPT	3/8” NPT	1/2” NPT
G5	1” NPT	1” NPT		
G6	1 1/4” NPT	3/4” NPT		
G7	SAE 12 - 1 1/16” - 12 UN	SAE 12 - 1 1/16” - 12 UN	SAE 6 - 9/16” - 18 UNF	SAE 8 - 3/4” - 16 UNF
G8	SAE 16 - 1 5/16” - 12 UN	SAE 16 - 1 5/16” - 12 UN		
G9	SAE 20 - 1 5/8” - 12 UN	SAE 12 - 1 1/16” - 12 UN		

Aux connection - see previous table

0	Not machined	**1**	Aux size 1	**2**	Aux size 2

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: MR100 | 1 | A10 | A | P01

Element series and size
MR100

Element length
1 | **2** | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

A	NBR
V	FPM

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

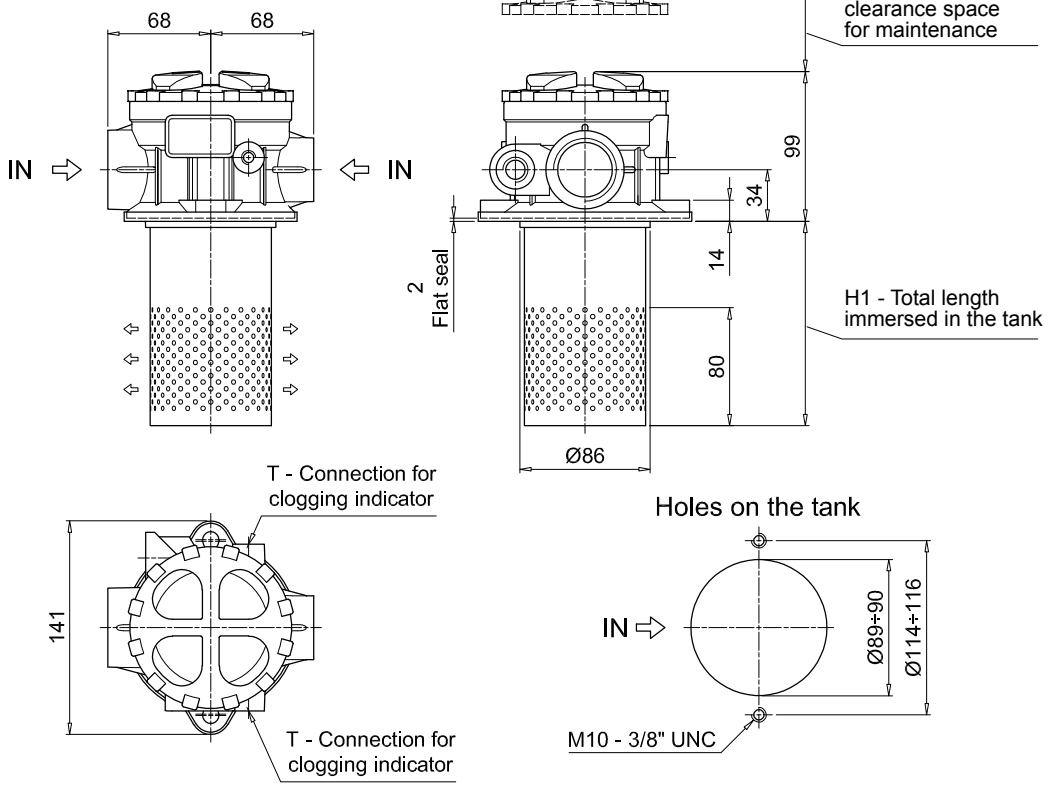
Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

Additional features

		page
DPT	Dipstick	225

		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

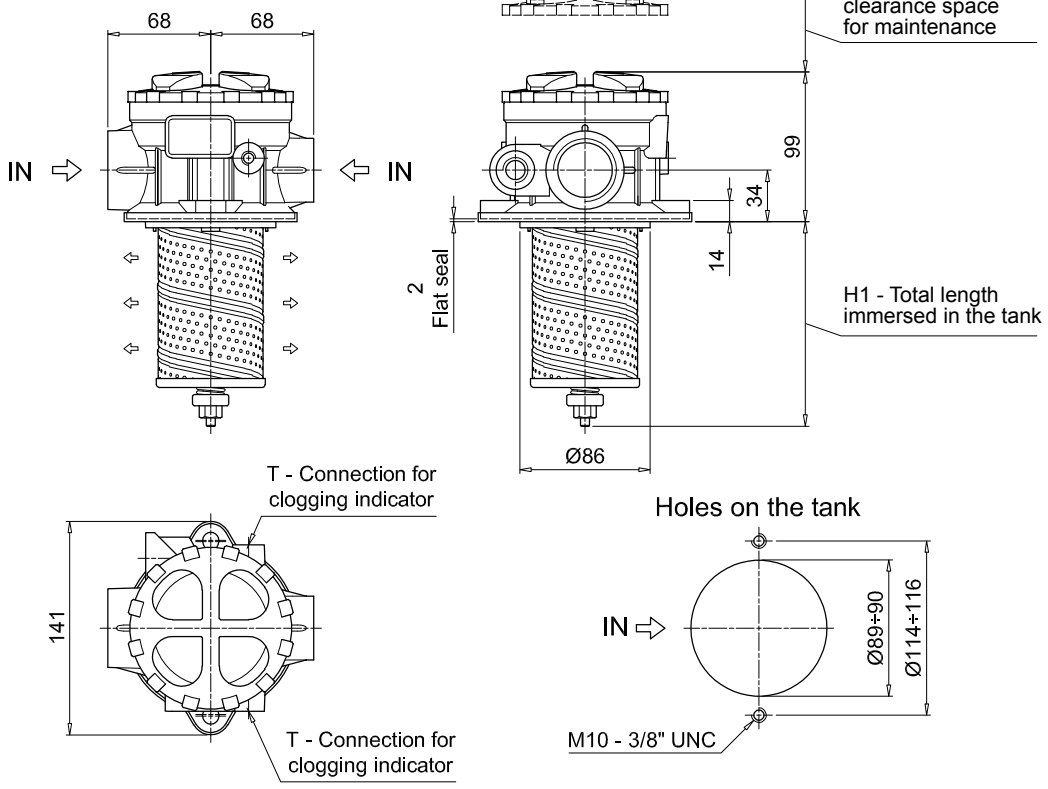


MPH120

with diffuser

Filter length	H1 [mm]	H2 [mm]
1	188	255
2	188	255
3	238	305
4	338	405
5	438	505

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPH104

without diffuser

Filter length	H1 [mm]	H2 [mm]
1	129	190
2	173	235
3	223	285
4	323	385
5	423	485

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPH MPH250

Designation & Ordering code

COMPLETE FILTER

Configuration example: MPH250 | 1 | C | D | S | A | G1 | A10 | P01

Series and size
MPH250

Length
1 | **2** | **3** | **4** |

Bypass valve

S	Without bypass	**C**	1.75 bar	**E**	2.5 bar

Diffuser and magnetic column

D	With diffuser, with magnetic column
F	With diffuser, without magnetic column
O	Without diffuser, with magnetic column
E	Without diffuser, without magnetic column

Air breather

S	Without air breather

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections / Rear connections

G1	G1 1/2"	-
G2	G1 1/2"	G1 1/4"
G4	1 1/2" NPT	-
G5	1 1/2" NPT	1 1/4" NPT
G7	SAE 24 - 1 7/8" - 12 UN	-
G8	SAE 24 - 1 7/8" - 12 UN	SAE 20 - 1 5/8" - 12 UN
F1	1 1/2" SAE 3000 psi/M	-
F2	1 1/2" SAE 3000 psi/M	1 1/4" SAE 3000 psi/M
F3	1 1/2" SAE 3000 psi/UNC	-
F4	1 1/2" SAE 3000 psi/UNC	1 1/4" SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: MR250 | 1 | A10 | A | P01

Element series and size
MR250

Element length
1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

A	NBR
V	FPM

Execution

P01	MP Filtri standard
Pxx	Customized

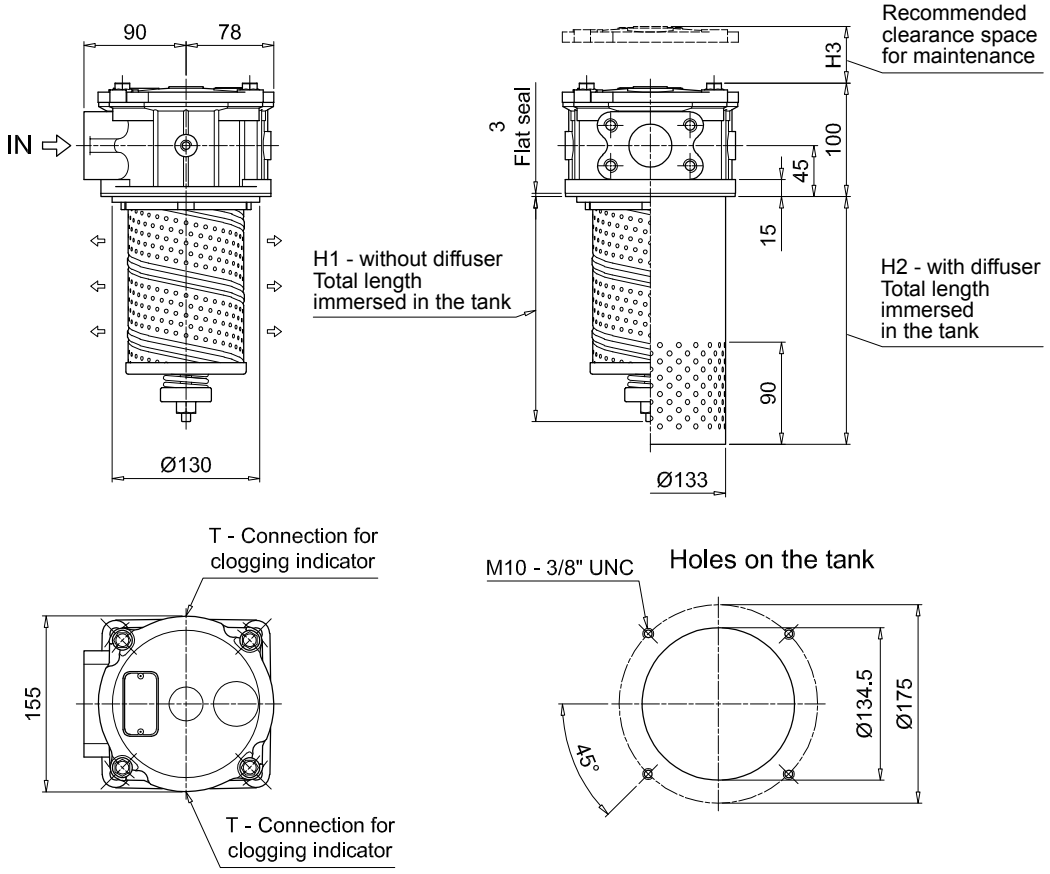
ACCESSORIES

Indicators

		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

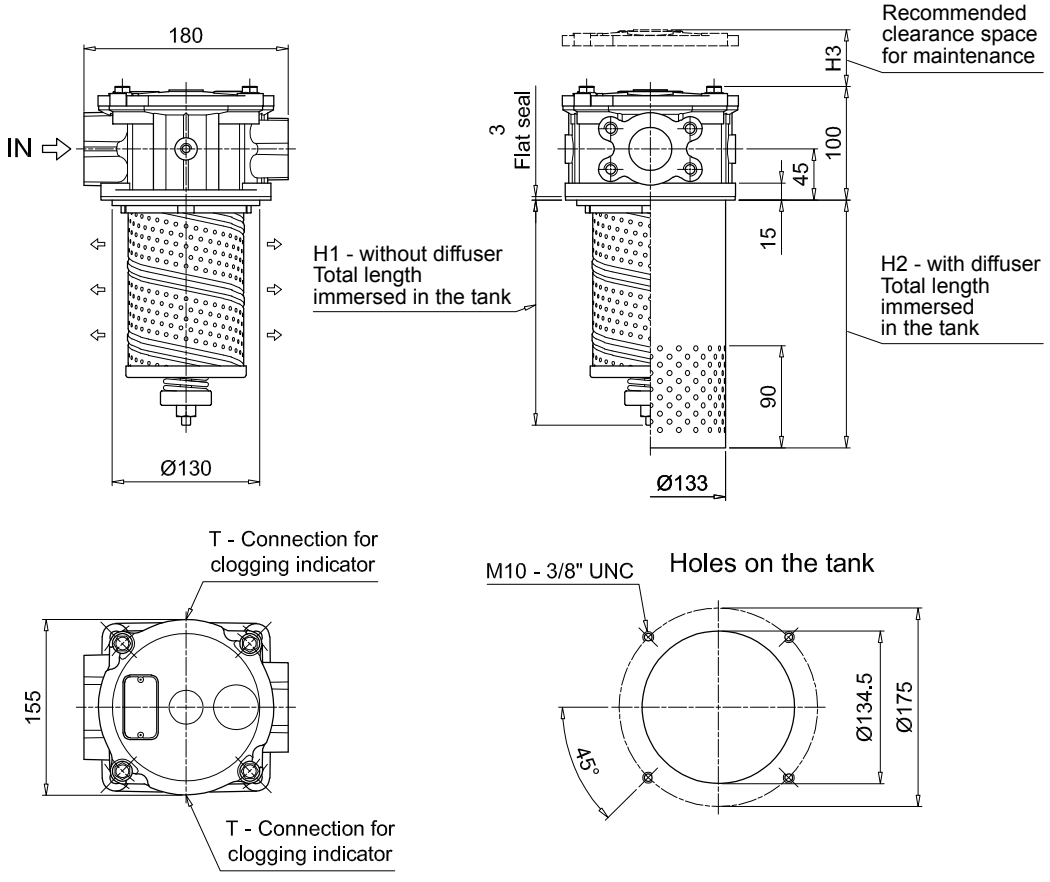
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216

Dimensions



MPH250			
1 connection port			
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
1	182	247	255
2	231	247	305
3	302	317	375
4	502	507	580

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT



MPH250			
2 connection ports			
Filter length	**H1 [mm]**	**H2 [mm]**	**H3 [mm]**
1	182	247	255
2	231	247	305
3	302	317	375
4	502	507	580

Connections	T
G1-G2-G3	G1/8"
G4-G5-G6-G7-G8-G9	1/8" NPT

MPH MPH630 - MPH660

Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	MPH630	1	S	E	S	W	F1	M25	P01
Configuration example 2:	MPH660	1	C	D	S	A	F4	A10	P01

Series and size

MPH630

MPH660

Length	MPH630	MPH660
1	•	
2	•	
3	•	
4	•	•
5	•	•

Bypass valve

S Without bypass **C** 1.75 bar **E** 2.5 bar

Diffuser and magnetic column

D With diffuser, with magnetic column

F With diffuser, without magnetic column

O Without diffuser, with magnetic column

E Without diffuser, without magnetic column

Air breather

S Without air breather

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections MPH630	Rear connections
F1 2 1/2" SAE 3000 psi/M	-
F2 2 1/2" SAE 3000 psi/M	2" SAE 3000 psi/M
F3 2 1/2" SAE 3000 psi/UNC	-
F4 2 1/2" SAE 3000 psi/UNC	2" SAE 3000 psi/UNC

Connections MPH660

F1 3" SAE 3000 psi/M

F2 4" SAE 3000 psi/M

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01 MP Filtri standard

Pxx Customized

FILTER ELEMENT

Configuration example 1:	MR630	1	M25	A	P01
Configuration example 2:	MR630	1	A10	A	P01

Element series and size

MR630

Element length

1 | **2** | **3** | **4** | **5** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

A NBR

V FPM

Execution

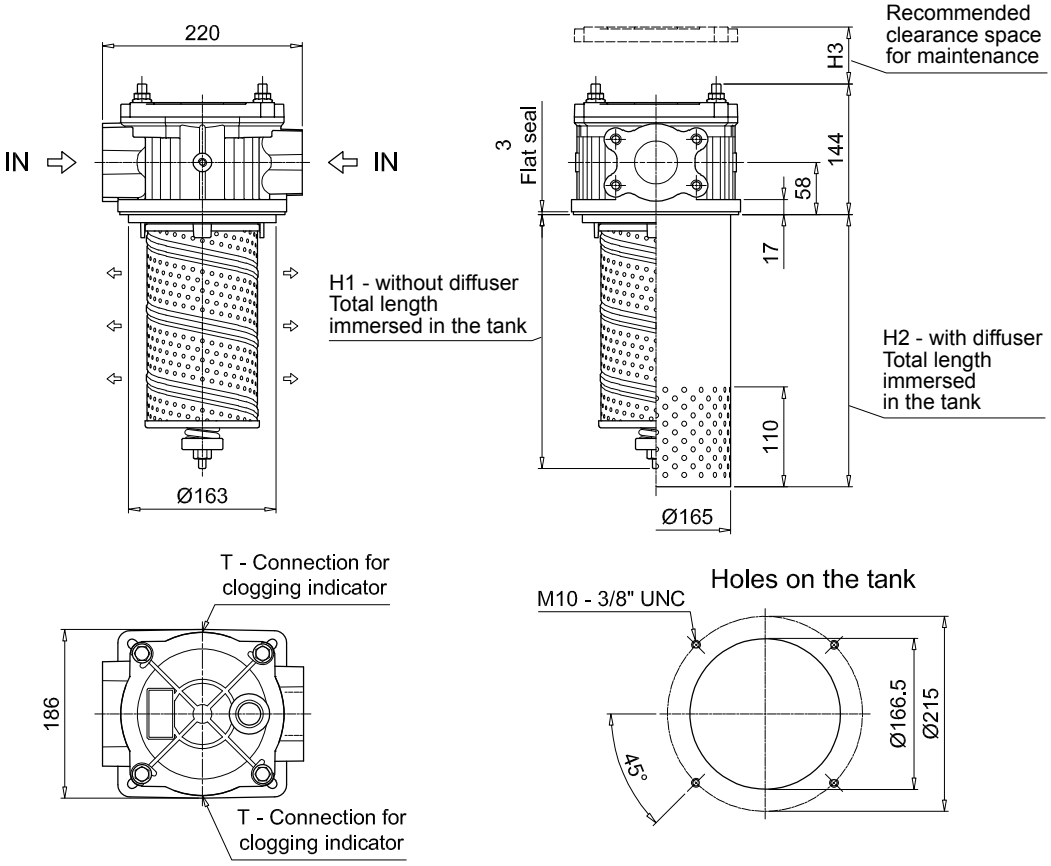
P01 MP Filtri standard

Pxx Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

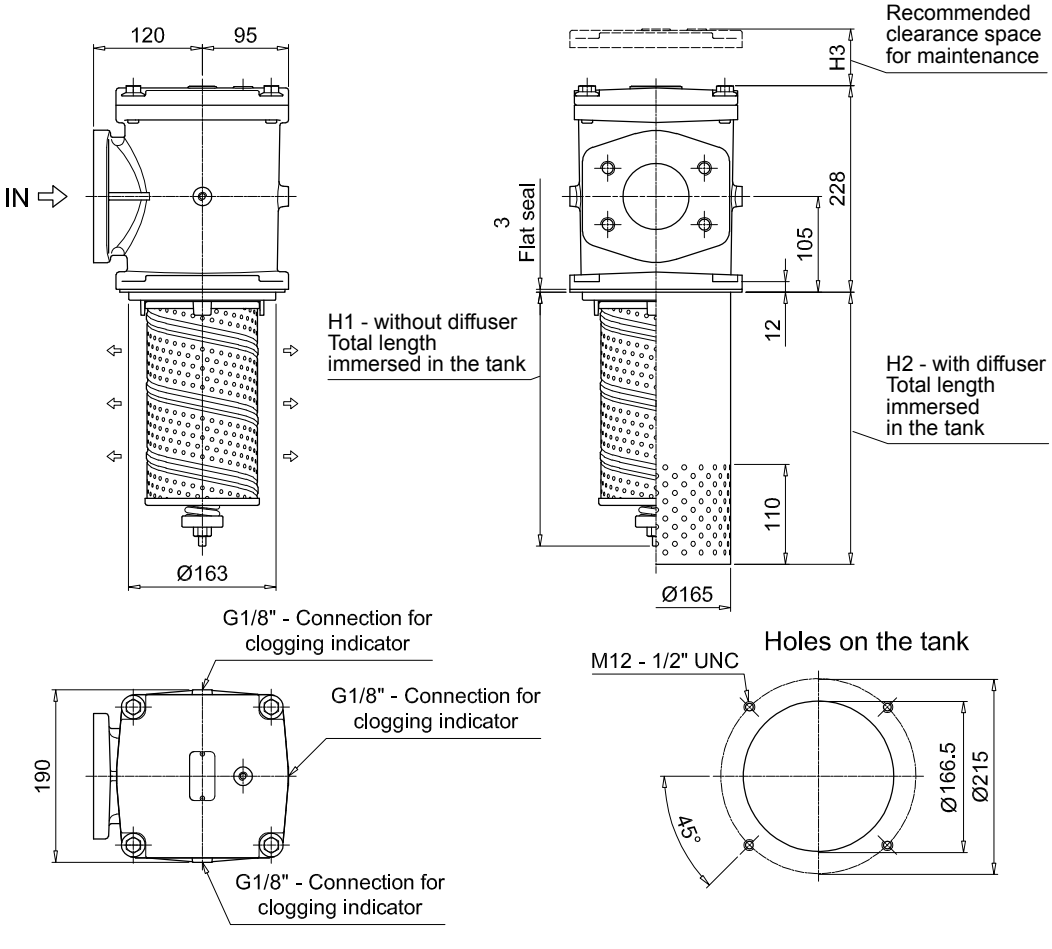
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216



MPH630

Filter length	H1 [mm]	H2 [mm]	H3 [mm]
1	260	278	330
2	340	358	410
3	440	458	510
4	528	548	600
5	829	848	900

Connections	T
F1 - F2	G1/8"
F3 - F4	1/8" NPT



MPH660

Filter length	H1 [mm]	H2 [mm]	H3 [mm]
4	538	548	610
5	838	848	910

MPH MPH850

Designation & Ordering code

COMPLETE FILTER

Configuration example: MPH850 | 1 | C | D | S | A | F1 | A10 | P01

Series and size
MPH850

Length
1 | **2** | **3** | **4** |

Bypass valve

S	Without bypass	**C**	1.75 bar

Diffuser and magnetic column

D	With diffuser, with magnetic column
F	With diffuser, without magnetic column
O	Without diffuser, with magnetic column
E	Without diffuser, without magnetic column

Air breather

S	Without air breather

Seals and treatments			Filtration rating Axx	Mxx	Pxx
A	NBR		•	•	•
V	FPM		•	•	•
W	NBR	head anodized	•	•	
Z	FPM	head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Main Connections		Rear connections
F1	UNI 2223 DN 100 PN 10/16	3” SAE 3000 psi/M
F2	UNI 2223 DN 100 PN 10/16	3” SAE 3000 psi/UNC
F5	Not machined	3” SAE 3000 psi/M
F6	Not machined	3” SAE 3000 psi/UNC
F7	4” SAE 3000 psi/M	3” SAE 3000 psi/M
F8	4” SAE 3000 psi/UNC	3” SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: MR850 | 1 | A10 | A | P01

Element series and size
MR850

Element length
1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

A	NBR
V	FPM

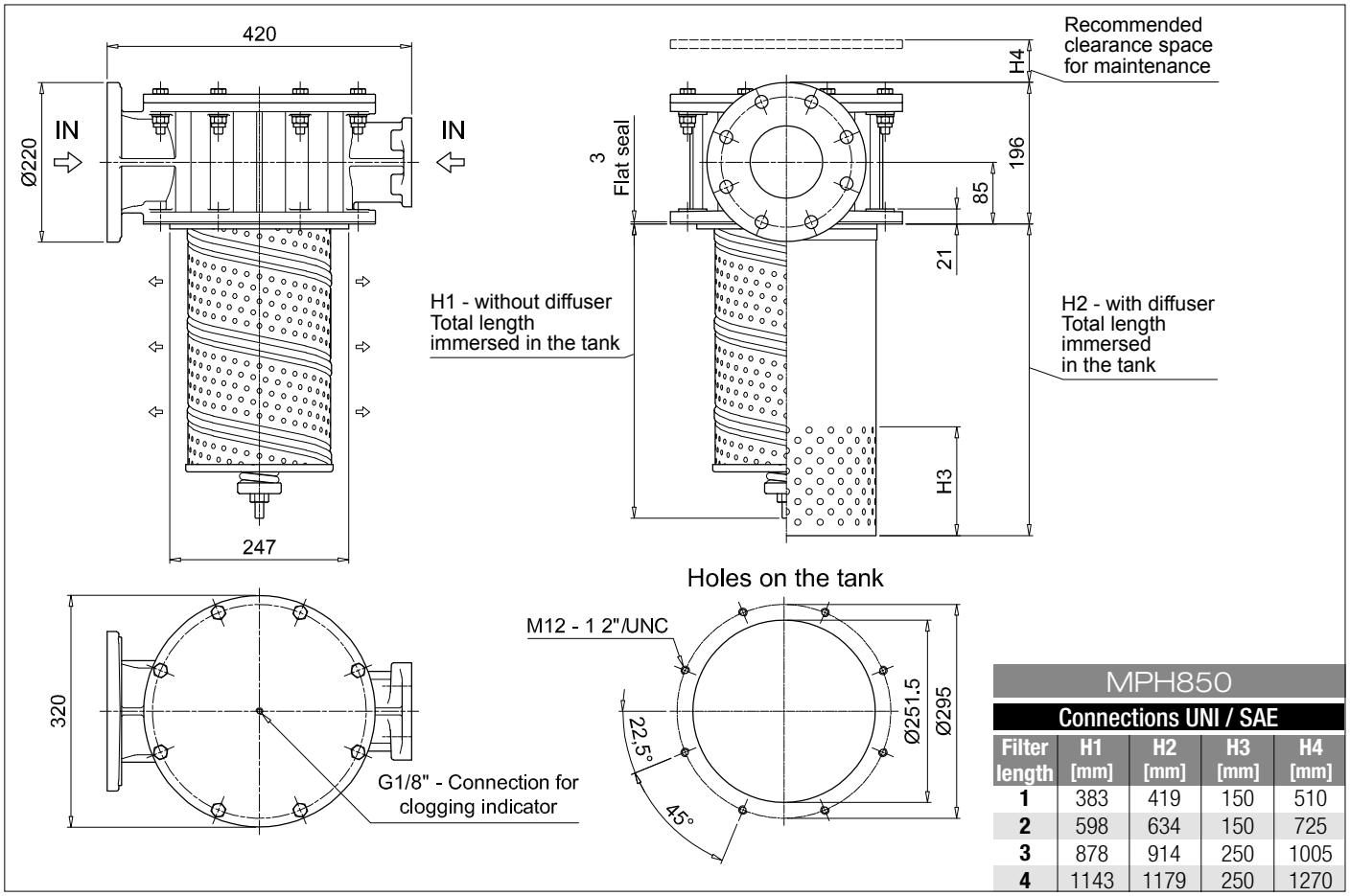
Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators		page
BVA	Axial pressure gauge	216
BVR	Radial pressure gauge	216
BVP	Visual pressure indicator with automatic reset	217
BVQ	Visual pressure indicator with manual reset	217

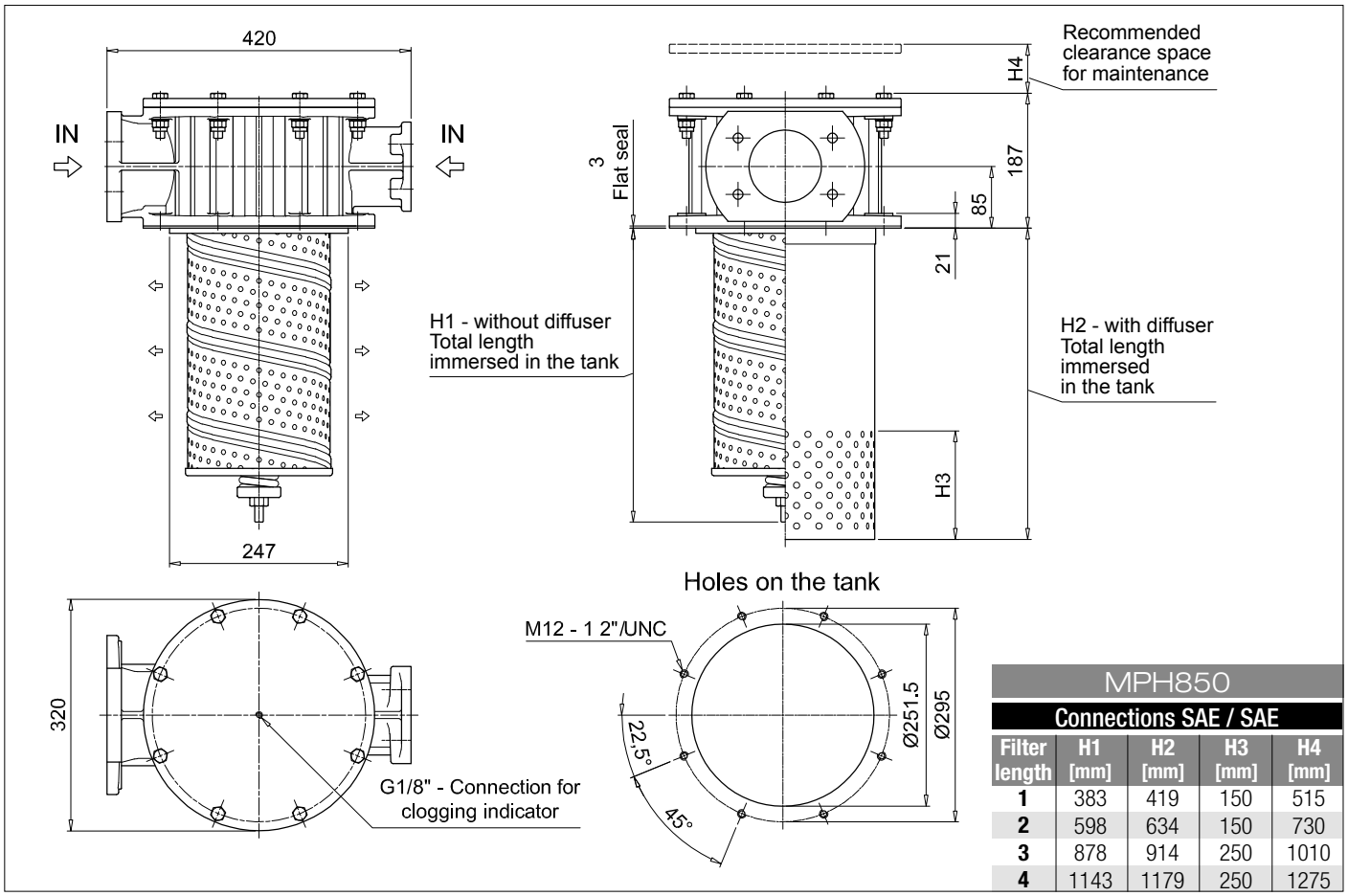
		page
BEA	Electrical pressure indicator	215
BEM	Electrical pressure indicator	215
BLA	Electrical / visual pressure indicator	215-216



MPH850

Connections UNI / SAE

Filter length	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]
1	383	419	150	510
2	598	634	150	725
3	878	914	250	1005
4	1143	1179	250	1270



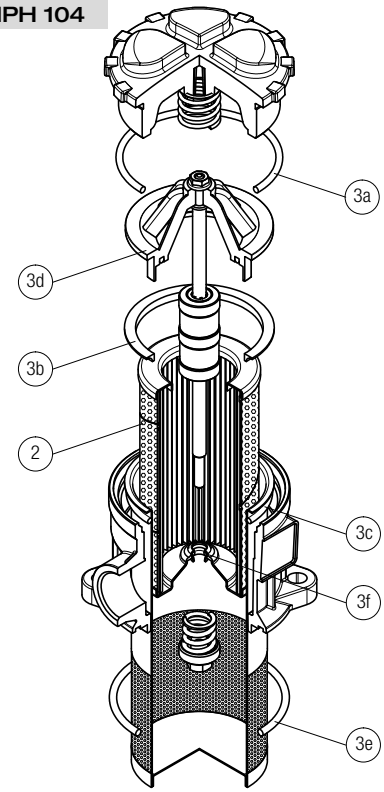
MPH850

Connections SAE / SAE

Filter length	H1 [mm]	H2 [mm]	H3 [mm]	H4 [mm]
1	383	419	150	515
2	598	634	150	730
3	878	914	250	1010
4	1143	1179	250	1275

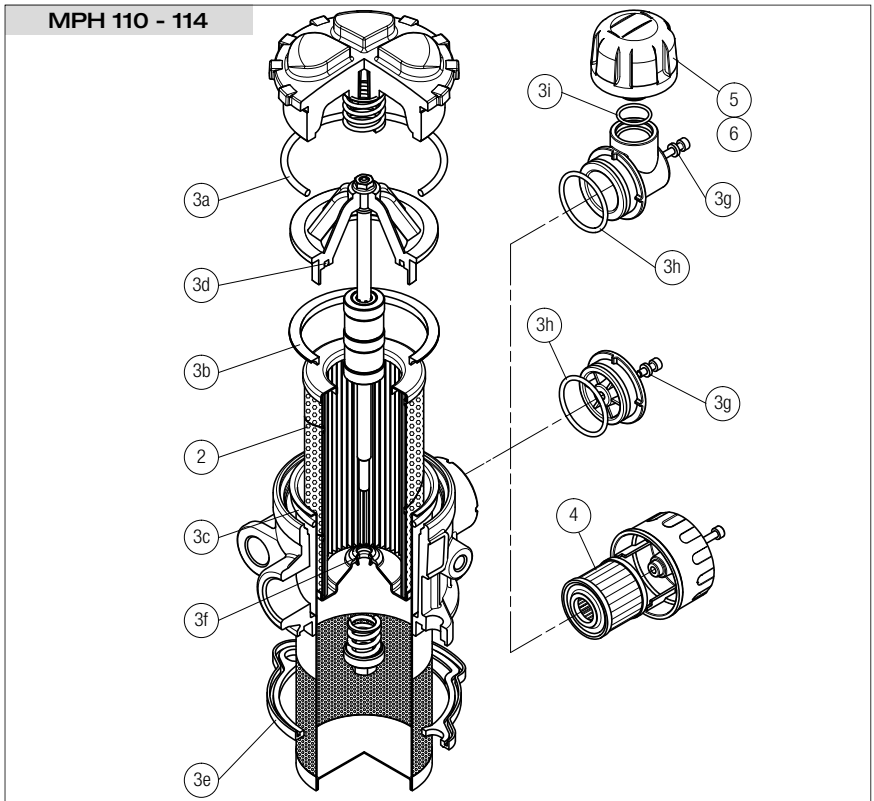
Order number for spare parts

MPH 104



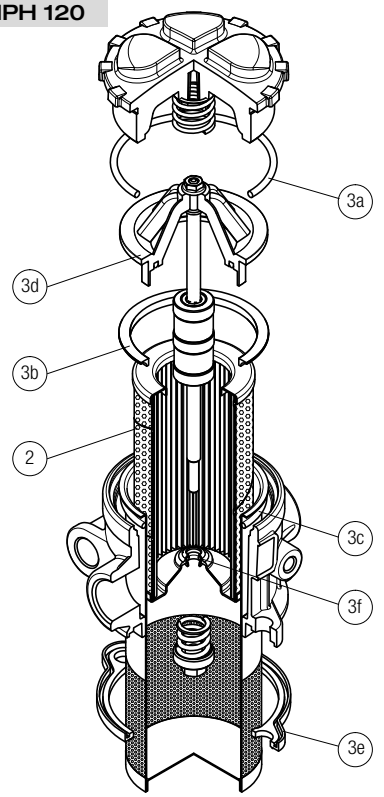
Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPH 104	See order table	02050390	02050409

MPH 110 - 114



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3i)		Q.ty: 1 pc. 4	Q.ty: 1 pc. 5	Q.ty: 1 pc. 6
Filter series	Filter element	Seal Kit code number NBR	FPM	Air breather filter element - version: C	D	P
MPH 110	See order table	02050565	02050566	10 µm A3L03	10 µm SAP50G3L03A0P01	10 µm SAP50G3L03A1P01
MPH 114		02050582	02050583			

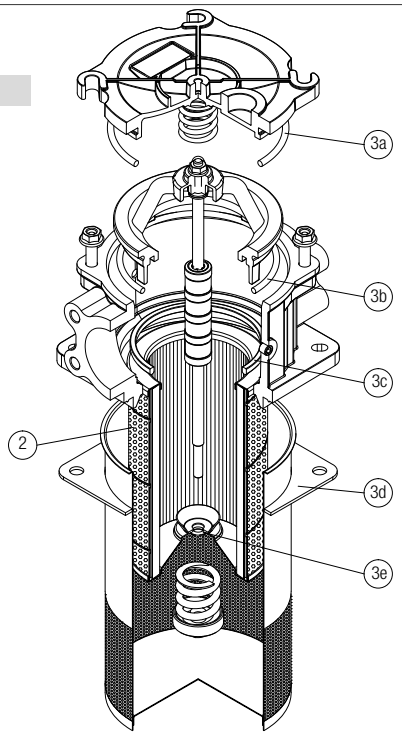
MPH 120



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPH 120	See order table	02050567	02050568

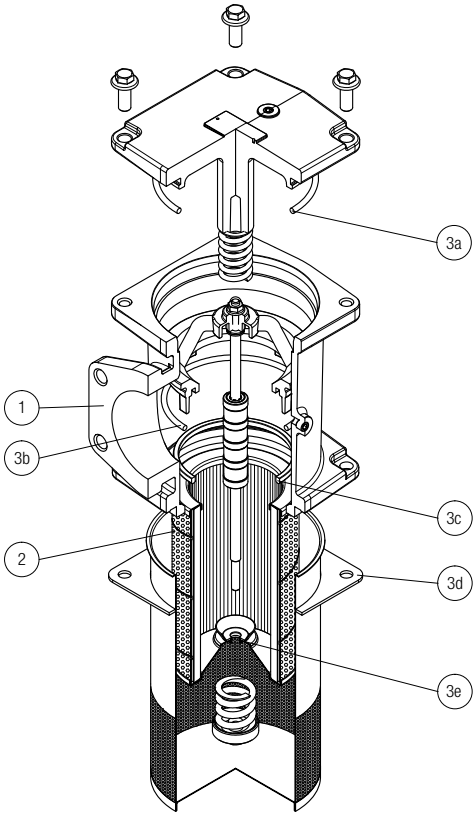
Order number for spare parts

MPH 250 - 630

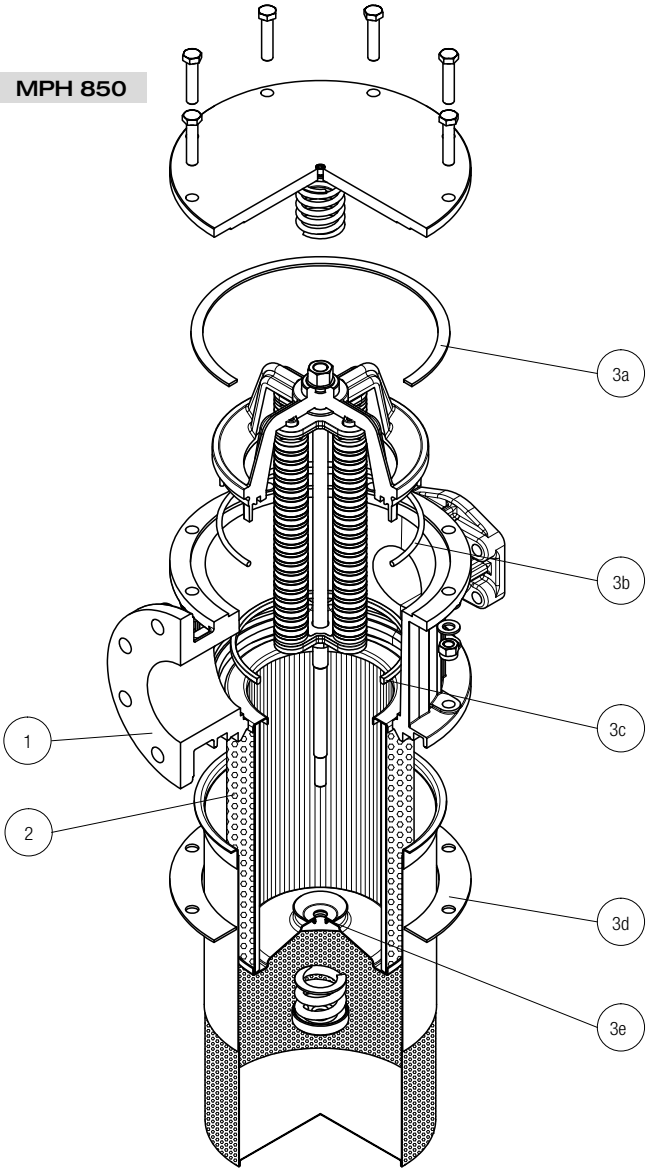


Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPH 250	See order table	02050151	02050152
MPH 630		02050153	02050154

MPH 660



MPH 850



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
MPH 660	See order table	02050153	02050154
MPH 850		02050155	02050156

Technical data

Return filter **Maximum pressure up to 10 bar - Flow rate up to 3000 l/min**

Filter housing materials
- Insert assembly:
  Polyamide, GF reinforced (only for: MPI 100)
  Aluminium (the other insert assemblies)
- Diffuser: Zinc Plated Steel
- Valve: Steel

Pressure
Working pressure: 1 MPa (10 bar)

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Note
MPI filters are provided for vertical mounting

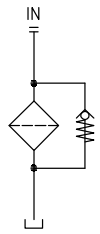
Bypass valve
- Opening pressure 175 kPa (1.75 bar)
- Opening pressure 250 kPa (2.5 bar) (except for MPI 850)

Δp element type
- Microfibre filter elements - series MR: 10 bar
- Fluid flow through the filter element from IN to OUT.

Weights [kg] and volumes [dm³]

	Weights [kg]					Volumes [dm³]				
	Lenght	1	2	3	4	Lenght	1	2	3	4
MPI 100		0.90	1.00	1.20	1.50		0.90	0.90	1.20	1.60
MPI 250		2.20	2.50	2.90	4.30		3.50	3.50	4.50	7.00
MPI 630		3.40	3.90	4.30	5.40		5.80	7.40	9.50	11.4
MPI 850		15.2	18.2	21.2	25.2		8.80	12.2	16.7	20.8

Hydraulic symbol



Designation & Ordering code

COMPLETE FILTER

Configuration example 1: MPI100 | 1 | C | D | A | A10 | P01

Configuration example 2: MPI630 | 5 | E | D | Z | M25 | P01

Series and size

- **MPI100**
- **MPI250**
- **MPI630**
- **MPI850**

Length	MPI100	MPI250	MPI630	MPI850
1	•	•	•	•
2	•	•	•	•
3	•	•	•	•
4	•	•	•	•
5	•		•	

Bypass valve	MPI100	MPI250	MPI630	MPI850
S Without	•	•	•	•
C 1.75 bar	•	•	•	•
E 2.5 bar	•	•	•	

Diffuser and magnetic column

- **D** With diffuser, with magnetic column
- **F** With diffuser, without magnetic column
- **O** Without diffuser, with magnetic column
- **E** Without diffuser, without magnetic column

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

- **P01** MP Filtri standard
- **Pxx** Customized

FILTER ELEMENT

Configuration example 1: MR100 | 1 | A10 | A | P01

Configuration example 2: MR630 | 5 | M25 | V | P01

Element series and size

- **MR100**
- **MR250**
- **MR630**
- **MR850**

Element length	Size 100	Size 250	Size 630	Size 850
1	•	•	•	•
2	•	•	•	•
3	•	•	•	•
4	•	•	•	•
5	•		•	

Filtration rating (filter media)

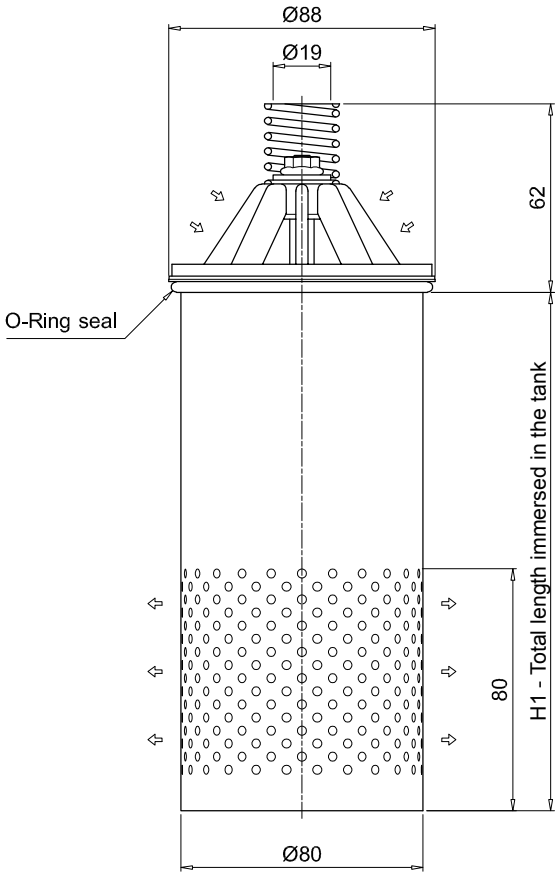
A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

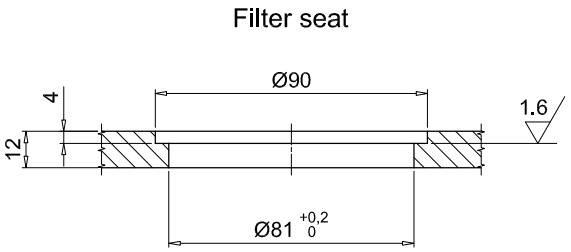
Seals

- **A** NBR
- **V** FPM

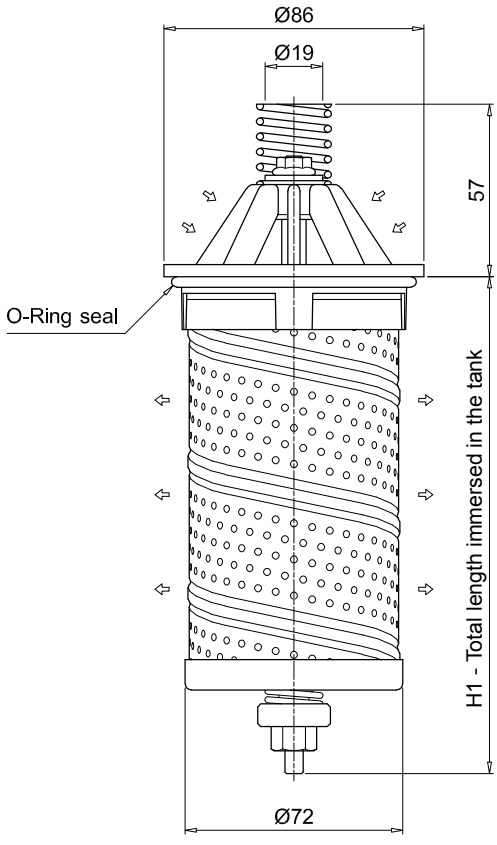
Execution

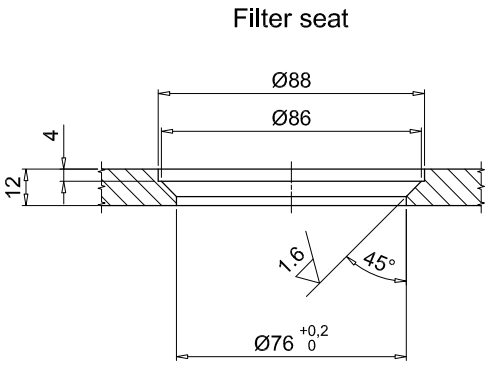
- **P01** MP Filtri standard
- **Pxx** Customized





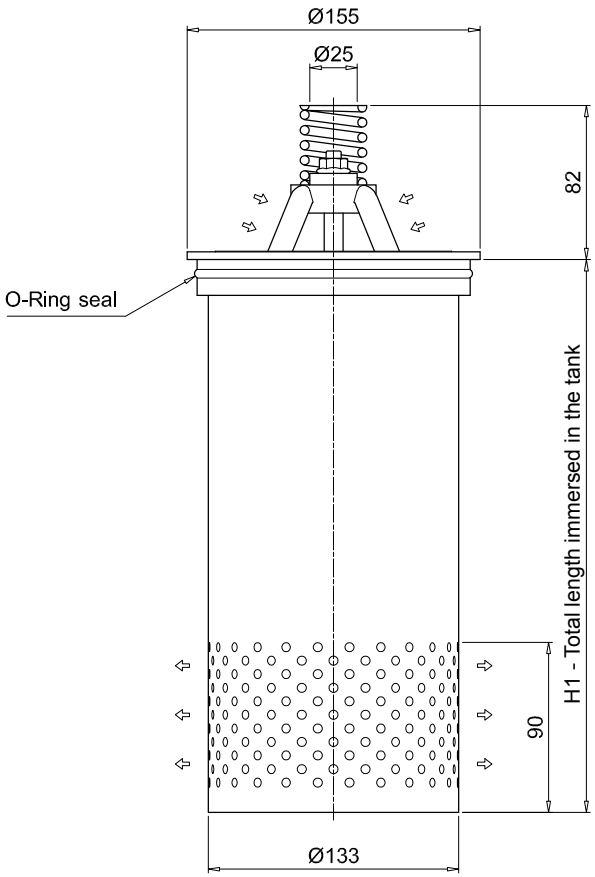
MPI100 with diffuser	
Filter length	H1 [mm]
1	198
2	198
3	248
4	348
5	448



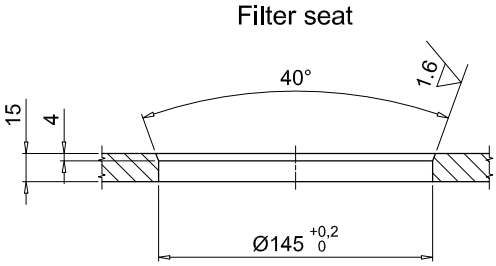


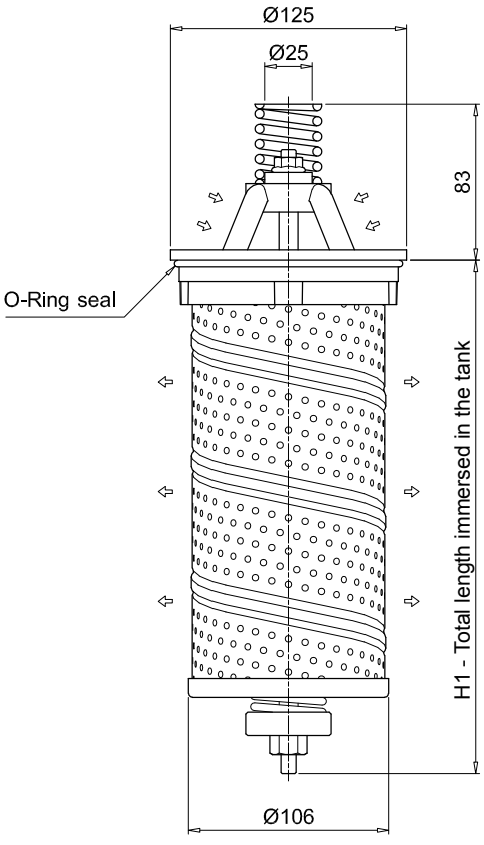
MPI100 without diffuser	
Filter length	H1 [mm]
1	141
2	185
3	235
4	335
5	435

Dimensions

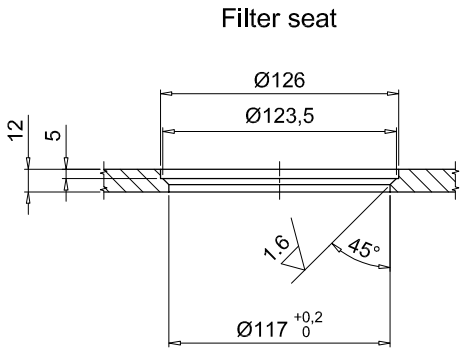


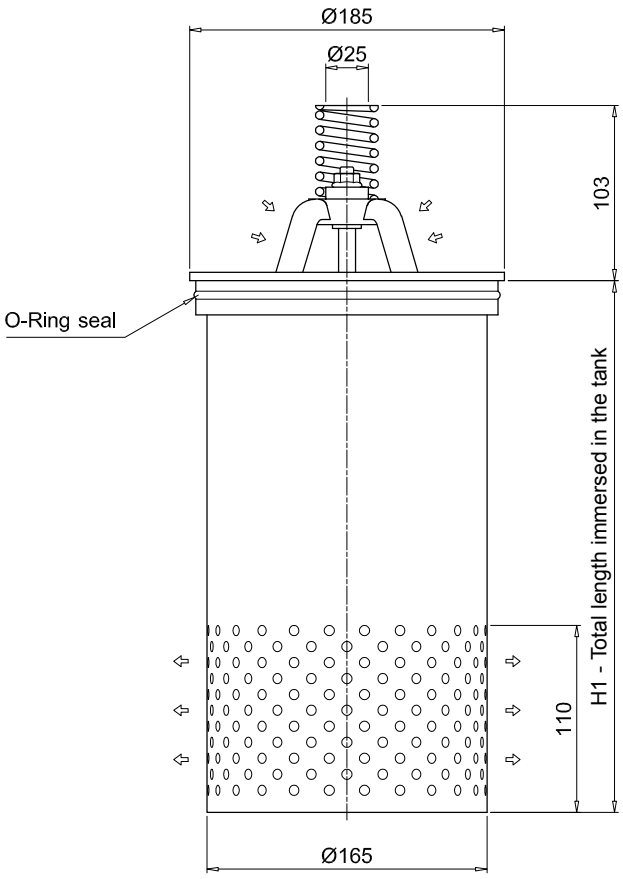
MPI250 with diffuser	
Filter length	**H1 [mm]**
1	266
2	266
3	336
4	524

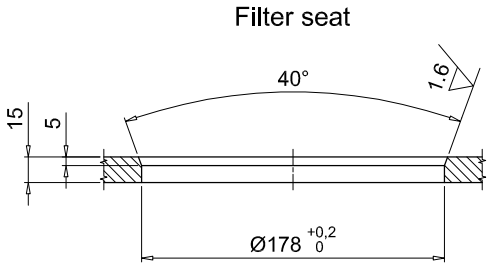




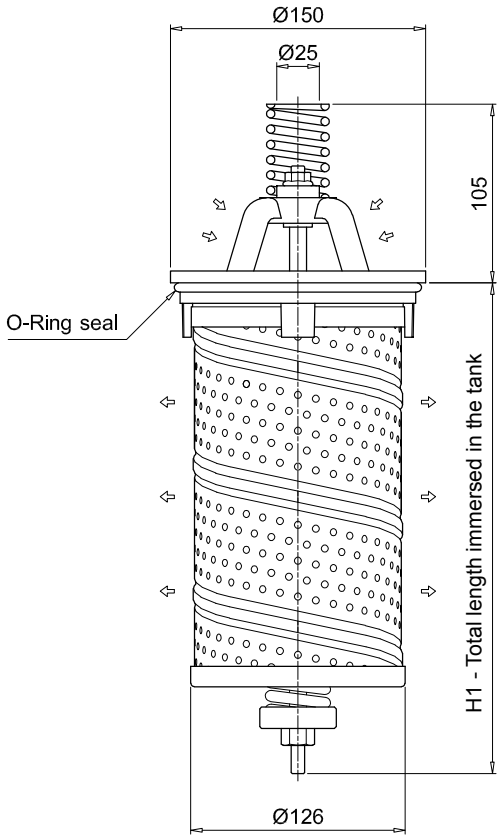
MPI250 without diffuser	
Filter length	**H1 [mm]**
1	193
2	243
3	313
4	516

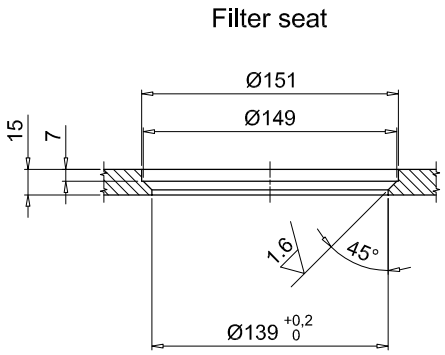






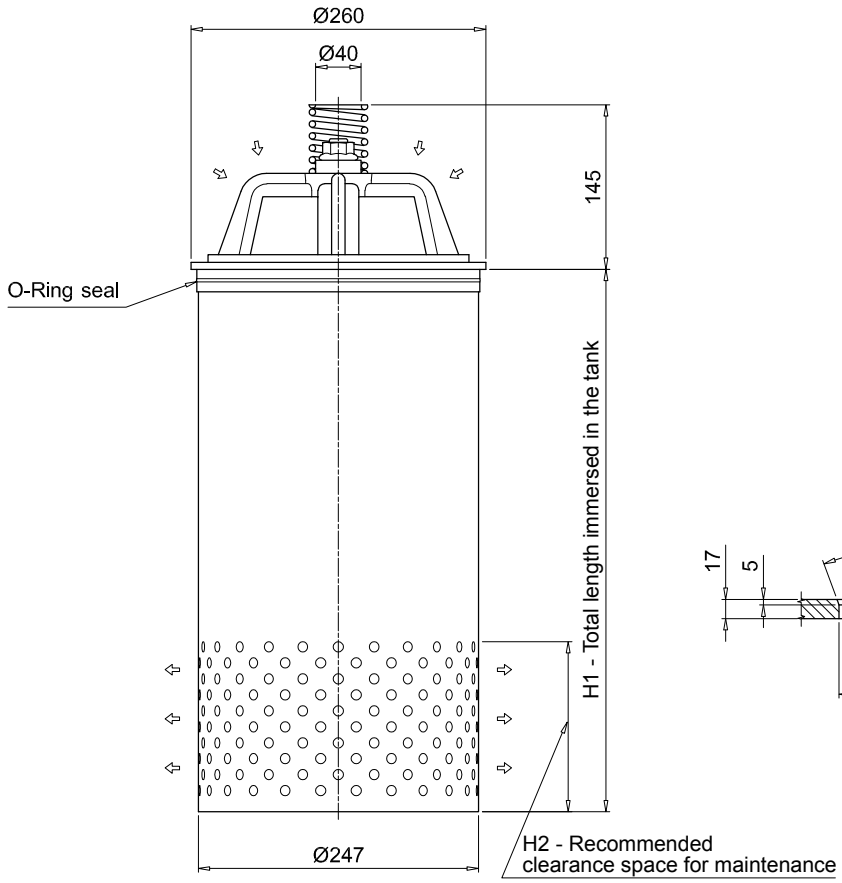
MPI630 with diffuser	
Filter length	H1 [mm]
1	298
2	378
3	478
4	568
5	868





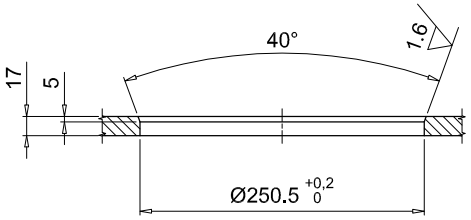
MPI630 without diffuser	
Filter length	H1 [mm]
1	275
2	355
3	455
4	540
5	841

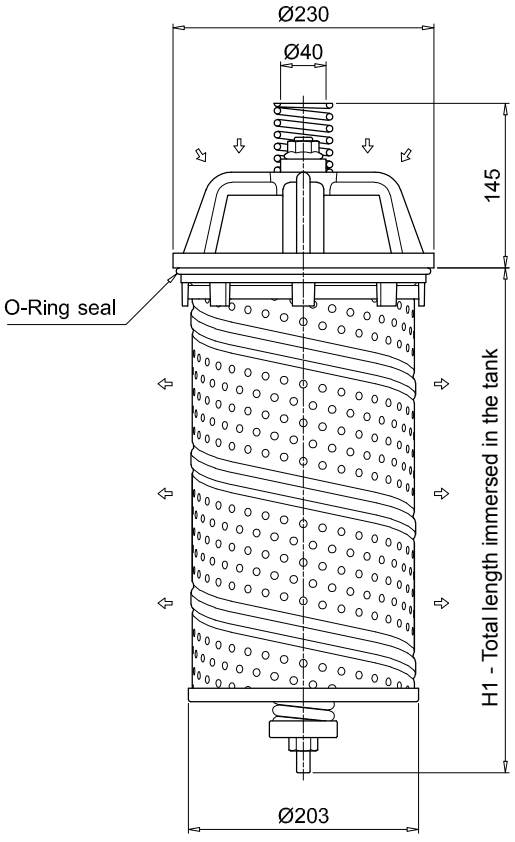
Dimensions



MPI850 with diffuser		
Filter length	H1 [mm]	H2 [mm]
1	427	150
2	642	150
3	922	250
4	1187	250

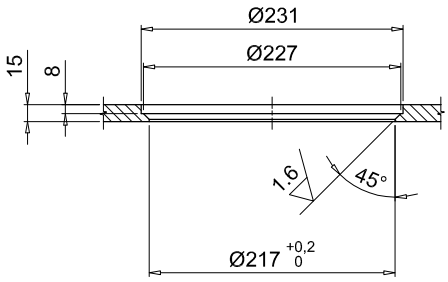
Filter seat





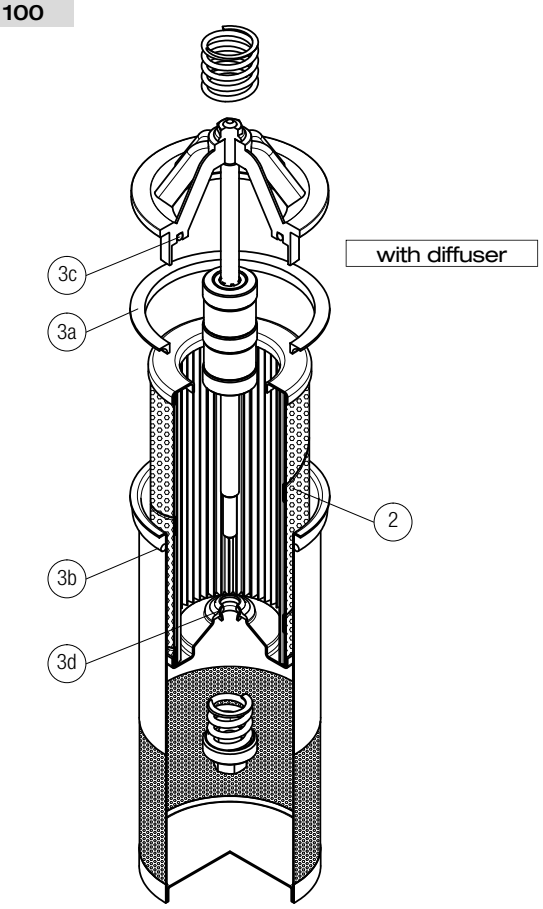
MPI850 without diffuser	
Filter length	H1 [mm]
1	405
2	620
3	900
4	1165

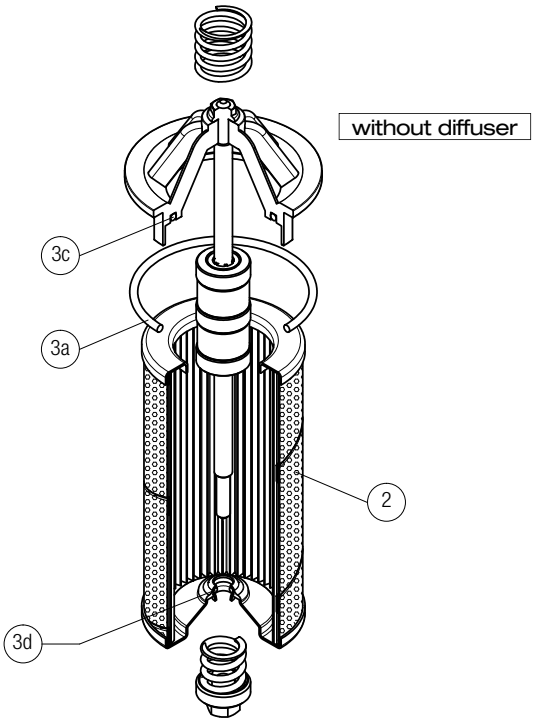
Filter seat



Order number for spare parts

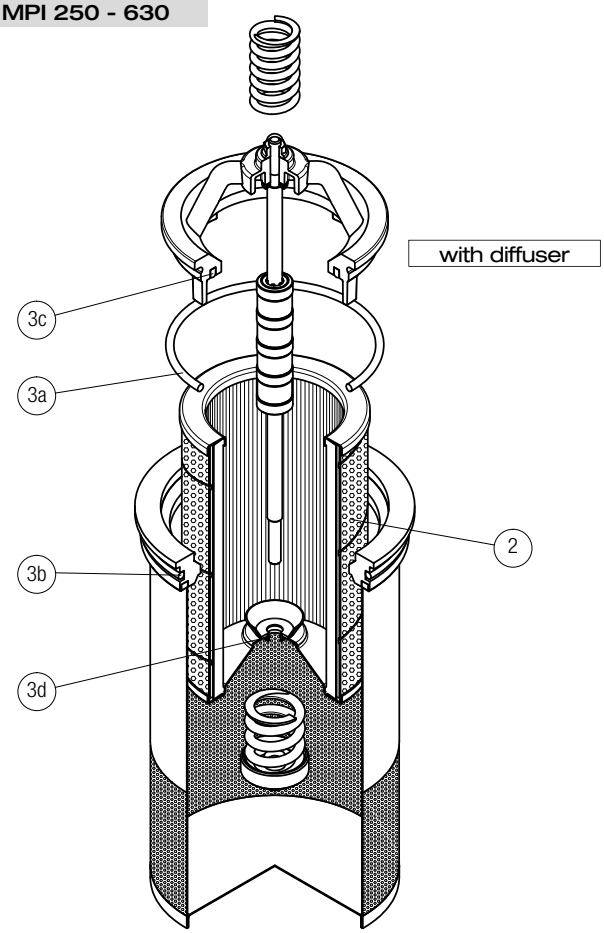
MPI 100

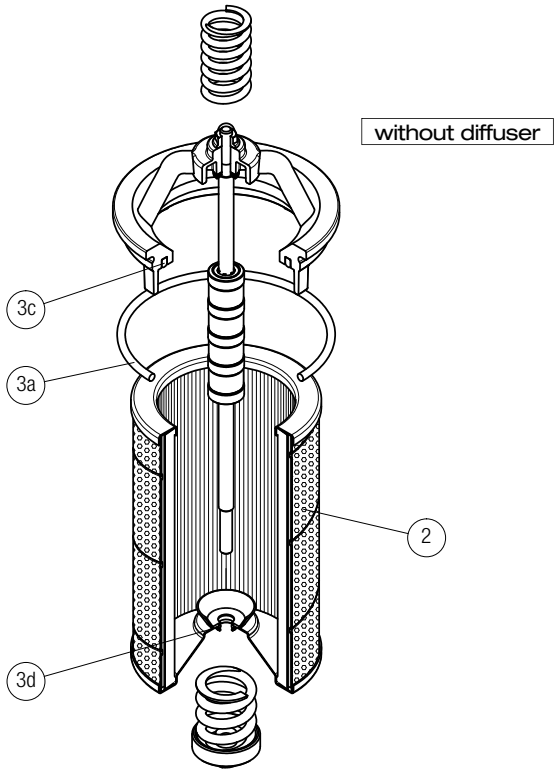




Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPI 100	See order table	02050145	02050146

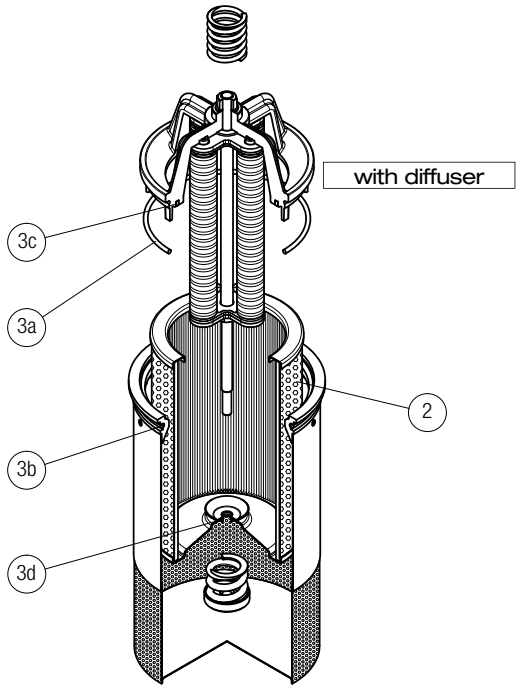
MPI 250 - 630

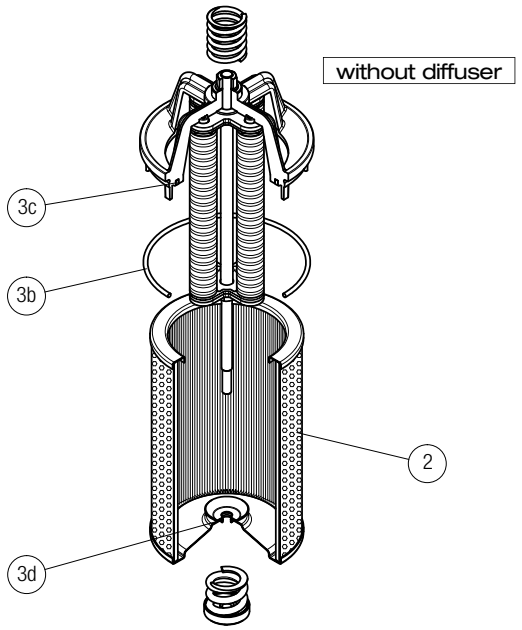




Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPI 250	See order table	02050147	02050148
MPI 630		02050112	02050113

MPI 850





Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
MPI 850	See order table	02050114	02050115

FRI series

Maximum pressure up to 20 bar - Flow rate up to 1500 l/min

Technical data

Return filter **Maximum pressure up to 20 bar - Flow rate up to 1500 l/min**

Filter housing materials
- Filter body:
  Aluminium: FRI 255
  Anodized Aluminium: FRI 025-040-100-250-630
  Phosphated Steel: FRI 850

- Cover:
  Polyamide, GF reinforced (only for: FRI 255)
  Anodized Aluminium (the other insert assemblies)

- Valve:
  Polyamide, GF reinforced - Steel

Pressure
Working pressure: 2 MPa (20 bar)

Bypass valve
Opening pressure 240 kPa (2.4 bar)

Δp element type
- Microfibre filter elements - series N: 10 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

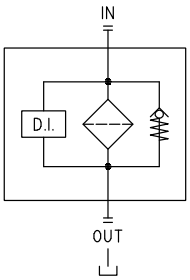
Note
FRI filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

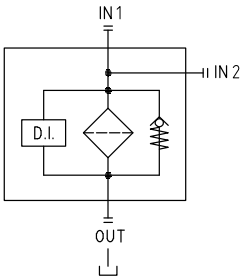
	Weights [kg]	Volumes [dm³]
	Lenght 1	Lenght 1
FRI 025	1.0	0.28
FRI 040	2.0	0.70
FRI 100	3.8	1.09
FRI 250	6.3	2.60
FRI 255	4.2	3.20
FRI 630	13.8	7.05
FRI 850	48.0	21.50

Hydraulic symbols

Style
2 connections + Diff. indic.
FRI 255-850

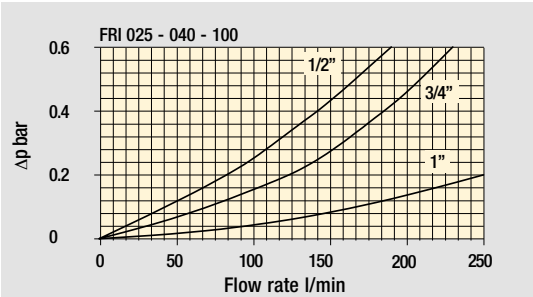


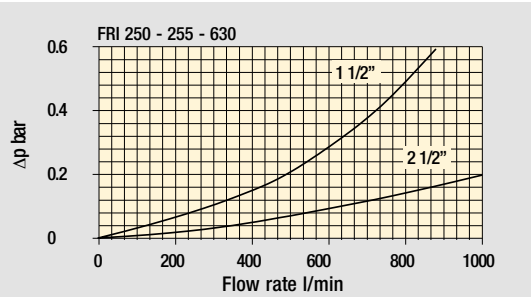
Style
3 connections + Diff. indic
FRI 025-040-100-250-630

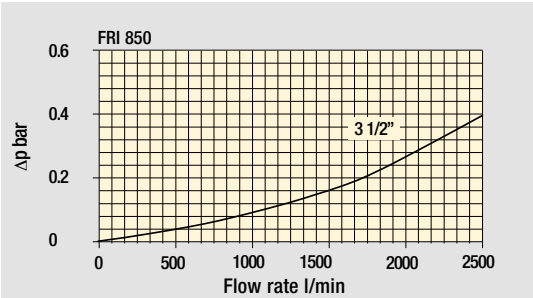


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

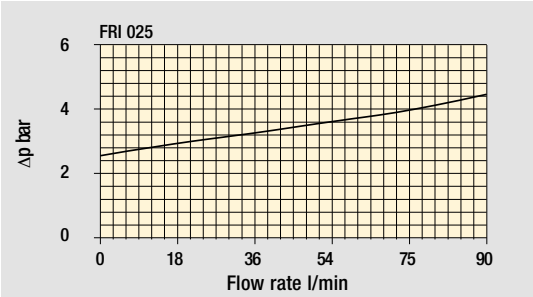
Filter housings Δp pressure drop

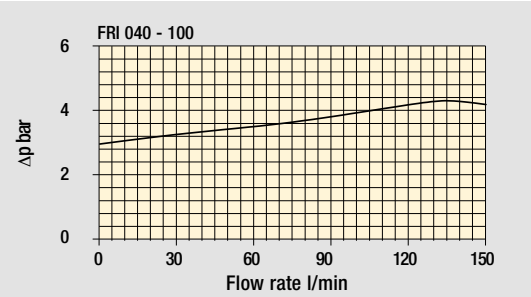


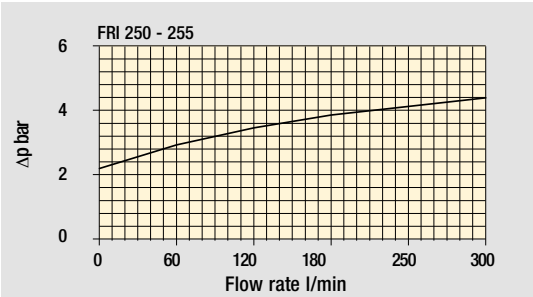


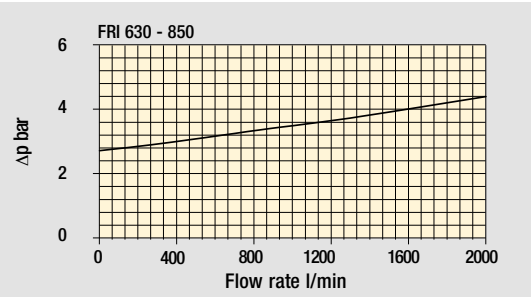


Bypass valve pressure drop









Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	FRI025	B	A	G1	A25	N	P01
Configuration example 2:	FRI040	S	W	G2	M25	N	P01

Series and size
- **FRI025**
- **FRI040**

Bypass valve
- **B** With bypass
- **S** Without bypass

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections for FRI025	Connections for FRI040
G1 G1/2”	G3/4”
G2 1/2” NPT	3/4” NPT
G3 SAE 8 - 3/4” - 16 UNF	SAE 12 - 1 1/16” - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
- **N** 10 bar

Execution
- **P01** MP Filtri standard
- **Pxx** Customized

FILTER ELEMENT

Configuration example 1:	CU025	A25	N	P01
Configuration example 2:	CU040	M25	W	P01

Element series and size
- **CU025**
- **CU040**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
N	NBR	•	•	•
V	FPM	•	•	•
W	NBR	•	•	
Z	FPM	•	•	

filter element compatible with fluids HFA-HFB-HFC

Execution
- **P01** MP Filtri standard
- **Pxx** Customized

ACCESSORIES

Indicators

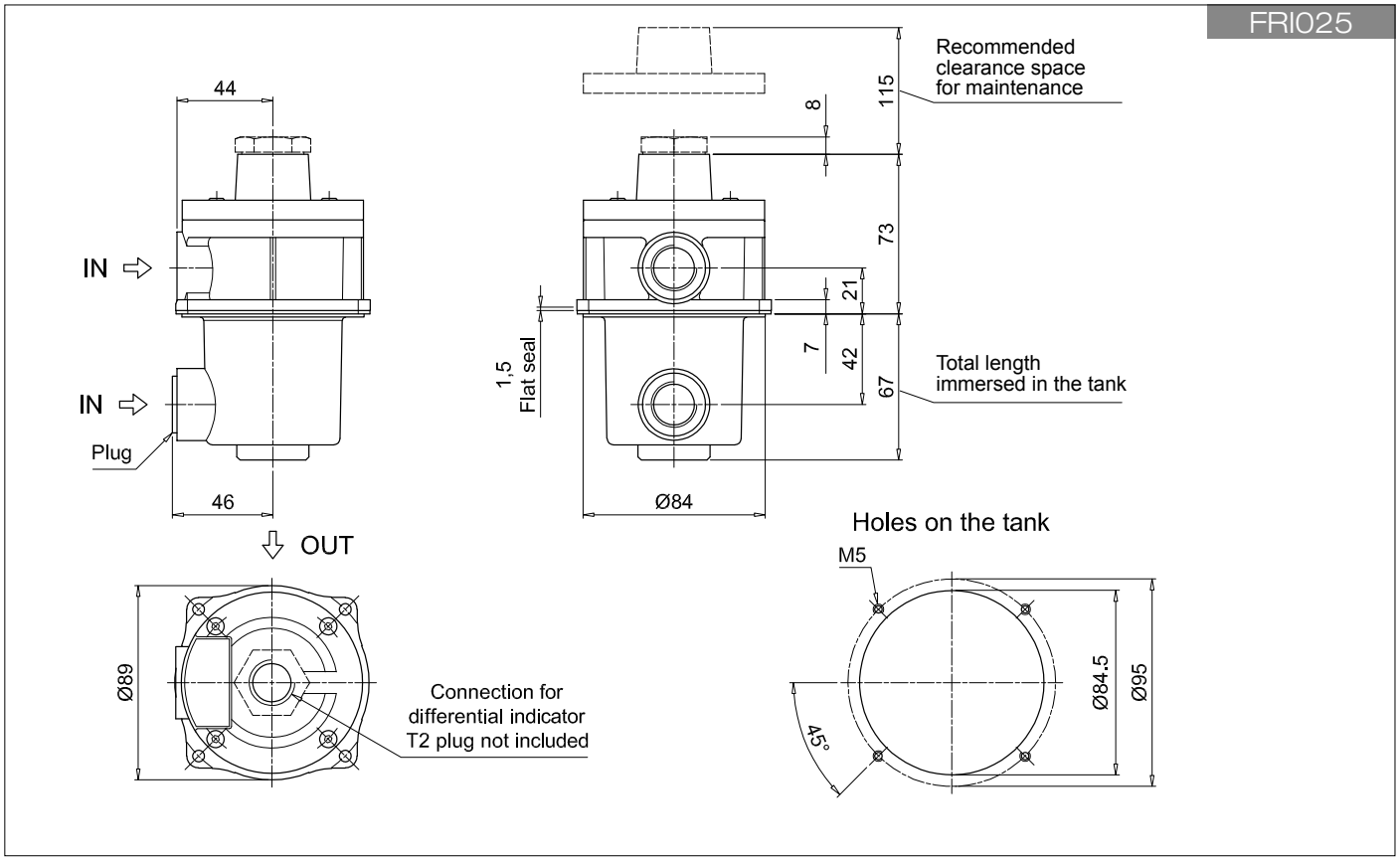
		page
DEA	Electrical differential indicator	218
DEM	Electrical differential indicator	218-219
DLA	Electrical / visual differential indicator	219-220
DLE	Electrical / visual differential indicator	220

Additional features

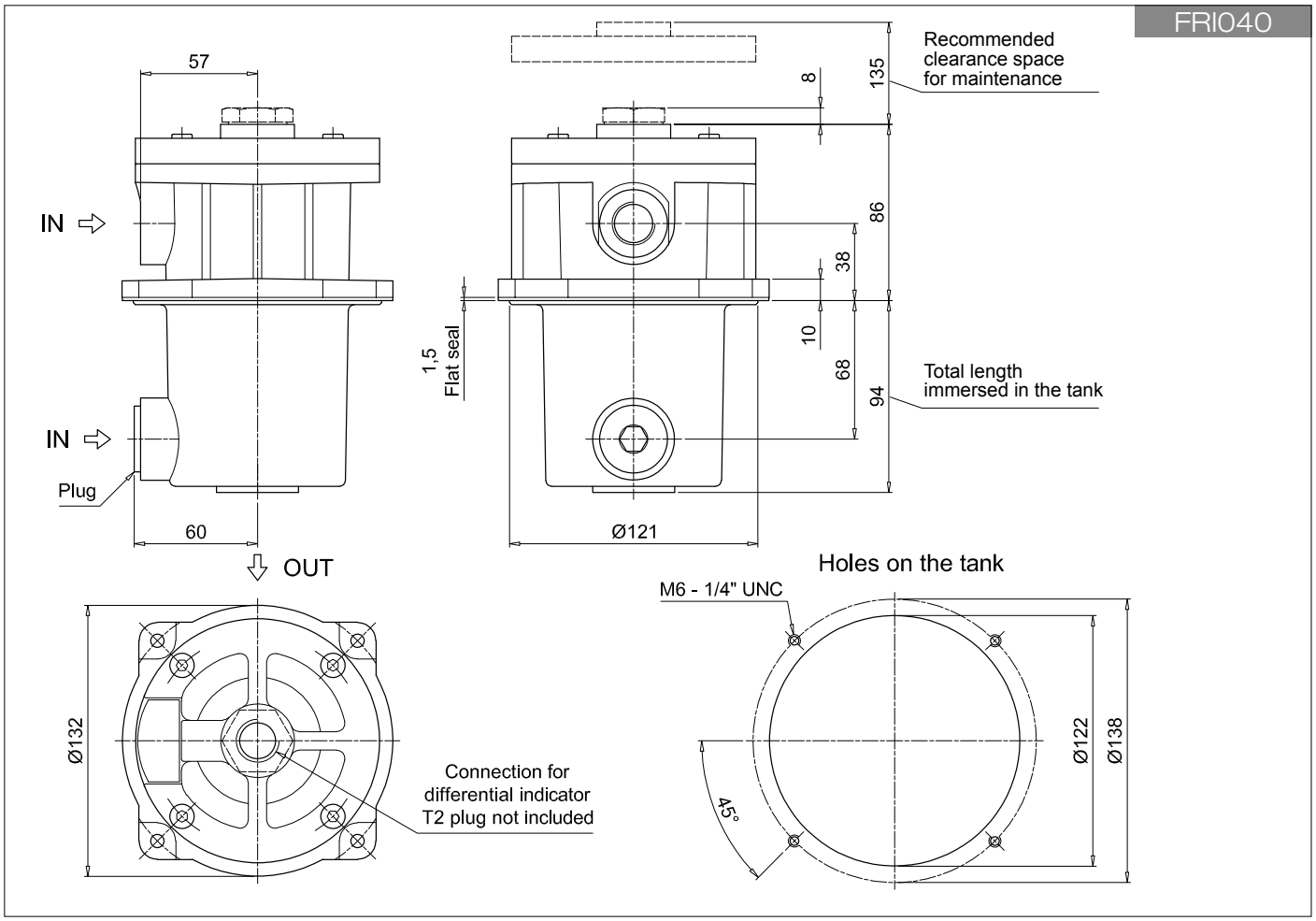
		page
T2	Plug	222

		page
DTA	Electronic differential indicator	221
DVA	Visual differential indicator	221
DVM	Visual differential indicator	221

FRI025



FRI040



Designation & Ordering code

COMPLETE FILTER

Configuration example 1:	FRI100	B	A	G1	A25	N	P01
Configuration example 2:	FRI630	S	W	F2	M25	N	P01

Series and size

FRI100
FRI250
FRI630

Bypass valve

B	With bypass
S	Without bypass

Seals and treatments

			Filtration rating Axx	Mxx	Pxx
A	NBR		•	•	•
V	FPM		•	•	•
W	NBR	head anodized	•	•	
Z	FPM	head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections for FRI100		Connections for FRI250	Connections for FRI630
G1	G1”	G1 1/2”	G2 1/2”
G2	1” NPT	1 1/2” NPT	2 1/2” NPT
G3	SAE 16 - 1 5/16” - 12 UN	SAE 24 - 1 7/8” - 12 UN	SAE 32 - 2 1/2” - 12 UN
F1	1” SAE 3000 psi/M	1 1/2” SAE 3000 psi/M	2 1/2” SAE 3000 psi/M
F2	1” SAE 3000 psi/UNC	1 1/2” SAE 3000 psi/UNC	2 1/2” SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

N	10 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example 1:	CU100	A25	N	P01
Configuration example 2:	CU630	M25	W	P01

Element series and size

CU100
CU250
CU630

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals and treatments

			Filtration rating Axx	Mxx	Pxx
N	NBR		•	•	•
V	FPM		•	•	•
W	NBR		•	•	
Z	FPM		•	•	

filter element compatible with fluids HFA-HFB-HFC

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Indicators

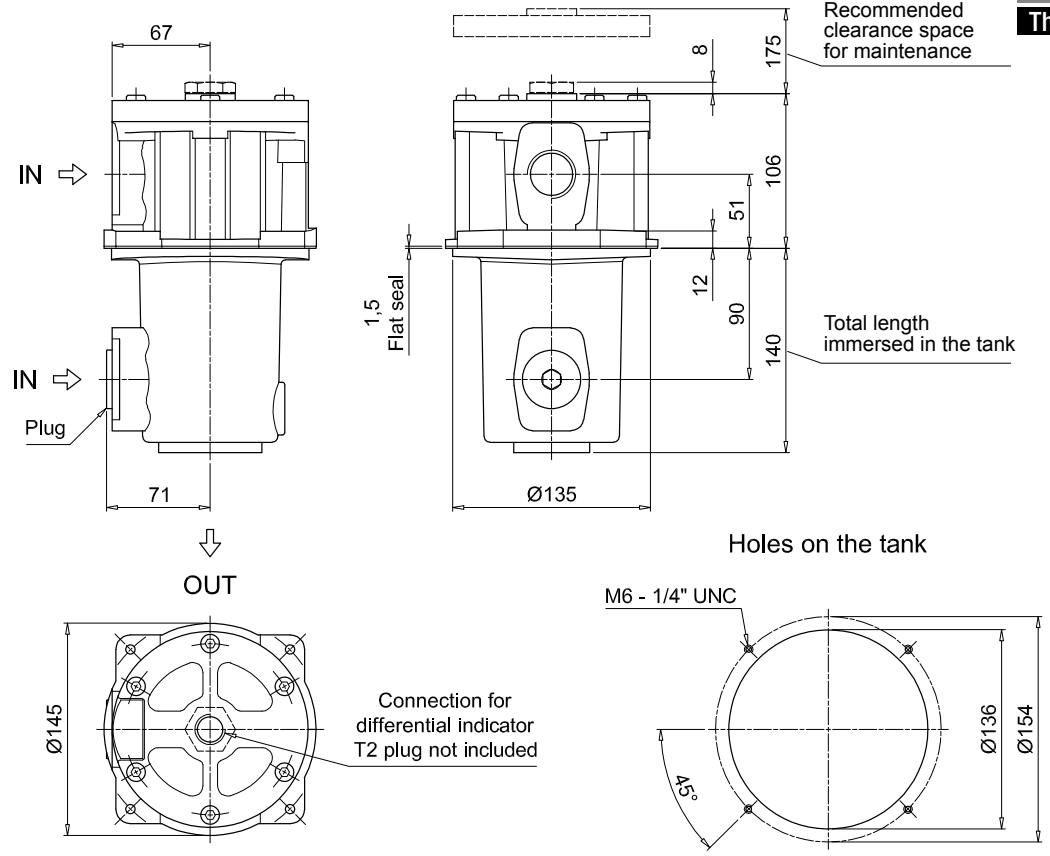
		page
DEA	Electrical differential indicator	218
DEM	Electrical differential indicator	218-219
DLA	Electrical / visual differential indicator	219-220
DLE	Electrical / visual differential indicator	220

		page
DTA	Electronic differential indicator	221
DVA	Visual differential indicator	221
DVM	Visual differential indicator	221

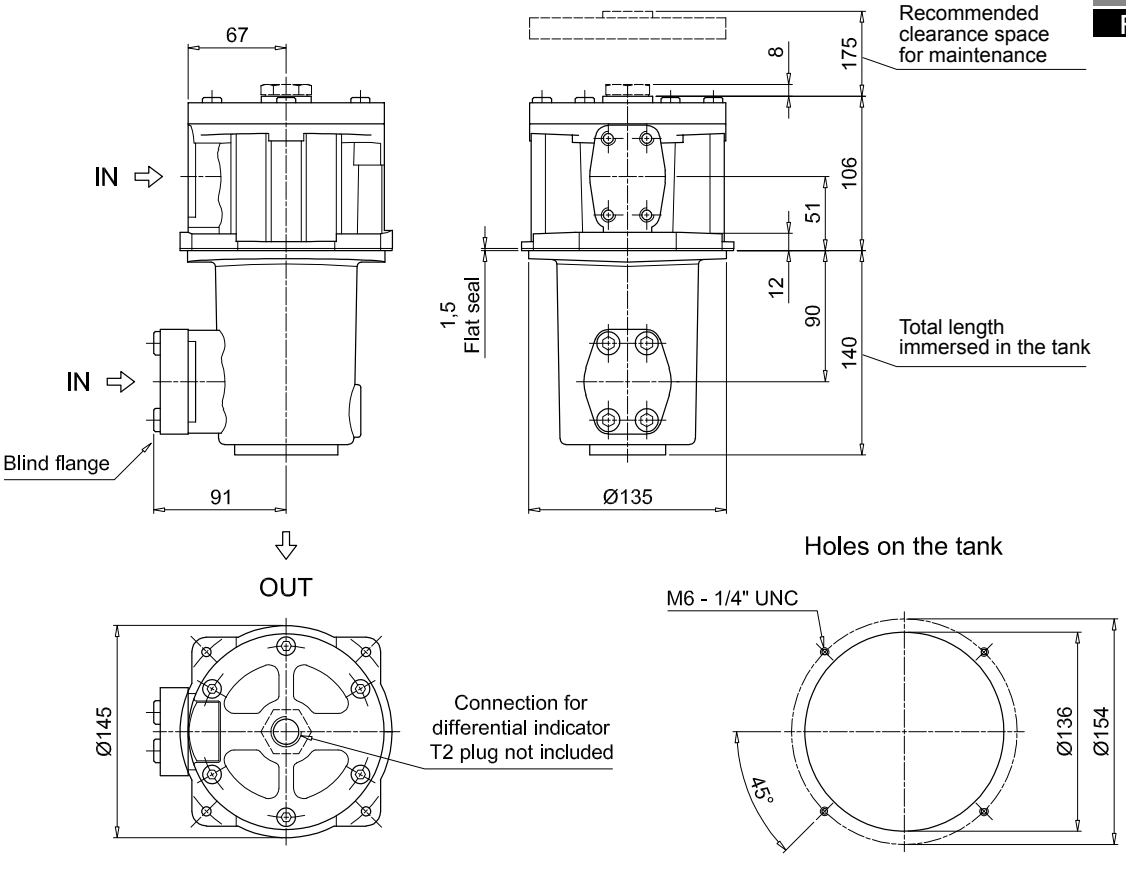
Additional features

		page
T2	Plug	222

FRI100
Threaded connections "G"

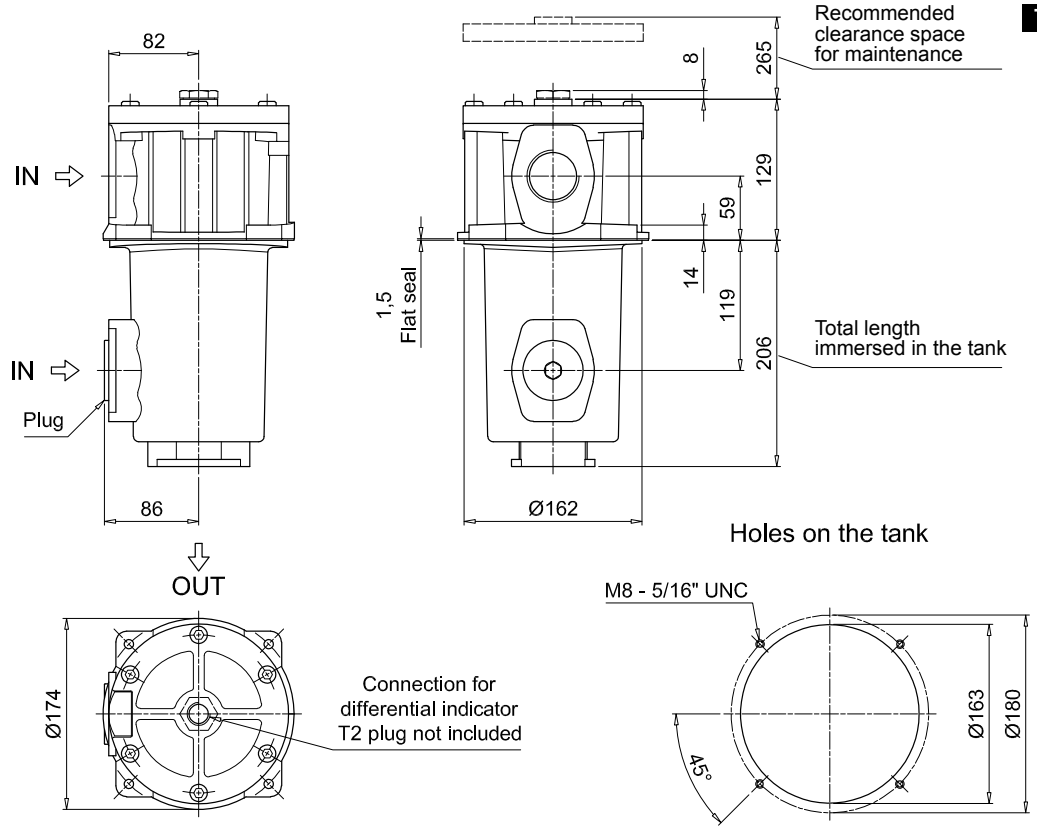


FRI100
Flange connections "F"

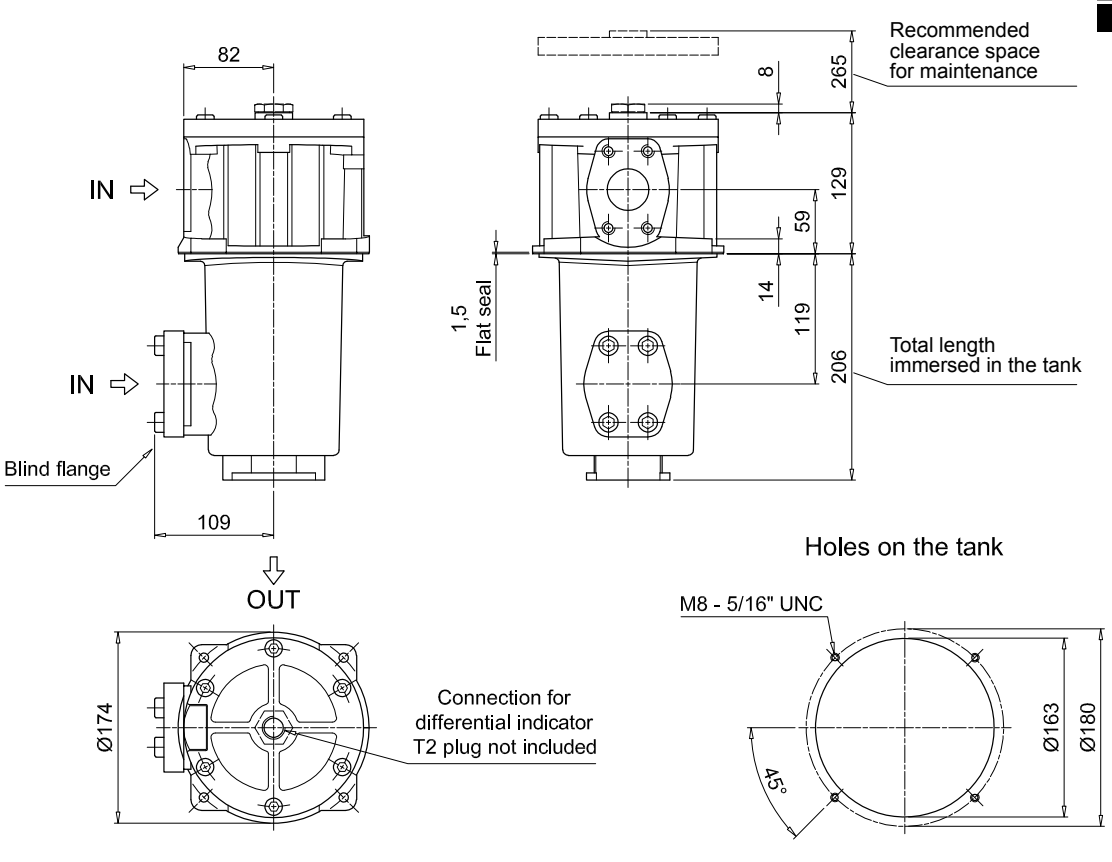


Dimensions

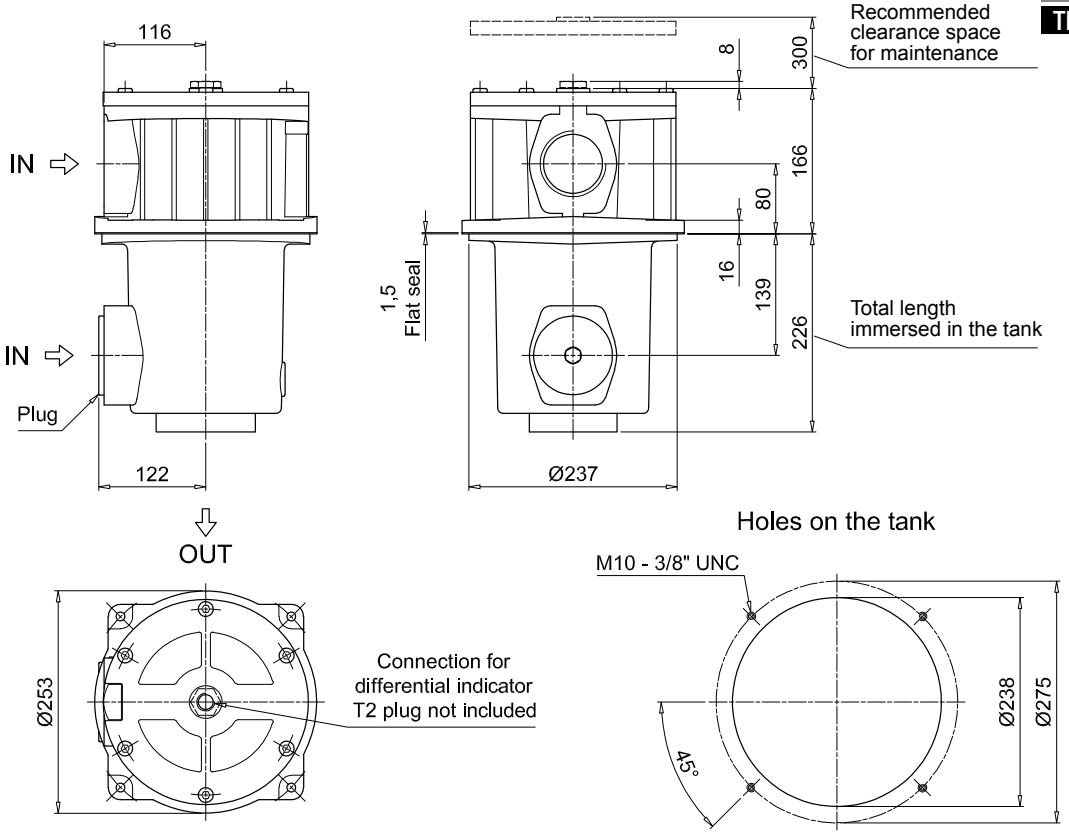
FRI250
Threaded connections "G"



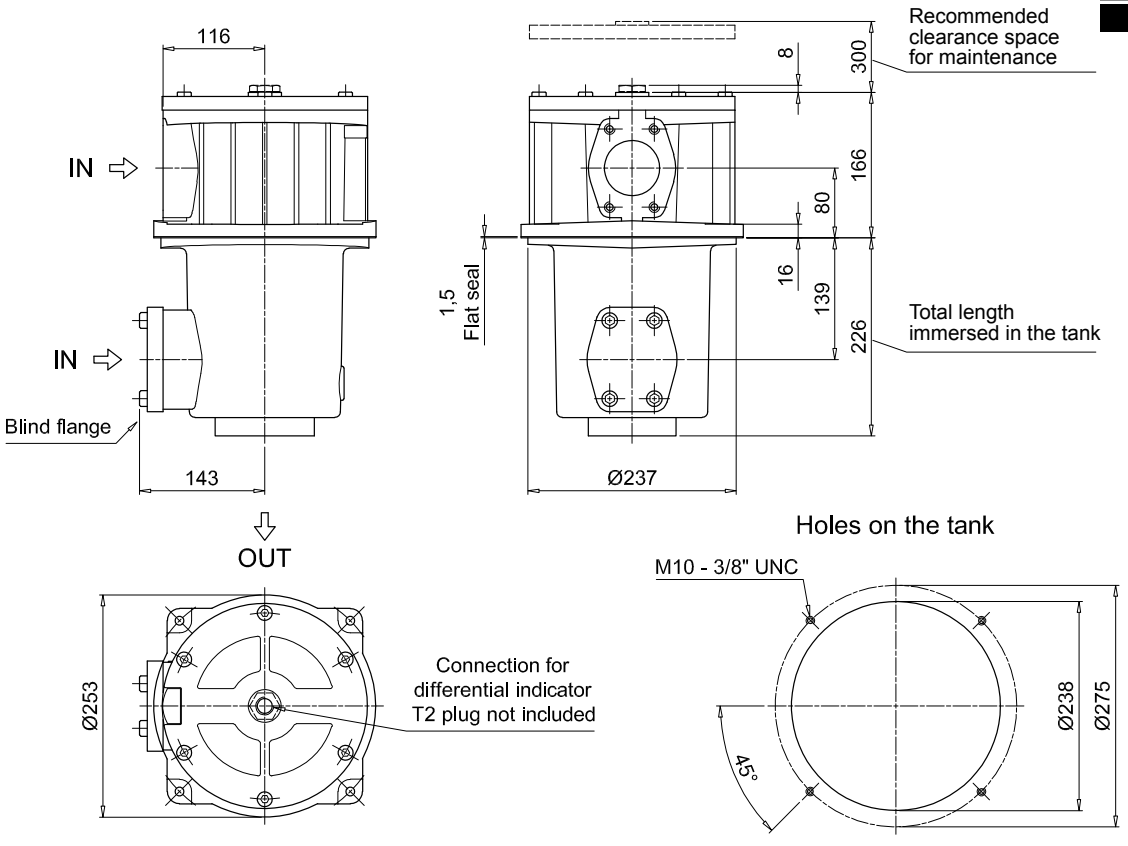
FRI250
Flange connections "F"



FRI630
Threaded connections "G"



FRI630
Flange connections "F"



Designation & Ordering code

COMPLETE FILTER

Configuration example 1: FRI255 | S | W | F2 | M25 | N | P01
Configuration example 2: FRI850 | B | A | G1 | A25 | N | P01

Series and size
- **FRI255**
- **FRI850**

Bypass valve
- **B** With bypass
- **S** Without bypass

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR head anodized	•	•	
Z	FPM head anodized	•	•	

filter element compatible with fluids HFA-HFB-HFC

Connections for FRI255
- **G1** G1 1/2”
- **G2** 1 1/2” NPT
- **G3** SAE 24 - 1 7/8” - 12 UN
- **G4** G1 1/4”
- **G5** 1 1/4” NPT
- **G6** SAE 20 - 1 5/8” - 12 UN
- **F1** 1 1/2” SAE 3000 psi/M
- **F2** 1 1/2” SAE 3000 psi/UNC

Connections for FRI850
- **F1** 3 1/2” SAE 3000 psi/M
- **F2** 3 1/2” SAE 3000 psi/UNC

Filtration rating (filter media)
- **A03** Inorganic microfiber 3 µm
- **A06** Inorganic microfiber 6 µm
- **A10** Inorganic microfiber 10 µm
- **A16** Inorganic microfiber 16 µm
- **A25** Inorganic microfiber 25 µm
- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **P10** Resin impregnated paper 10 µm
- **P25** Resin impregnated paper 25 µm

Element Δp
- **N** 10 bar

Execution
- **P01** MP Filtri standard
- **Pxx** Customized

FILTER ELEMENT

Configuration example 1: CU250 | M25 | W | P01
Configuration example 2: CU850 | A25 | N | P01

Element series and size
- **CU250**
- **CU850**

Filtration rating (filter media)
- **A03** Inorganic microfiber 3 µm
- **A06** Inorganic microfiber 6 µm
- **A10** Inorganic microfiber 10 µm
- **A16** Inorganic microfiber 16 µm
- **A25** Inorganic microfiber 25 µm
- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **P10** Resin impregnated paper 10 µm
- **P25** Resin impregnated paper 25 µm

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
N	NBR	•	•	•
V	FPM	•	•	•
W	NBR	•	•	
Z	FPM	•	•	

filter element compatible with fluids HFA-HFB-HFC

Execution
- **P01** MP Filtri standard
- **Pxx** Customized

FRI255 ACCESSORIES

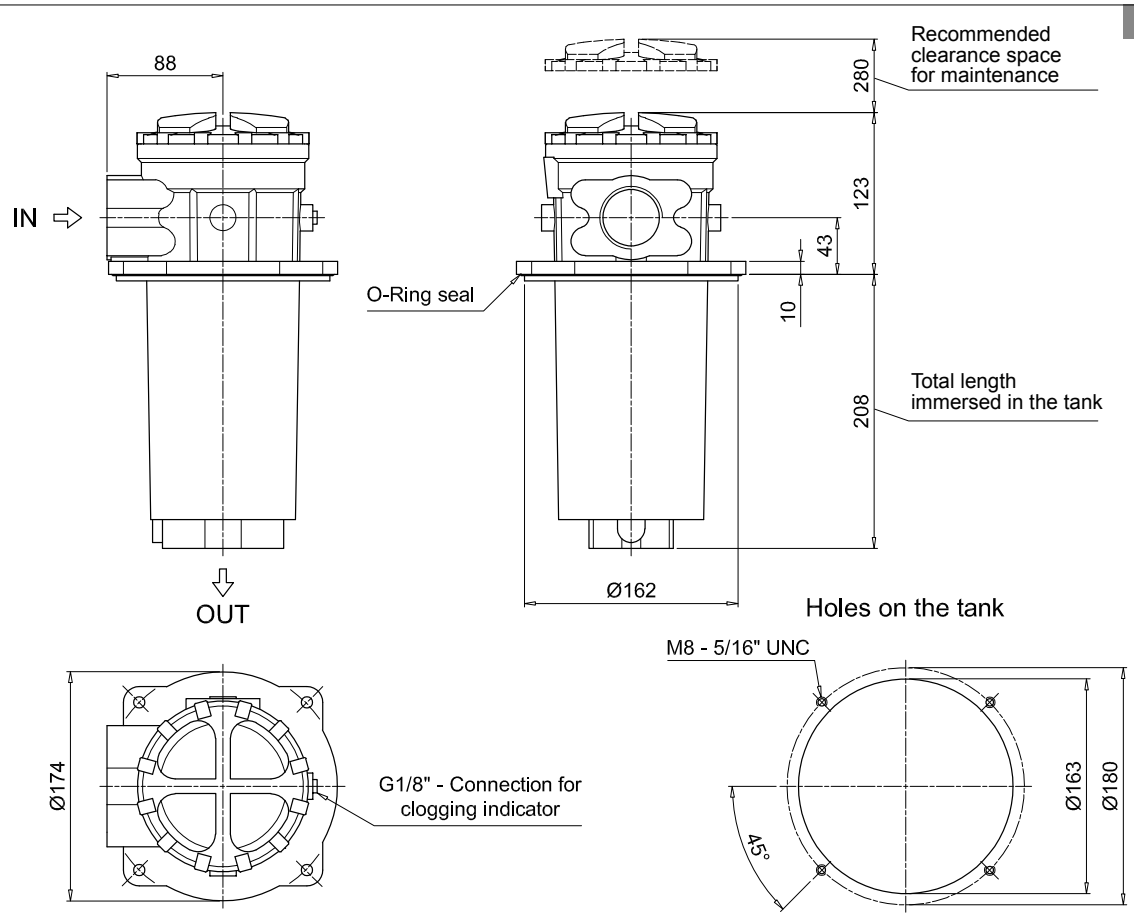
Indicators		page
BVA	Axial pressure gauge	218
BVR	Radial pressure gauge	218-219
BVP	Visual pressure indicator with automatic reset	219-220
BVQ	Visual pressure indicator with manual reset	220
BEA	Electrical pressure indicator	221
BEM	Electrical pressure indicator	221
BLA	Electrical / visual pressure indicator	221

FRI850 ACCESSORIES

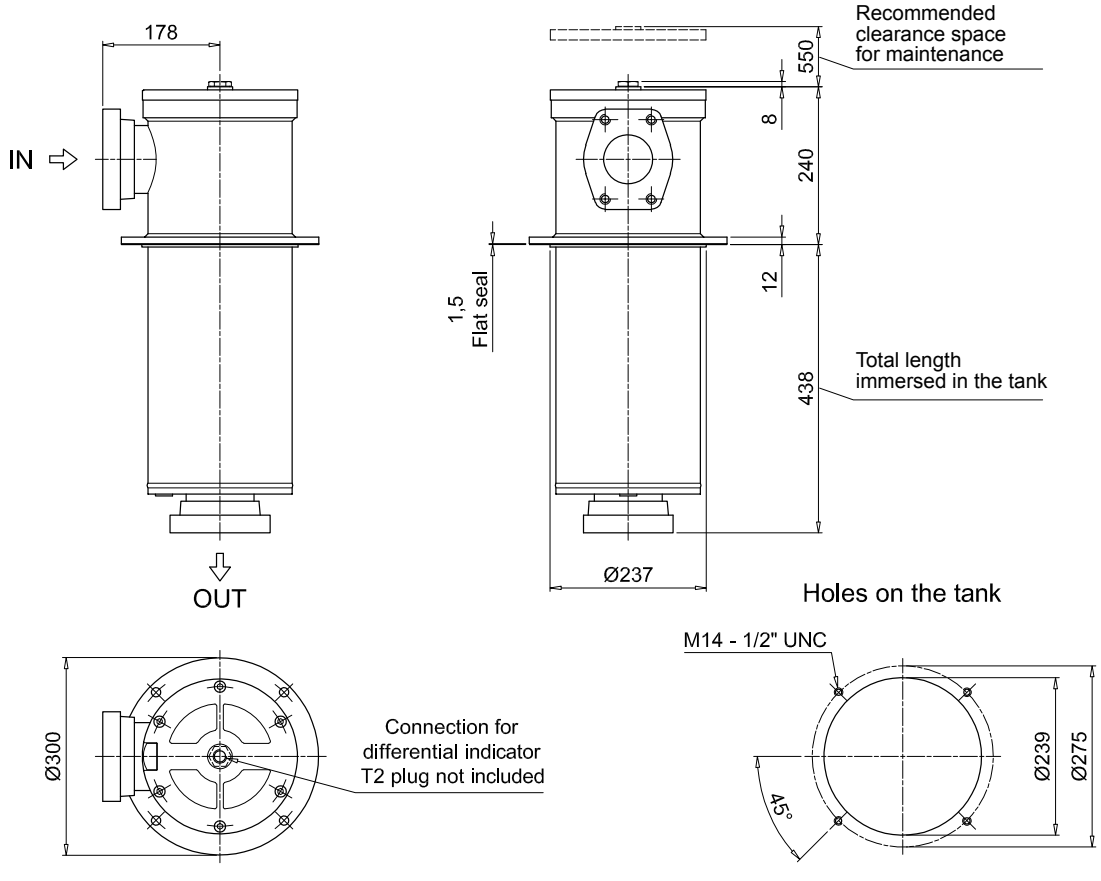
Indicators		page
DEA	Electrical differential indicator	218
DEM	Electrical differential indicator	218-219
DLA	Electrical / visual differential indicator	219-220
DLE	Electrical / visual differential indicator	220
DTA	Electronic differential indicator	221
DVA	Visual differential indicator	221
DVM	Visual differential indicator	221

Additional features		page
T2	Plug	222

FRI255

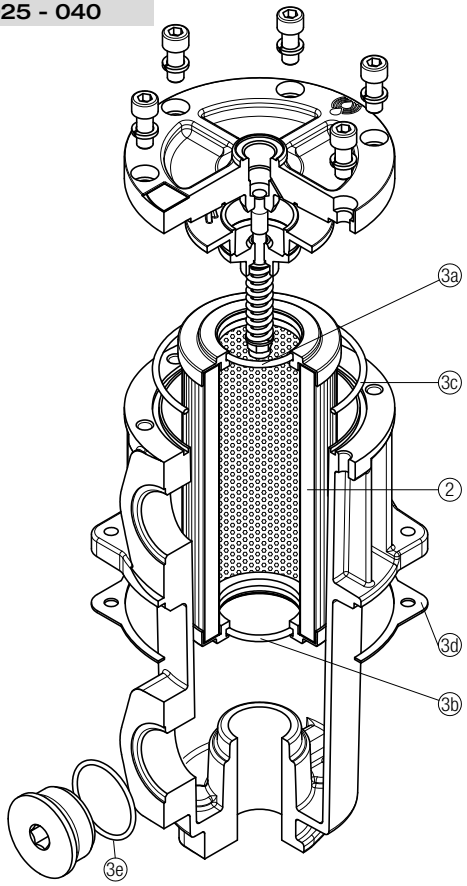


FRI850



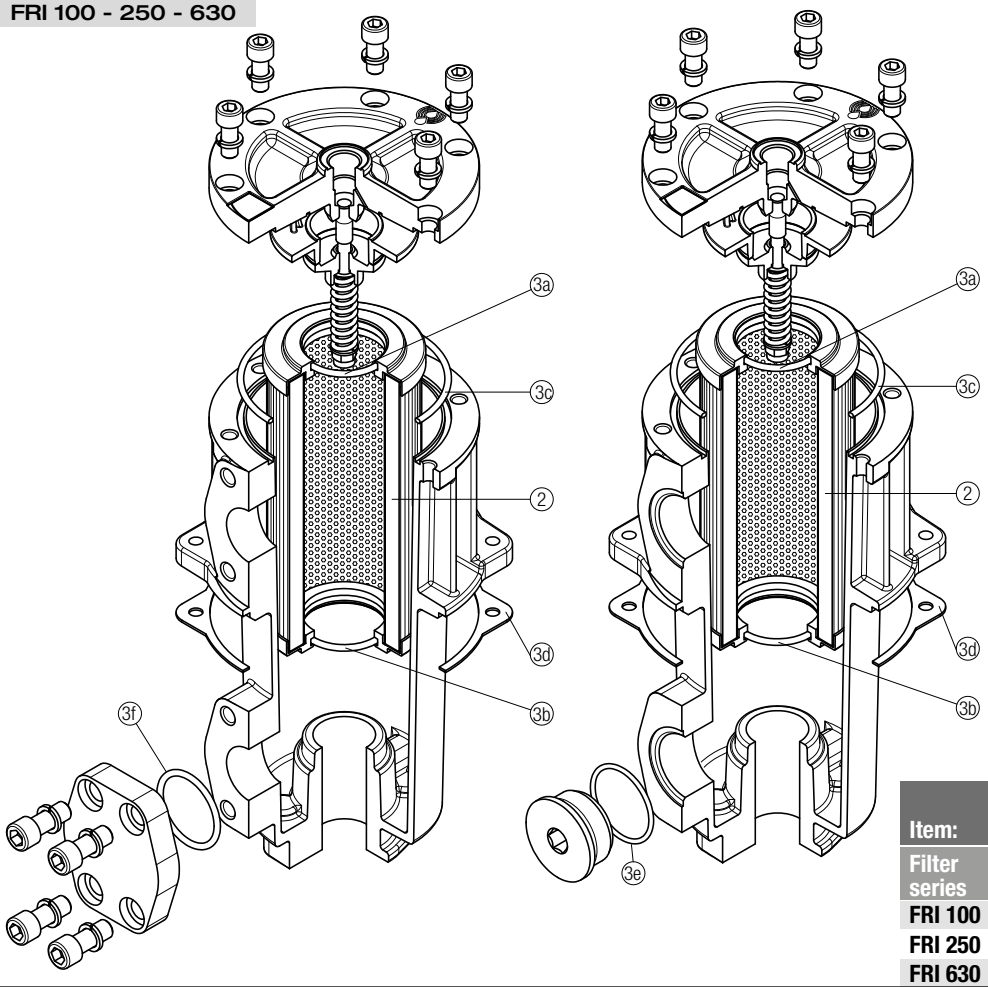
Order number for spare parts

FRI 025 - 040



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FRI 025	See order table	02050213	02050220
FRI 040		02050214	02050221

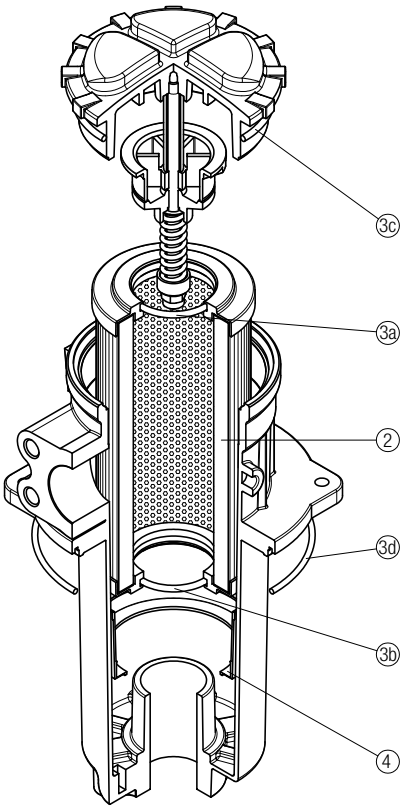
FRI 100 - 250 - 630



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FRI 100	See order table	02050215	02050222
FRI 250		02050216	02050223
FRI 630		02050217	02050224

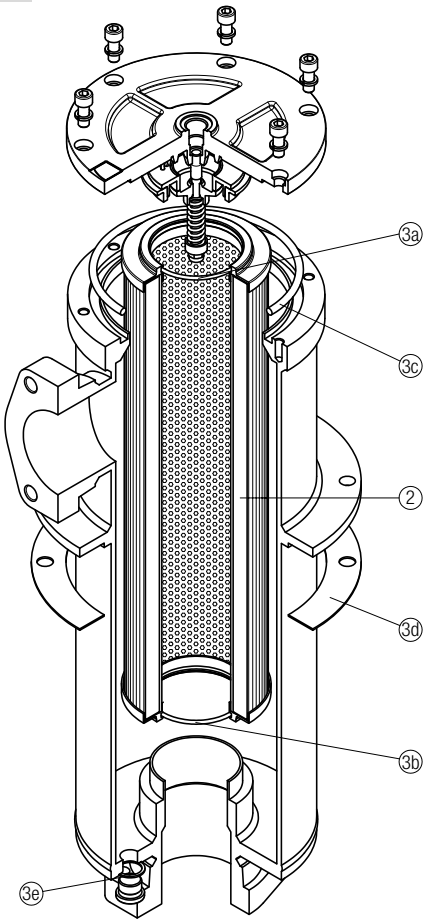
Order number for spare parts

FRI 255



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4
Filter series	Filter element	Seal Kit code number NBR	FPM	Contamination retainer binder
FRI 255	See order table	02050013	02050014	01060301

FRI 850



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FRI 850	See order table	02050218	02050225

RF2 series

Maximum pressure up to 20 bar - Flow rate up to 350 l/min

Technical data

Return filter **Maximum pressure up to 20 bar - Flow rate up to 350 l/min**

Filter housing materials
- Filter body: Aluminium
- Cover: Polyamide, GF reinforced
- Valve: Polyamide, GF reinforced - Steel
- Anti-Emptying valve: Steel

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: 2 MPa (20 bar)

Temperature
From -25 °C to +110 °C

Bypass valve
Opening pressure 175 kPa (1.75 bar)

Note
RF2 250-350 filters mounting,
see the drawings on page 211 and following.

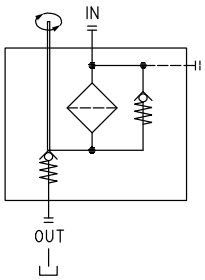
Δp element type
- Microfibre filter elements - series CU: 10 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

	Weights [kg]	Volumes [dm³]
	Lenght 1	Lenght 1
RF2 250	2.6	2.0
RF2 350	2.8	2.0

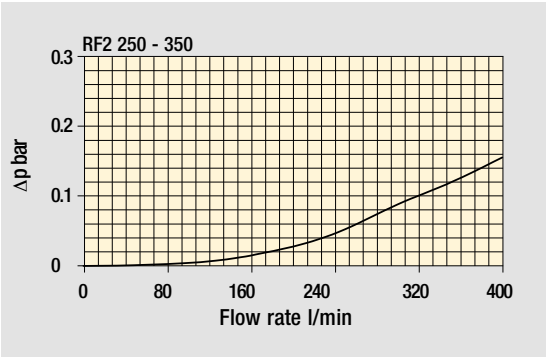
Hydraulic symbols

Style
RF2 250-350

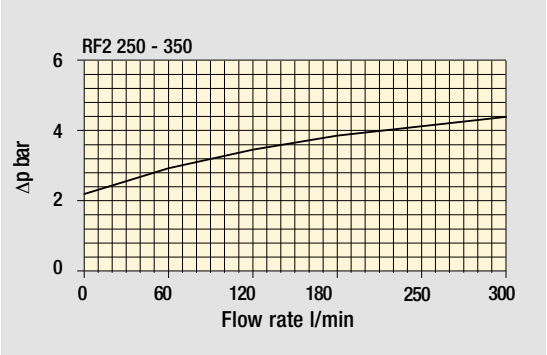


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop



Bypass valve pressure drop



Designation & Ordering code

COMPLETE FILTER

Configuration example 1: RF2250 | W | F2 | E | M25 | P01

Configuration example 2: RF2350 | A | G1 | B | A25 | P01

Series and size

RF2250

RF2350

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	
Z	FPM compatible with fluids HFA-HFB-HFC	•	•	

Connections

		Aux (only RF2350)	Mxx	Pxx
G1	G1 1/2”	G1”	•	•
G2	1 1/2” NPT	-	•	
G3	SAE 24 - 1 7/8” - 12 UN	SAE 16 - 1 5/16” - 12 UN	•	•
G4	G1 1/4”	-	•	
G5	1 1/4” NPT	-	•	
G6	SAE 20 - 1 5/8” - 12 UN	-	•	
G7	G1”	-	•	
G8	1” NPT	-	•	
G9	SAE 16 - 1 5/16” - 12 UN	-	•	
F1	1 1/2” SAE 3000 psi/M	-	•	
F2	1 1/2” SAE 3000 psi/UNC	-	•	

Bypass valve

B 1.75 bar

E 3 bar

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Execution

P01 MP Filtri standard

Pxx Customized

FILTER ELEMENT

Configuration example 1: CU250 | M25 | W | P01

Configuration example 2: CU250 | A25 | N | P01

Element series and size

CU250

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals and treatments

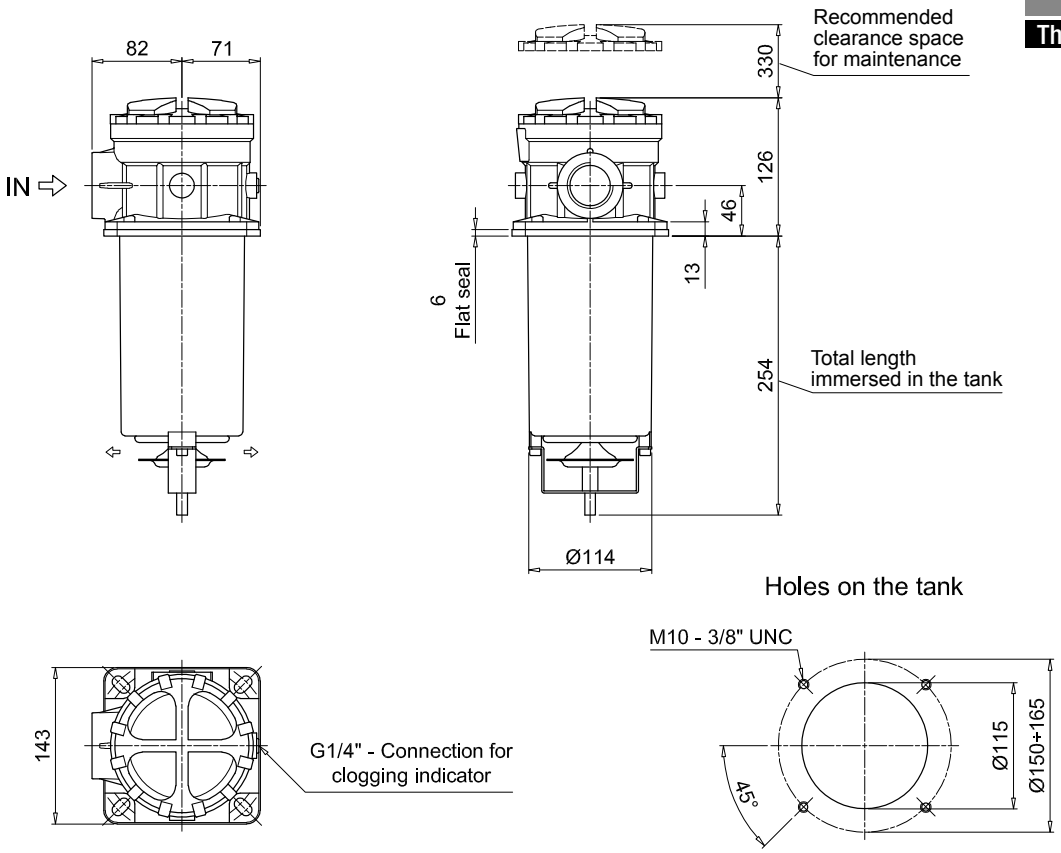
			Filtration rating Axx	Mxx	Pxx
N	NBR		•	•	•
V	FPM		•	•	•
W	NBR head anodized	filter element compatible with fluids HFA-HFB-HFC	•	•	
Z	FPM head anodized		•	•	

Execution

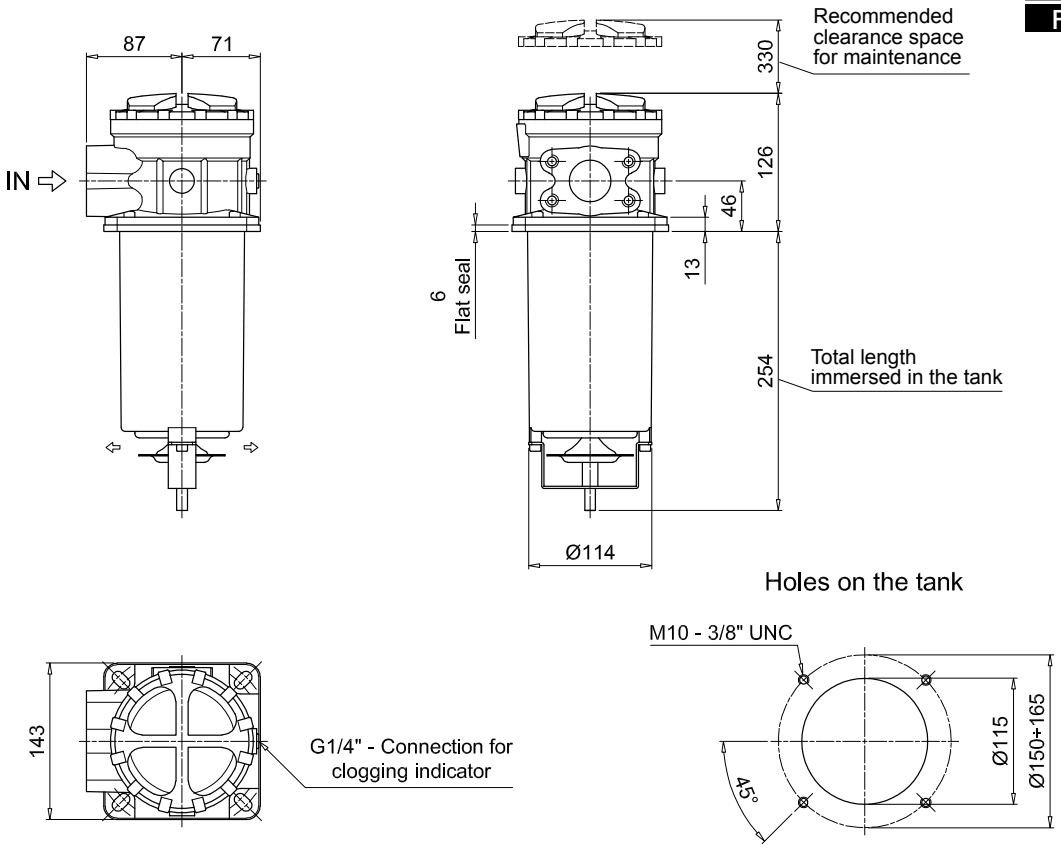
P01 MP Filtri standard

Pxx Customized

RF2250
Threaded connections "G"

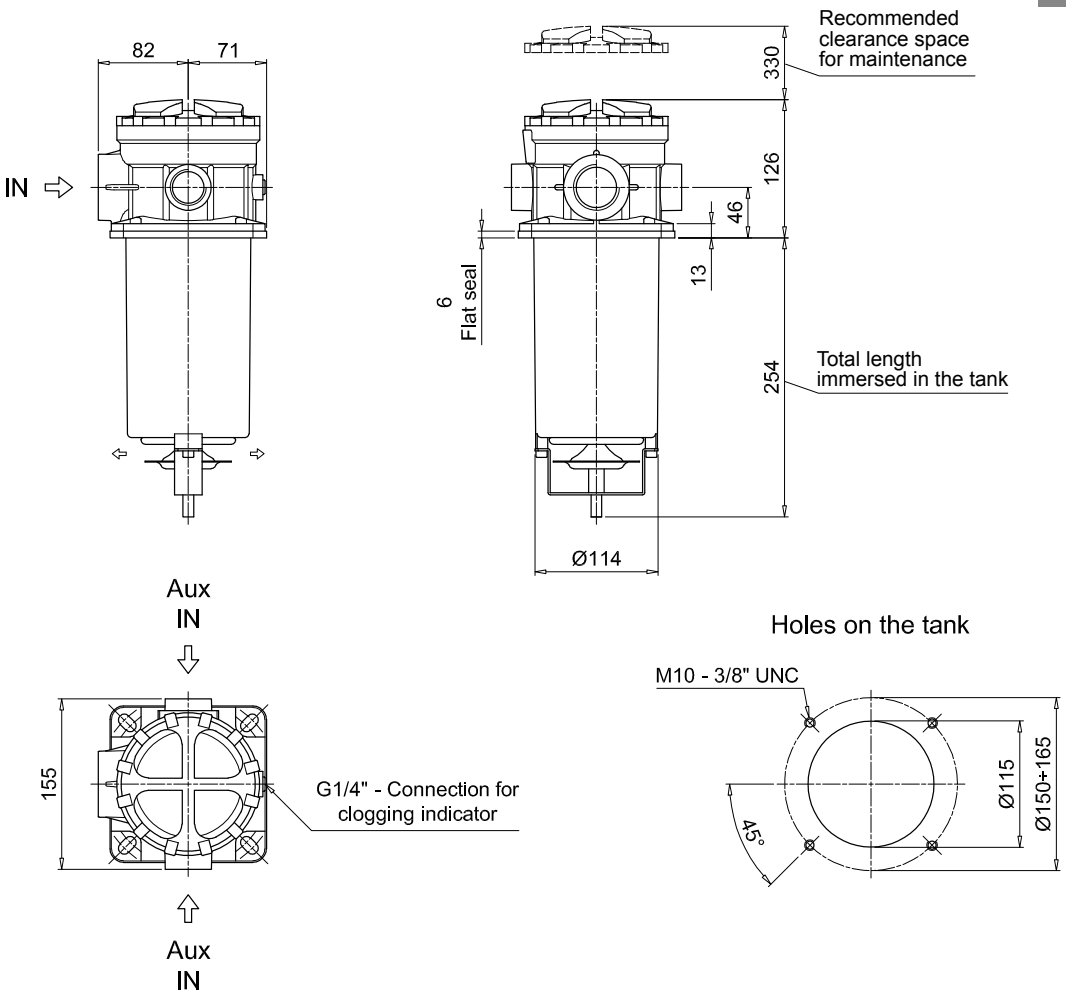


RF2250
Flange connections "F"



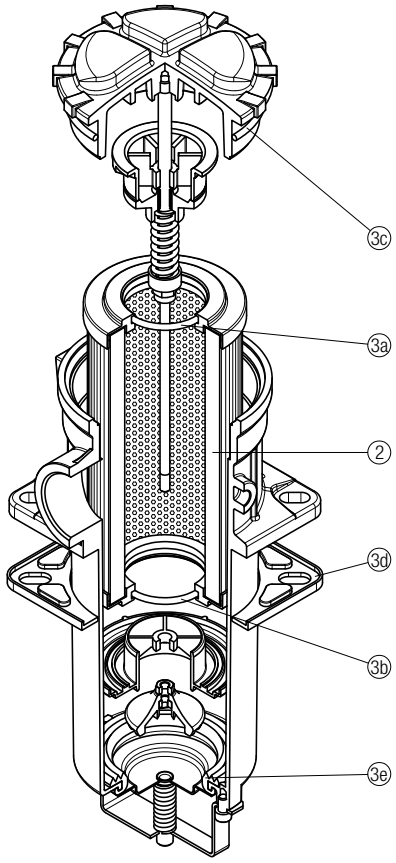
Dimensions

RF2350



Order number for spare parts

RF2 250 - 350



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
RF2 250	See order table	02050586	02050587
RF2 350			

Clogging indicators

Barometric indicators
Differential indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

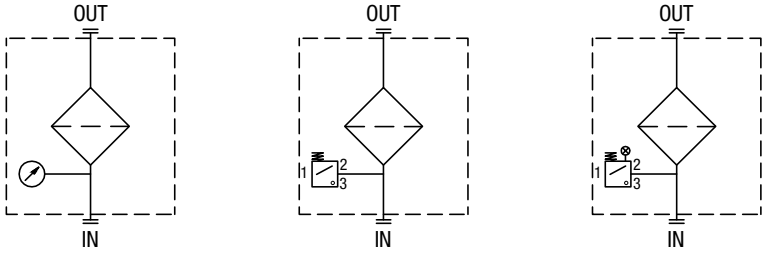
- **Vacuum switches and gauges**
- **Pressure switches and gauges**
- **Differential pressure indicators**

These type of devices can be provided with a visual, electrical or both signals.

Suitable indicator types

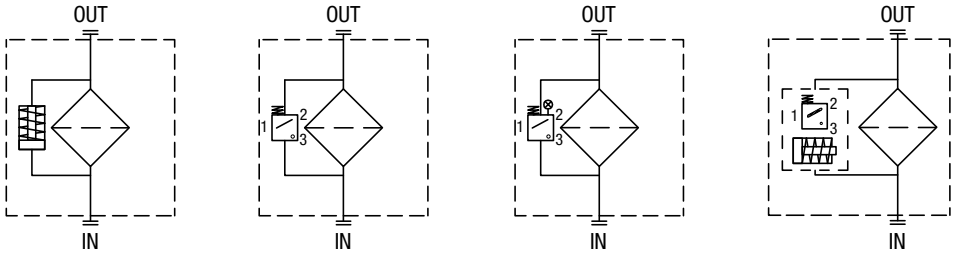
BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficency of the filter element. They measure the pressure upstream of the filter element.
Standard items are produced with R 1/8" EN 10226 connection.



DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



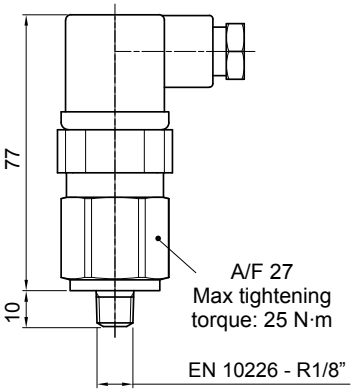
Quick reference guide

Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01	
FRI 025 - 040 - 100 - 250 - 630 - 850	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01

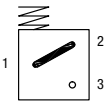
BEA*50

Electrical Pressure Indicator

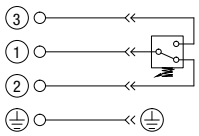
Settings	Ordering code
1.5 bar ±10%	BE A 15 H A 50 P01
2 bar ±10%	BE A 20 H A 50 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

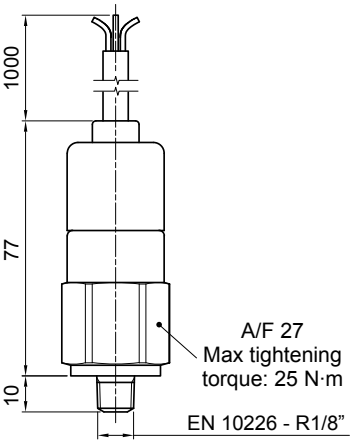
Electrical data

- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

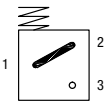
BEM*41

Electrical Pressure Indicator

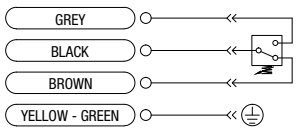
Settings	Ordering code
1.5 bar ±10%	BE M 15 H A 41 P01
2 bar ±10%	BE M 20 H A 41 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

Electrical data

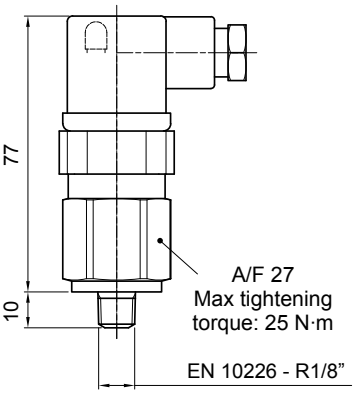
- Electrical connection: Four-core cable
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- CE certification

On request this indicator can be provided with main connectors in use for wirings.

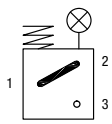
BL*51 - BL*52 - BL*53

Electrical/Visual Pressure Indicator

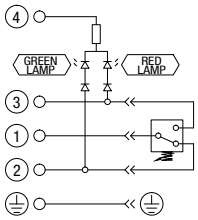
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A xx P01
2 bar ±10%	BL A 20 H A xx P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR

Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc	4 A / 230 Vac

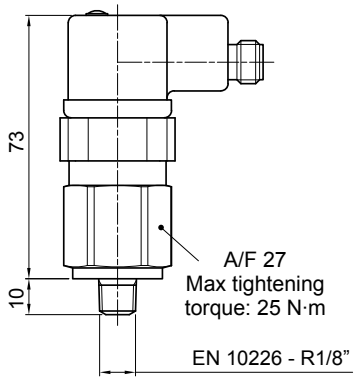
BAROMETRIC INDICATORS

Dimensions

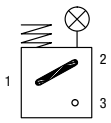
BL*71

Electrical/Visual Pressure Indicator

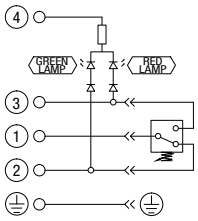
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A 71 P01
2 bar ±10%	BL A 20 H A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

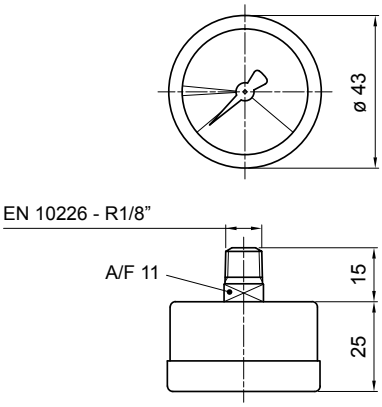
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

BVA

Axial Pressur e Gauge

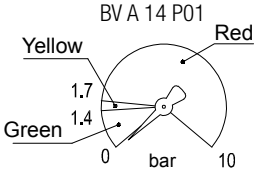
Settings	Ordering code
1.4 bar ±10%	BV A 14 P01
2.5 bar ±10%	BV A 25 P01



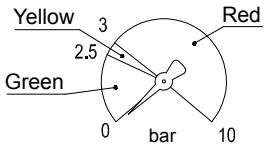
Hydraulic symbol

Dial scale

BV A 14 P01



BV A 25 P01



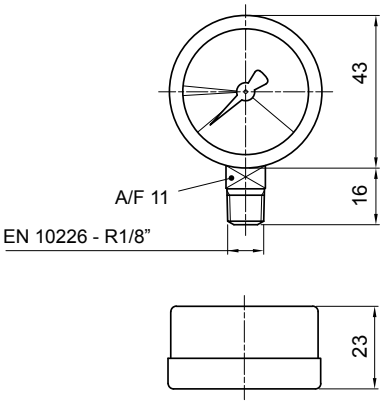
Materials
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

Technical data
- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

BVR

Radial Pressure Gauge

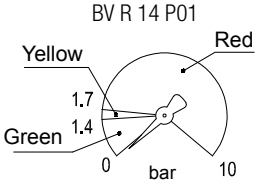
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01



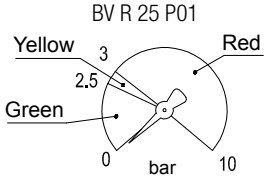
Hydraulic symbol

Dial scale

BV R 14 P01



BV R 25 P01



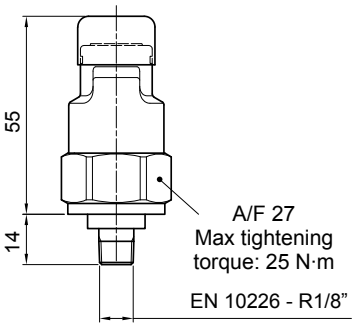
Materials
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

Technical data
- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

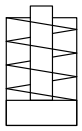
BVP - BVQ

Visual Pressure Indicator

Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2 bar ±10%	BV P 20 H P01
	BV Q 20 H P01



Hydraulic symbol



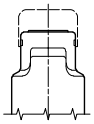
Materials

- Body: Brass
- Cover / internal parts: Nylon
- Caps: VMQ
- Seal: HNBR

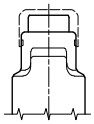
Technical data

- Reset: BVP - Automatic reset; BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP45 according to EN 60529

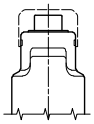
Signals



Absence of pressure (no indicator)



Presence of pressure (green button rises gradually)



Clogged filter element (red button risen)

DESIGNATION & ORDERING CODE

Configuration example 1:	BE	M	15	H	A	41	P01
Configuration example 2:	BL	A	20	H	A	71	P01
Configuration example 3:	BV	R	14				P01
Configuration example 4:	BV	P	20	H			P01

Series

- **BE** Electrical pressure indicator
- **BL** Electrical/Visual pressure indicator
- **BV** Visual pressure indicator

Type	BE	BL	BV
A Standard type	•	•	
M With wired electrical connection	•		

- **A** Axial connection pressure gauge
- **R** Radial connection pressure gauge
- **P** Visual indicator with automatic reset
- **Q** Visual indicator with manual reset

Pressure setting	BEA-BEM	BL	BVA-BVR	BVP-BVQ
14 1.4 bar			•	
15 1.5 bar	•	•		•
20 2 bar	•	•		•
25 2.5 bar			•	

Seals	BE	BL	BVA-BVR	BVP-BVQ
H HNBR	•	•		•

Thermostat	BE	VL	BV
A Without	•	•	

Electrical connections	BEA	BEM	BL	BV
10 Connection AMP Superseal series 1.5				
30 Connection Deutsch DT-04-2-P				
41 Connection via four-core cable		•		
50 Connection EN 175301-803	•			
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc			•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•	

Option

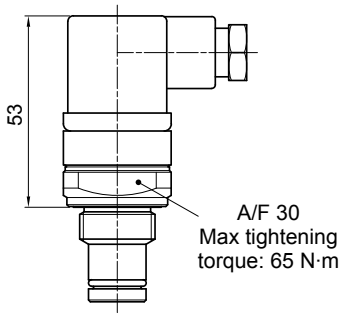
- **P01** MP Filtri standard
- **Pxx** Customized

Dimensions

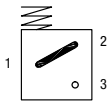
DEA*50

Electrical Differential Indicator

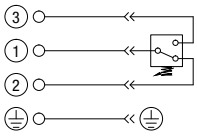
Settings	Ordering code
2 bar ±10%	DE A 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

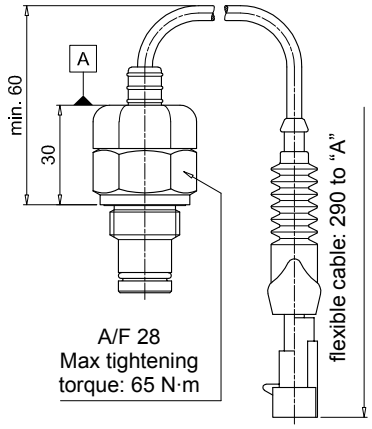
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

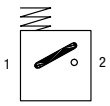
DEM*10

Electrical Differential Indicator

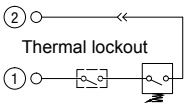
Settings	Ordering code
2 bar ±10%	DE M 20 xx 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

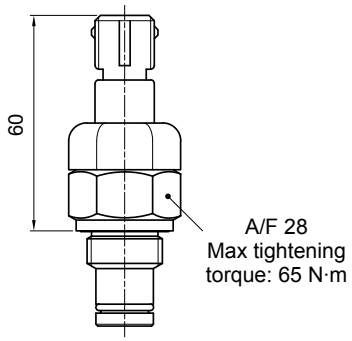
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

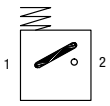
DEM*20

Electrical Differential Indicator

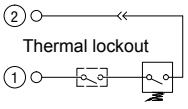
Settings	Ordering code
2 bar ±10%	DEM20xx20P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

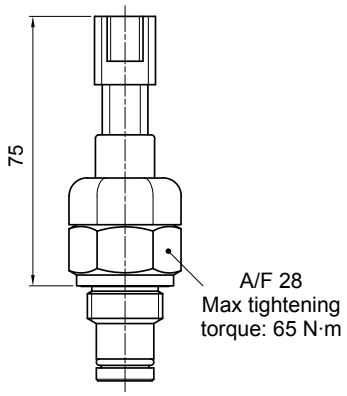
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

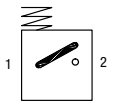
DEM*30

Electrical Differential Indicator

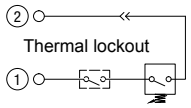
Settings	Ordering code
2 bar ±10%	DE M 20 xx 30 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

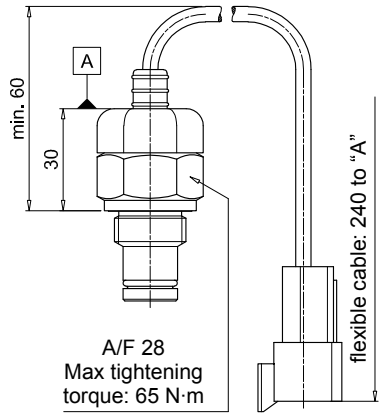
Electrical data

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option “F”)

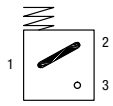
DEM*35

Electrical Differential Indicator

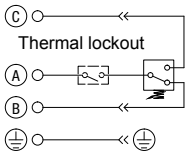
Settings	Ordering code
2 bar ±10%	DE M 20 xx 35 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

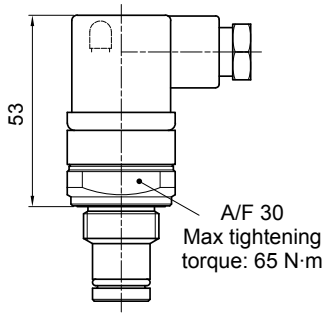
Electrical data

- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option “F”)

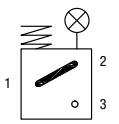
DLA*51 - DLA*52

Electrical/Visual Differential Indicator

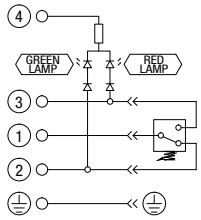
Settings	Ordering code
2 bar ±10%	DL A 20 x A xx P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data

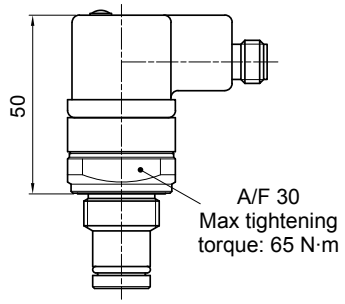
- Electrical connection: EN 175301-803
- Type: 51 / 52
- Lamps: 24 Vdc / 110 Vdc
- Resistive load: 0.8 A / 24 Vdc / 0.2 A / 110 Vdc

Dimensions

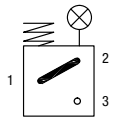
DLA*71

Electrical/Visual Differential Indicator

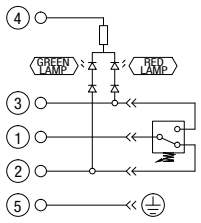
Settings	Ordering code
2 bar ±10%	DL A 20 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

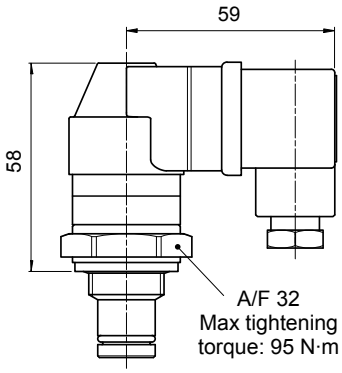
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

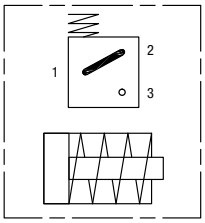
DLE*A50

Electrical/Visual Differential Indicator

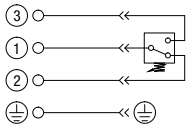
Settings	Ordering code
2 bar ±10%	DL E 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

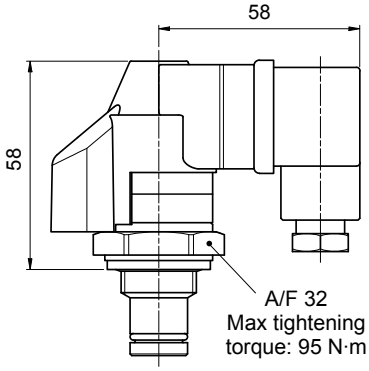
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

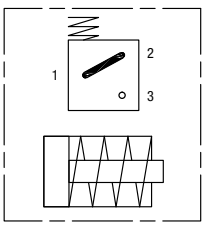
DLE*F50

Electrical/Visual Differential Indicator

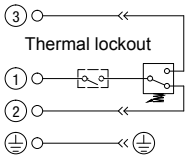
Settings	Ordering code
2 bar ±10%	DL E 20 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

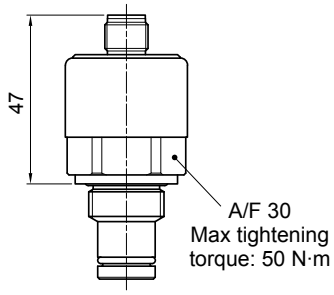
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

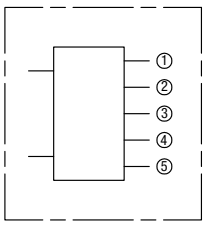
DTA*70

Electronic Differential Indicator

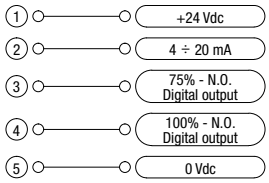
Settings	Ordering code
2 bar ±10%	DT A 20 x x 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

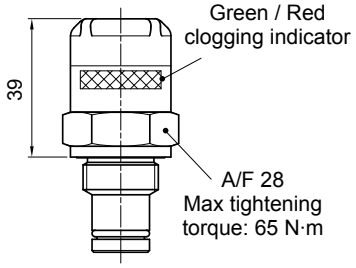
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

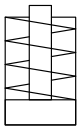
DVA

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV A 20 x P01



Hydraulic symbol



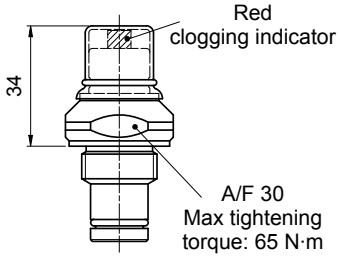
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

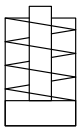
DVM

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV M 20 x P01



Hydraulic symbol



Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

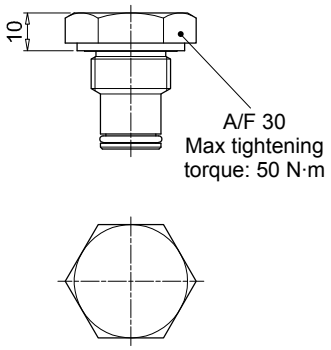
Technical data
- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Dimensions

T2

Indicator plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V



Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	M	20	H	F	50	P01
Configuration example 2:	DL	E	20	V	A	71	P01
Configuration example 3:	DT	A	20	H	F	70	P01
Configuration example 4:	DV	M	20	V			P01

Series

- **DE** Electrical differential indicator
- **DL** Electrical/Visual differential indicator
- **DT** Electronic differential indicator
- **DV** Visual differential indicator

Type	DE	DL	DT	DV
A Standard type	•	•	•	**A** With automatic reset
M With wired electrical connection	•			**M** With manual reset
E For high power supply		•		

Pressure setting

- **20** 2 bar

Seals

- **H** HNBR
- **V** FPM

Thermostat	DEA	DEM	DLA	DLE	DT	DV
A Without	•	•	•	•		
F With thermostat		•		•	•	

Electrical connections	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option

- **P01** MP Filtri standard
- **Pxx** Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	T2	H

Series

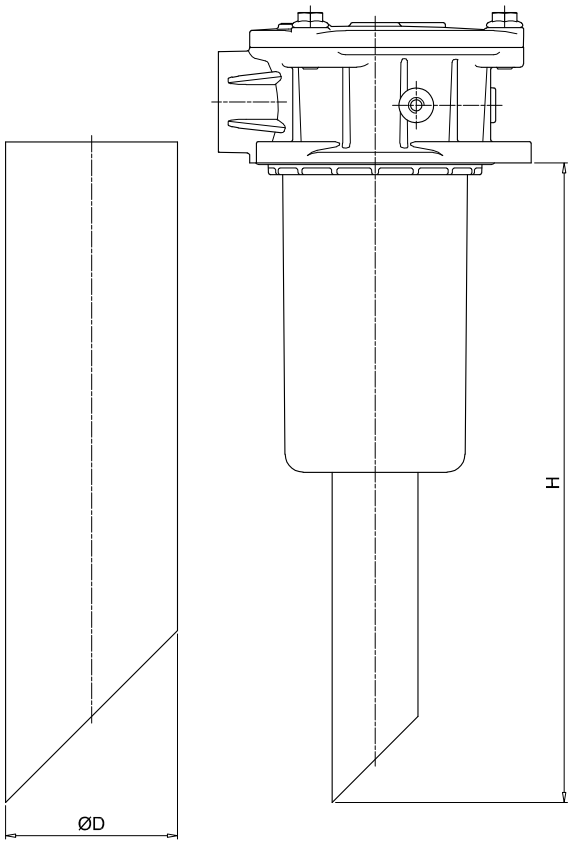
- **T2** Indicator plug

Seals

- **H** HNBR
- **V** FPM

Accessories

STEEL EXTENSION TUBE



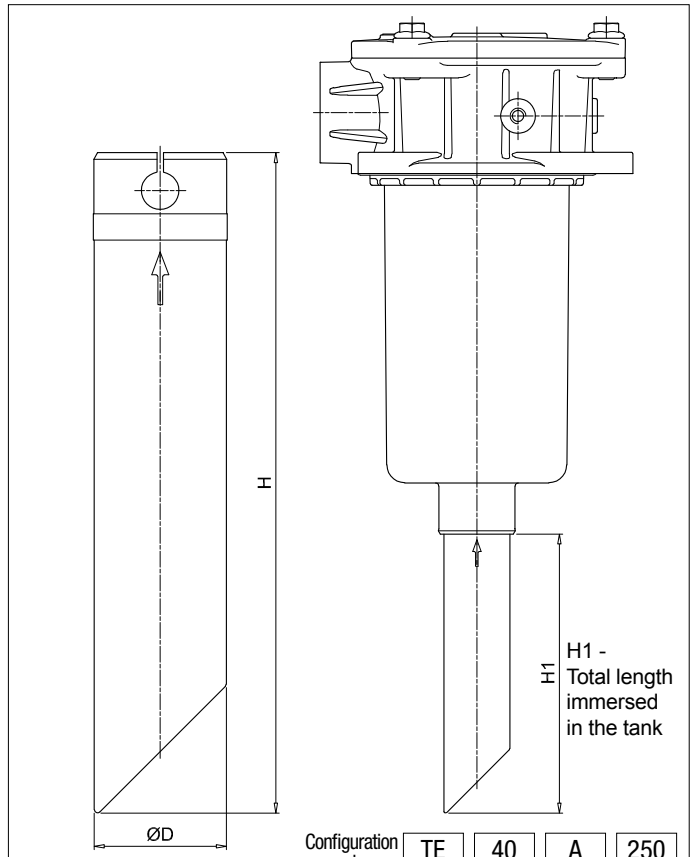
Configuration example:

MPF191	2	A	F1	A10	H	B	S60

Length	H [mm]
S30	300
S35	350
S40	400
S45	450
S50	500
S60	650
S70	700
S80	800
S90	900

COMPATIBILITY TABLE					ø D [mm]	
Filter series	Filter size			Filter lenght	52	65
MPF	191	192	194	2	•	
	400	410	450 451	1	•	
				2		•
				3		
	750			1		•

NYLON EXTENSION TUBE



Configuration example:

TE	40	A	250

Series
TE

Size	ø D [mm]
25	25
32	32
40	40

Material	
A	Nylon

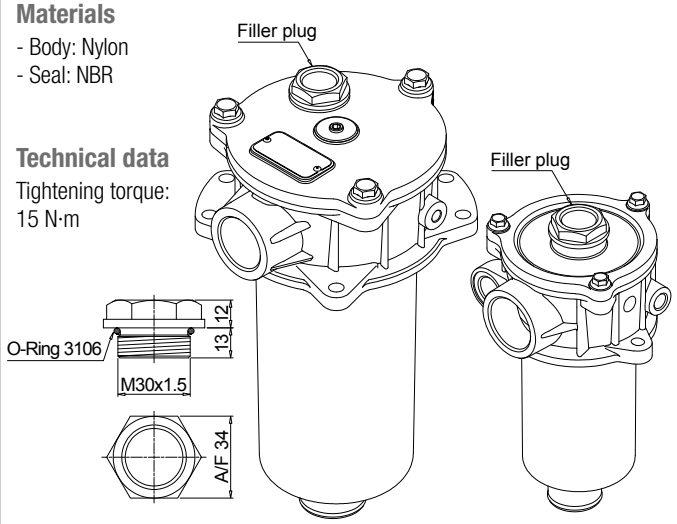
Length	H [mm]	H1 [mm]
200	200	174
250	250	224
300	300	274
350	350	324
400	400	374
450	450	424
500	500	474

COMPATIBILITY TABLE								
Filter series	Filter size					Filter lenght	TE25	TE32	TE40
MPF - MPFX	30					1	•		
MPF	100	104	110			1 2		•	
						3 4			•
MPFX	100	104	110			1 2 3 4			•
MPF - MPFX	181	182	184			1 2			•
MPT - MPTX	025	027				1 2 3	•		
MPT	101	104	110	114	120	1 2		•	
						3 4			•
MPTX	101	104	110	114	120	1 2 3 4			•

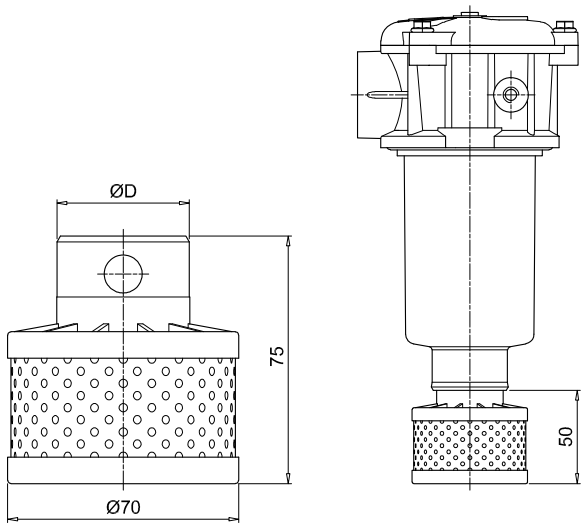
FILLER PLUG

Materials
- Body: Nylon
- Seal: NBR

Technical data
Tightening torque:
15 N·m



DIFFUSER WITH FAST LOCK CONNECTION



Configuration example: DFS | 32 | A | 250

Series
DFS

Size	ø D [mm]
32	32
40	40

Version
A Standard

Length
075 Standard

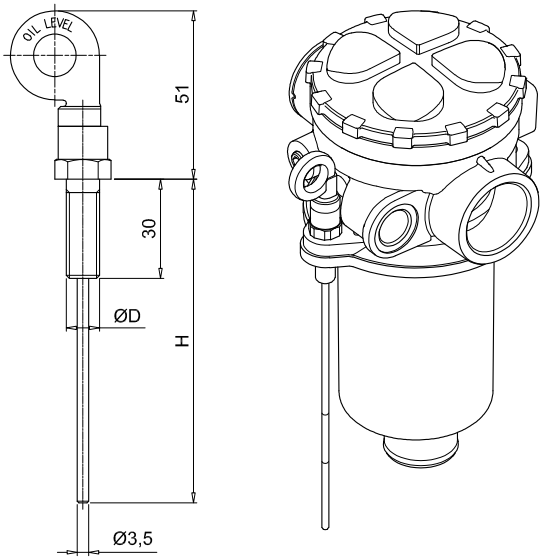
COMPATIBILITY TABLE

Filter series	Filter size					Filter lenght	DFS32	DFS40
MPF	100	104	110			1	•	
						2		
						3		•
						4		
MPFX	100	104	110			1		•
						2		
						3		
						4		
MPT	101	104	110	114	120	1	•	
						2		
						3		•
						4		
MPTX	101	104	110	114	120	1		•
						2		
						3		
						4		

DIPSTICK

Materials
- Screw: phosphatized steel
- Stick: phosphatized steel
- Handle: Nylon

Technical data
Working temperature:
From -25 °C to +110 °C



Configuration example: DPT | 20 | M10 | A | P01

Series
DPT

Length	H [mm]
15	134
20	184
25	234
30	284
35	334

Fastening
M8 Fastening with screws ø D = M8
M10 Fastening with screws ø D = M10

Seals
A NBR
V FPM

Execution
P01 MP Filtri standard
Pxx Customized

Hydraulic combined filters for installation on the return and suction lines of hydrostatic transmissions (HSTs) for commercial vehicles, construction machinery, agricultural vehicles, and mobile work equipment with hydrostatic drive.

Advantage for the installation:
- **Space-saving assembly**
- **Reduced assembly time**
- **Fewer connections to the tank**
- **Protection from the pollution of the tank**

Advantages for the operativity:
- **Absolute filtration of the oil for the hydrostatic drive**
- **Fulfilment of the purity requirements according to ISO 4406, as specified by the manufacturer of the driving drives.**
- **Protection against damages from cavitation even under adverse conditions, e.g. cold start**
- **Less formation of free air in the system**
- **Easier maintenance operations (one spare filter element instead of two)**

FILTER SIZING

For the proper corrective factor Y see chapter at page 21

Return / Suction filters

MYCLEAN

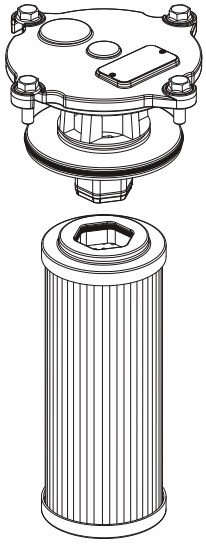
THE NEW FILTER CONCEPT

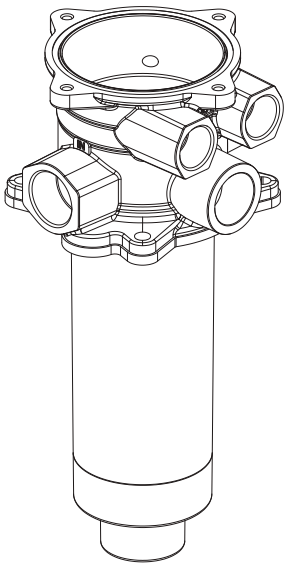
MRSX RSX series

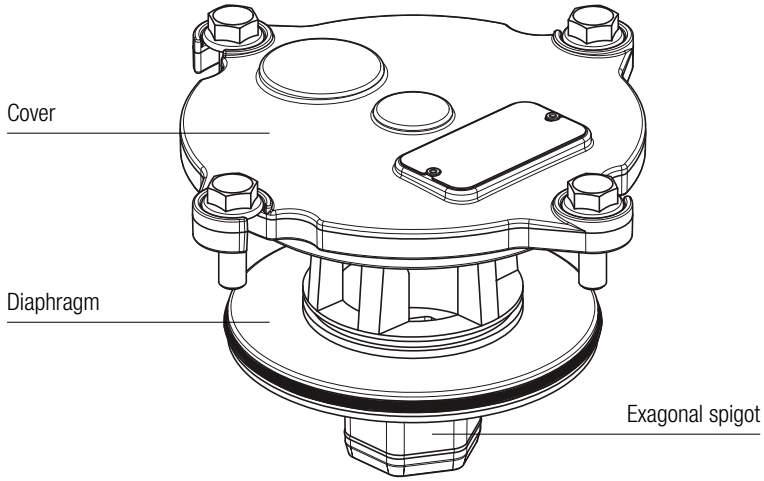
NEW FILTER ELEMENT WITH EXCLUSIVE INTERFACE CONNECTION

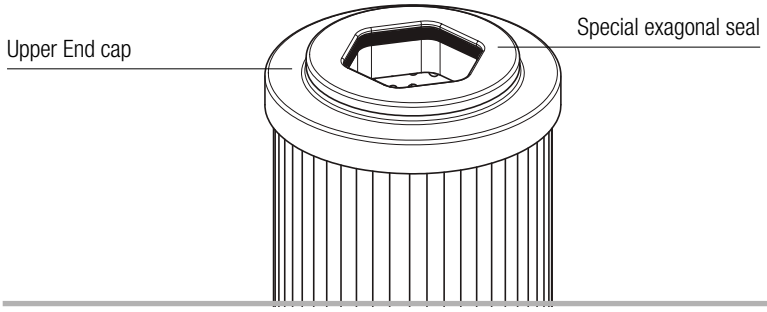
- **Protects the machine from improper use of non-original products.**
- **Safety of constant quality protection & reliability**

With exclusive filter element you are sure that only filter elements MP Filtri can be used, ensuring the best cleaning level of the oil due to the use of originals filter elements.







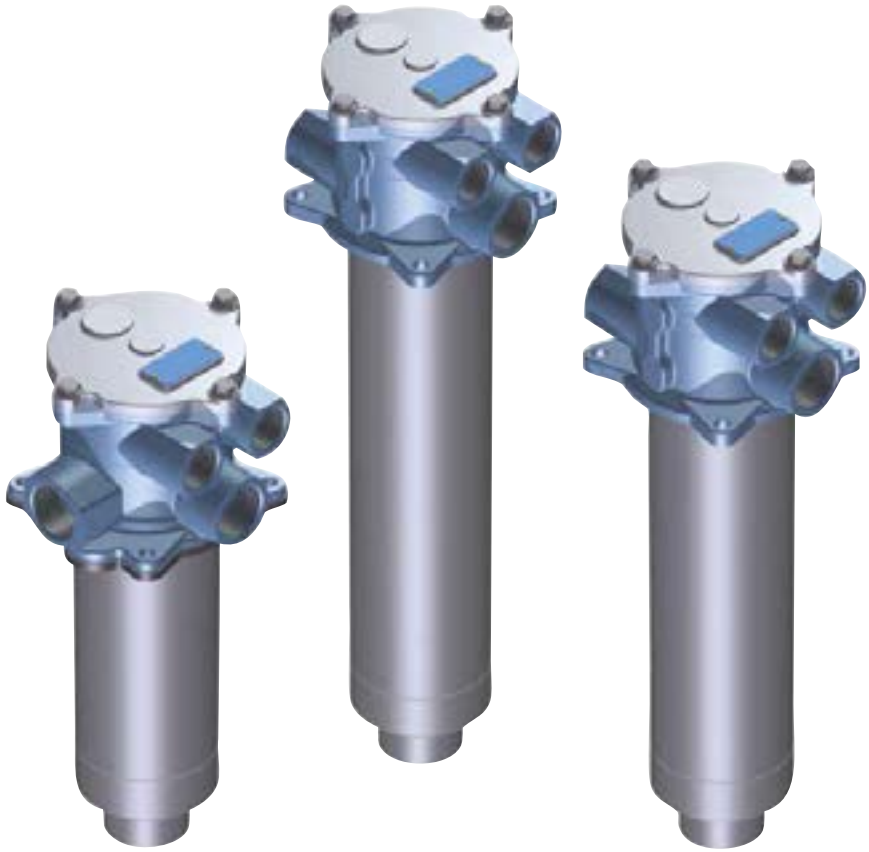


The products identified as MRSX and RSX
are protected by one or more of the following patent applications:

European Patent Pending: n° 16181725.9
Italian Patent Pending: n° 102015000040473
US Patent Pending: n° 15/224,337
Canadian Patent Pending: n° 2,937,258

MRSX series

Maximum pressure up to 10 bar - Flow rate up to 300 l/min



Technical data

Return / Suction filter
Tank mounted

Maximum pressure up to 10 bar - Flow rate up to 300 l/min

Filter housing materials
- Head: Aluminium
- Cover: Nylon (MRSX 116)
  Aluminium (MRSX 165-166)
- Bowl: Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
Working pressure: 1 MPa (10 bar)

Temperature
From -25 °C to +110 °C

Δp element type
- RSX: 10 bar
- Oil flow from exterior to interior.

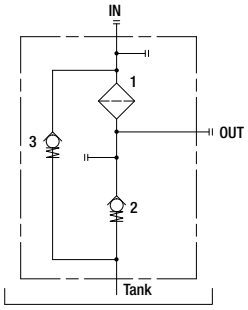
Weights [kg] and volumes [dm³]

	Weights [kg]				Volumes [dm³]			
	Length	1	2	3	Length	1	2	3
MRSX 116		1.30	1.40	-		0.80	1.00	-
MRSX 165		3.40	3.80	4.10		2.00	2.60	3.00
MRSX 166		3.40	3.80	4.10		2.00	2.60	3.00

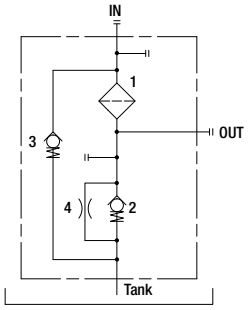
Hydraulic symbols
MRSX 116

LEGEND
1 - Filter element
2 - Back-Pressure valve: opening pressure 0.5 bar ±10%
3 - Bypass valve: opening pressure 2.5 bar ±10%
4 - Depressurization valve
5 - Anti-Cavitation valve
6 - Safety filter element (wire mesh 60 µm)
7 - Anti-Cavitation valve / Anti-Emptying valve

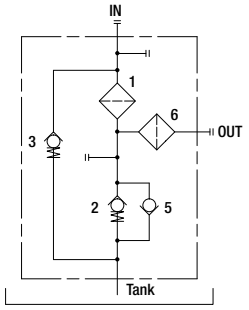
Valves "A" option



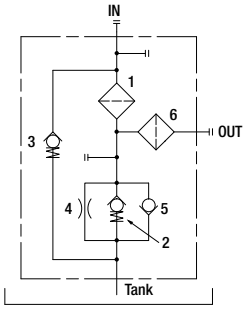
Valves "B" option



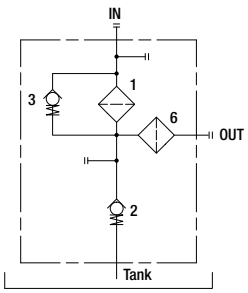
Valves "C" option



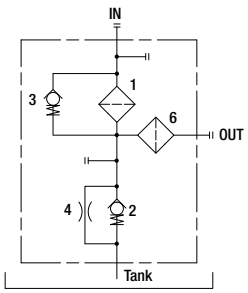
Valves "D" option



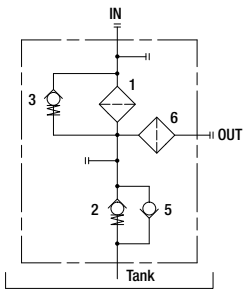
Valves "E" option



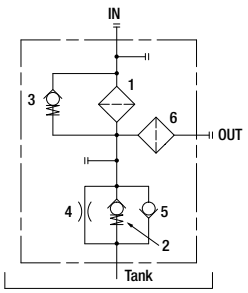
Valves "F" option



Valves "G" option

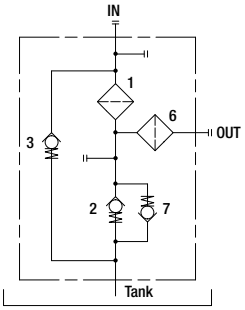


Valves "H" option

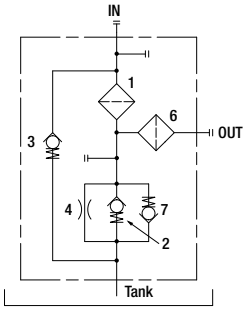


Suitable only for tank side-wall mounting

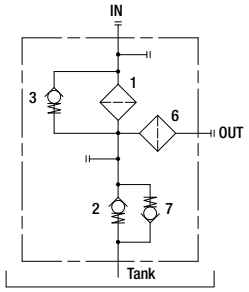
Valves "I" option



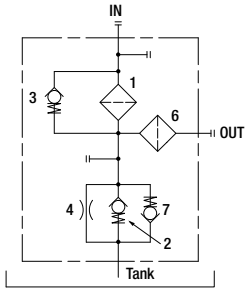
Valves "L" option



Valves "M" option



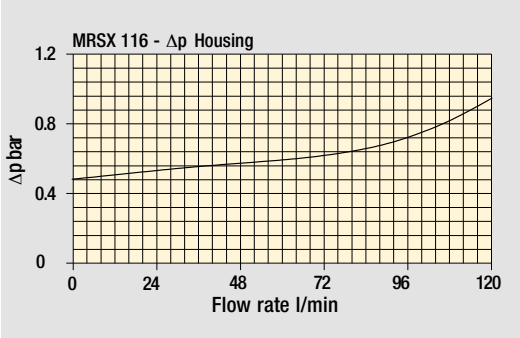
Valves "N" option

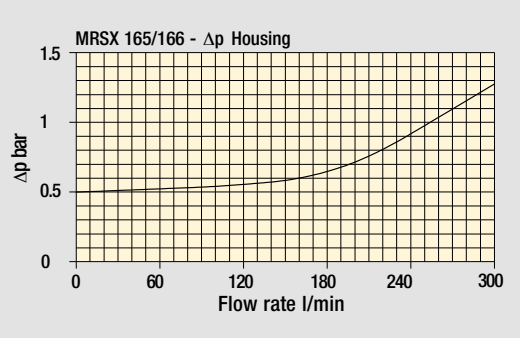


Pressure drop

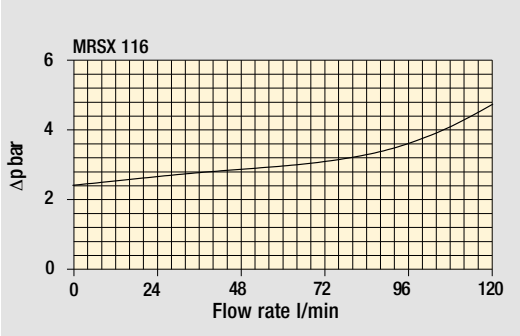
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

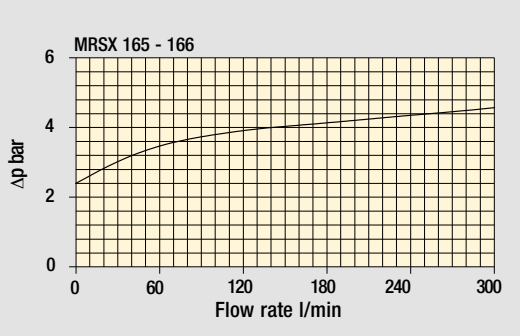
Filter housings Δp pressure drop





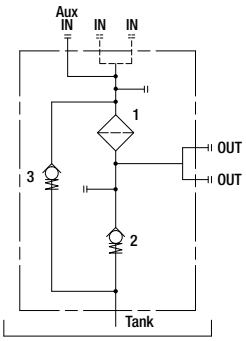
Bypass valve pressure drop



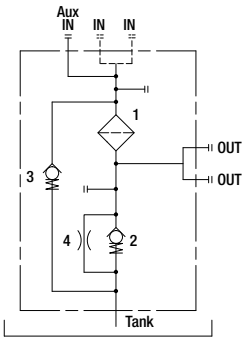


Hydraulic symbols
MRSX 165 - 166

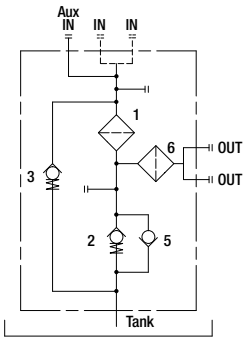
Valves "A" option



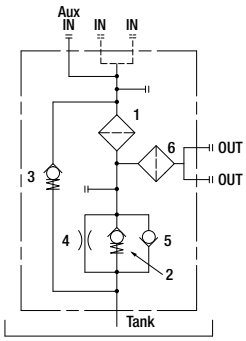
Valves "B" option



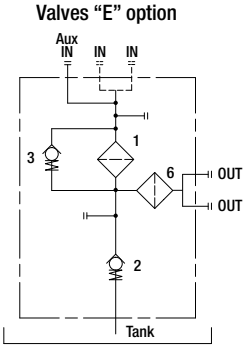
Valves "C" option



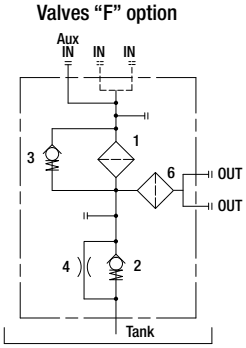
Valves "D" option



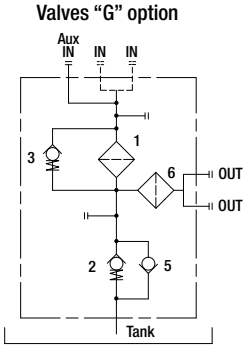
Valves "E" option



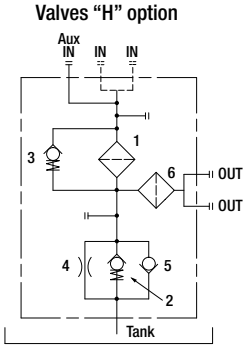
Valves "F" option



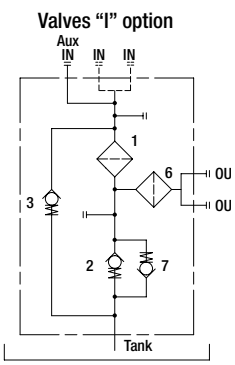
Valves "G" option



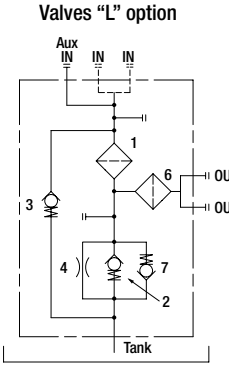
Valves "H" option



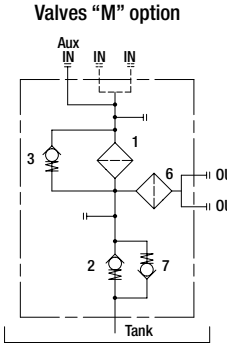
Valves "I" option



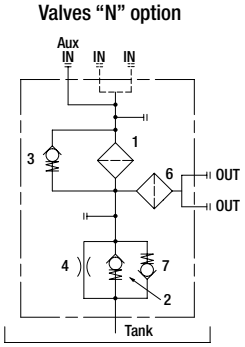
Valves "L" option



Valves "M" option



Valves "N" option



Suitable only for tank side-wall mounting

MRSX MRSX116

Designation & Ordering code

COMPLETE FILTER

Configuration example: MRSX116 | 1 | B | A | G1 | 0 | A16 | B | P01

Series and size

MRSX116 Filter element with private spigot

Length

1 | **2**

Hydraulic diagram configuration - see page 000

	Bypass valve to tank	Bypass valve to OUT
A | **B** | **C** | **D**	•	
E | **F** | **G** | **H**		•
I | **L**	•	
M | **N**		•

Seals and treatments

A	NBR, O-Ring on head	**B**	NBR, flat seal on head
V	FPM, O-Ring on head	**D**	FPM, flat seal on head

Connections IN		Connections OUT
G1	G3/4”	G3/4”
G2	G1”	G1”
G3	3/4” NPT	3/4” NPT
G4	1” NPT	1” NPT
G5	SAE 12 - 1 1/16” - 12 UN	SAE 12 - 1 1/16” - 12 UN
G6	SAE 16 - 1 5/16” - 12 UN	SAE 16 - 1 5/16” - 12 UN
D1	G1”	G3/4”
D2	1” NPT	3/4” NPT
D3	SAE 16 - 1 5/16” - 12 UN	SAE 12 - 1 1/16” - 12 UN

Aux IN connection

0 Without aux IN connection

Filtration rating (filter media)

A10 Inorganic microfiber 10 µm

A16 Inorganic microfiber 16 µm

A25 Inorganic microfiber 25 µm

Valves configuration

Mounting position	A	B	C	D	E	F	G	H	I	L	M	N
S Standard	•	•	•	•	•	•	•	•				
B Tank side-wall mounting	•	•			•	•			•	•	•	•

Execution

P01 MP Filtri standard

Pxx Customized

FILTER ELEMENT

Configuration example: RSX116 | 1 | A16 | A | P01

Element series and size

RSX116 Filter element with private spigot

Element length

1 | **2**

Filtration rating (filter media)

A10 Inorganic microfiber 10 µm

A16 Inorganic microfiber 16 µm

A25 Inorganic microfiber 25 µm

Seals

A NBR

V FPM

Execution

P01 MP Filtri standard

Pxx Customized

ACCESSORIES

Indicators on Return Line		page
BVA	Axial pressure gauge	250
BVR	Radial pressure gauge	250
BVP	Visual pressure indicator with automatic reset	251
BVQ	Visual pressure indicator with manual reset	251

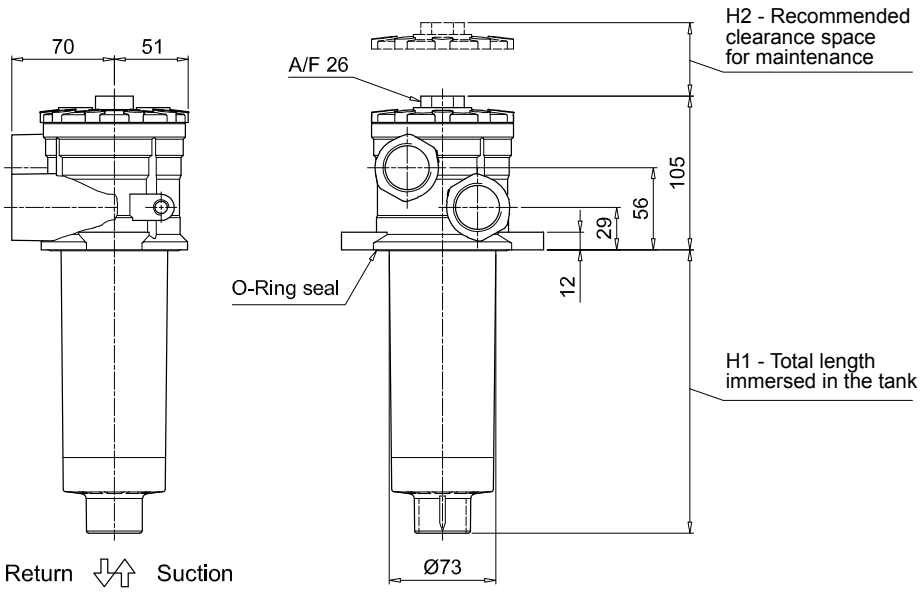
		page
BEA	Electrical pressure indicator	248
BEM	Electrical pressure indicator	248
BET	Electrical pressure indicator	248-249
BLA	Electrical / visual pressure indicator	249-250

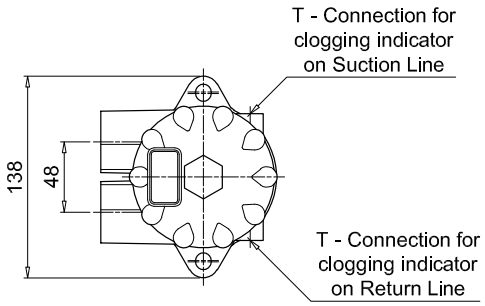
Indicators on Suction Line		page
VVB	Axial vacuum gauge	247
VVS	Radial vacuum gauge	247

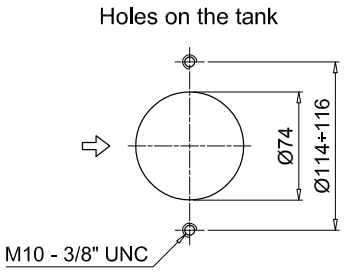
		page
VEB	Electrical vacuum indicator	245
VLB	Electrical / visual vacuum indicator	245

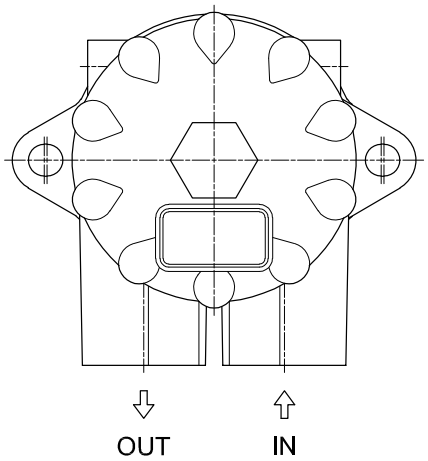
MRSX116		
Filter length	**H1 [mm]**	**H2 [mm]**
1	203	240
2	263	300

Connections	T
G1 - G2	G1/8"
G3 - G4	1/8" NPT
G5 - G6	1/8" NPT
D1	G1/8"
D2 - D3	1/8" NPT









MRSX MRSX165 - MRSX166

Designation & Ordering code

COMPLETE FILTER

Configuration example: MRSX166 | 2 | C | V | G3 | 1 | A10 | S | P01

Series and size

MRSX165 | **MRSX166** Filter element with private spigot

Length

1 | **2** | **3** |

Hydraulic diagram configuration - see page 000

	Bypass valve to tank	Bypass valve to OUT
A | **B** | **C** | **D**	•	
E | **F** | **G** | **H**		•
I | **L**	•	
M | **N**		•

Seals and treatments

A	NBR, O-Ring on head	**B**	NBR, flat seal on head
V	FPM, O-Ring on head	**D**	FPM, flat seal on head

Connections

	IN (size 165)	IN (size 166)	Aux IN	OUT
G1	G1 1/4"	G1"	G1 1/4"	G1"
G2	1 1/4" NPT	1" NPT	1 1/4" NPT	1" NPT
G3	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN	SAE 16 - 1 5/16" - 12 UN

Aux IN connection

		MRS 165	MRS 166
0	Without aux IN connection	•	-
1	With aux IN connection - see previous table	•	•

Filtration rating (filter media)

A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Valves configuration

Mounting position	A	B	C	D	E	F	G	H	I	L	M	N
S Standard	•	•	•	•	•	•	•	•				
B Tank side-wall mounting	•	•			•	•			•	•	•	•

Execution

P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: RSX165 | 2 | A10 | V | P01

Element series and size

RSX165 Filter element with private spigot

Element length

1 | **2** | **3** |

Filtration rating (filter media)

A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Seals

A NBR
V FPM

Execution

P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Indicators on Return Line	page		page
BVA Axial pressure gauge	250	**BEA** Electrical pressure indicator	248
BVR Radial pressure gauge	250	**BEM** Electrical pressure indicator	248
BVP Visual pressure indicator with automatic reset	251	**BET** Electrical pressure indicator	248-249
BVQ Visual pressure indicator with manual reset	251	**BLA** Electrical / visual pressure indicator	249-250

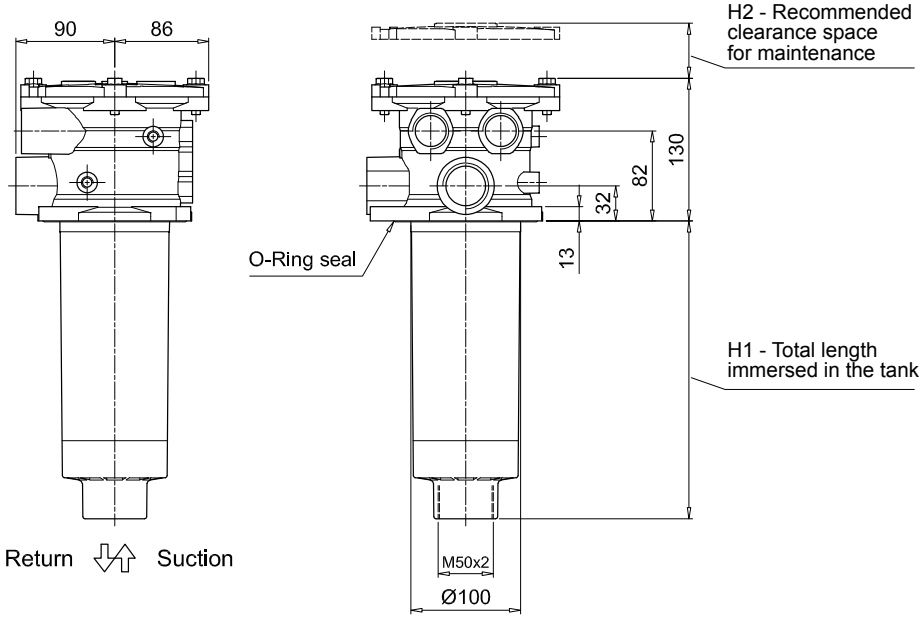
Indicators on Suction Line	page		page
VVB Axial vacuum gauge	247	**VEB** Electrical vacuum indicator	245
VVS Radial vacuum gauge	247	**VLB** Electrical / visual vacuum indicator	245

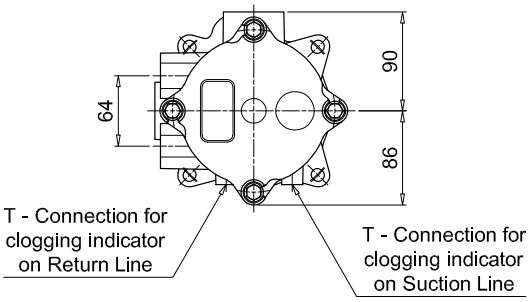
Dimensions

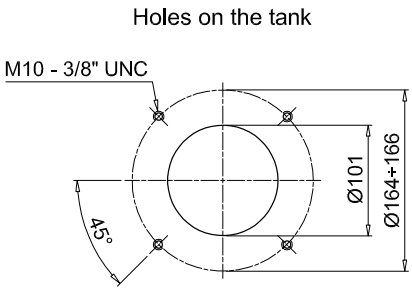
MRSX165

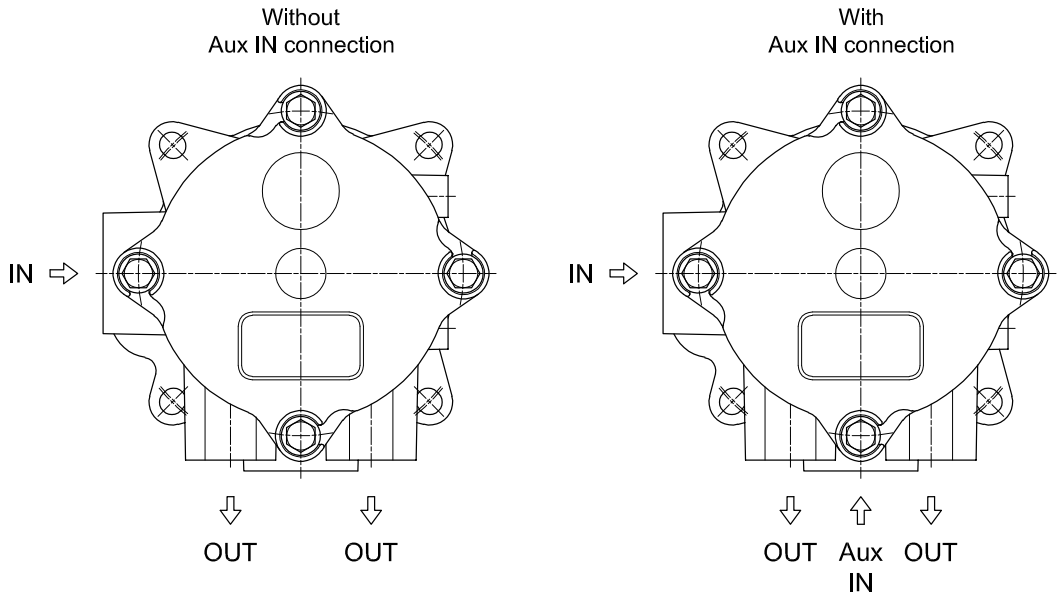
Filter length	H1 [mm]	H2 [mm]
1	270	320
2	378	430
3	445	500

Connections	T
G1	G1/8"
G2 - G3	1/8" NPT

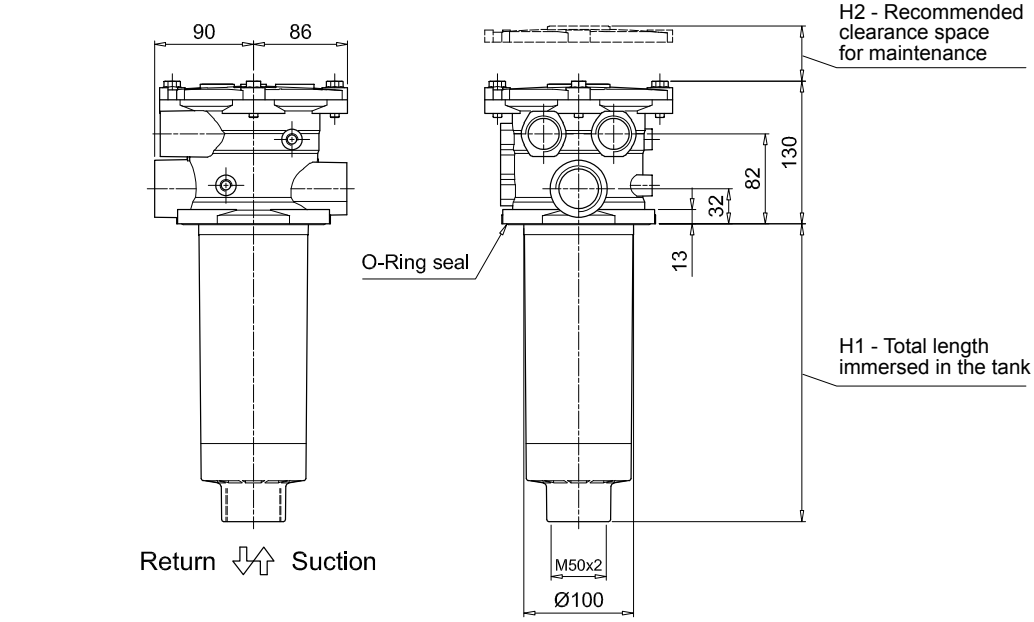


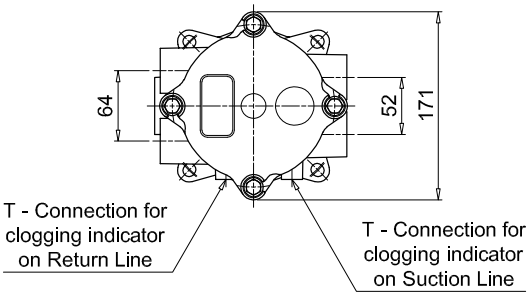


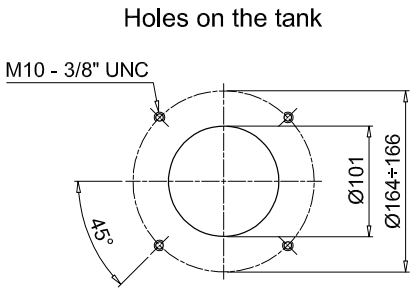


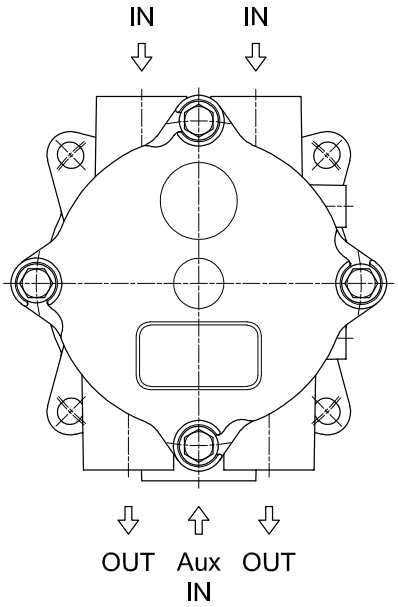


Dimensions







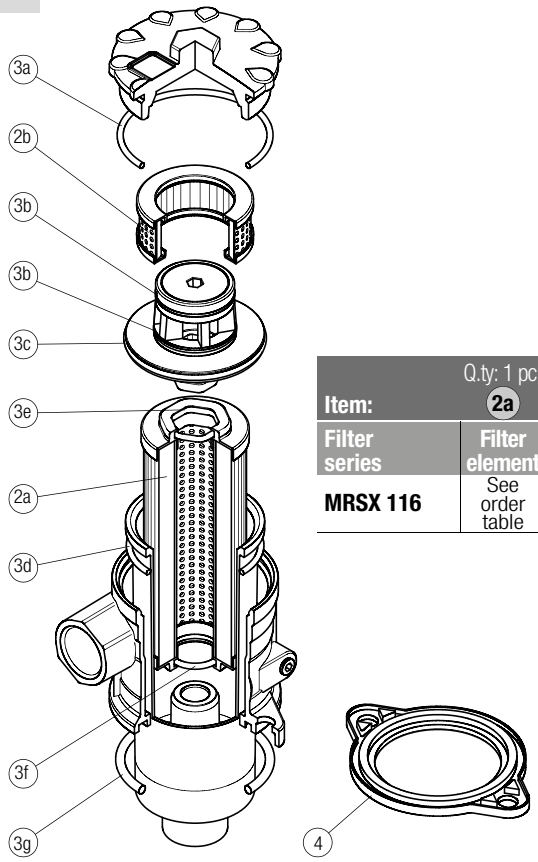


MRSX166

Filter length	H1 [mm]	H2 [mm]
1	270	320
2	378	430
3	445	500

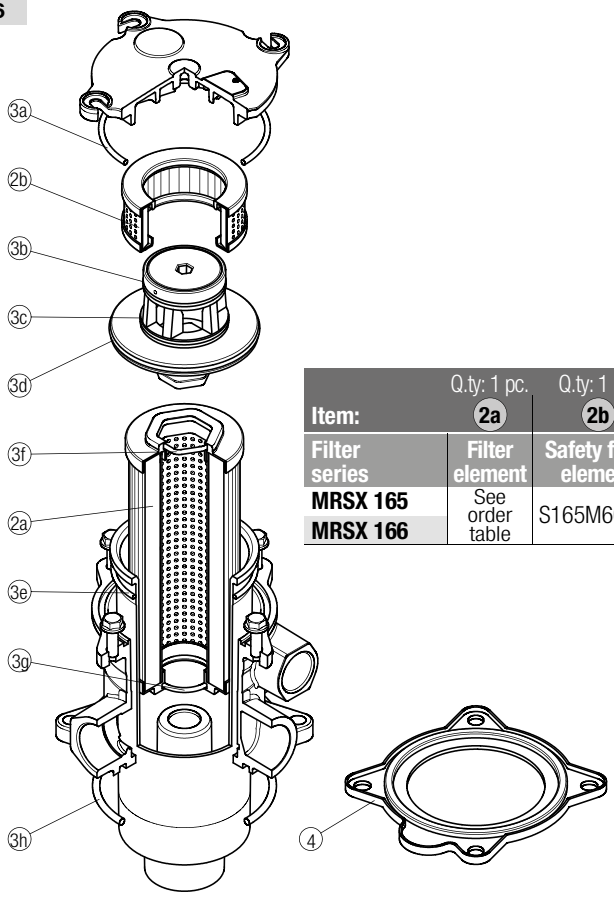
Connections	T
G1	G1/8"
G2 - G3	1/8" NPT

MRSX 116



Item:	Q.ty: 1 pc. 2a	Q.ty: 1 pc. 2b	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Safety filter element	Seal Kit code number NBR	FPM	Optional head seal (molded gasket) NBR	FPM
MRSX 116	See order table	S116M60P01	02050617	02050619	01026593	01026598

MRSX 165 - 166



Item:	Q.ty: 1 pc. 2a	Q.ty: 1 pc. 2b	Q.ty: 1 pc. 3 (3a ÷ 3h)		Q.ty: 1 pc. 4	
Filter series	Filter element	Safety filter element	Seal Kit code number NBR	FPM	Optional head seal (molded gasket) NBR	FPM
MRSX 165	See order table	S165M60P01	02050627	02050630	01026621	01026622
MRSX 166			02050627	02050630	01026626	01026627

LMP 124 series
MULTIPORT

Maximum pressure up to 80 bar - Flow rate up to 200 l/min

Technical data

Return / Suction filter
In-line

Maximum pressure up to 80 bar - Flow rate up to 200 l/min

Filter housing materials
- Head: Aluminium
- Housing: Cataphoresis - Painted Steel
- Bypass valve: Brass - Aluminium

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 8 MPa (80 bar)
- Test pressure: 12MPa (120 bar)
- Burst pressure: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 80 bar (8 MPa)

Temperature
From -25 °C to +110 °C

Note
LMP124 filters are provided for vertical mounting

Bypass valve
- Opening pressure 250 kPa (2.5 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

	Weights [kg]					Volumes [dm³]				
	Length	1	2	3	4	Length	1	2	3	4
LMP 124		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53

Multiport styles

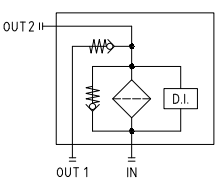
Style **C - D - E - F**

A Return
B Tank
C Pump

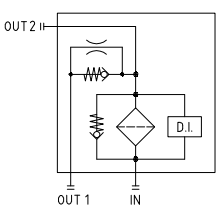
Style **G - H**

A Return
B Pump
C Tank

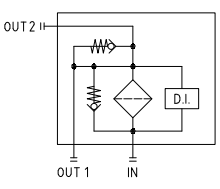
C



D



E



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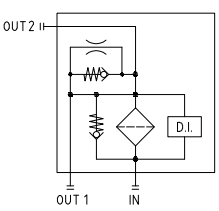
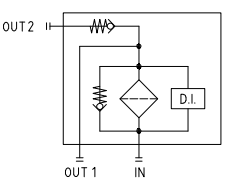
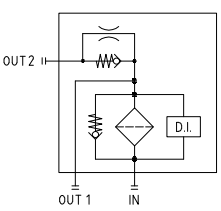


G



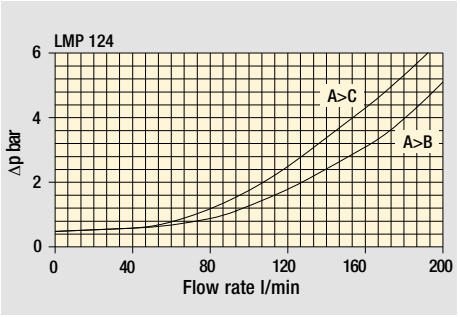
H



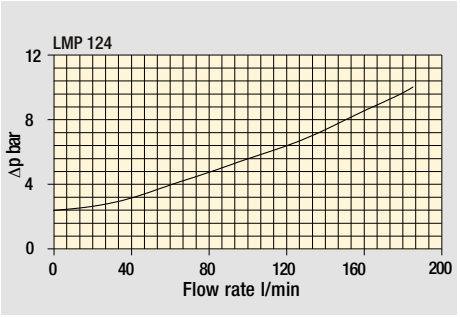
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

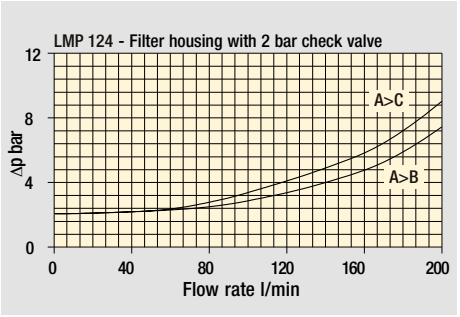
Filter housings Δp pressure drop

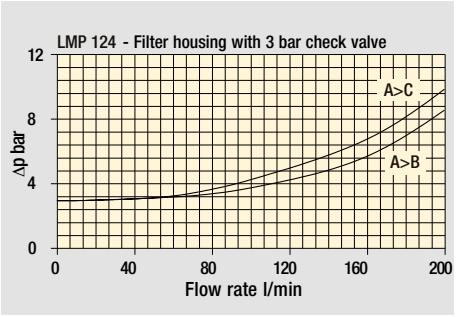


Bypass valve pressure drop



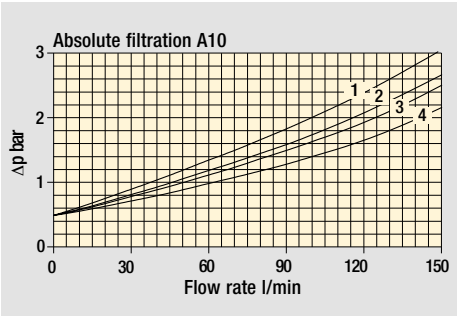
Valves

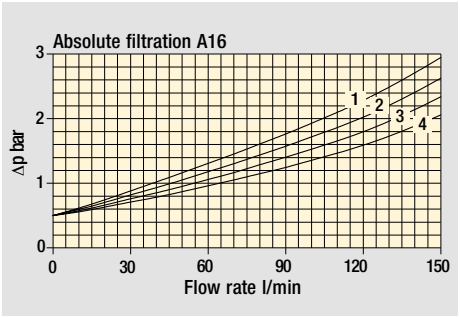


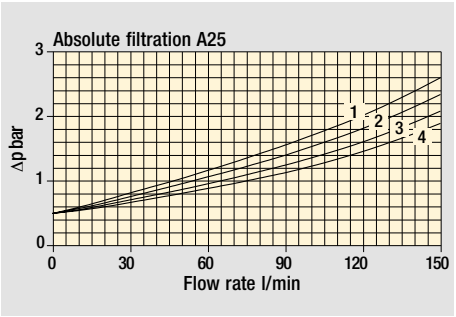


Filter length: **1 - 2 - 3 - 4**

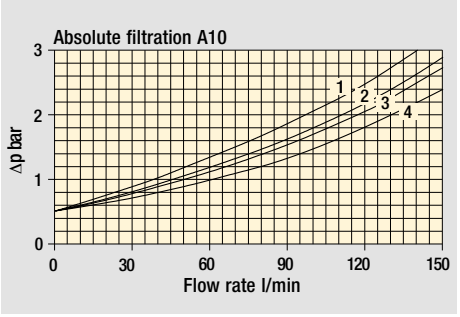
STYLE **C - D - E - F**

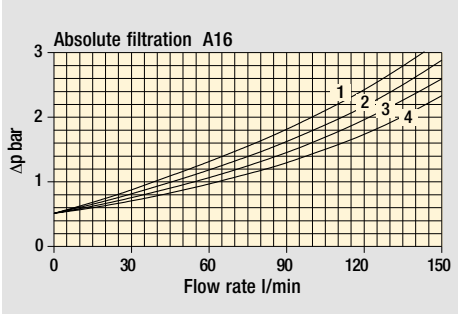


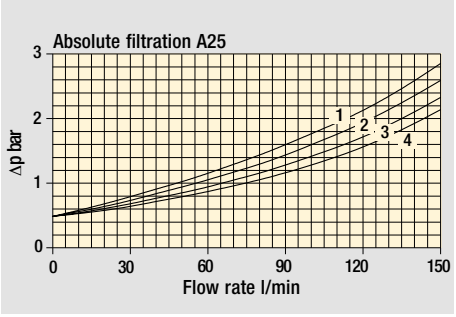




STYLE **G - H**







Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP124 | 4 | C | A | F | 1 | A10 | N | P01

Series and size
LMP124

Filter length
1 | **2** | **3** | **4** |

Hydraulic diagram configuration - see previous page
C | **D** | **E** | **F** | **G** | **H** |

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections
B G1”
F SAE 16 - 1 5/16” - 12 UN

Connection for indicator
1 Without
2 With connection G1/8” for clogging indicator
3 With connection G1/4” for clogging indicator
4 With connection for differential indicator

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU110 | 4 | A10 | A | N | P01

Element series and size
CU110

Element length
1 | **2** | **3** | **4** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Clogging indicators

		page
BVA	Axial pressure gauge	250
BVR	Radial pressure gauge	250
BVP	Visual pressure indicator with automatic reset	251
BVQ	Visual pressure indicator with manual reset	251
BEA	Electrical pressure indicator	248
BEM	Electrical pressure indicator	248
BET	Electrical pressure indicator	248-249
BLA	Electrical / visual pressure indicator	249-250

Differential indicators

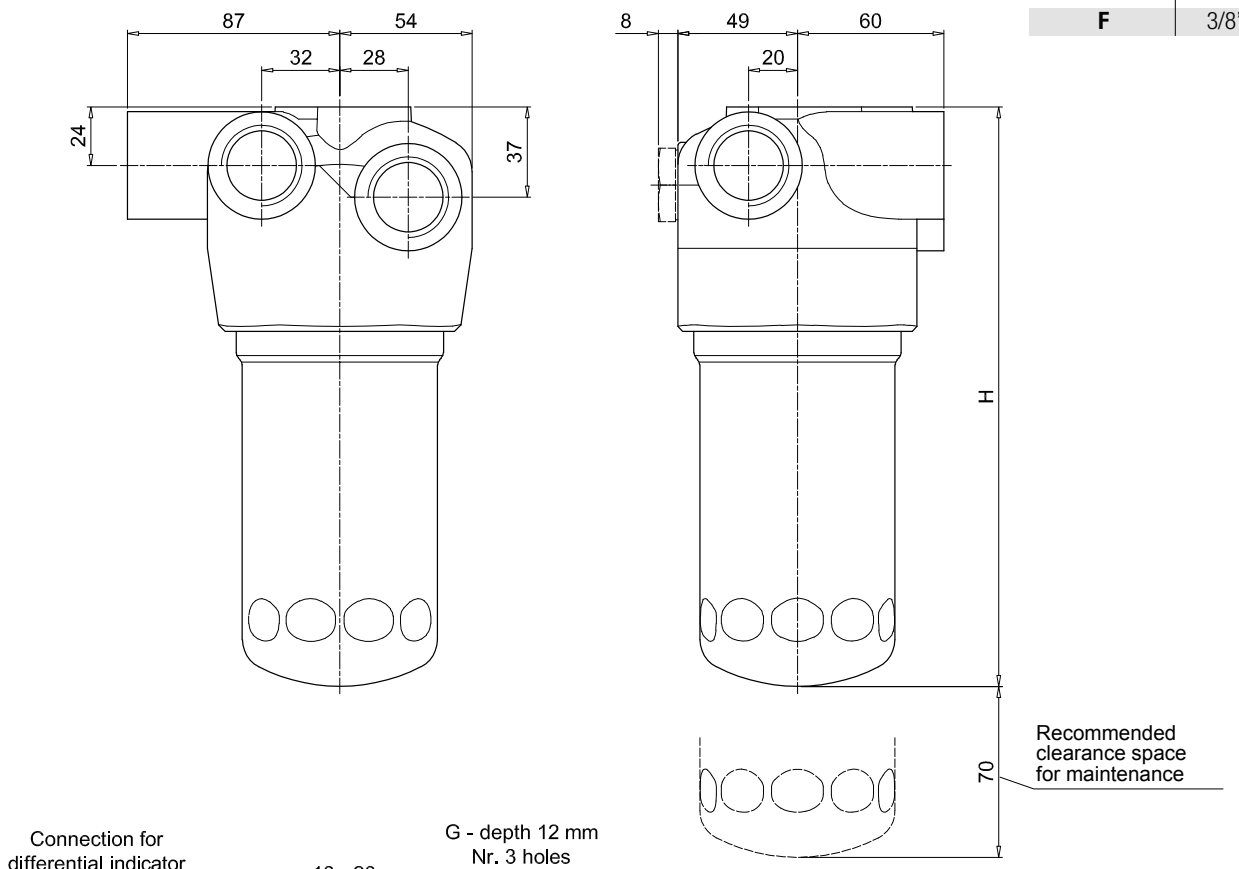
		page
DEA	Electrical differential indicator	252
DEM	Electrical differential indicator	252-253
DLA	Electrical / visual differential indicator	253-254
DLE	Electrical / visual differential indicator	254
DTA	Electronic differential indicator	255
DVA	Visual differential indicator	255
DVM	Visual differential indicator	255

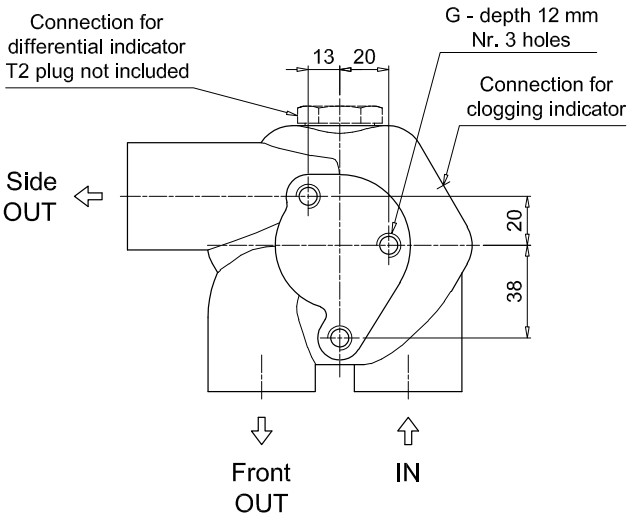
Additional features

		page
T2	Plug	256

LMP 124 MULTIPORT	
Filter length	**H [mm]**
1	182
2	215
3	265
4	365

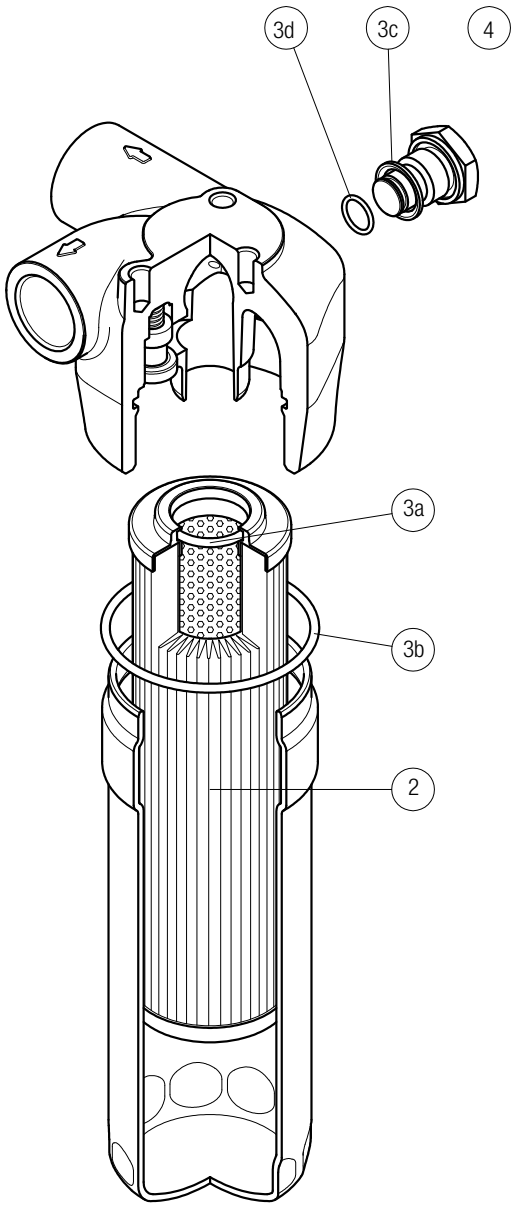
Connections	**R**
B	M10
F	3/8" UNC





Order number for spare parts

LMP 124 MULTIPORT



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
LMP 124 MULTIPORT	See order table	02050478	02050479	T2H	T2V

Clogging indicators

Vacuum indicators
Barometric indicators
Differential indicators

Introduction

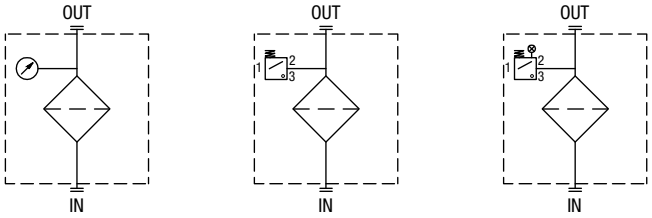
Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.
These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.
The indicator is set to alarm before the element becomes fully clogged.
MP Filtri can supply indicators of the following designs:

- **Vacuum switches and gauges**
- **Pressure switches and gauges**
- **Differential pressure indicators**

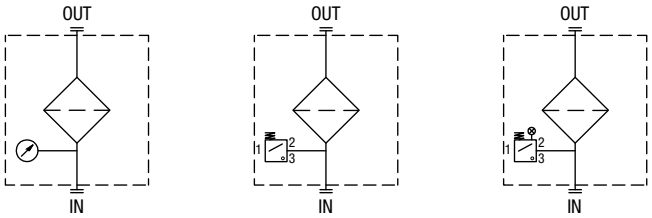
These type of devices can be provided with a visual, electrical or both signals.

Suitable indicator types

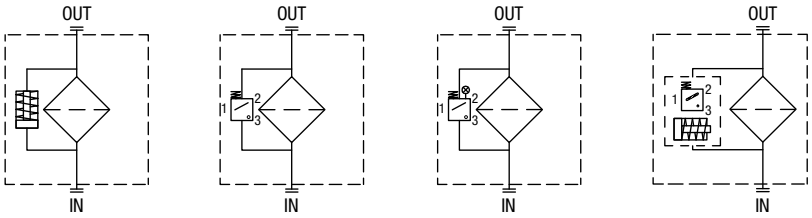
VACUUM INDICATORS
Vacuum indicators are used on the Suction line to check the efficency of the filter element.
They measure the pressure downstream of the filter element.
Standard items are produced with R 1/4" EN 10226 connection.
Available products with R 1/8" EN 10226 to be fitted on MPS series.



BAROMETRIC INDICATORS
Pressure indicators are used on the Return line to check the efficency of the filter element.
They measure the pressure upstream of the filter element.
Standard items are produced with R 1/8" EN 10226 connection.



DIFFERENTIAL INDICATORS
Differential indicators are used on the Pressure line to check the efficency of the filter element.
They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator
Suction line	MRSX 116 - 165 - 166	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
Return line	MRSX 116 - 165 - 166 LMP 124	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01

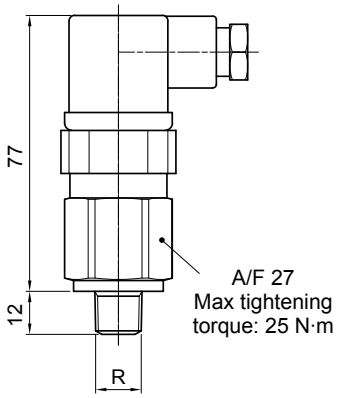
VACUUM INDICATORS

Dimensions

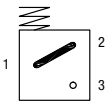
VE*50

Electrical Vacuum Indicator

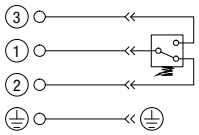
R	Ordering code
EN 10226 - R1/4"	VE A 21 A A 50 P01
EN 10226 - R1/8"	VE B 21 A A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

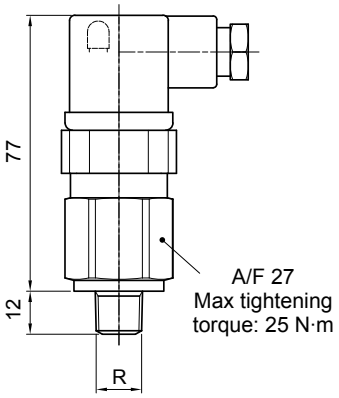
Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

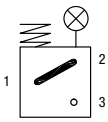
VL*51 - VL*52 - VL*53

Electrical/Visual Vacuum Indicator

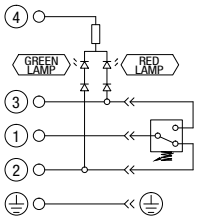
R	Ordering code
EN 10226 - R1/4"	VL A 21 A A xx P01
EN 10226 - R1/8"	VL B 21 A A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Brass - Nylon
- Seal: NBR

Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

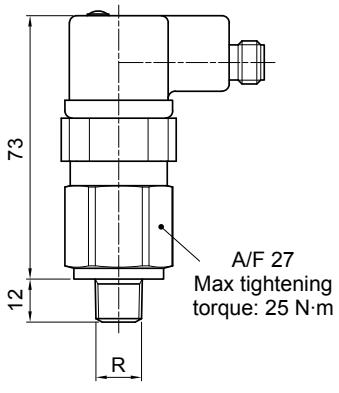
Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 115 Vdc	4 A / 230 Vac

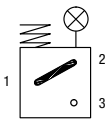
VL*71

Electrical/Visual Vacuum Indicator

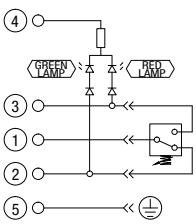
Connections	Indicator code
EN 10226 - R1/4"	VL A 21 A A 71 P01
EN 10226 - R1/8"	VL B 21 A A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

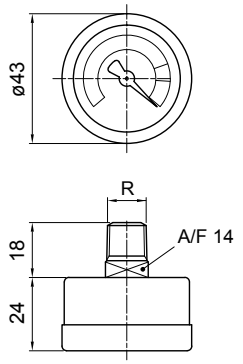
Technical data
- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

VVA - VVB

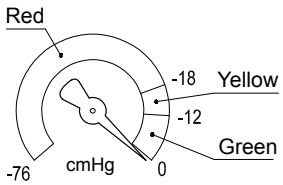
Axial Vacuum Gauge

R	Ordering code
EN 10226 - R1/4"	VV A 16 P01
EN 10226 - R1/8"	VV B 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

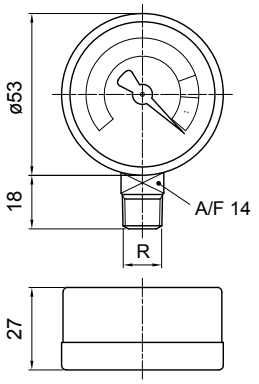
Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40°C to +60°C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

VVR - VVS

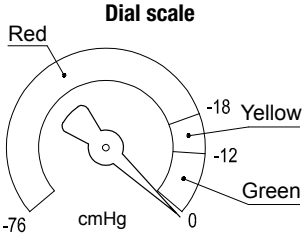
Radial Vacuum Gauge

R	Ordering code
EN 10226 - R1/4"	VV R 16 P01
EN 10226 - R1/8"	VV S 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40°C to +60°C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

DESIGNATION & ORDERING CODE

Configuration example 1:	VE	A	21	A	A	50	P01
Configuration example 2:	VL	B	21	A	A	71	P01
Configuration example 3:	VV	R	16				P01

Series

- **VE** Electrical vacuum indicator
- **VL** Electrical/Visual vacuum indicator
- **VV** Vacuum gauge

Type VE - VL

- **A** Connection EN 10226 - R1/4"
- **B** Connection EN 10226 - R1/8"

Type VV

- **A** Axial connection EN 10226 - R1/4"
- **B** Axial connection EN 10226 - R1/8"
- **R** Radial connection EN 10226 - R1/4"
- **S** Radial connection EN 10226 - R1/8"

Vacuum setting	VE	VL	VV
16 0.16 bar			•
21 0.21 bar	•	•	

Seals	VE	VL	VV
A NBR	•	•	

Thermostat	VE	VL	VV
A Without	•	•	

Electrical connections	VE	VL	VV
50 Connection EN 175301-803	•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc		•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc		•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•	

Option

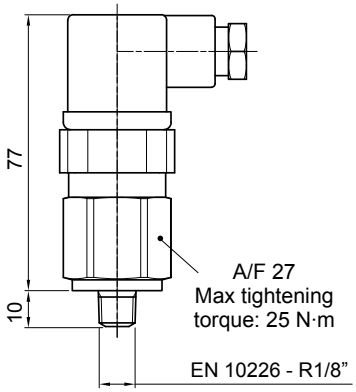
- **P01** MP Filtri standard
- **Pxx** Customized

Dimensions

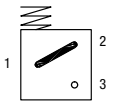
BEA*50

Electrical Pressure Indicator

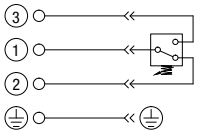
Settings	Ordering code
1.5 bar ±10%	BE A 15 H A 50 P01
2 bar ±10%	BE A 20 H A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

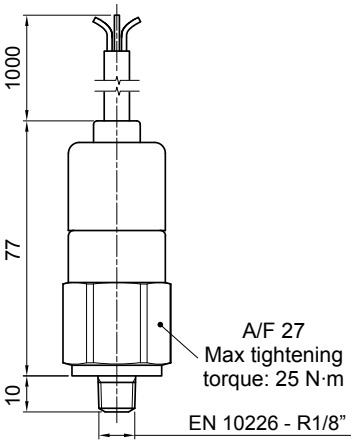
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

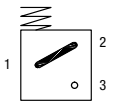
BEM*41

Electrical Pressure Indicator

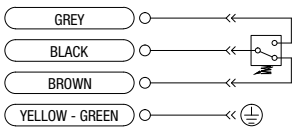
Settings	Ordering code
1.5 bar ±10%	BE M 15 H A 41 P01
2 bar ±10%	BE M 20 H A 41 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

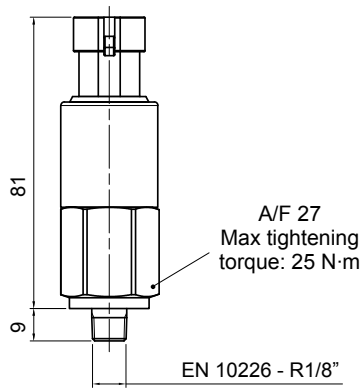
Electrical data
- Electrical connection: Four-core cable
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- CE certification

On request this indicator can be provided with main connectors in use for wirings.

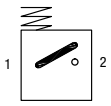
BET*10

Electrical Pressure Indicator

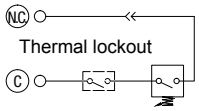
Settings	Ordering code
2 bar ±10%	BE T 20 H A 10 P01
2.5 bar ±10%	BE T 25 H A 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

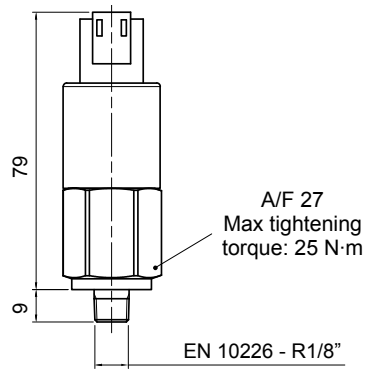
Technical data
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30°C
- CE certification

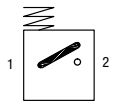
BET*30

Electrical Pressure Indicator

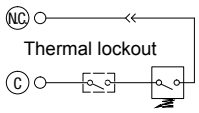
Settings	Ordering code
2 bar ±10%	BE T 20 H A 30 P01
2.5 bar ±10%	BE T 25 H A 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

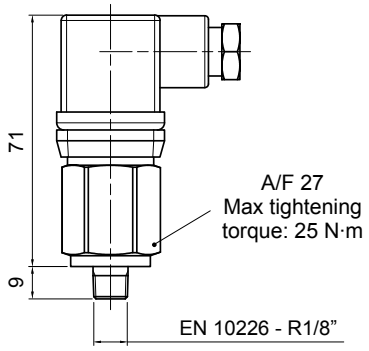
Technical data
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

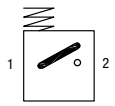
BET*50

Electrical Pressure Indicator

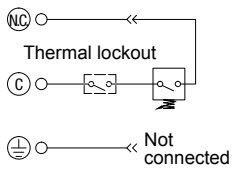
Settings	Ordering code
2 bar ±10%	BE T 20 H A 50 P01
2.5 bar ±10%	BE T 25 H A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

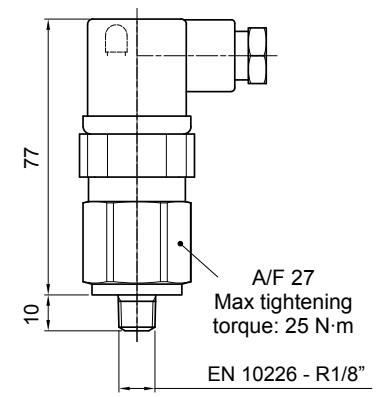
Technical data
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +100 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.5 A / 48 Vdc
- Thermostat condition: Open up to 30 °C
- CE certification

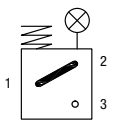
BL*51 - BL*52 - BL*53

Electrical/Visual Pressure Indicator

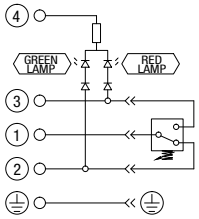
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A xx P01
2 bar ±10%	BL A 20 H A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR

Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc	4 A / 230 Vac

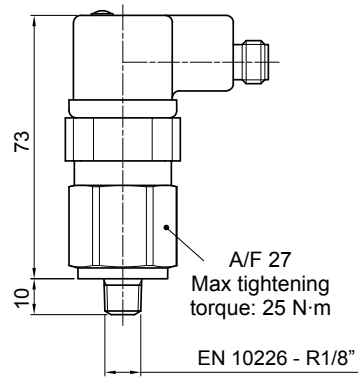
BAROMETRIC INDICATORS

Dimensions

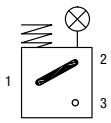
BL*71

Electrical/Visual Pressure Indicator

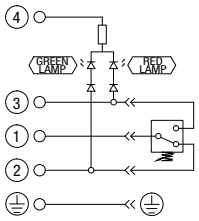
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A 71 P01
2 bar ±10%	BL A 20 H A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

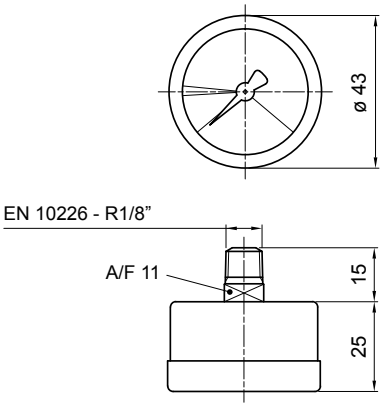
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

BVA

Axial Pressur e Gauge

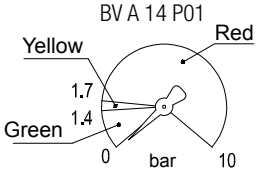
Settings	Ordering code
1.4 bar ±10%	BV A 14 P01
2.5 bar ±10%	BV A 25 P01



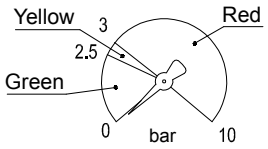
Hydraulic symbol

Dial scale

BV A 14 P01



BV A 25 P01



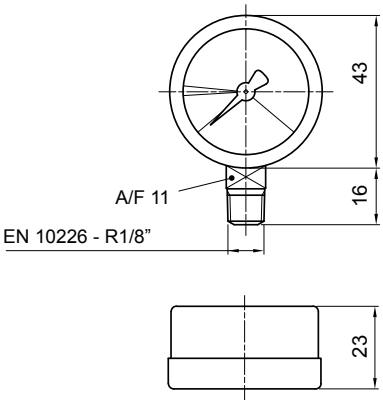
Materials
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

Technical data
- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

BVR

Radial Pressure Gauge

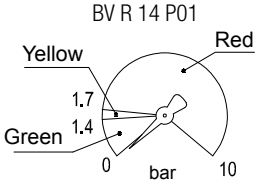
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01



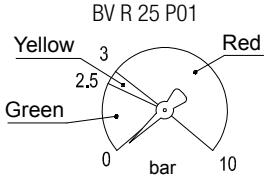
Hydraulic symbol

Dial scale

BV R 14 P01



BV R 25 P01



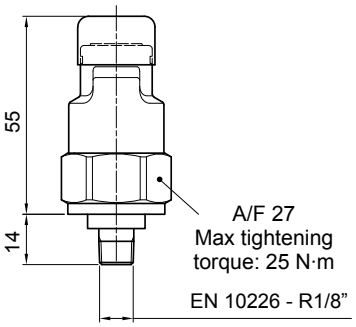
Materials
- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

Technical data
- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

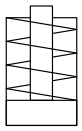
BVP - BVQ

Visual Pressure Indicator

Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2 bar ±10%	BV P 20 H P01
	BV Q 20 H P01



Hydraulic symbol



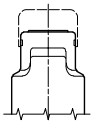
Materials

- Body: Brass
- Cover / internal parts: Nylon
- Caps: VMQ
- Seal: HNBR

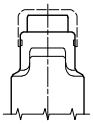
Technical data

- Reset: BVP - Automatic reset; BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP45 according to EN 60529

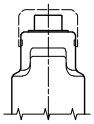
Signals



Absence of pressure (no indicator)



Presence of pressure (green button rises gradually)



Clogged filter element (red button risen)

DESIGNATION & ORDERING CODE

Configuration example 1:	BE	M	15	H	A	41	P01
Configuration example 2:	BL	A	20	H	A	71	P01
Configuration example 3:	BV	R	14				P01
Configuration example 4:	BV	P	20	H			P01

Series

BE Electrical pressure indicator
BL Electrical/Visual pressure indicator
BV Visual pressure indicator

Type	BE	BL
A Standard type	•	•
M With wired electrical connection	•	
T With thermal switch	•	

BV	
A	Axial connection pressure gauge
R	Radial connection pressure gauge
P	Visual indicator with automatic reset
Q	Visual indicator with manual reset

Pressure setting	BEA-BEM	BET	BL	BVA-BVR	BVP-BVQ
14 1.4 bar				•	
15 1.5 bar	•		•		•
20 2 bar	•	•	•		•
25 2.5 bar		•		•	

Seals	BE	BL	BVA-BVR	BVP-BVQ
H HNBR	•	•		•

Thermostat	BE	VL	BV
A Without	•	•	

Electrical connections	BEA	BEM	BET	BL	BV
10 Connection AMP Superseal series 1.5			•		
30 Connection Deutsch DT-04-2-P			•		
41 Connection via four-core cable		•			
50 Connection EN 175301-803	•		•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc				•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc				•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc				•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc				•	

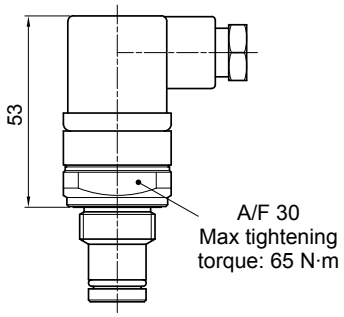
Option	
P01	MP Filtri standard
Pxx	Customized

Dimensions

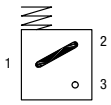
DEA*50

Electrical Differential Indicator

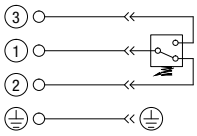
Settings	Ordering code
2 bar ±10%	DE A 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

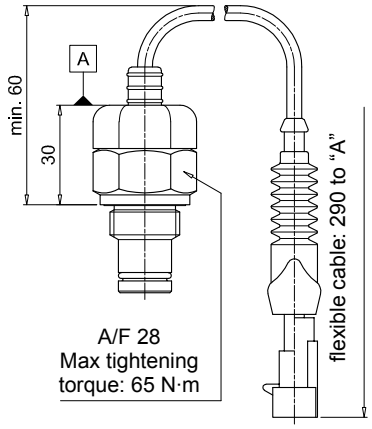
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

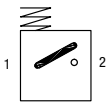
DEM*10

Electrical Differential Indicator

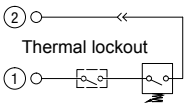
Settings	Ordering code
2 bar ±10%	DE M 20 xx 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

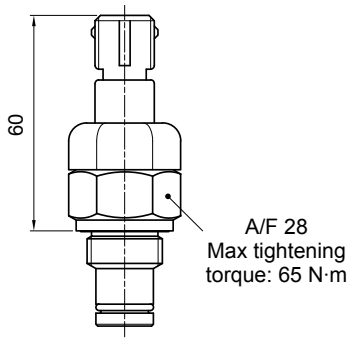
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

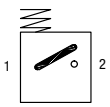
DEM*20

Electrical Differential Indicator

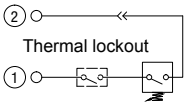
Settings	Ordering code
2 bar ±10%	DEM20xx20P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

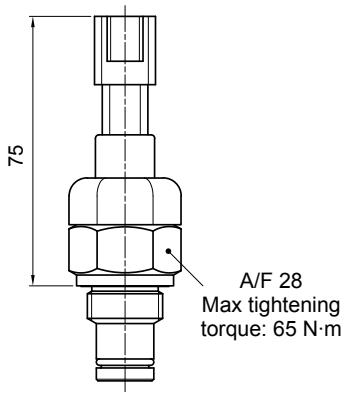
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

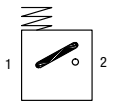
DEM*30

Electrical Differential Indicator

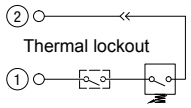
Settings	Ordering code
2 bar ±10%	DE M 20 xx 30 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

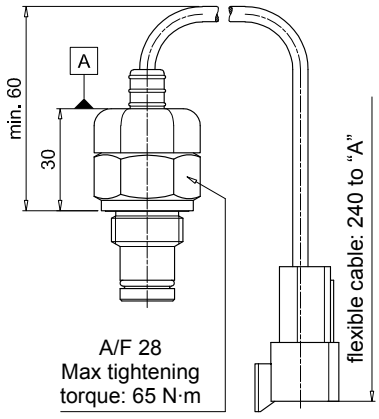
Electrical data

- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option “F”)

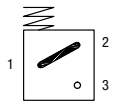
DEM*35

Electrical Differential Indicator

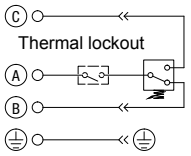
Settings	Ordering code
2 bar ±10%	DE M 20 xx 35 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

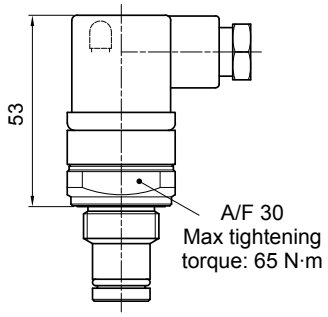
Electrical data

- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option “F”)

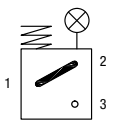
DLA*51 - DLA*52

Electrical/Visual Differential Indicator

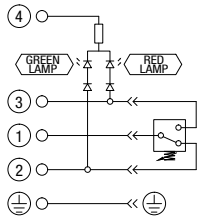
Settings	Ordering code
2 bar ±10%	DL A 20 x A xx P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data

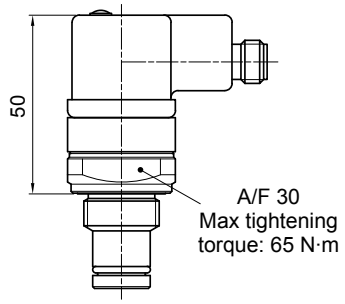
- Electrical connection: EN 175301-803
- Type: 51 / 52
- Lamps: 24 Vdc / 110 Vdc
- Resistive load: 0.8 A / 24 Vdc / 0.2 A / 110 Vdc

Dimensions

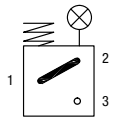
DLA*71

Electrical/Visual Differential Indicator

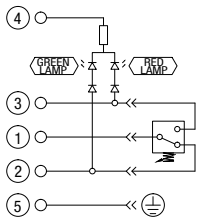
Settings	Ordering code
2 bar ±10%	DL A 20 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

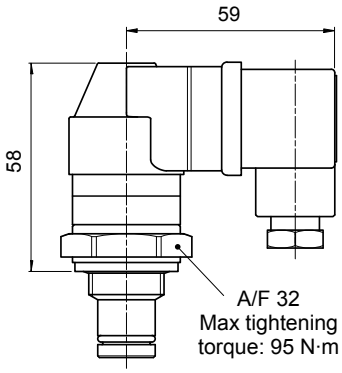
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110°C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

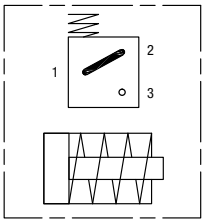
DLE*A50

Electrical/Visual Differential Indicator

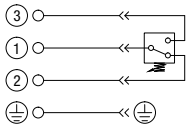
Settings	Ordering code
2 bar ±10%	DL E 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

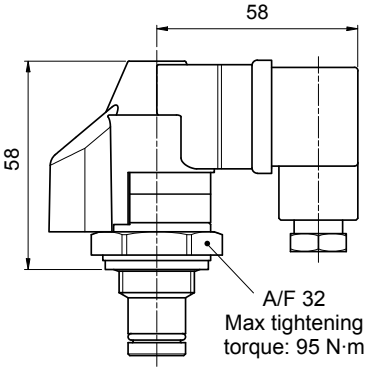
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

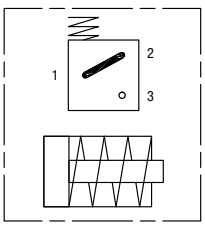
DLE*F50

Electrical/Visual Differential Indicator

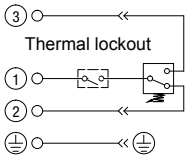
Settings	Ordering code
2 bar ±10%	DL E 20 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

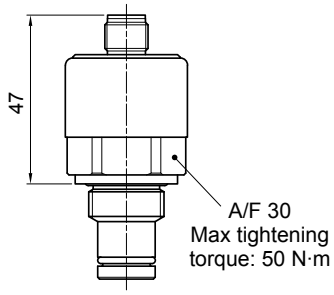
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

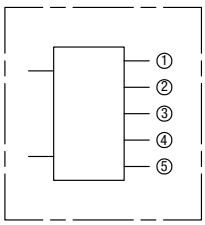
DTA*70

Electronic Differential Indicator

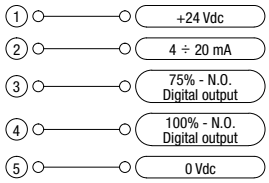
Settings	Ordering code
2 bar ±10%	DT A 20 x x 70 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

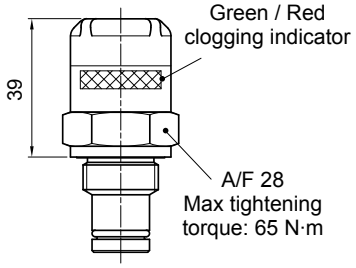
Electrical data

- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30°C (all output signals stalled up to 30°C)

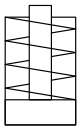
DVA

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV A 20 x P01



Hydraulic symbol



Materials

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

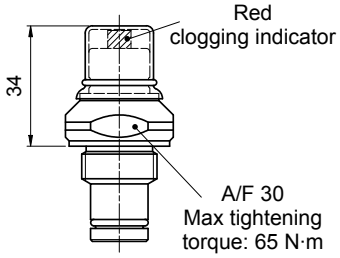
Technical data

- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110°C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

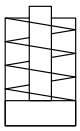
DVM

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV M 20 x P01



Hydraulic symbol



Materials

- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data

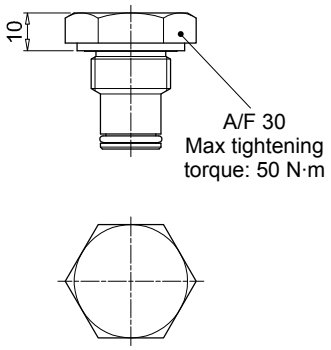
- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110°C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Dimensions

T2

Indicator plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V



Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	M	20	H	F	50	P01
Configuration example 2:	DL	E	20	V	A	71	P01
Configuration example 3:	DT	A	20	H	F	70	P01
Configuration example 4:	DV	M	20	V			P01

Series

- **DE** Electrical differential indicator
- **DL** Electrical/Visual differential indicator
- **DT** Electronic differential indicator
- **DV** Visual differential indicator

Type

	DE	DL	DT	DV
A Standard type	•	•	•	**A** With automatic reset
M With wired electrical connection	•			**M** With manual reset
E For high power supply		•		

Pressure setting

- **20** 2 bar

Seals

- **H** HNBR
- **V** FPM

Thermostat

	DEA	DEM	DLA	DLE	DT	DV
A Without	•	•	•	•		
F With thermostat		•		•	•	

Electrical connections

	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option

- **P01** MP Filtri standard
- **Pxx** Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	T2	H

Series

- **T2** Indicator plug

Seals

- **H** HNBR
- **V** FPM

Spin-On filters are used as process and safety filters to protect individual pumps, valves or the entire hydraulic circuit from contamination as per ISO 4406.

In-line Spin-On filters can be used for the following purposes:
- **Suction filters**
- **On the return circuit, for mounting on the line or on the tank cover**
- **In-line for low and medium pressure applications**

Spin-On filters are available in 4 configurations:
- **Single cartridge in-line**
- **In-line with two parallel cartridges on the same axis**
- **In-line with two parallel cartridges mounted side by side**
- **With single cartridge flange for installation to the tank cover**

All versions may be equipped with visual and/or electrical blockage indicators.

Spin-on filters

MPS series

Maximum pressure up to 12 bar - Flow rate up to 365 l/min

Technical data

Spin-on filters **Maximum pressure up to 12 bar - Flow rate up to 365 l/min**

Filter housing materials
- Head: Aluminium
- Bypass valve: Nylon - Steel
- Element: Zinc-Plated Steel. Painted Steel

Pressure
- Working pressure: 1.2 MPa (12 bar)

Bypass valve
- Return filter opening pressure: 175 kPa (1.75 bar)
- Suction filter opening pressure: 30 kPa (0.3 bar)

Δp element type
- Δp: 5 bar
- Fluid flow through the filter element from OUT to IN.

Seals
Standard NBR - series A

Temperature
From -20 °C to +110 °C

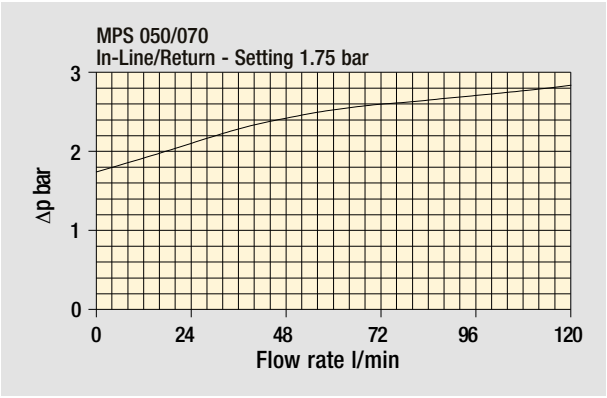
Note
MPS filters are provided for vertical mounting

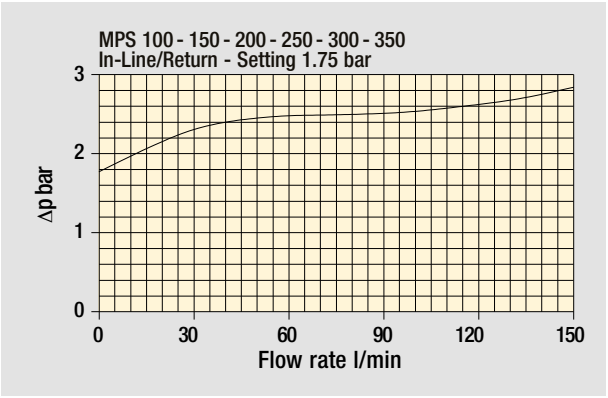
Weights [kg] and volumes [dm³]

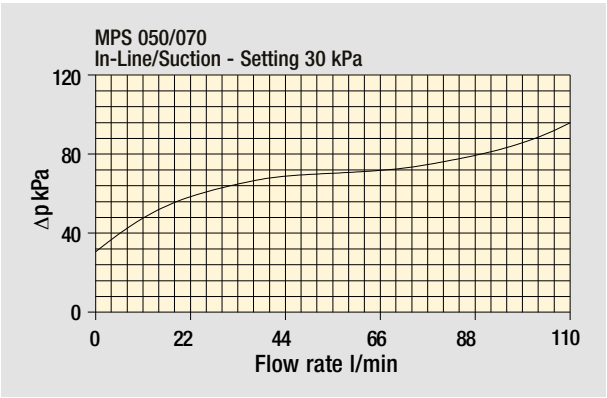
	Weights [kg]	Volumes [dm³]
MPS 050	1.00	0.70
MPS 051	1.05	0.70
MPS 070	1.20	0.95
MPS 071	1.25	0.95
MPS 100	2.10	1.65
MPS 101	2.20	1.65
MPS 150	2.40	2.00
MPS 151	2.50	2.00
MPS 200	3.90	3.00
MPS 250	4.60	3.70
MPS 300 - 301	5.30	3.40
MPS 350 - 351	6.00	4.10

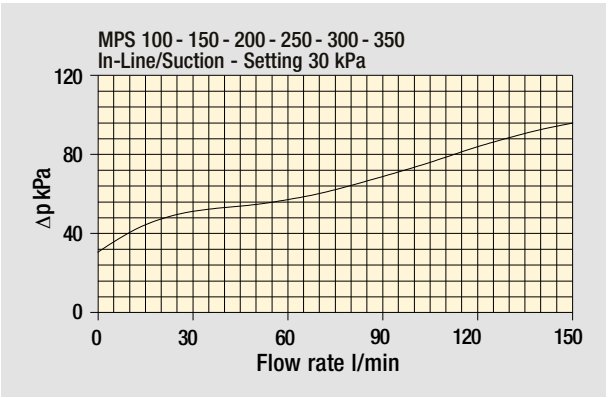
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Bypass valve pressure drop



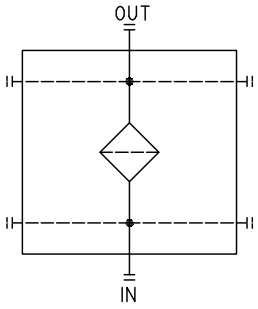




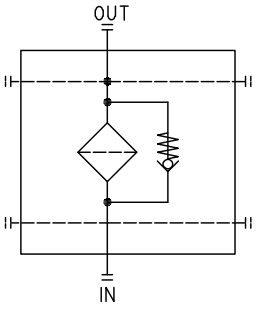


Hydraulic symbols

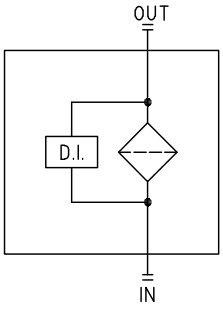
Style **S**
MPS 050 - 070 - 100 - 150



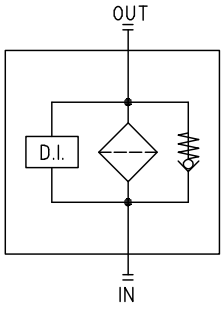
Style **B**
MPS 050 - 070 - 100 - 150



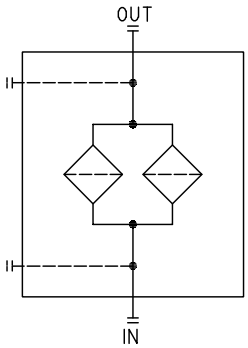
Style **S**
MPS 051 - 071 - 101 - 151



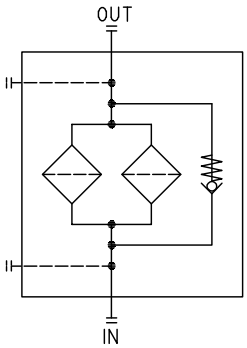
Style **B**
MPS 050 - 070 - 100 - 150



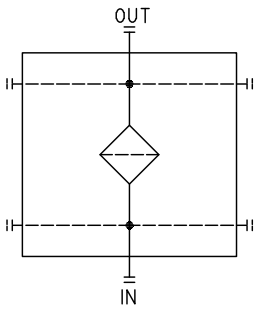
Style **S**
MPS 200 - 250



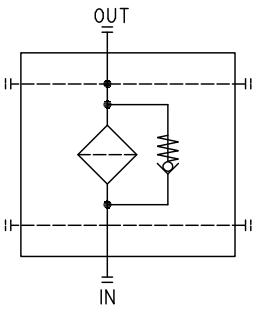
Style **B**
MPS 200 - 250



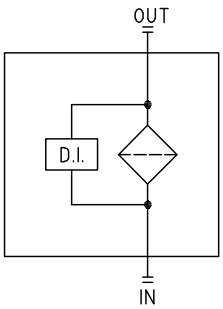
Style **S**
MPS 300 - 350



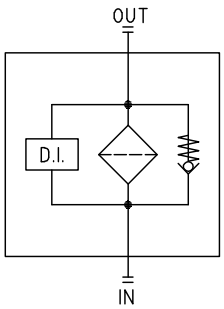
Style **B**
MPS 300 - 350



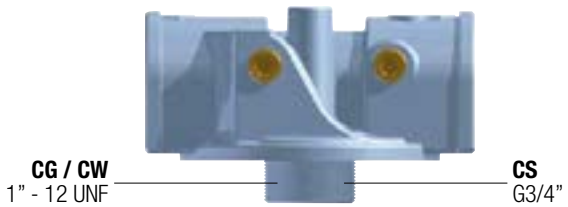
Style **S**
MPS 301 - 351

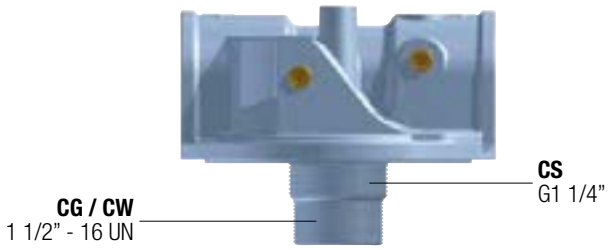


Style **B**
MPS 301 - 351



Heads





Cartridge

CS 050 - 070 - 100 - 150
CG - CW 050 - 070

CG - CW 100 - 150

CW
This series of cartridge removes water from oil while filtering the oil at the same time.
Water absorbent polymers up to 800 times their own weight provide this major feature.

Water holding capacities:
CW 050= 240 ml
Ordering code: **CW050P10AP01**

CW 150= 788 ml
Ordering code: **CW150P10AP01**

Thread connections	
Element	Connection
CS 050 - 070	G3/4"
CS 100 - 150	G1 1/4"
CG / CW 050 - 070	1" - 12 UNF
CG / CW 100 - 150	1 1/2" - 16 UN

Water holding capacities CW		
	good	poor
Viscosity	30/46 mm2/s (cSt)	> 46 mm2/s (cSt)
H_2O p.p.m.	600/800 p.p.m.	> 800 p.p.m.
Flow rate	CW050 7/15 l/min CW150 20/40 l/min	CW050 > 20 l/min CW150 > 50 l/min
Temperature	40/60 °C	< 30 °C

MPS MPS050 - MPS070 MPS051 - MPS071

Designation & Ordering code

COMPLETE FILTER

Configuration example : MPS050 | R | G1 | A10 | A | P01

Series and size

MPS050 | **MPS070** With connections for clogging indicators
MPS051 | **MPS071** With connections for differential indicators

Bypass valve		MPS 050 - 070	MPS 051 - 071
R	Return: 1.75 bar	•	•
S	Suction: 30 kPa	•	
U	Without bypass	•	
P	Without bypass		•

Connections

G1	G3/4”
G2	3/4” NPT
G3	SAE 12 - 1 1/16” - 12 UN
G4	SAE 8 - 3/4” - 16 UNF
G5	G1”
G6	1” NPT

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seal

A	NBR

Execution

P01	MP Filtri standard

CARTRIDGE

Configuration example: CS050 | A10 | A | P01

Cartridge series and size

CS050 | **CS070**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seals

A	NBR

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Clogging indicators on RETURN line		page
BVA	Axial pressure gauge	295
BVR	Radial pressure gauge	295
BVP	Visual pressure indicator with automatic reset	296
BVQ	Visual pressure indicator with manual reset	296

		page
BEA	Electrical pressure indicator	294
BEM	Electrical pressure indicator	294
BLA	Electrical / visual pressure indicator	294-295

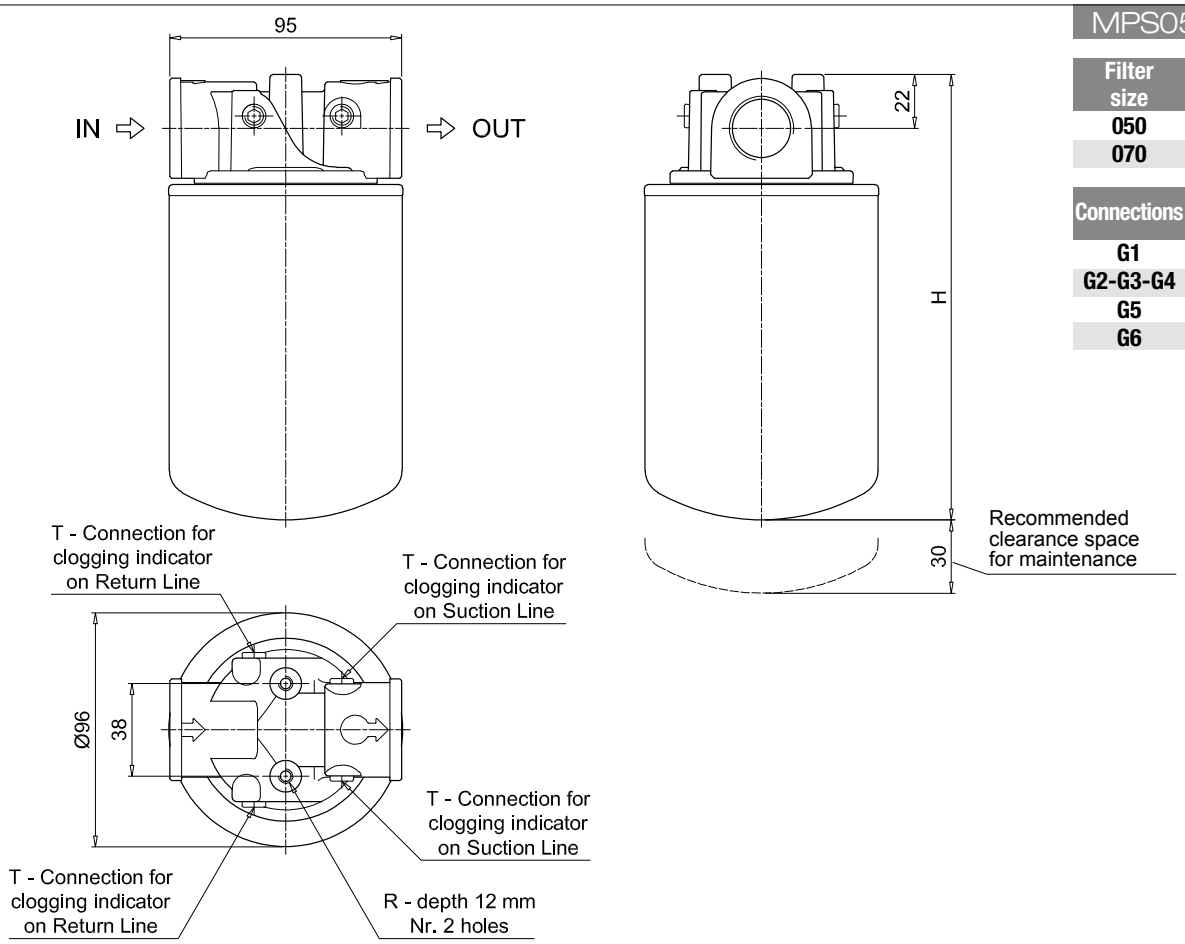
Clogging indicators on SUCTION line		page
VVB	Axial pressure gauge	293
VVS	Radial pressure gauge	293

		page
VEB	Electrical vacuum indicator	292
VLB	Electrical/visual vacuum indicator	292

Differential indicators		page
DEA	Electrical differential indicator	297
DEM	Electrical differential indicator	297-298
DLA	Electrical / visual differential indicator	298-299
DLE	Electrical / visual differential indicator	299

		page
DTA	Electronic differential indicator	300
DVA	Visual differential indicator	300
DVM	Visual differential indicator	300

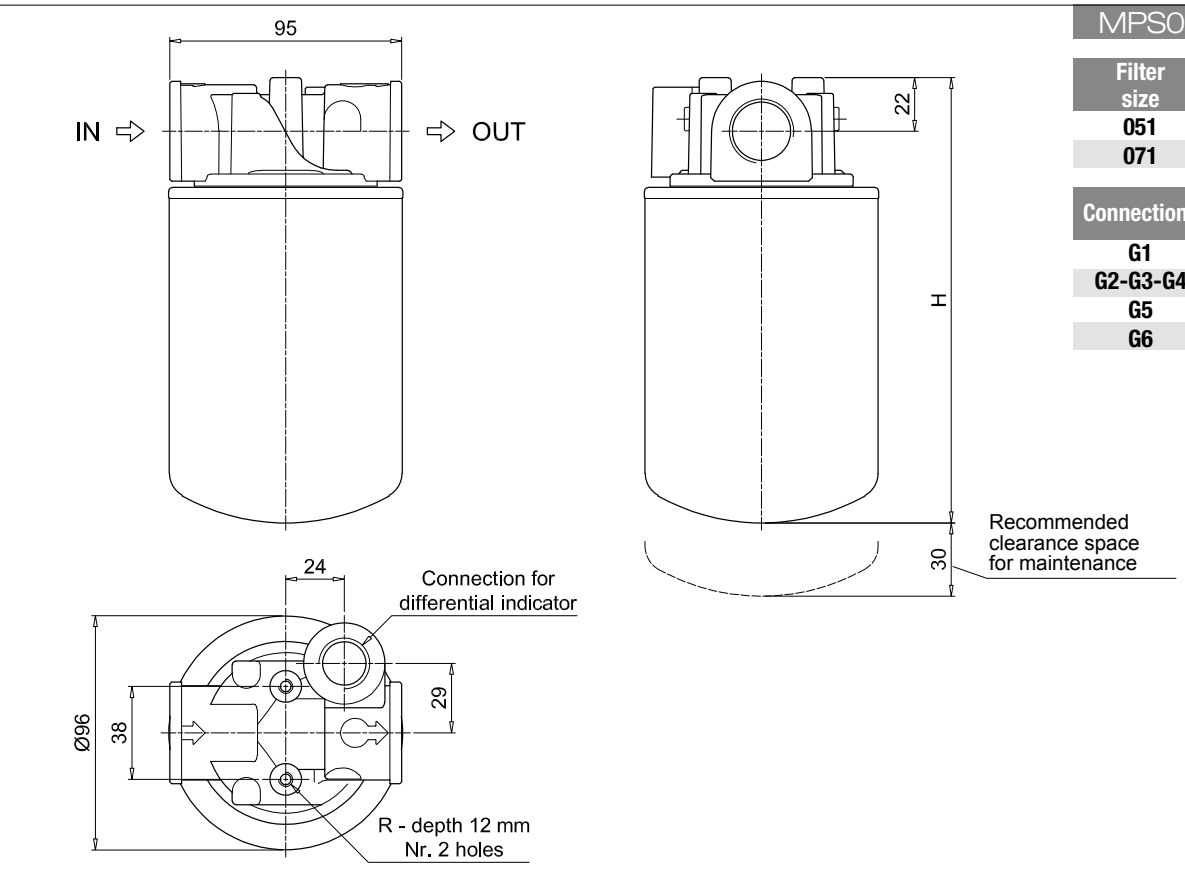
MPS050 - MPS070



Filter size	H [mm]
050	192
070	256

Connections	T	R
G1	G1/8"	M6
G2-G3-G4	1/8" NPT	1/4" UNC
G5	G1/8"	M6
G6	1/8" NPT	1/4" UNC

MPS051 - MPS071



Filter size	H [mm]
051	192
071	256

Connections	R
G1	M6
G2-G3-G4	1/4" UNC
G5	M6
G6	1/4" UNC

MPS MPS100 - MPS150 MPS101 - MPS151

Designation & Ordering code

COMPLETE FILTER

Configuration example : MPS100 | R | G1 | A10 | A | P01

Series and size

MPS100 | **MPS150** With connections for clogging indicators
MPS101 | **MPS151** With connections for differential indicators

Bypass valve

		MPS 100 - 150	MPS 101 - 151
R	Return: 1.75 bar	•	•
S	Suction: 30 kPa	•	
U	Without bypass	•	
P	Without bypass		•

Connections

G1 G1 1/4”
G2 1 1/4” NPT
G3 SAE 20 - 1 5/8” - 12 UN

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seal

A NBR

Execution

P01 MP Filtri standard

CARTRIDGE

Configuration example: CS100 | A10 | A | P01

Cartridge series and size

CS100 | **CS150**

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals

A NBR

Execution

P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Clogging indicators on RETURN line

		page
BVA	Axial pressure gauge	295
BVR	Radial pressure gauge	295
BVP	Visual pressure indicator with automatic reset	296
BVQ	Visual pressure indicator with manual reset	296
BEA	Electrical pressure indicator	294
BEM	Electrical pressure indicator	294
BLA	Electrical / visual pressure indicator	294-295

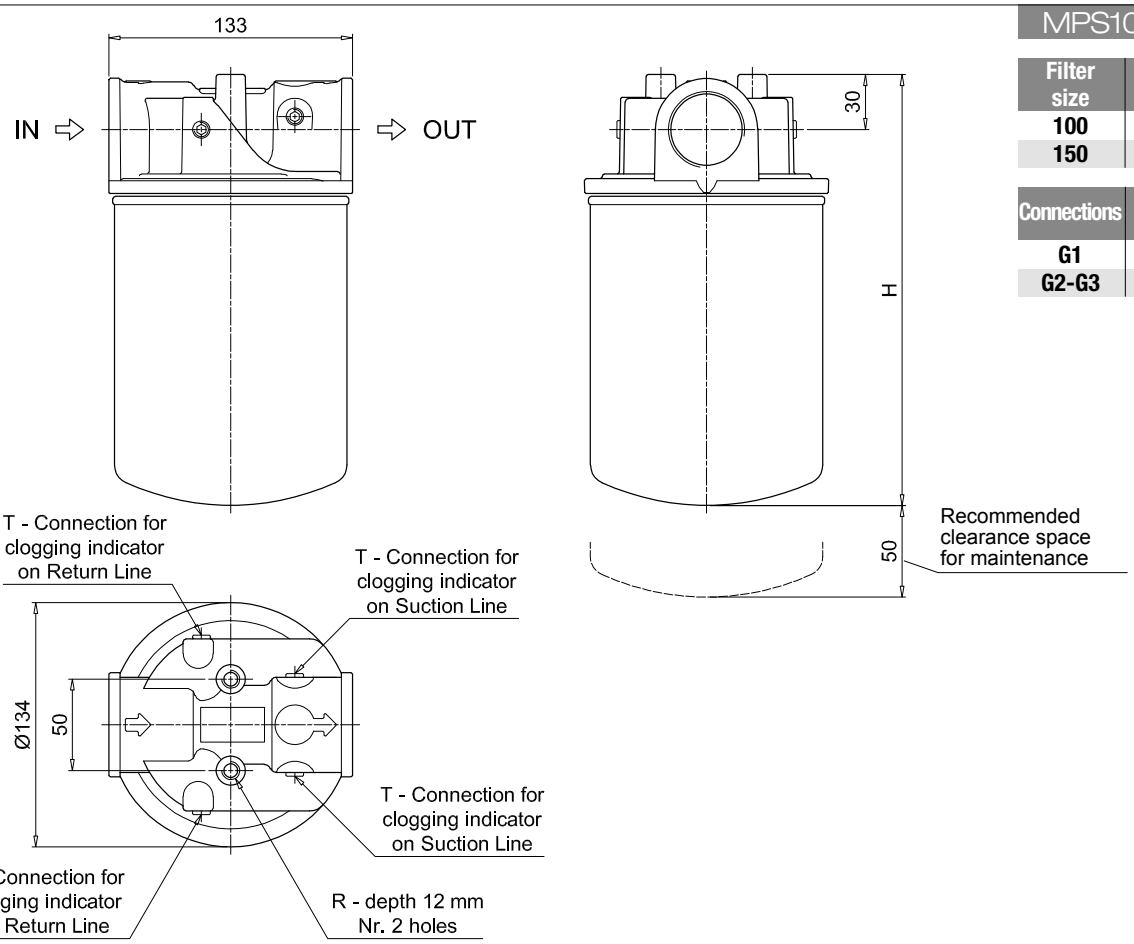
Clogging indicators on SUCTION line

		page
VVB	Axial pressure gauge	293
VVS	Radial pressure gauge	293
VEB	Electrical vacuum indicator	292
VLB	Electrical/visual vacuum indicator	292

Differential indicators

		page
DEA	Electrical differential indicator	297
DEM	Electrical differential indicator	297-298
DLA	Electrical / visual differential indicator	298-299
DLE	Electrical / visual differential indicator	299
DTA	Electronic differential indicator	300
DVA	Visual differential indicator	300
DVM	Visual differential indicator	300

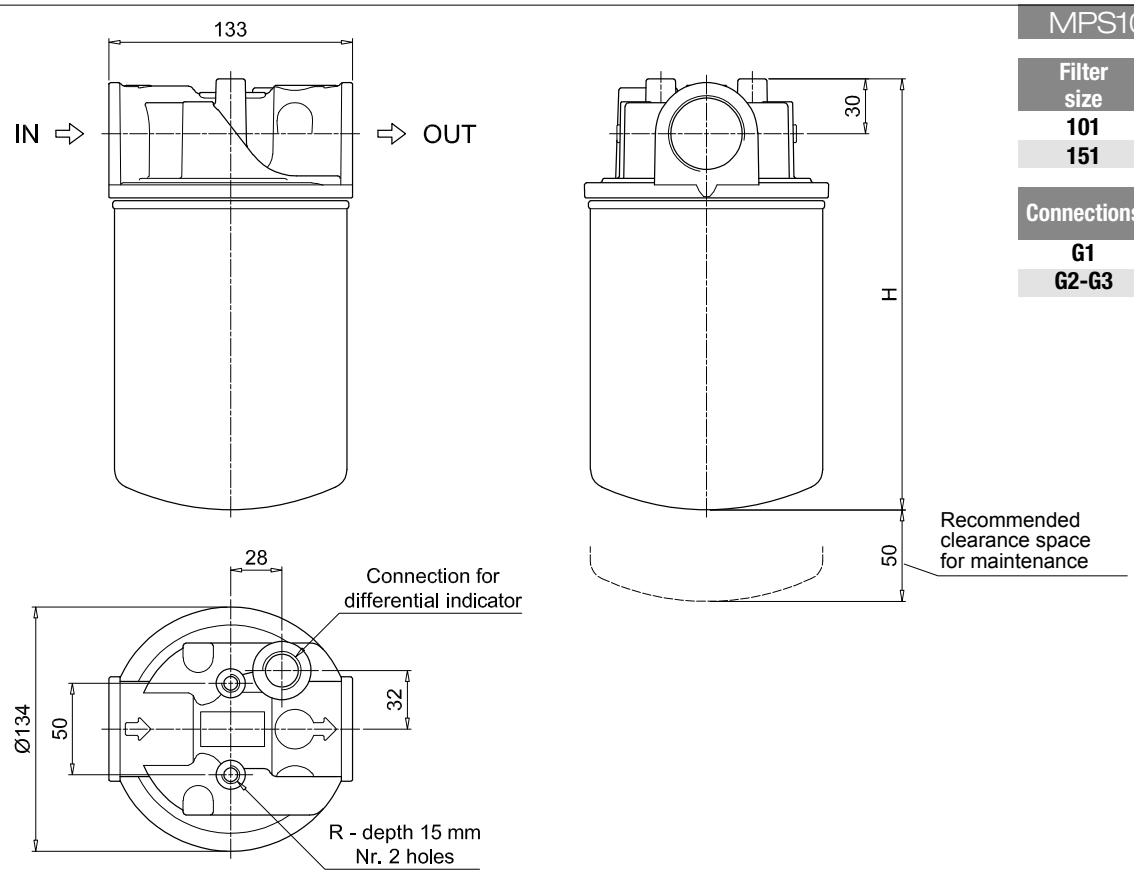
Dimensions



MPS100 - MPS150

Filter size	H [mm]
100	246
150	295

Connections	T	R
G1	G1/8"	M8
G2-G3	1/8" NPT	5/16" UNC



MPS101 - MPS151

Filter size	H [mm]
101	246
151	295

Connections	R
G1	M8
G2-G3	5/16" UNC

MPS MPS200 - MPS250

Designation & Ordering code

COMPLETE FILTER

Configuration example : MPS200 | R | G1 | A10 | A | P01

Series and size
MPS200 | **MPS250**

Bypass valve
- **R** Return: 1.75 bar
- **S** Suction: 30 kPa
- **U** Without bypass

Connections
- **G1** G1 1/2”
- **G2** 1 1/2” NPT
- **G3** SAE 24 - 1 7/8” - 12 UN

Filtration rating (filter media)
- **A03** Inorganic microfiber 3 µm
- **A06** Inorganic microfiber 6 µm
- **A10** Inorganic microfiber 10 µm
- **A25** Inorganic microfiber 25 µm
- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **P10** Resin impregnated paper 10 µm
- **P25** Resin impregnated paper 25 µm

Seal
- **A** NBR

Execution
- **P01** MP Filtri standard

CARTRIDGE

Configuration example: CS100 | A10 | A | P01

Cartridge series and size
CS100 | **CS150**

Filtration rating (filter media)
- **A03** Inorganic microfiber 3 µm
- **A06** Inorganic microfiber 6 µm
- **A10** Inorganic microfiber 10 µm
- **A25** Inorganic microfiber 25 µm
- **M25** Wire mesh 25 µm
- **M60** Wire mesh 60 µm
- **M90** Wire mesh 90 µm
- **P10** Resin impregnated paper 10 µm
- **P25** Resin impregnated paper 25 µm

Seals
- **A** NBR

Execution
- **P01** MP Filtri standard
- **Pxx** Customized

ACCESSORIES

Clogging indicators on RETURN line

		page
BVA	Axial pressure gauge	295
BVR	Radial pressure gauge	295
BVP	Visual pressure indicator with automatic reset	296
BVQ	Visual pressure indicator with manual reset	296
BEA	Electrical pressure indicator	294
BEM	Electrical pressure indicator	294
BLA	Electrical / visual pressure indicator	294-295

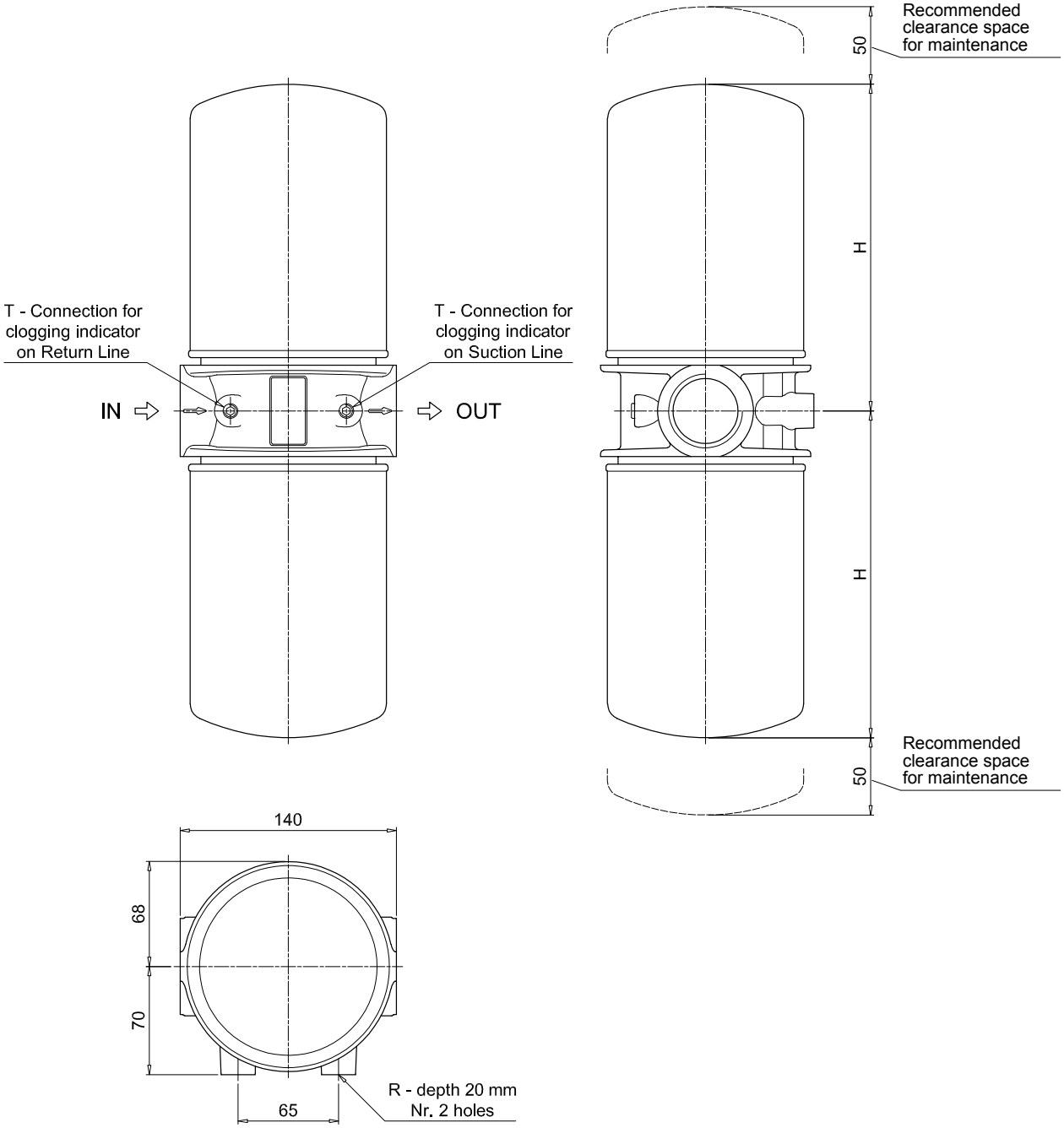
Clogging indicators on SUCTION line

		page
VVB	Axial pressure gauge	293
VVS	Radial pressure gauge	293
VEB	Electrical vacuum indicator	292
VLB	Electrical/visual vacuum indicator	292

MPS200 - MPS250

Filter size	H [mm]
200	213
250	262

Connections	T	R
G1	G1/8"	M10
G2-G3	1/8" NPT	7/16" UNC



MPS MPS300 - MPS350 MPS301 - MPS351

Designation & Ordering code

COMPLETE FILTER

Configuration example : MPS300 | R | F1 | A10 | A | P01

Series and size

MPS300 | **MPS350** With connections for clogging indicators
MPS301 | **MPS351** With connections for differential indicators

Bypass valve		MPS 300 - 350	MPS 301 - 351
R	Return: 1.75 bar	•	•
S	Suction: 30 kPa	•	
U	Without bypass	•	
P	Without bypass		•

Connections

G1	G1 1/2”
G2	1 1/2” NPT
G3	SAE 24 - 1 7/8” - 12 UN
F1	1 1/2” SAE 3000 psi/M
F2	1 1/2” SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seal

A NBR

Execution

P01 MP Filtri standard

CARTRIDGE

Configuration example: CS100 | A10 | A | P01

Cartridge series and size

CS100 | **CS150**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seals

A NBR

Execution

P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Clogging indicators on RETURN line		page
BVA	Axial pressure gauge	295
BVR	Radial pressure gauge	295
BVP	Visual pressure indicator with automatic reset	296
BVQ	Visual pressure indicator with manual reset	296

		page
BEA	Electrical pressure indicator	294
BEM	Electrical pressure indicator	294
BLA	Electrical / visual pressure indicator	294-295

Clogging indicators on SUCTION line		page
VVB	Axial pressure gauge	293
VVS	Radial pressure gauge	293

		page
VEB	Electrical vacuum indicator	292
VLB	Electrical/visual vacuum indicator	292

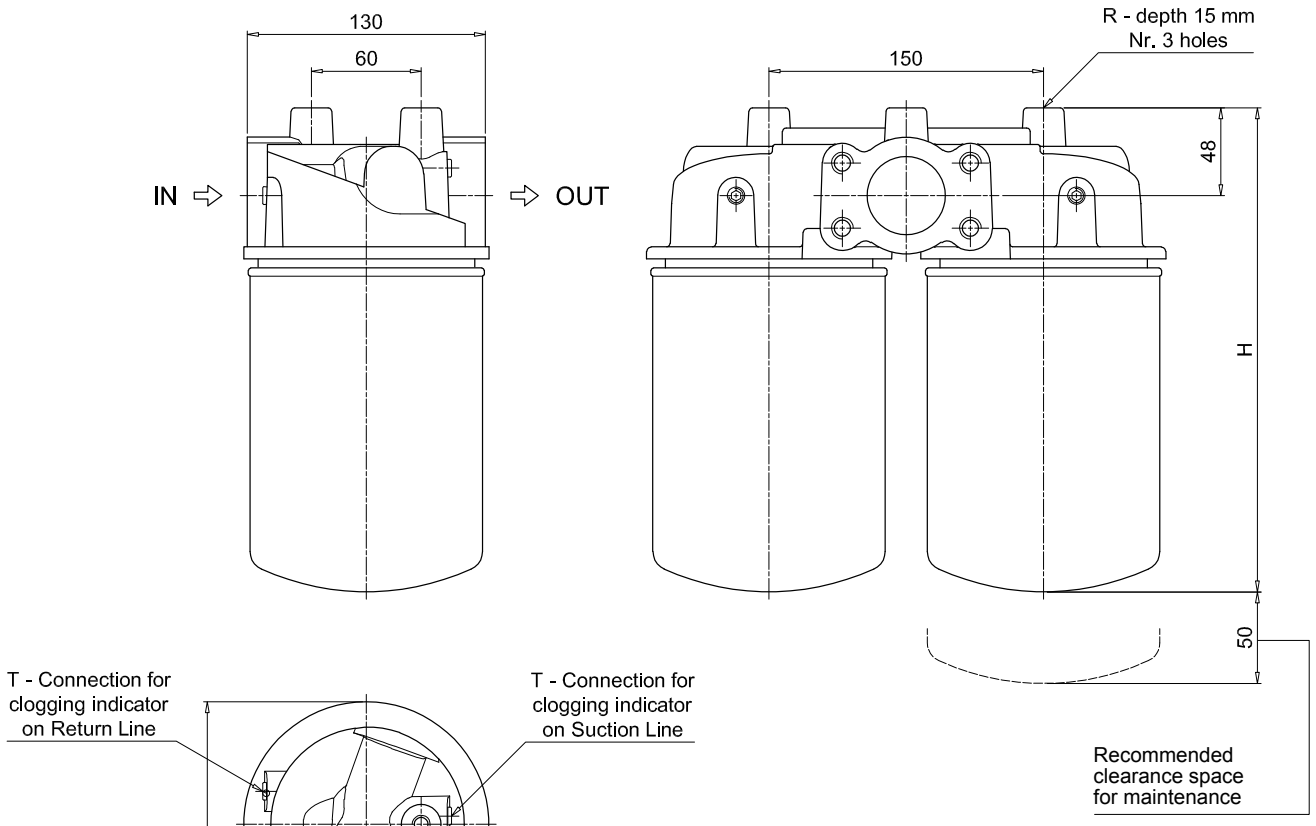
Differential indicators		page
DEA	Electrical differential indicator	297
DEM	Electrical differential indicator	297-298
DLA	Electrical / visual differential indicator	298-299
DLE	Electrical / visual differential indicator	299

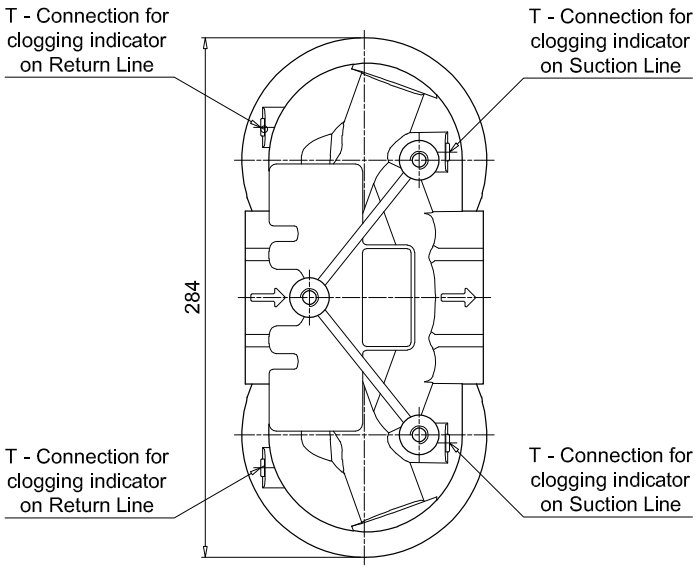
		page
DTA	Electronic differential indicator	300
DVA	Visual differential indicator	300
DVM	Visual differential indicator	300

MPS300 - MPS350

Filter size	H [mm]
300	266
350	315

Connections	T	R
G1	G1/8"	M10
G2-G3	1/8" NPT	7/16" UNC
F1	G1/8"	M10
F2	1/8" NPT	7/16" UNC



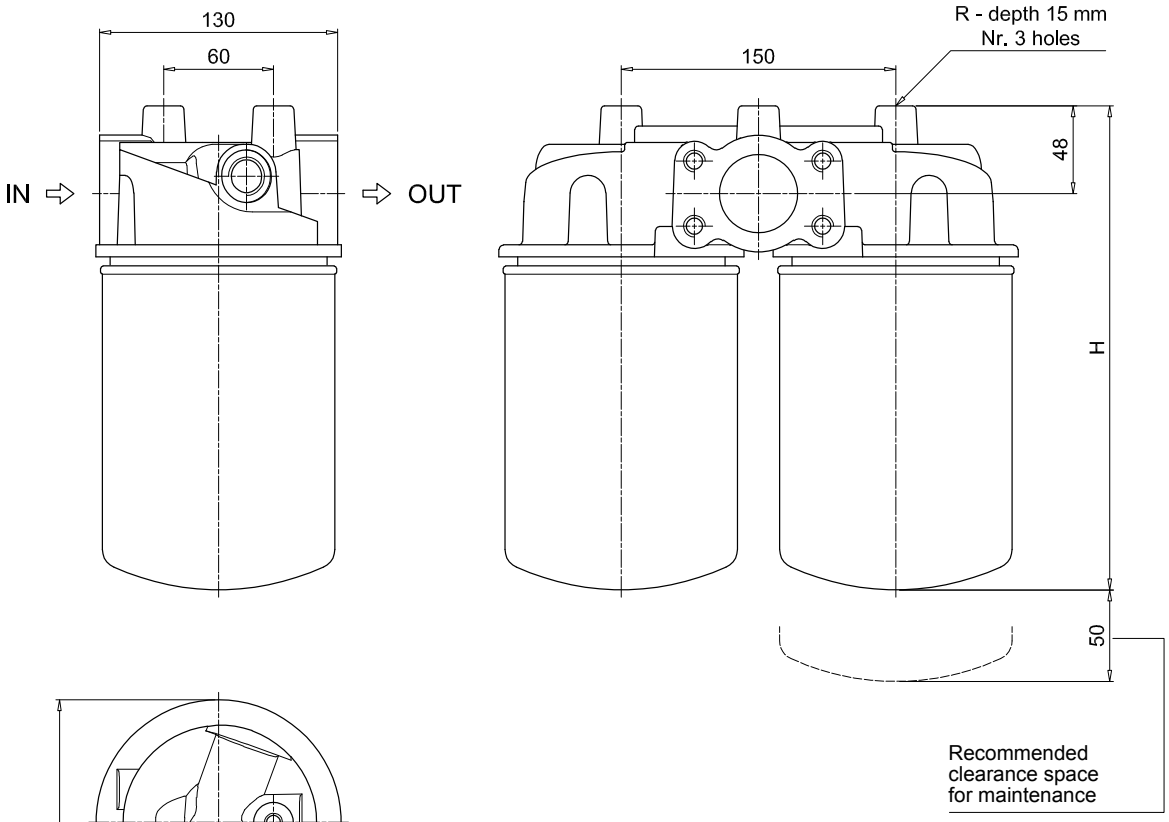


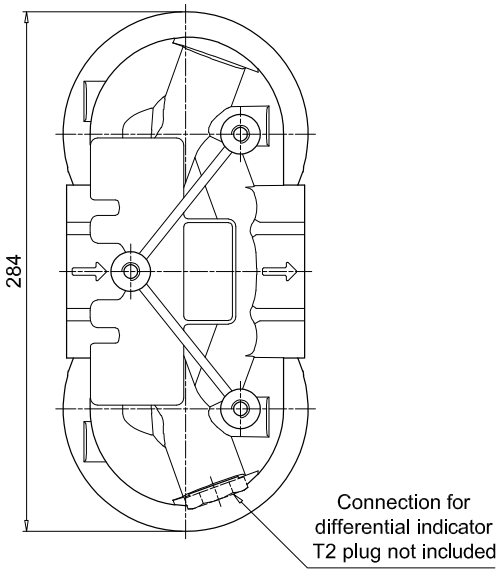
Dimensions

MPS301 - MPS351

Filter size	H [mm]
301	266
351	315

Connections	R
G1	M10
G2-G3	7/16" UNC
F1	M10
F2	7/16" UNC





MSH series

Maximum pressure up to 35 bar - Flow rate up to 196 l/min

Technical data

Spin-on filters **Maximum pressure up to 35 bar - Flow rate up to 196 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Bypass valve: Nylon - Steel
- Element: Aluminium, Painted Steel

Bypass valve
- Opening pressure: 250 kPa (2.5 bar)

Seals
- Standard NBR - series A
- Optional FPM - series V

Pressure
- Working pressure: 3.5 MPa (35 bar)

Δp element type
- Δp: 5 bar
- Oil flow from OUT to IN.

Temperature
From -20 °C to +110 °C

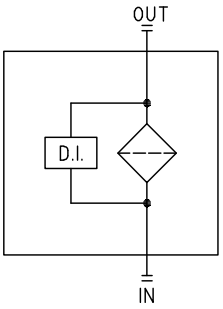
Note
MSH filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

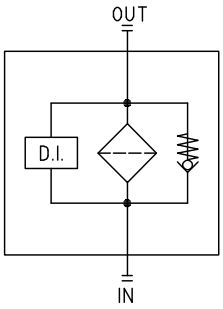
	Weights [kg]	Volumes [dm³]
MPS 050	1.50	0.65
MPS 070	1.90	0.95
MPS 100	3.30	1.80
MPS 150	3.80	2.20

Hydraulic symbols

Style **S**



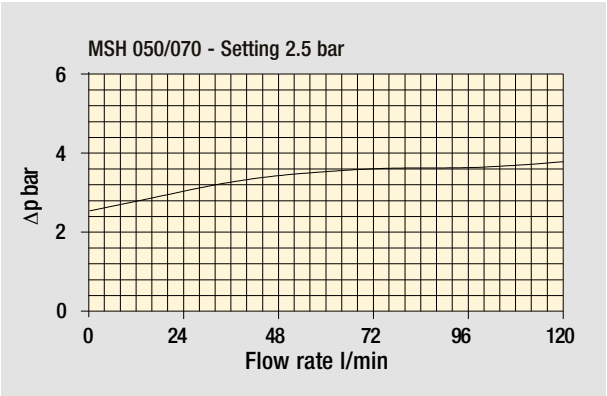
Style **B**

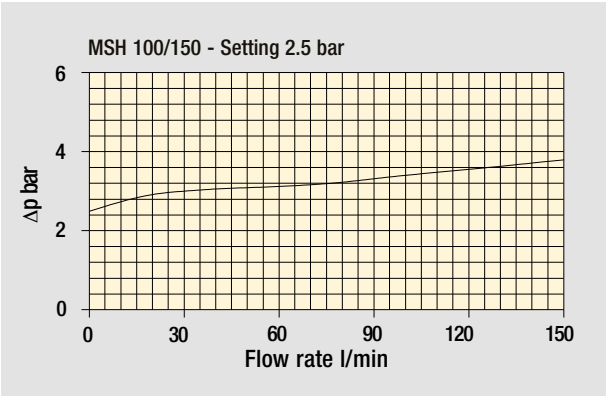


Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Bypass valve pressure drop





Cartridge

CH

Thread connections	
Type	Connection
CH 050 - 070	M32 x 2
CH 100 - 150	M45 x 2

MSH MSH050 - MSH070 MSH100 - MSH150

Designation & Ordering code

COMPLETE FILTER

Configuration example : MSH050 | B | A | G1 | A10 | P01

Series and size

MSH050 | **MSH070** | **MSH100** | **MSH150**

Bypass valve

S	Without bypass
B	2.5 bar

Seal

A	NBR

Connections	MSH 050 - 070	MSH 100 - 150
G1	G1”	G1 1/2”
G2	G3/4”	G1 1/4”
G3	1” NPT	1 1/2” NPT
G4	3/4” NPT	1 1/4” NPT
G5	SAE 16 - 1 5/16” - 12 UN	SAE 24 - 1 7/8” - 12 UN
G6	SAE 12 - 1 1/16” - 12 UN	SAE 20 - 1 5/8” - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Execution

P01	MP Filtri standard

CARTRIDGE

Configuration example: CH050 | A10 | A | P01

Cartridge series and size

CH050 | **CH070** | **CH100** | **CH150**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seals

A	NBR

Execution

P01	MP Filtri standard
Pxx	Customized

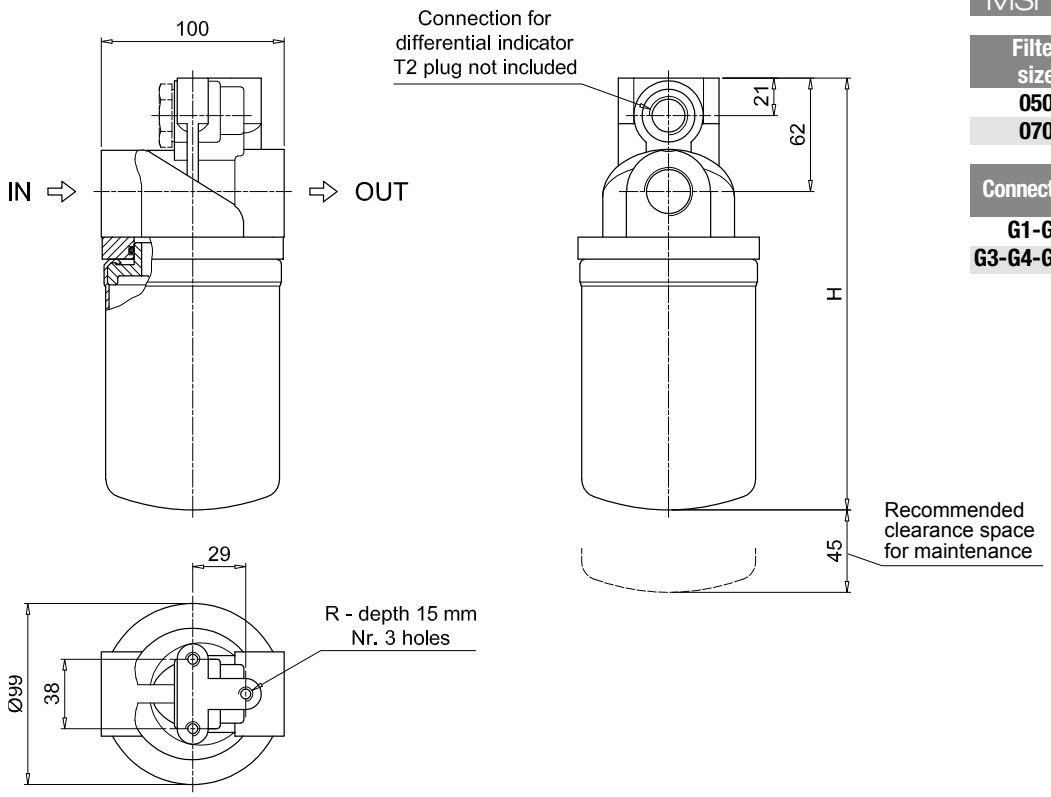
ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	297
DEM	Electrical differential indicator	297-298
DLA	Electrical / visual differential indicator	298-299
DLE	Electrical / visual differential indicator	299
DTA	Electronic differential indicator	300
DVA	Visual differential indicator	300
DVM	Visual differential indicator	300

Additional features		page
T2	Plug	301

Dimensions

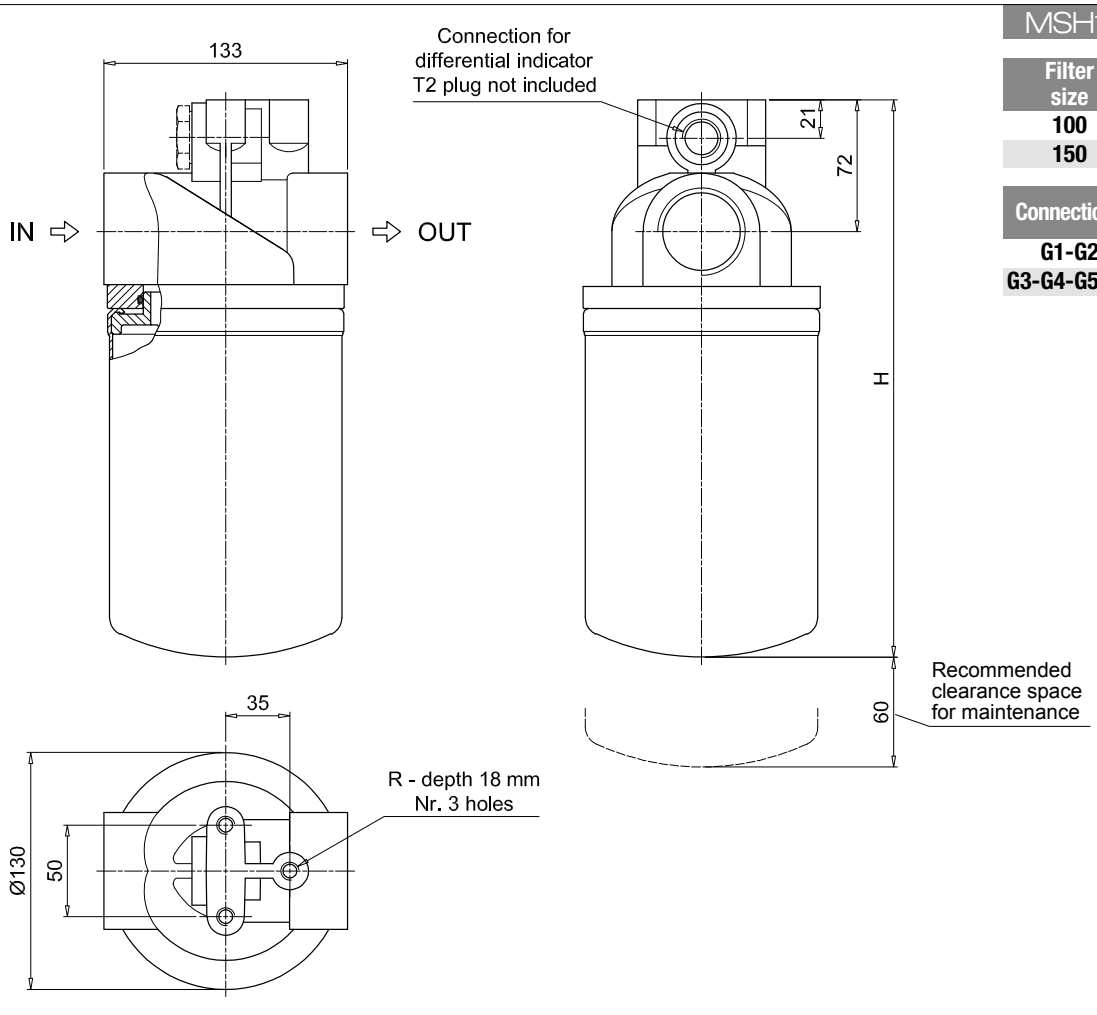
MSH050 - MSH070



Filter size	H [mm]
050	236
070	324

Connections	R
G1-G2	M8
G3-G4-G5-G6	5/16" UNC

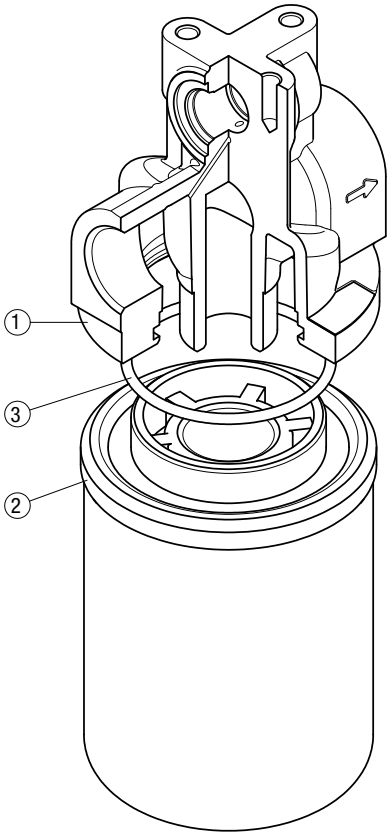
MSH100 - MSH150



Filter size	H [mm]
100	311
150	354

Connections	R
G1-G2	M10
G3-G4-G5-G6	3/8" UNC

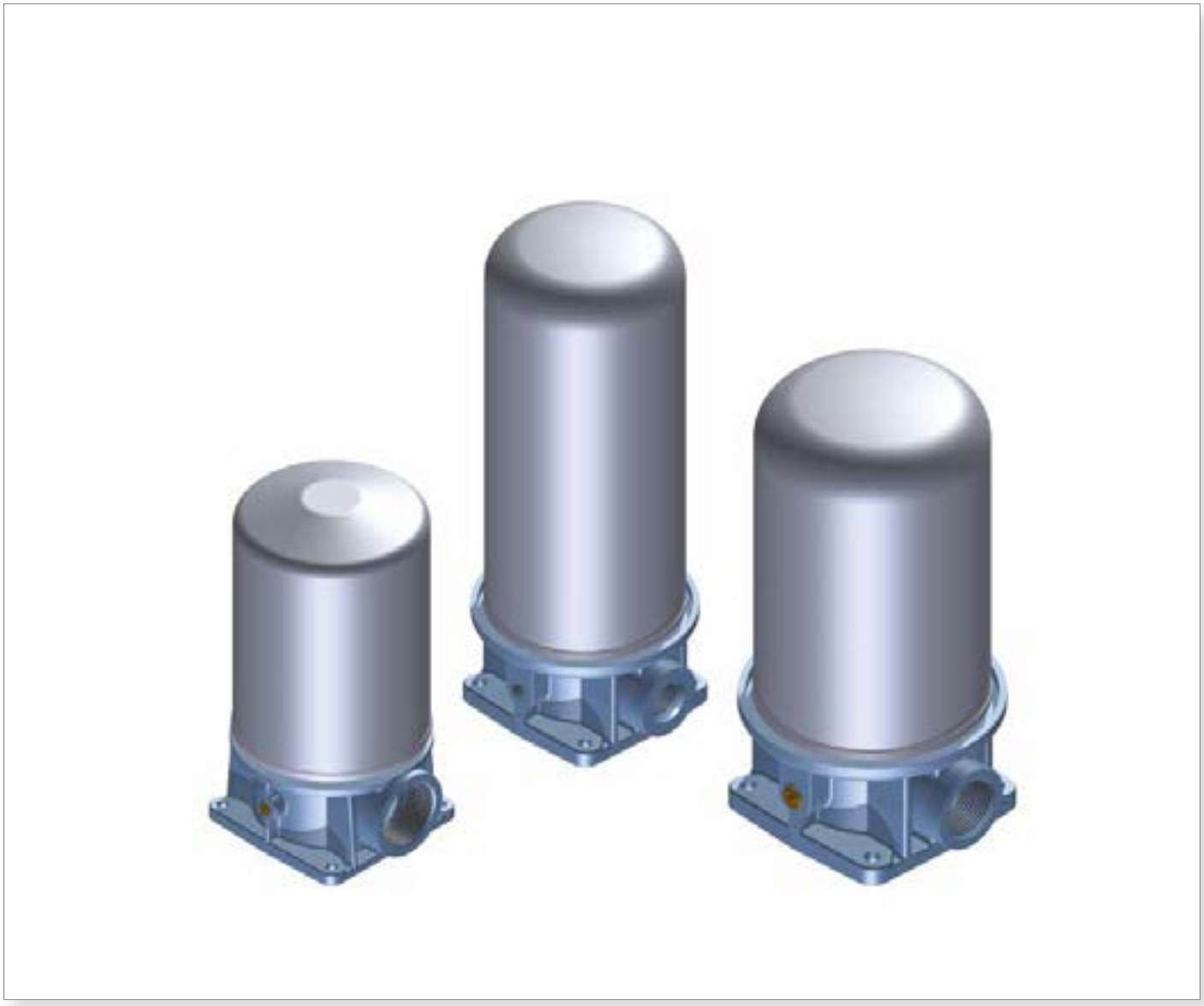
Order number for spare parts



Item:	Q.ty: 1 pc. 1	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3
Filter series	**Filter assembly**	**Cartridge**	**Seal code number**
MSH 050 - 070	See order table	See order table	O-R 167 (ø 63.50 x 3.53)
MSH 100 - 150			O-R 4362 (ø 91.67 x 3.53)

MST series

Maximum pressure up to 12 bar - Flow rate up to 195 l/min



Technical data

Spin-on filters **Maximum pressure up to 12 bar - Flow rate up to 195 l/min**

Filter housing materials
- Head: Aluminium
- Bypass valve: Nylon - Steel
- Element: Zinc-Plated Steel, Painted Steel

Bypass valve
- Opening pressure: 175 kPa (1.75 bar)

Seals
- Standard NBR - series A
- Optional FPM - series V

Pressure
- Working pressure: 1.2 MPa (12 bar)

Δp element type
- Δp: 5 bar
- Oil flow from OUT to IN.

Temperature
From -20 °C to +110 °C

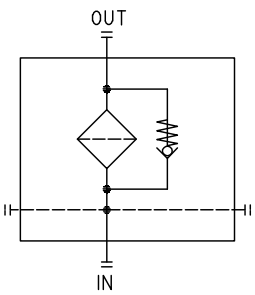
Note
MST filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]	Volumes [dm³]
MST 050	1.20	0.80
MST 070	1.40	1.10
MST 100	2.50	1.70
MST 150	2.70	2.00

Hydraulic symbols

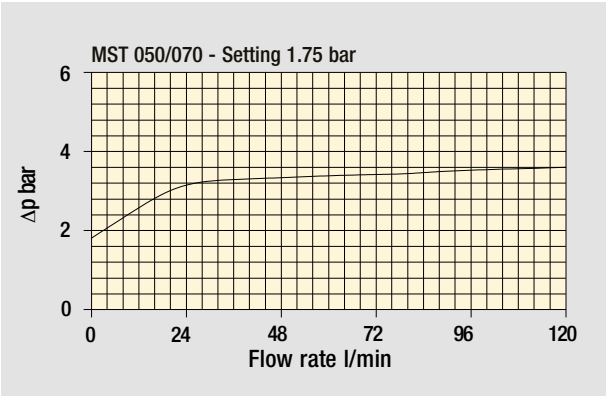
Style **B**

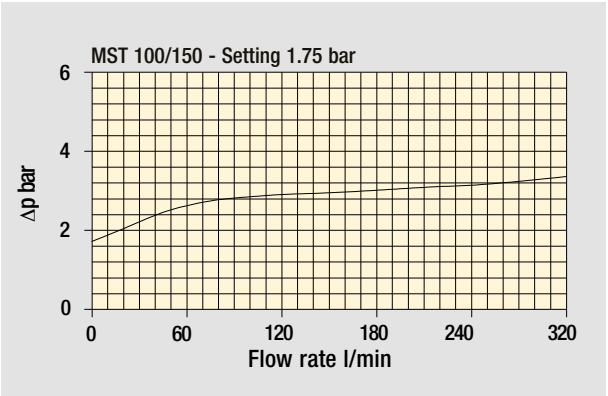


Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Bypass valve pressure drop





Cartridge

CT

Thread connections	
Type	Connection
CT 050 - 070	G3/4"
CT 100 - 150	G1 1/4"

MST MST050 - MST070 - MST100 - MST150

Designation & Ordering code

COMPLETE FILTER

Configuration example : MST050 | A | G1 | A10 | B | P01

Series and size

MST050 | **MST070** | **MST100** | **MST150**

Seal

A	NBR

Connections	MST 050 - 070	MST 100 - 150
G1	G3/4”	G1 1/2”
G2	3/4” NPT	1 1/2” NPT
G3	SAE 12 - 1 1/16” - 12 UN	SAE 24 - 1 7/8” - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Bypass valve

B	1.75 bar

Execution

P01	MP Filtri standard

CARTRIDGE

Configuration example: CT050 | A10 | A | B | P01

Cartridge series and size

CT050 | **CT070** | **CT100** | **CT150**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A25	Inorganic microfiber 25 µm	**P10**	Resin impregnated paper 10 µm
		P25	Resin impregnated paper 25 µm

Seals

A	NBR

Bypass valve

B	1.75 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Clogging indicators		page
BVA	Axial pressure gauge	295
BVR	Radial pressure gauge	295
BVP	Visual pressure indicator with automatic reset	296
BVQ	Visual pressure indicator with manual reset	296

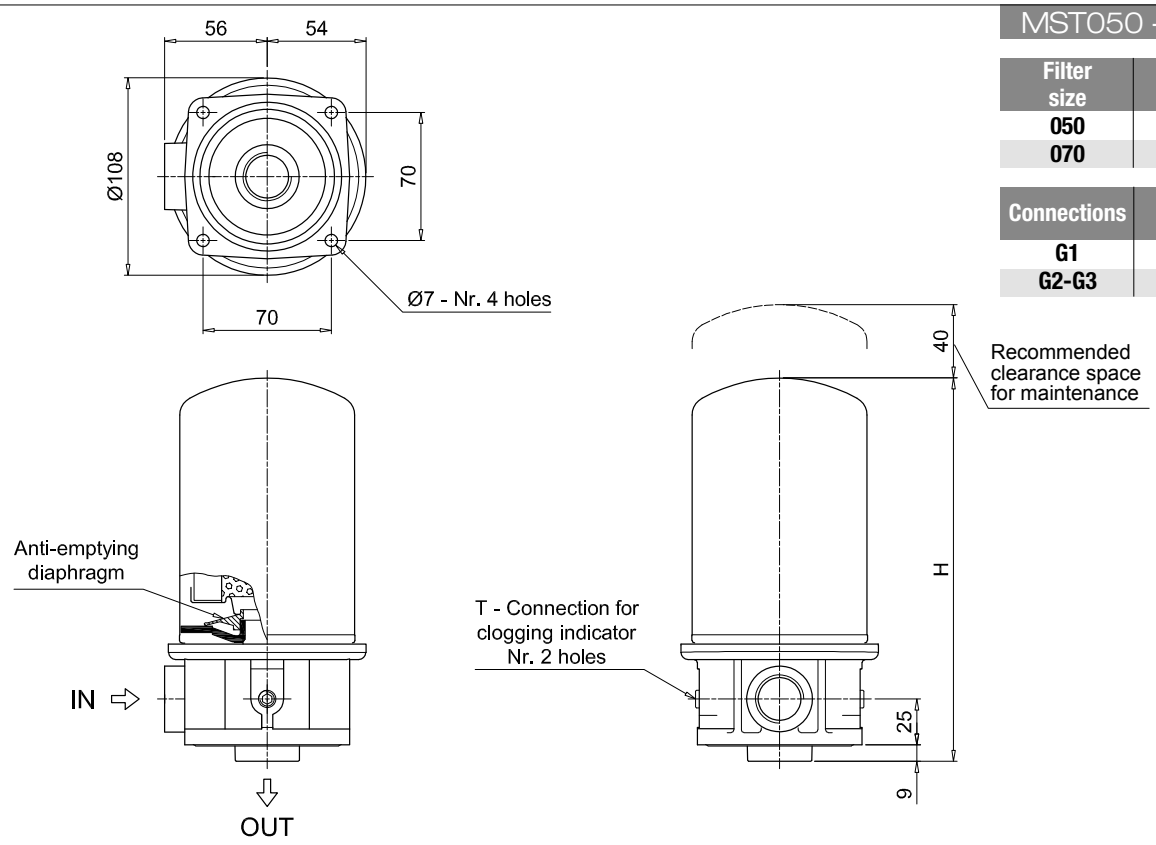
		page
BEA	Electrical pressure indicator	294
BEM	Electrical pressure indicator	294
BLA	Electrical / visual pressure indicator	294-295

Dimensions

MST050 - MST070

Filter size	H [mm]
050	210
070	274

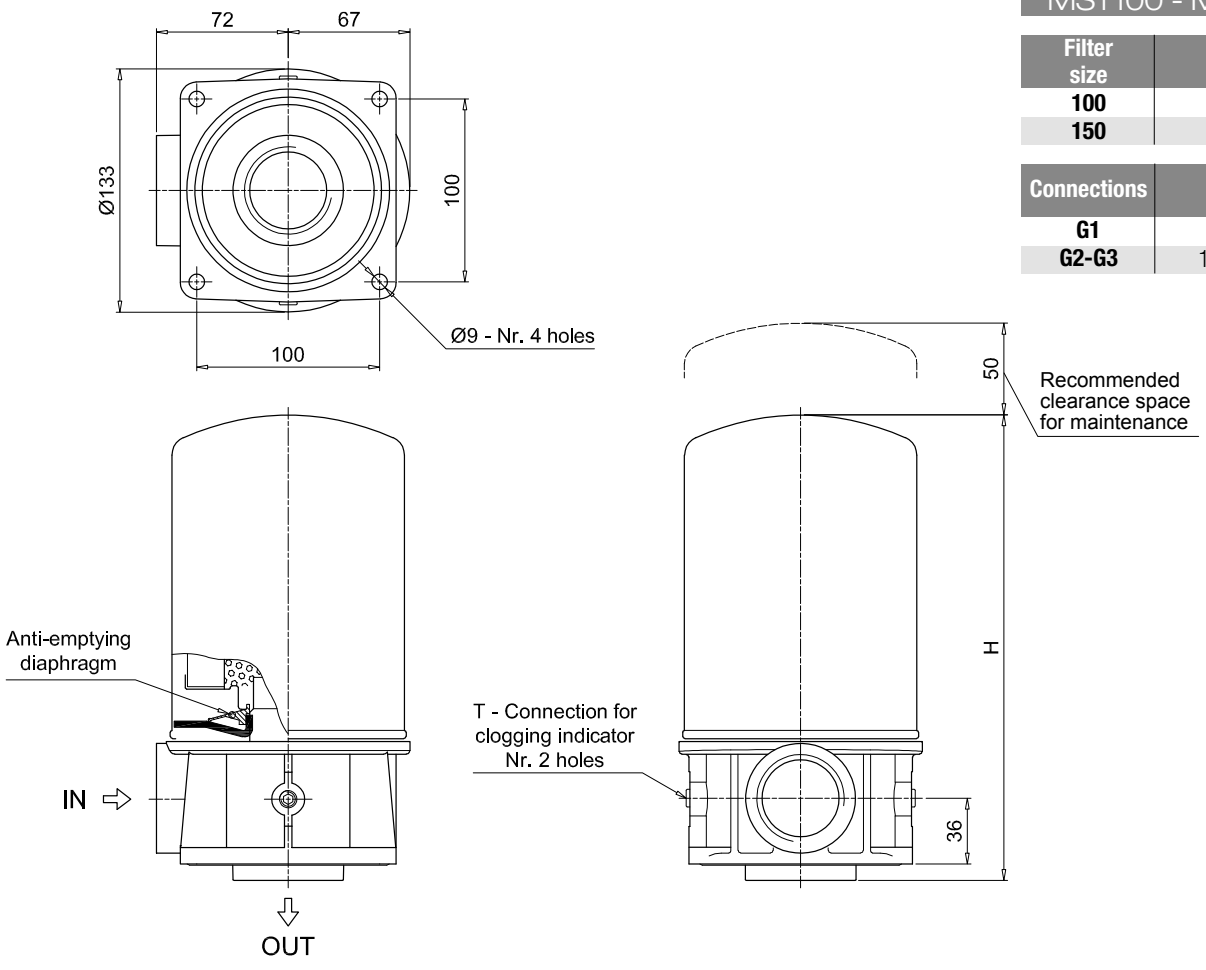
Connections	T
G1	G1/8"
G2-G3	1/8" NPT



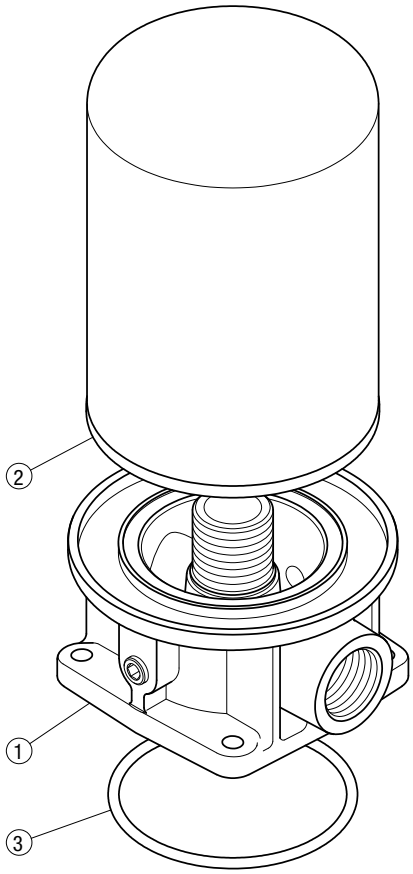
MST100 - MST150

Filter size	H [mm]
100	260
150	309

Connections	T
G1	G1/8"
G2-G3	1/8" NPT



Order number for spare parts



Item:	Q.ty: 1 pc. 1	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3
Filter series	**Filter assembly**	**Cartridge**	**Seal code number**
MST 050 - 070	See order table	See order table	O-R 177 (ø 74.61 x 3.53)
MST 100 - 150			O-R 4412 (ø 104.40 x 3.53)

Clogging indicators

Barometric indicators
Vacuum indicators
Differential indicators

Introduction

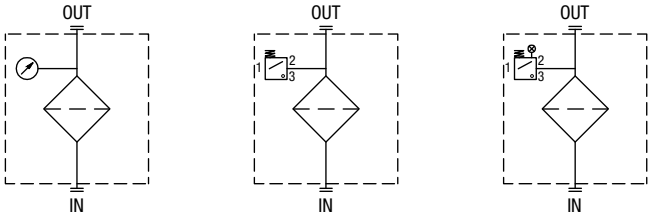
Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.
These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.
The indicator is set to alarm before the element becomes fully clogged.
MP Filtri can supply indicators of the following designs:

- **Vacuum switches and gauges**
- **Pressure switches and gauges**
- **Differential pressure indicators**

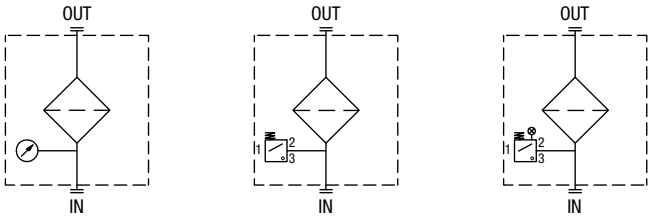
These type of devices can be provided with a visual, electrical or both signals.

Suitable indicator types

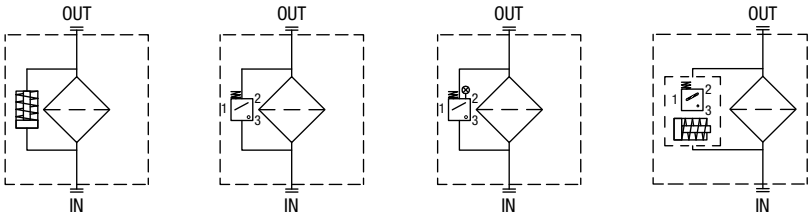
VACUUM INDICATORS
Vacuum indicators are used on the Suction line to check the efficency of the filter element.
They measure the pressure downstream of the filter element.
Standard items are produced with R 1/4" EN 10226 connection.
Available products with R 1/8" EN 10226 to be fitted on MPS series.



BAROMETRIC INDICATORS
Pressure indicators are used on the Return line to check the efficency of the filter element.
They measure the pressure upstream of the filter element.
Standard items are produced with R 1/8" EN 10226 connection.



DIFFERENTIAL INDICATORS
Differential indicators are used on the Pressure line to check the efficency of the filter element.
They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator
Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01
Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01
In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01

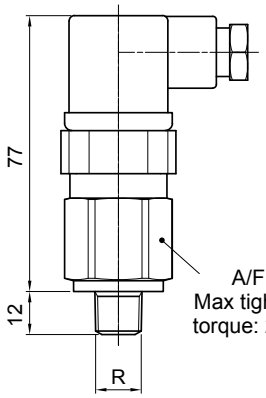
VACUUM INDICATORS

Dimensions

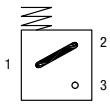
VE*50

Electrical Vacuum Indicator

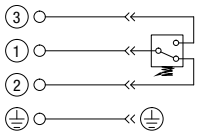
R	Ordering code
EN 10226 - R1/8"	VE B 21 A A 50 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

Technical data

- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

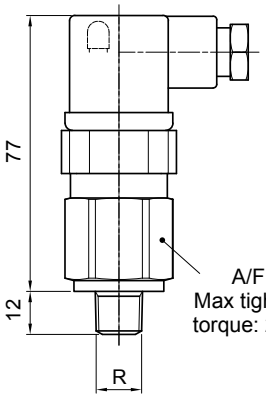
Electrical data

- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

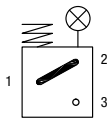
VL*51 - VL*52 - VL*53

Electrical/Visual Vacuum Indicator

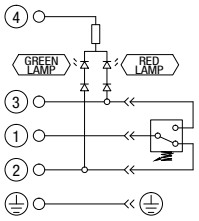
R	Ordering code
EN 10226 - R1/8"	VL B 21 A A xx P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Transparent Nylon
- Contacts: Brass - Nylon
- Seal: NBR

Technical data

- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

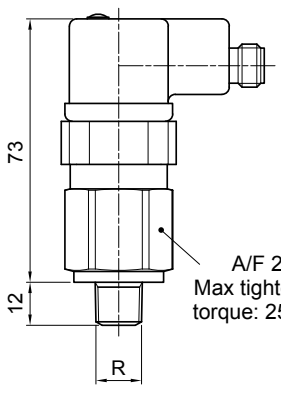
Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 115 Vdc	4 A / 230 Vac

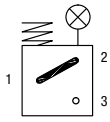
VL*71

Electrical/Visual Vacuum Indicator

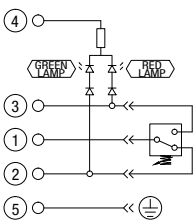
Connections	Ordering code
EN 10226 - R1/8"	VL B 21 A A 71 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: NBR

Technical data

- Vacuum setting: -0.21 bar ±10%
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

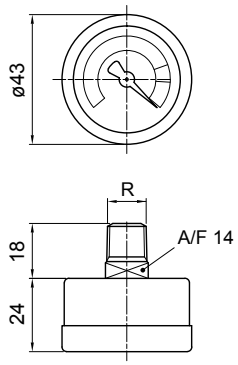
Electrical data

- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

VVB

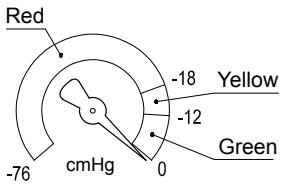
Axial Vacuum Gauge

R	Ordering code
EN 10226 - R1/8"	VV B 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

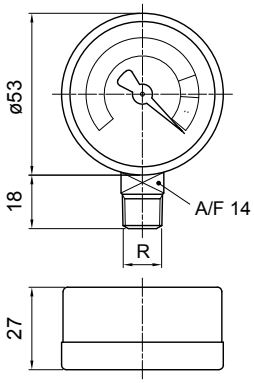
Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP65 according to EN 60529

VVS

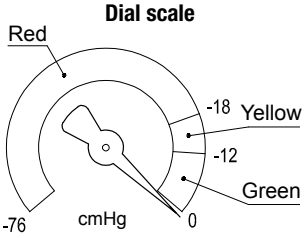
Radial Vacuum Gauge

R	Ordering code
EN 10226 - R1/8"	VV S 16 P01



Hydraulic symbol

Dial scale



Conversion to SI units

[cmHg]	[bar]
-12	-0.16
-18	-0.24
-76	-1.01

Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy soft soldered

Technical data

- Max working pressure: Static: 7 bar; Fluctuating: 6 bar; Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids; HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP65 according to EN 60529

DESIGNATION & ORDERING CODE

Configuration example 1:	VE	B	21	A	A	50	P01
Configuration example 2:	VL	B	21	A	A	71	P01
Configuration example 3:	VV	S	16				P01

Series

VE Electrical vacuum indicator
VL Electrical/Visual vacuum indicator
VV Vacuum gauge

Type VE - VL

B Connection EN 10226 - R1/8"

Type VV

B Axial connection EN 10226 - R1/8"
S Radial connection EN 10226 - R1/8"

Vacuum setting	VE	VL	VV
16 0.16 bar			•
21 0.21 bar	•	•	

Seals	VE	VL	VV
A NBR	•	•	

Thermostat	VE	VL	VV
A Without	•	•	

Electrical connections	VE	VL	VV
50 Connection EN 175301-803	•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc		•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc		•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc		•	

Option

P01 MP Filtri standard
Pxx Customized

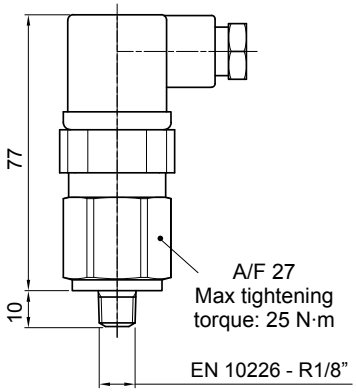
BAROMETRIC INDICATORS

Dimensions

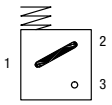
BEA*50

Electrical Pressure Indicator

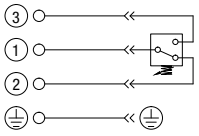
Settings	Ordering code
1.5 bar ±10%	BE A 15 H A 50 P01
2 bar ±10%	BE A 20 H A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

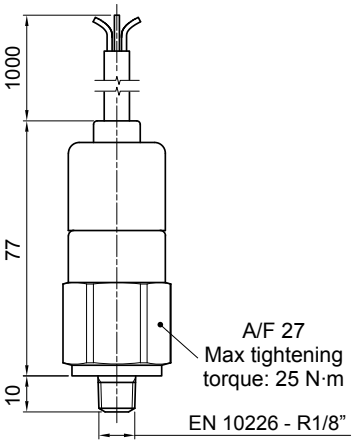
Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- Available Atex product: II 1GD Ex ia IIC Tx Ex ia IIIC Tx°C X
- CE certification

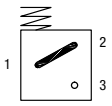
BEM*41

Electrical Pressure Indicator

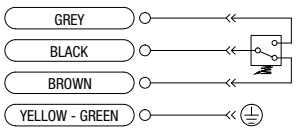
Settings	Ordering code
1.5 bar ±10%	BE M 15 H A 41 P01
2 bar ±10%	BE M 20 H A 41 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP67 according to EN 60529

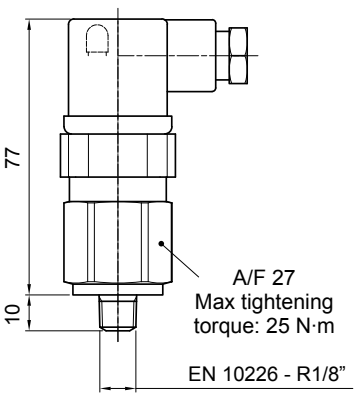
Electrical data
- Electrical connection: Four-core cable
- Resistive load: 5 A / 14 Vdc
  4 A / 30 Vdc
  5 A / 125 Vac
  4 A / 250 Vac
- CE certification

On request this indicator can be provided with main connectors in use for wirings.

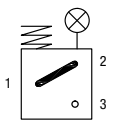
BL*51 - BL*52 - BL*53

Electrical/Visual Pressure Indicator

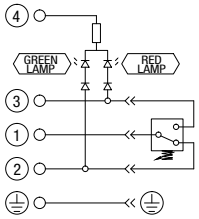
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A xx P01
2 bar ±10%	BL A 20 H A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR

Technical data
- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

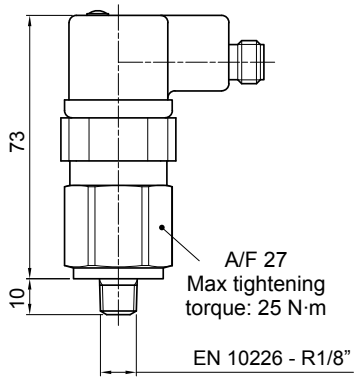
Electrical data

- Electrical connection:	EN 175301-803		
- Type	51	52	53
- Lamps	24 Vdc	110 Vdc	230 Vac
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc	4 A / 230 Vac

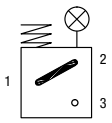
BL*71

Electrical/Visual Pressure Indicator

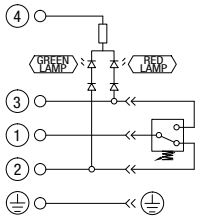
Settings	Ordering code
1.5 bar ±10%	BL A 15 H A 71 P01
2 bar ±10%	BL A 20 H A 71 P01



Hydraulic symbol



Electrical symbol



Materials

- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR

Technical data

- Max working pressure: 40 bar
- Proof pressure: 60 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP65 according to EN 60529

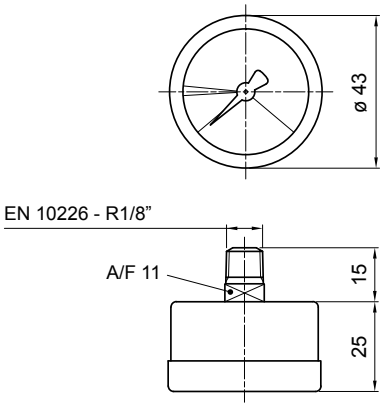
Electrical data

- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps: 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

BVA

Axial Pressur e Gauge

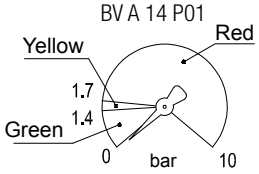
Settings	Ordering code
1.4 bar ±10%	BV A 14 P01
2.5 bar ±10%	BV A 25 P01



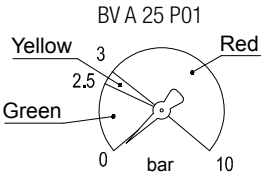
Hydraulic symbol

Dial scale

BV A 14 P01



BV A 25 P01



Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

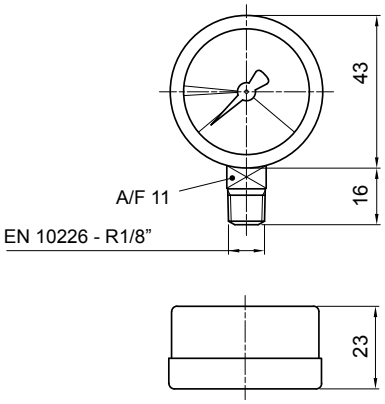
Technical data

- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

BVR

Radial Pressure Gauge

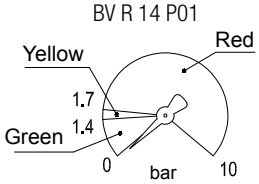
Settings	Ordering code
1.4 bar ±10%	BV R 14 P01
2.5 bar ±10%	BV R 25 P01



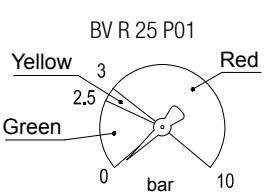
Hydraulic symbol

Dial scale

BV R 14 P01



BV R 25 P01



Materials

- Case: Painted Steel
- Window: Transparent plastic
- Dial: Painted Steel
- Pointer: Painted Aluminium
- Pressure connection: Brass
- Pressure element: Bourdon tube Cu-alloy sof t soldered

Technical data

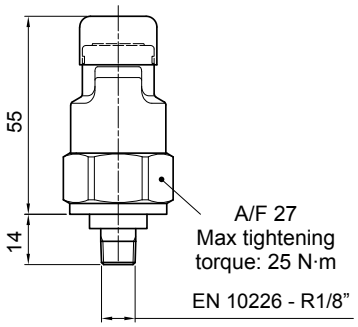
- Max working pressure: Static: 7 bar Fluctuating: 6 bar Short time: 10 bar
- Working temperature: From -40 °C to +60 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Accuracy: Class 2.5 according to EN 13190
- Degree of protection: IP31 according to EN 60529

Dimensions

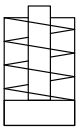
BVP - BVQ

Visual Pressure Indicator

Setting	Ordering code
1.5 bar ±10%	BV P 15 H P01
	BV Q 15 H P01
2 bar ±10%	BV P 20 H P01
	BV Q 20 H P01



Hydraulic symbol



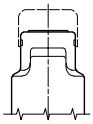
Materials

- Body: Brass
- Cover / internal parts: Nylon
- Caps: VMQ
- Seal: HNBR

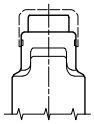
Technical data

- Reset: BVP - Automatic reset; BVQ - Manual reset
- Max working pressure: 10 bar
- Proof pressure: 15 bar
- Working temperature: From -25 °C to +80 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree of protection: IP45 according to EN 60529

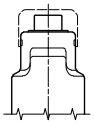
Signals



Absence of pressure (no indicator)



Presence of pressure (green button rises gradually)



Clogged filter element (red button risen)

DESIGNATION & ORDERING CODE

Configuration example 1:	BE	M	15	H	A	41	P01
Configuration example 2:	BL	A	20	H	A	71	P01
Configuration example 3:	BV	R	14				P01
Configuration example 4:	BV	P	20	H			P01

Series

- **BE** Electrical pressure indicator
- **BL** Electrical/Visual pressure indicator
- **BV** Visual pressure indicator

Type	BE	BL
A Standard type	•	•
M With wired electrical connection	•	

BV	
A	Axial connection pressure gauge
R	Radial connection pressure gauge
P	Visual indicator with automatic reset
Q	Visual indicator with manual reset

Pressure setting	BEA-BEM	BL	BVA-BVR	BVP-BVQ
14 1.4 bar			•	
15 1.5 bar	•	•		•
20 2 bar	•	•		•
25 2.5 bar			•	

Seals	BE	BL	BVA-BVR	BVP-BVQ
H HNBR	•	•		•

Thermostat	BE	VL	BV
A Without	•	•	

Electrical connections	BEA	BEM	BL	BV
10 Connection AMP Superseal series 1.5				
30 Connection Deutsch DT-04-2-P				
41 Connection via four-core cable		•		
50 Connection EN 175301-803	•			
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•	
53 Connection EN 175301-803, transparent base with lamps 230 Vdc			•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•	

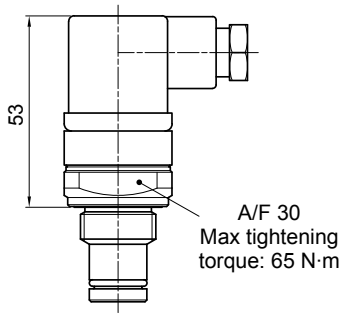
Option

- **P01** MP Filtri standard
- **Pxx** Customized

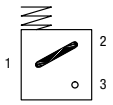
DEA*50

Electrical Differential Indicator

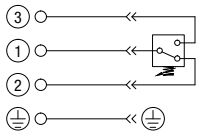
Settings	Ordering code
1.2 bar ±10%	DE A 12 x A 50 P01
2 bar ±10%	DE A 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

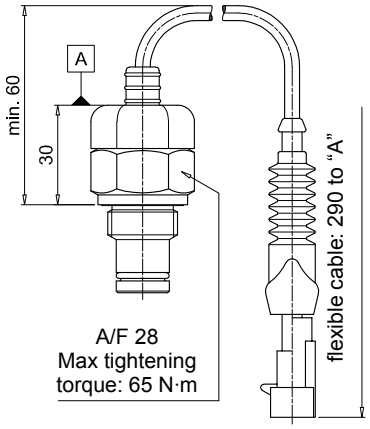
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

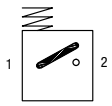
DEM*10

Electrical Differential Indicator

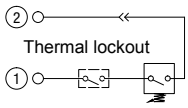
Settings	Ordering code
1.2 bar ±10%	DE M 12 x x 10 P01
2 bar ±10%	DE M 20 x x 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

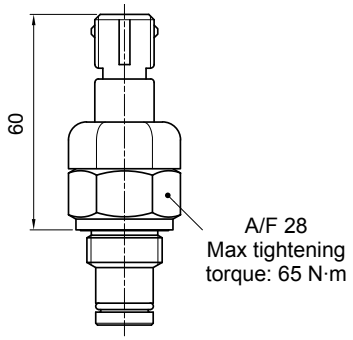
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

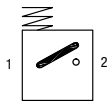
DEM*20

Electrical Differential Indicator

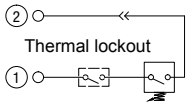
Settings	Ordering code
1.2 bar ±10%	DE M 12 x x 20 P01
2 bar ±10%	DE M 20 x x 20 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

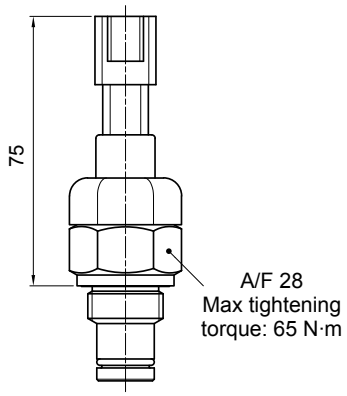
DIFFERENTIAL INDICATORS

Dimensions

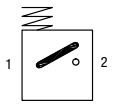
DEM*30

Electrical Differential Indicator

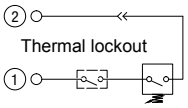
Settings	Ordering code
1.2 bar ±10%	DE M 12 x x 30 P01
2 bar ±10%	DE M 20 x x 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

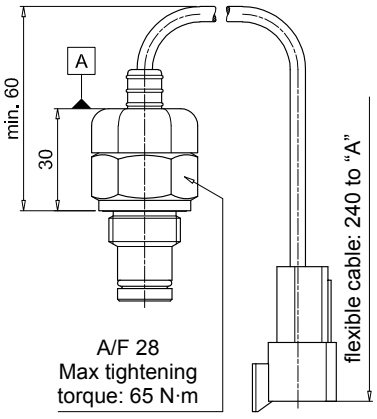
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option “F”)

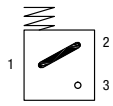
DEM*35

Electrical Differential Indicator

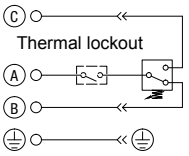
Settings	Ordering code
1.2 bar ±10%	DE M 12 x x 35 P01
2 bar ±10%	DE M 20 x x 35 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

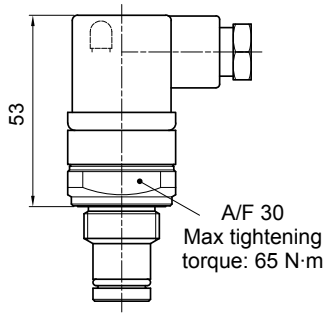
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option “F”)

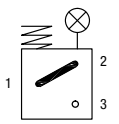
DLA*51 - DLA*52

Electrical/Visual Differential Indicator

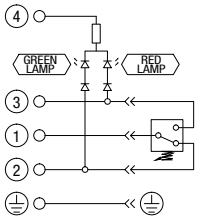
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A xx P01
2 bar ±10%	DL A 20 x A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

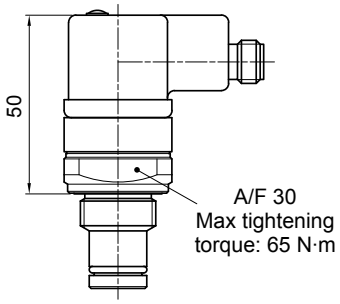
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc

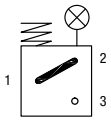
DLA*71

Electrical/Visual Differential Indicator

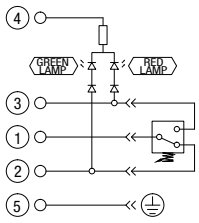
Settings	Ordering code
1.2 bar ±10%	DL A 12 x A 71 P01
2 bar ±10%	DL A 20 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

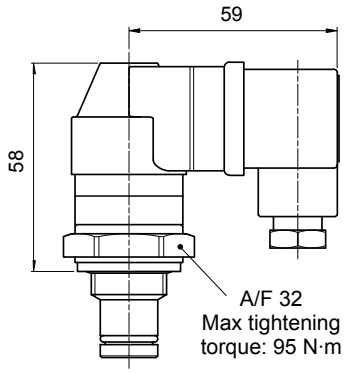
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

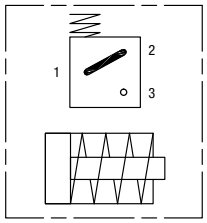
DLE*A50

Electrical/Visual Differential Indicator

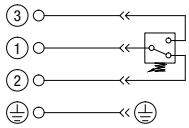
Settings	Ordering code
1.2 bar ±10%	DL E 12 x A 50 P01
2 bar ±10%	DL E 20 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

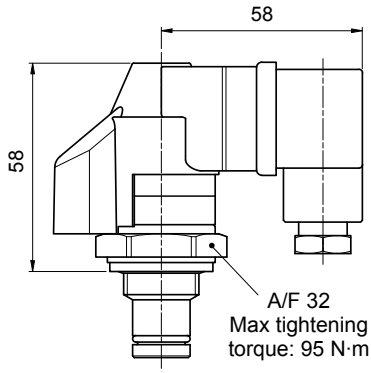
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

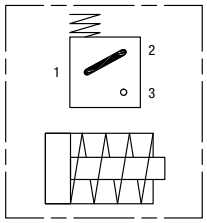
DLE*F50

Electrical/Visual Differential Indicator

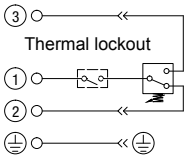
Settings	Ordering code
1.2 bar ±10%	DL E 12 x F 50 P01
2 bar ±10%	DL E 20 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

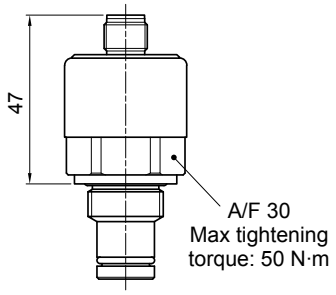
DIFFERENTIAL INDICATORS

Dimensions

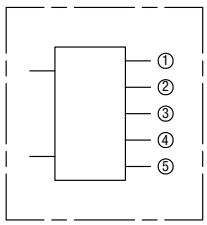
DTA*70

Electronic Differential Indicator

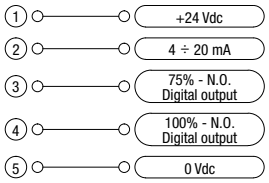
Settings	Ordering code
1.2 bar ±10%	DT A 12 x x 70 P01
2 bar ±10%	DT A 20 x x 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

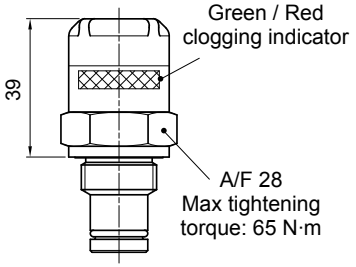
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

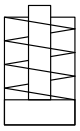
DVA

Visual Differential Indicator

Settings	Ordering code
1.2 bar ±10%	DV A 12 x P01
2 bar ±10%	DV A 20 x P01



Hydraulic symbol



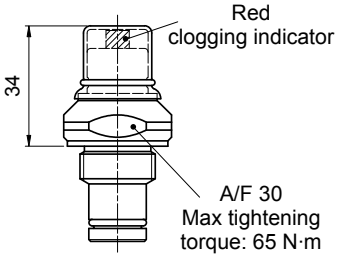
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

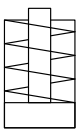
DVM

Visual Differential Indicator

Settings	Ordering code
1.2 bar ±10%	DV M 12 x P01
2 bar ±10%	DV M 20 x P01



Hydraulic symbol



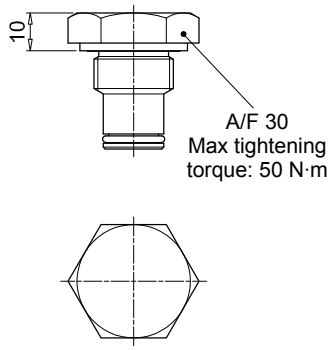
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

T2

Indicator plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V



Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	M	12	H	F	50	P01
Configuration example 2:	DL	E	20	V	A	71	P01
Configuration example 3:	DT	A	12	H	F	70	P01
Configuration example 4:	DV	M	20	V			P01

Series

- **DE** Electrical differential indicator
- **DL** Electrical/Visual differential indicator
- **DT** Electronic differential indicator
- **DV** Visual differential indicator

Type	DE	DL	DT	DV
A Standard type	•	•	•	**A** With automatic reset
M With wired electrical connection	•			**M** With manual reset
E For high power supply		•		

Pressure setting

- **12** 1.2 bar
- **20** 2 bar

Seals

- **H** HNBR
- **V** FPM

Thermostat	DEA	DEM	DLA	DLE	DT	DV
A Without	•	•	•	•		
F With thermostat		•		•	•	

Electrical connections	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option

- **P01** MP Filtri standard
- **Pxx** Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	T2	H

Series

- **T2** Indicator plug

Seals

- **H** HNBR
- **V** FPM

LMP - low and medium pressure filters are used as process filters to protect pumps, pressure reducers and hydraulic circuits from damage due to oil contamination as per ISO 4406.

LMP series is available in 5 different sizes: 100, 200, 400, 900 and 950 and a wide range of versions.

LMP filters are available with several working pressures suitable for all hydraulic circuits as:

- **return filters in external tank mounting construction for medium and high flow rates in single and duplex versions**
- **in-line filters for low and medium pressures for off-line applications**
- **in-line process filters for medium pressures, for example, for forced lubrication applications, in single or duplex versions**
- **in-line filters for medium pressures for filtering hydraulic boost circuits**
- **in-line filters as high holding capacity filters on test beds**

LMP filters are thus specifically designed to be suitable for a wide range of application: from steel plants to mobile equipments, from test benches to naval application, providing the right solution for filtering requirements in all sectors.

LMP filters are available in single, manifold and duplex versions.

FILTER SIZING

For the proper corrective factor Y see chapter at page 21

Low & Medium Pressure filters

LMP 110-120 series
MULTIPORT

Maximum pressure up to 80 bar - Flow rate up to 200 l/min

Technical data

Low & Medium Pressure filters **Maximum pressure up to 80 bar - Flow rate up to 200 l/min**

Filter housing materials
- Head: Aluminium
- Housing: Cataphoresis - Painted Steel
- Bypass valve: Brass - Aluminium

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 8 MPa (80 bar)
- Test pressure: 12 MPa (120 bar)
- Burst pressure:
  LMP 110: 29 MPa (290 bar)
  LMP 120/130: 38 MPa (380 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 8 MPa (80 bar)

Temperature
From -25 °C to +110 °C

Note
LMP MULTIPORT filters are provided for vertical mounting

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

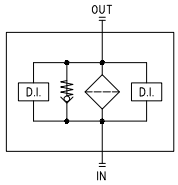
Δp element type
- Microfibre filter elements - series N - W: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

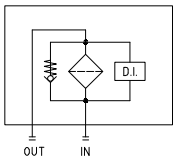
	Weights [kg]					Volumes [dm³]				
	Length	1	2	3	4	Length	1	2	3	4
LMP 110		1.60	1.80	2.10	2.60		0.75	0.81	1.11	1.53
LMP 120		1.90	2.10	2.40	2.90		0.75	0.81	1.11	1.53
LMP 123		1.70	1.90	2.20	2.70		0.75	0.81	1.11	1.53

Multiport

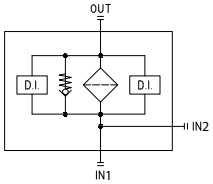
LMP 110
In-Line filter



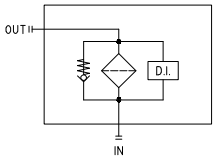
LMP 120
Port IN-OUT on the same side



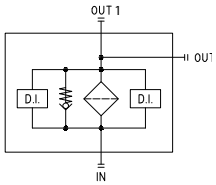
LMP 112
Double IN port



LMP 122
Lateral OUT port high flow

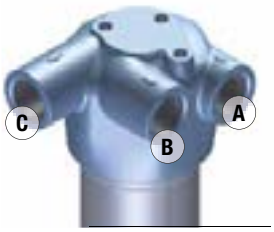


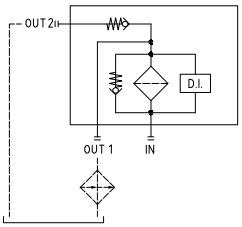
LMP 116
Double OUT port



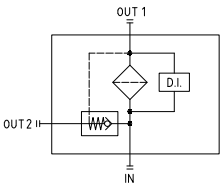
LMP 123
Bypass valve for heat exchanger high flow

Type 1

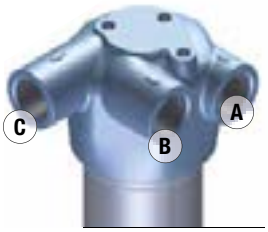


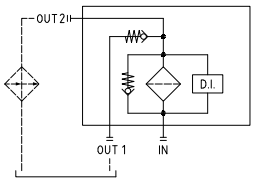


LMP 118
Bypass lateral. Always cleaning fluid in OUT port

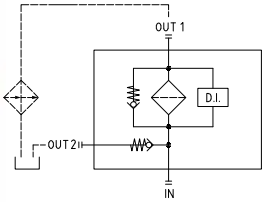


Type 2





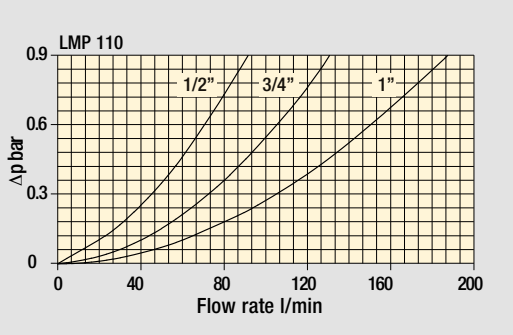
LMP 119
Safety valve 6 bar for heat exchanger

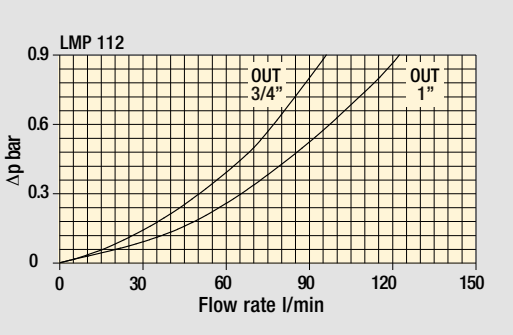


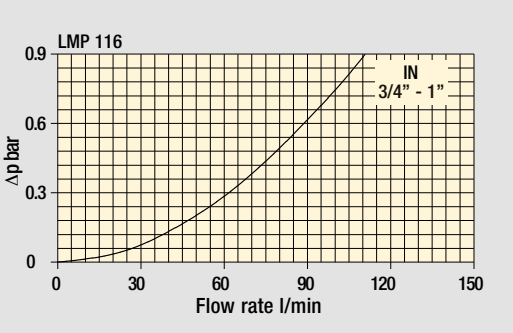
Pressure drop

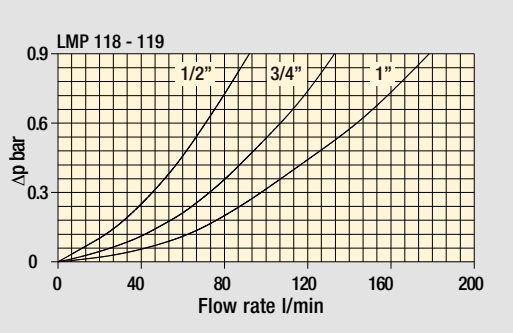
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

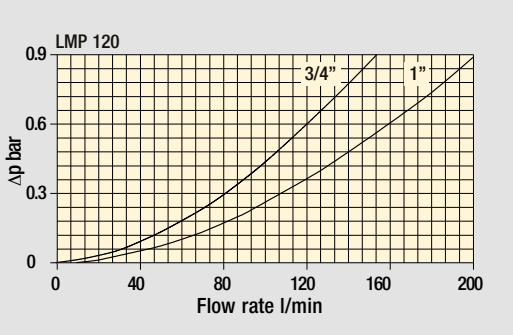
Filter housings Δp pressure drop

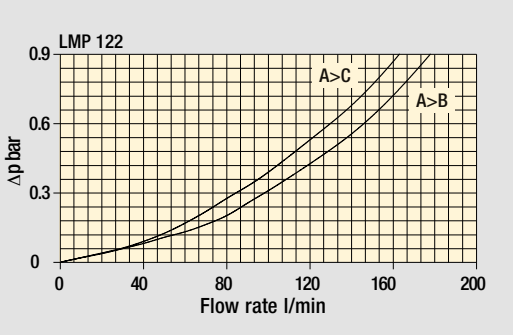


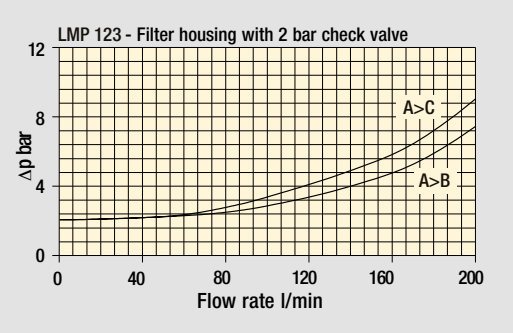


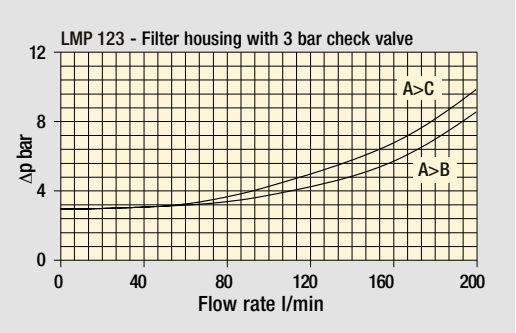








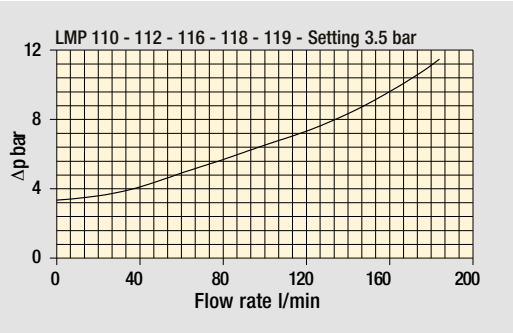


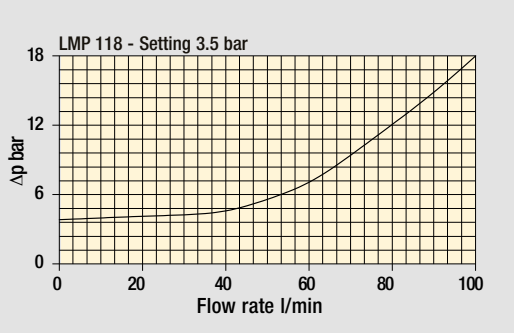


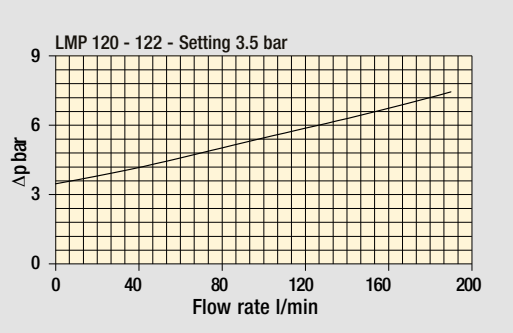
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Bypass valve pressure drop







Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP112 | 4 | B | A | D | 1 | A10 | N | P01

Series and size
LMP110 | LMP112 | LMP116

Length
1 | 2 | 3 | 4 |

Bypass valve

S	Without bypass	**B**	3.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections

		Aux (only LMP 112 - 116)
A	G3/4"	G3/4"
B	G1"	G3/4"
C	3/4" NPT	3/4" NPT
D	1" NPT	3/4" NPT
E	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
F	SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

Connection for differential indicator

1	Without
2	With standard connection
3	With connection on the opposite side
6	With two connections on both sides

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: CU110 | 4 | A10 | A | N | P01

Element series and size
CU110

Element length
1 | 2 | 3 | 4 |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators

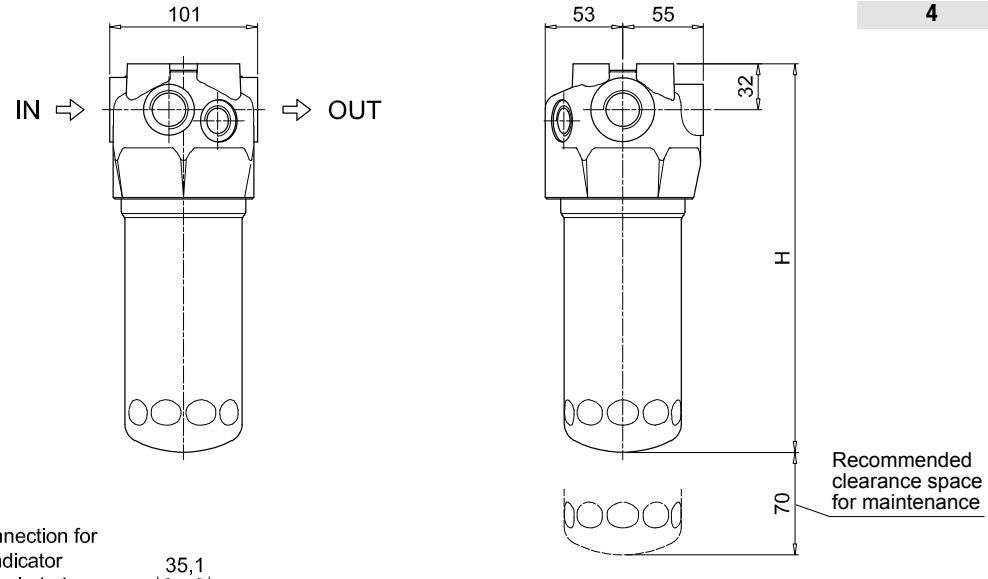
		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

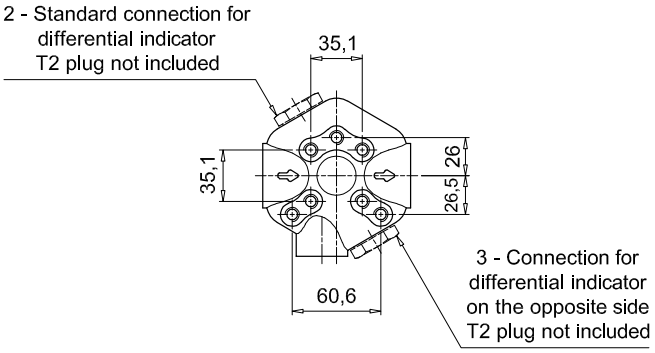
Additional features

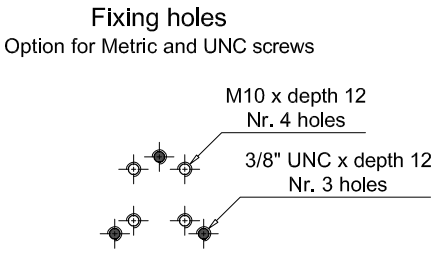
		page
T2	Plug	423

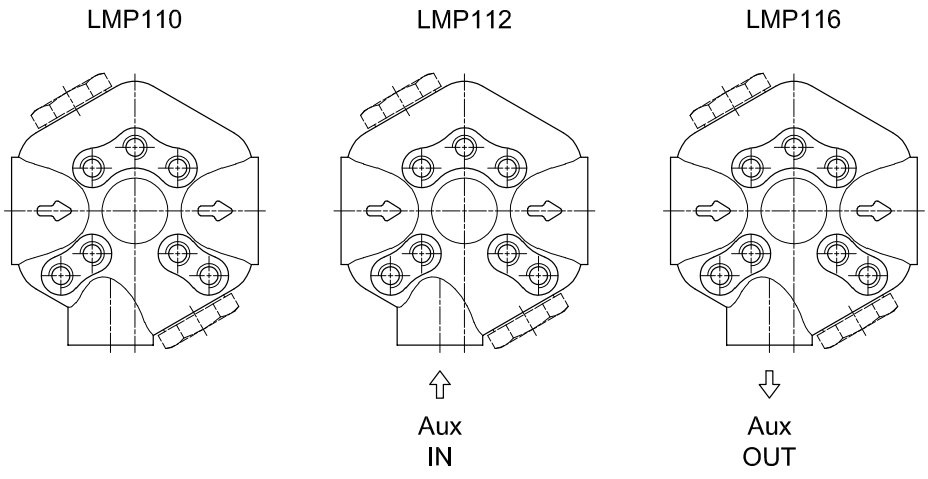
Dimensions

LMP110 - LMP112 LMP116	
Filter length	**H [mm]**
1	182
2	215
3	265
4	365









Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP118 | 4 | B | A | D | 1 | A10 | N | P01

Series and size
LMP118 | **LMP119**

Length
1 | **2** | **3** | **4**

Bypass valve
B 3.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections

		Aux OUT
A	G3/4"	G3/4"
B	G1"	G3/4"
C	3/4" NPT	3/4" NPT
D	1" NPT	3/4" NPT
E	SAE 12 - 1 1/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN
F	SAE 16 - 1 5/16" - 12 UN	SAE 12 - 1 1/16" - 12 UN

Connection for differential indicator
1 Without
2 With standard connection

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU110 | 4 | A10 | A | N | P01

Element series and size
CU110

Element length
1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

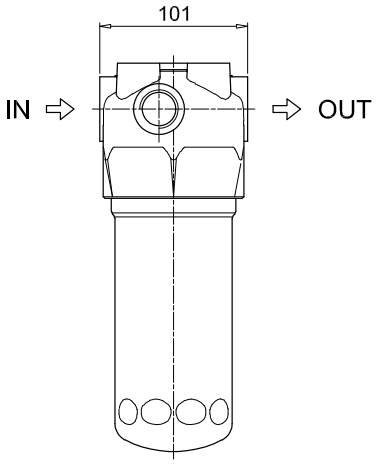
		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

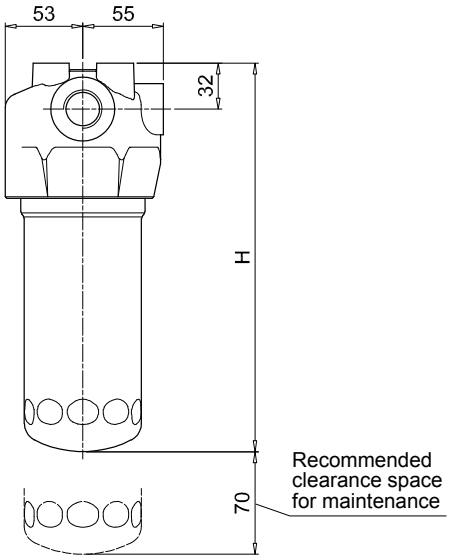
Additional features

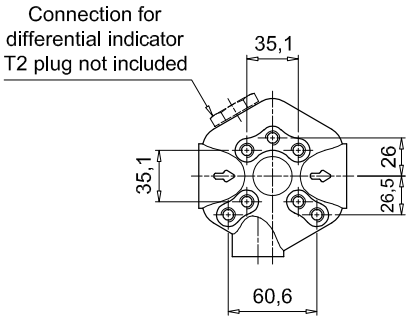
		page
T2	Plug	423

LMP118 - LMP119

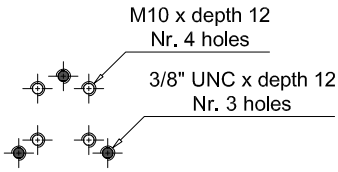
Filter length	H [mm]
1	182
2	215
3	265
4	365

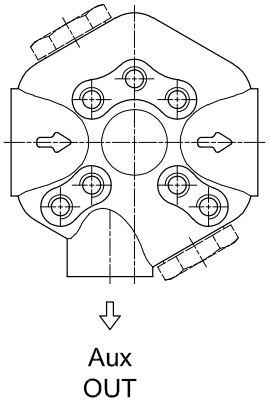






Fixing holes
Option for Metric and UNC screws





Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP112 | 4 | B | A | D | 1 | A10 | N | P01

Series and size
LMP120 | **LMP122**

Length
1 | **2** | **3** | **4**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections		LMP120	LMP122
A	G3/4"	•	
B	G1"	•	•
C	3/4" NPT	•	
D	1" NPT	•	•
E	SAE 12 - 1 1/16" - 12 UN	•	
F	SAE 16 - 1 5/16" - 12 UN	•	•

Connection for differential indicator
1 Without
2 With standard connection

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU110 | 4 | A10 | A | N | P01

Element series and size
CU110

Element length
1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

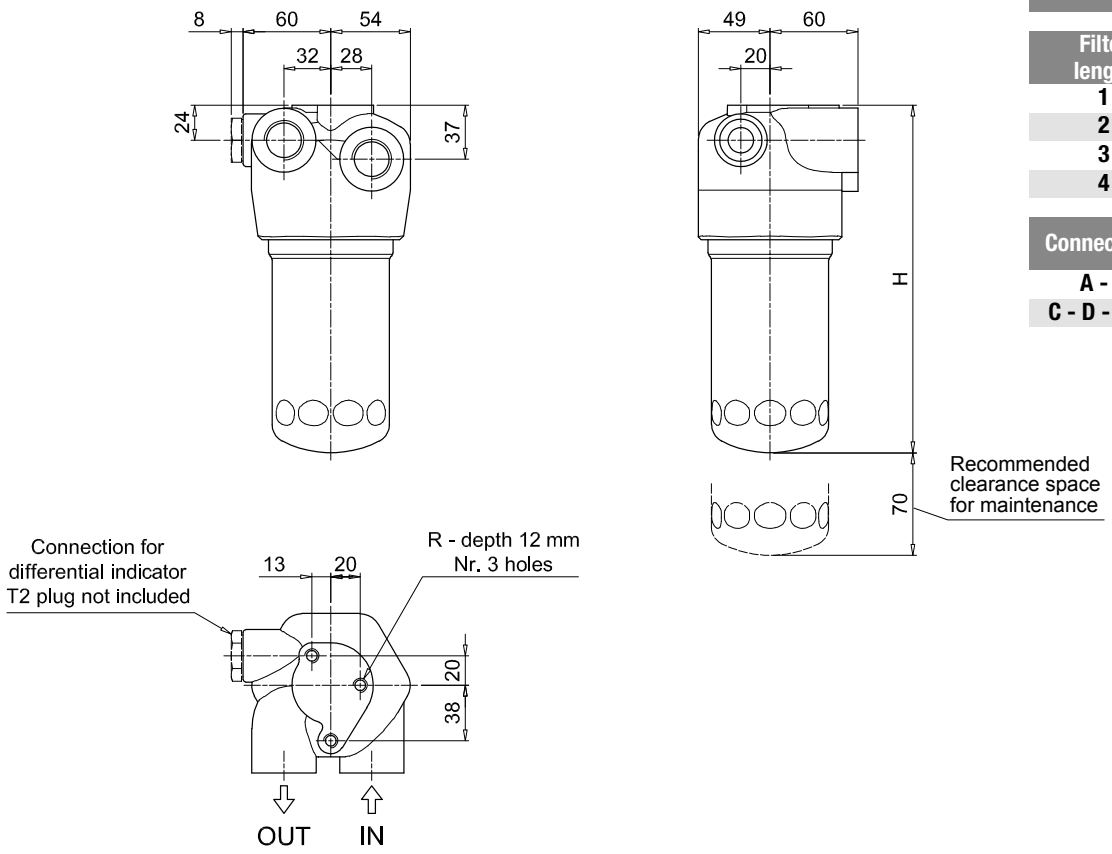
Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features		page
T2	Plug	423

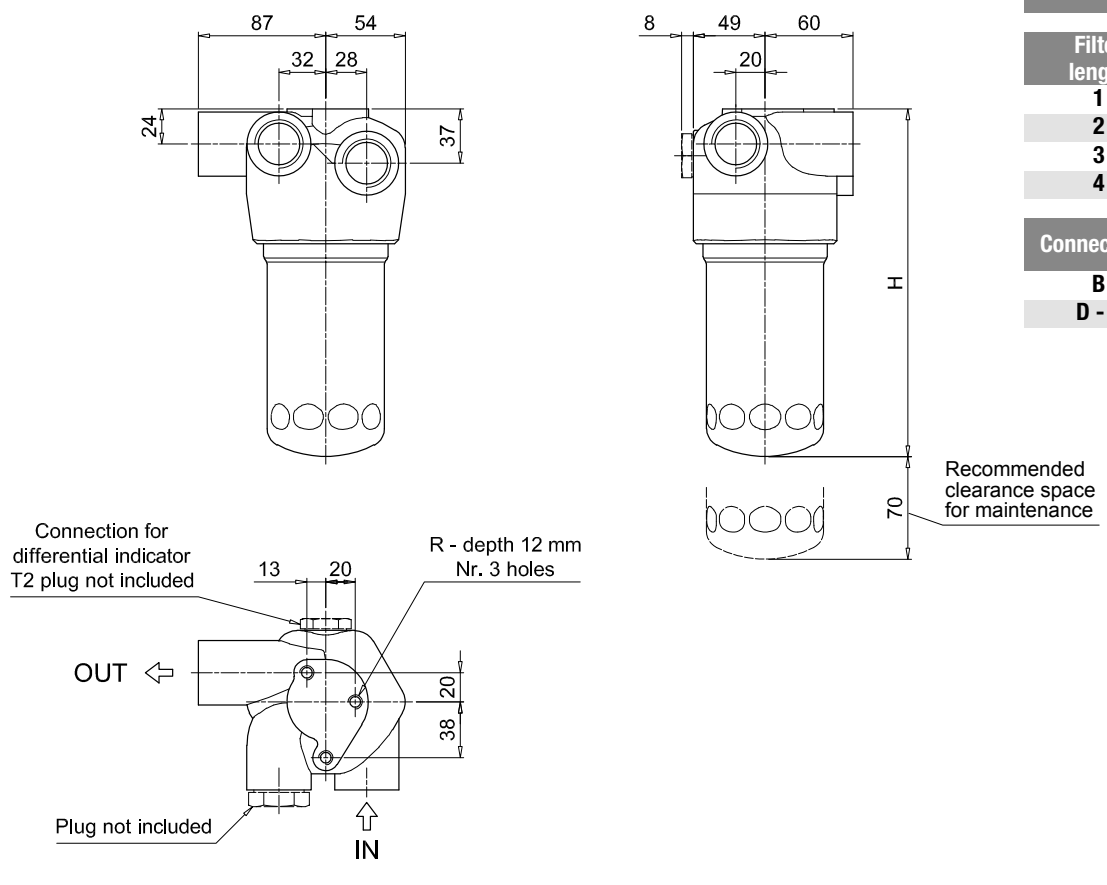
Dimensions



LMP120

Filter length	H [mm]
1	182
2	215
3	265
4	365

Connections	R
A - B	M10
C - D - E - F	3/8" UNC



LMP122

Filter length	H [mm]
1	182
2	215
3	265
4	365

Connections	R
B	M10
D - F	3/8" UNC

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP123 | 4 | R | A | F | 1 | A10 | N | P01

Series and size
LMP123

Length
1 | **2** | **3** | **4**

Valves	Bypass	OUT to cooler	Check valve
C	without	front	2 bar
D			3 bar
G		side	2 bar
H			3 bar
M	3.5 bar	front	2 bar
N			3 bar
Q		side	2 bar
R			3 bar

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections
B G1”
F SAE 16 - 1 5/16” - 12 UN

Connection for differential indicator
1 Without
2 With standard connection

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU110 | 4 | A10 | A | N | P01

Element series and size
CU110

Element length
1 | **2** | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

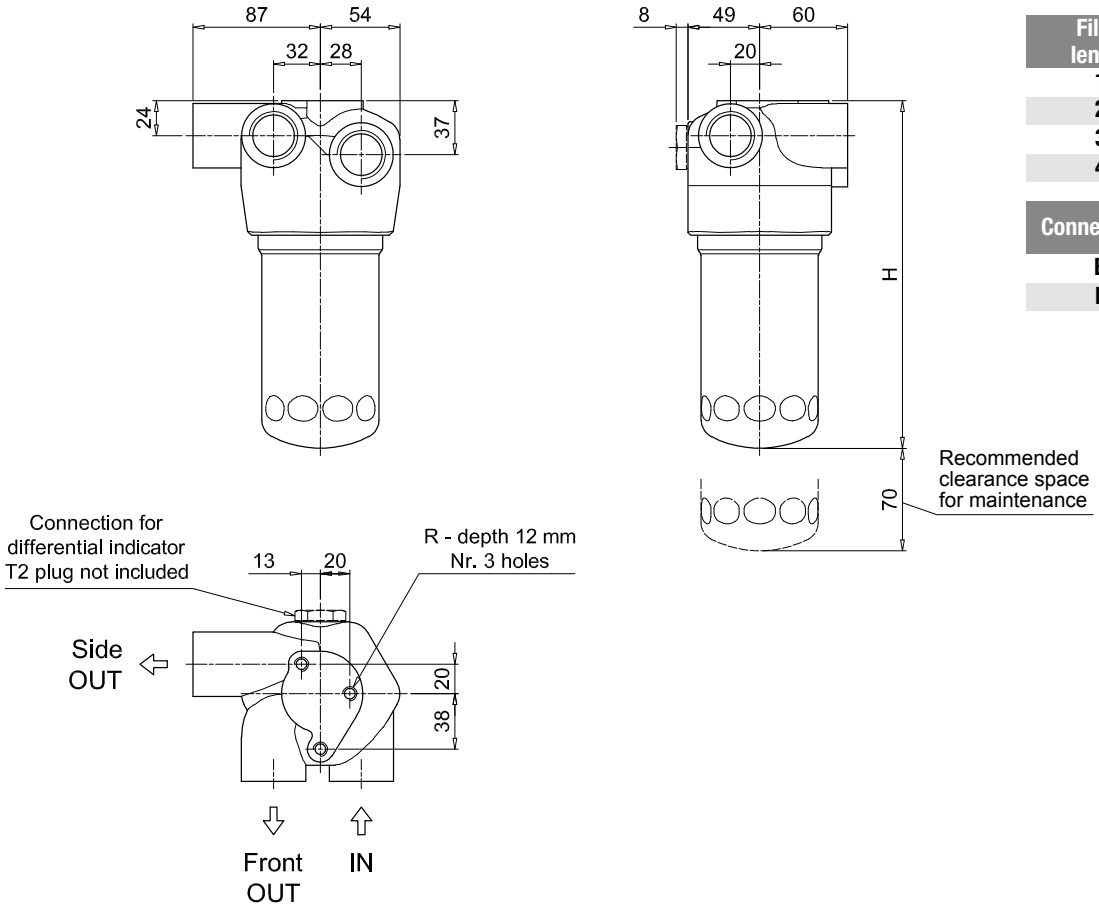
Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

Dimensions

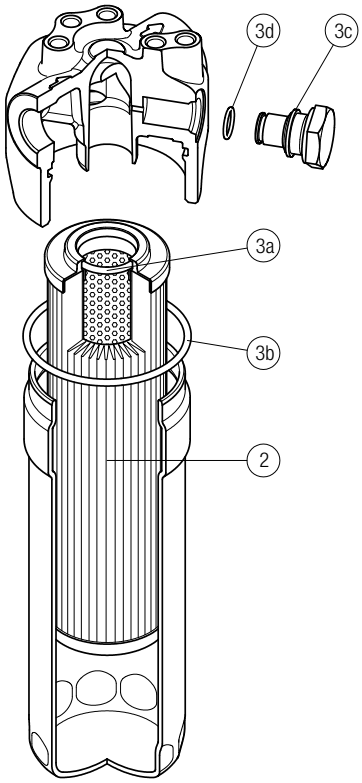


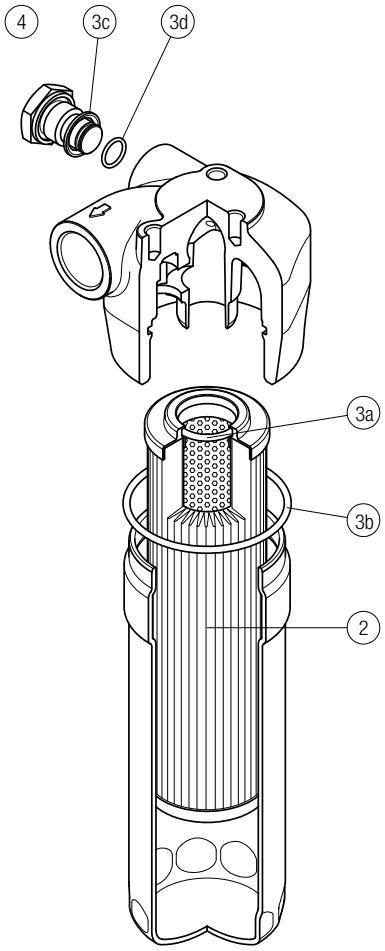
LMP123	
Filter length	**H [mm]**
1	182
2	215
3	265
4	365

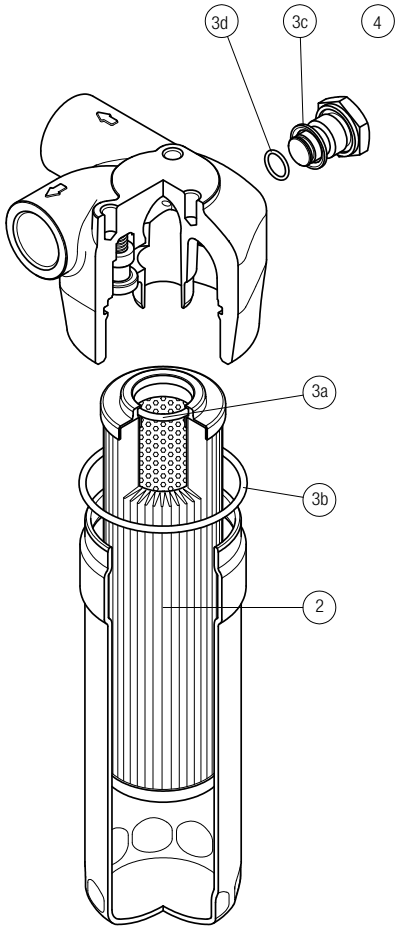
Connections	**R**
B	M10
F	3/8" UNC

Order number for spare parts

LMP 110 - 112 - 116 - 118 - 119	LMP 120	LMP 122 - 123







Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
LMP 110 - 112- 116 - 118 - 119 LMP 120 LMP 122 - 123	See order table	02050478	02050479	T2H	T2V

LMP 210-211

Maximum pressure up to 60 bar - Flow rate up to 330 l/min

Technical data

Low & Medium Pressure filters **Maximum pressure up to 60 bar - Flow rate up to 330 l/min**

Filter housing materials
- Head: Aluminium
- Bowl: Cataphoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

Temperature
From -25 °C to +110 °C

Connections
Inlet/Outlet In-Line

Note
LMP 210 - 211 filters are provided for vertical mounting

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

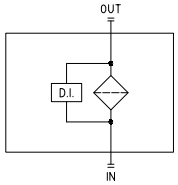
Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

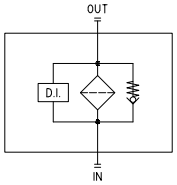
	Weights [kg]				Volumes [dm³]			
	Length	1	2	3	Length	1	2	3
LMP 210 - 211		3.10	4.80	6.40		1.60	2.10	2.80

Hydraulic symbols

LMP 210-400-900-950
execution **S**



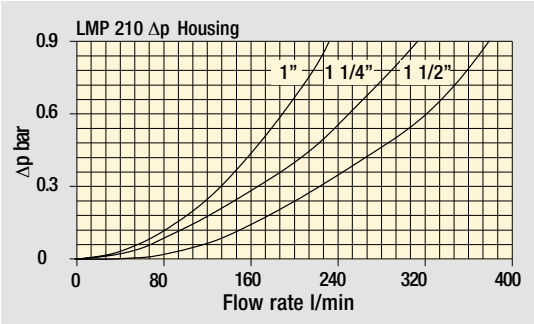
LMP 210-400-900-950
execution **B**

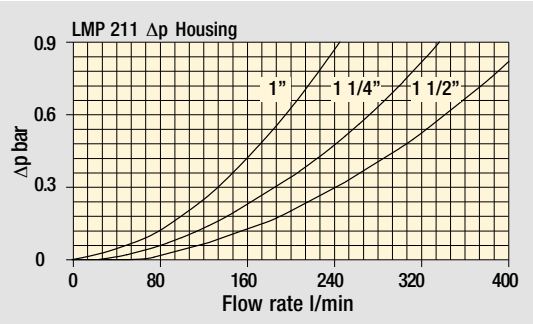


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

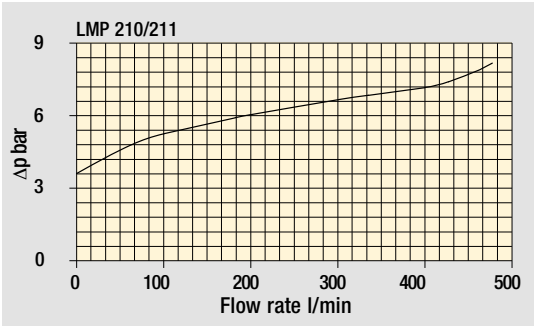
Pressure drop

Filter housings Δp pressure drop





Bypass valve pressure drop



LMP210

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP210 | 3 | B | A | F1 | A10 | N | P01

Series and size
LMP210

Length
1 | **2** | **3**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections
F1 1" SAE 3000 psi/M
F2 1 1/4" SAE 3000 psi/M
F3 1 1/2" SAE 3000 psi/M
F4 1" SAE 3000 psi/UNC
F5 1 1/4" SAE 3000 psi/UNC
F6 1 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU210 | 3 | A10 | A | N | P01

Element series and size
CU210

Element length
1 | **2** | **3**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

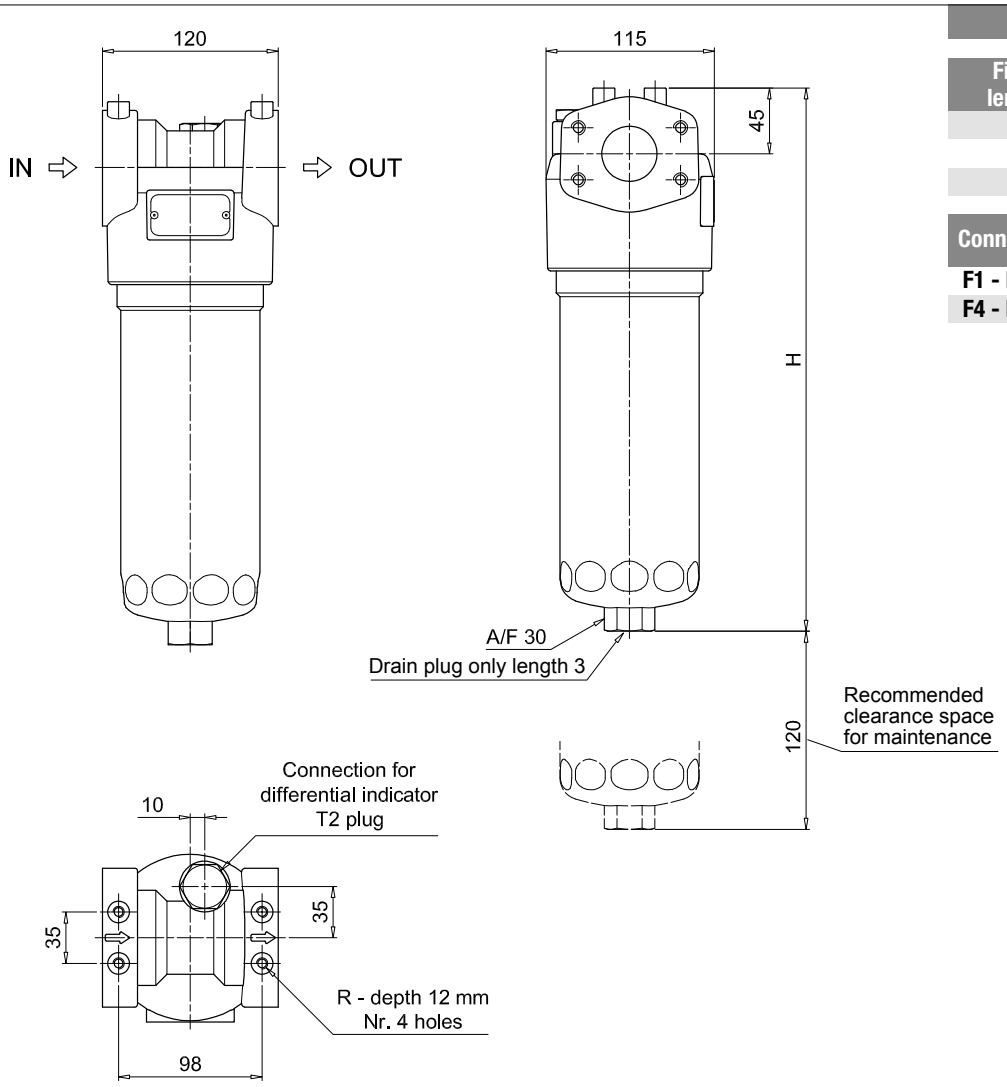
Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features		page
T2	Plug	423

Dimensions



LMP210	
Filter length	**H [mm]**
1	362
2	492
3	633

Connections	**R**
F1 - F2 - F3	M8
F4 - F5 - F6	5/16" UNC

LMP211

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP211 | 3 | B | A | D | 6 | A10 | N | P01

Series and size
LMP211

Length
1 | **2** | **3**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments — Filtration rating: Axx • Mxx • Pxx
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Connections
A G1”
B G1 1/4”
C G1 1/2”
D 1” NPT
E 1 1/4” NPT
F 1 1/2” NPT
G SAE 16 - 1 5/16” - 12 UN
H SAE 20 - 1 5/8” - 12 UN
I SAE 24 - 1 7/8” - 12 UN

Connection for differential indicator
6 With plugged connection

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: CU210 | 3 | A10 | A | N | P01

Element series and size
CU210

Element length
1 | **2** | **3**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals — Filtration rating: Axx • Mxx • Pxx
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

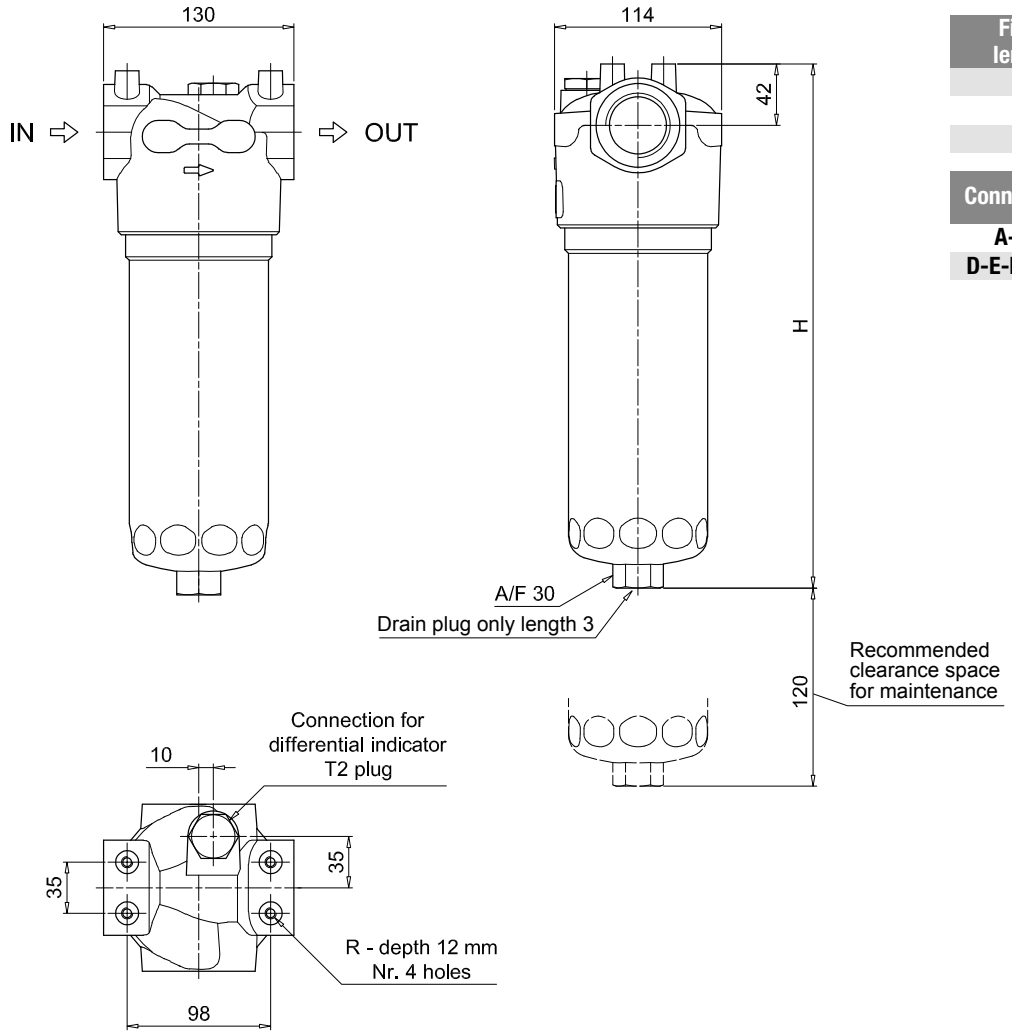
Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

Dimensions



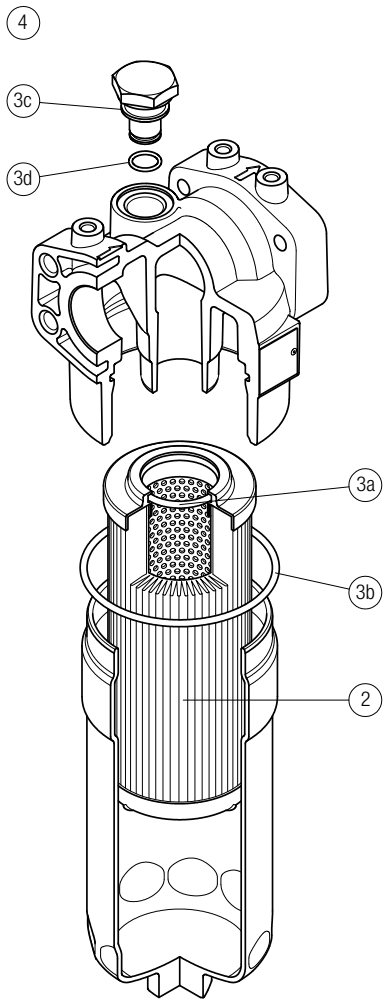
LMP211	
Filter length	**H [mm]**
1	358
2	488
3	629

Connections	**R**
A-B-C	M8
D-E-F-G-H-I	5/16" UNC

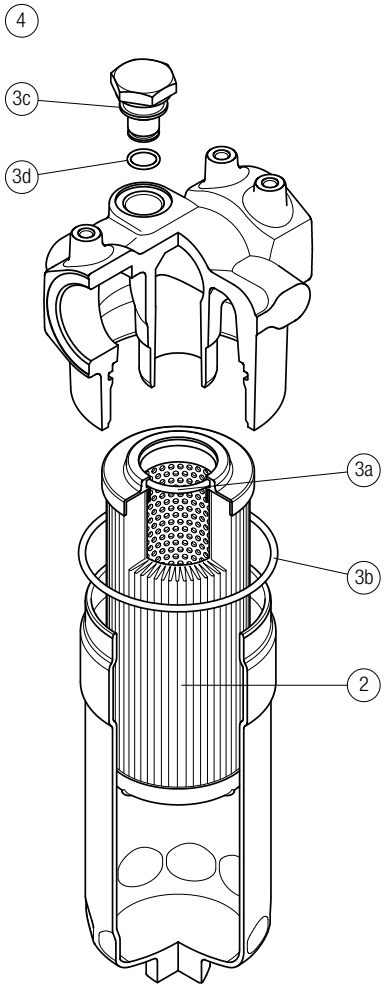
LMP210-211 SPARE PARTS

Order number for spare parts

LMP 210



LMP 211



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
LMP 210 - 211	See order table	02050435	02050436	T2H	T2V

LMP 400-401 & 430-431 series

Maximum pressure up to 60 bar - Flow rate up to 740 l/min

Technical data

Low & Medium Pressure filters **Maximum pressure up to 60 bar - Flow rate up to 740 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Steel

Seals
- Standard NBR series A
- Optional FPM series V

Pressure LMP 400 length 2 -3 - 4
- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

Temperature
From -25 °C to +110 °C

Connections
LMP 400 - 430: In-line Inlet/Outlet
LMP 401 - 431: 90° Inlet/Outlet

Pressure LMP 400 length 5 - 6
- Working pressure: 5 MPa (50 bar)
- Test pressure: 7.5 MPa (75 bar)
- Burst pressure: 15 MPa (150 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 5 MPa (50 bar)

Note
LMP 400 filters are provided for vertical mounting

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

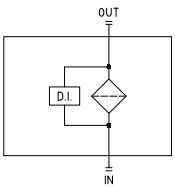
Δp element type
- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

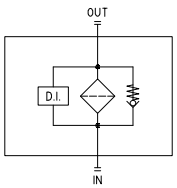
	Weights [kg]						Volumes [dm³]					
	Length	2	3	4	5	6	Length	2	3	4	5	6
LMP 400 - 401 - 430 - 431		7.20	8.10	8.80	11.90	14.40		3.50	5.00	6.50	9.50	13.50

Hydraulic symbols

LMP 210-400-900-950
execution **S**



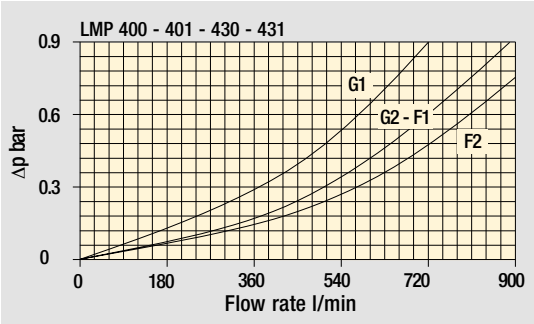
LMP 210-400-900-950
execution **B**



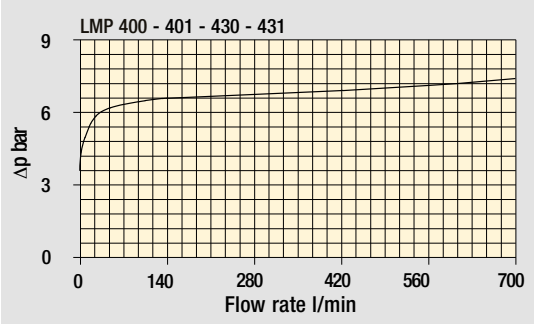
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

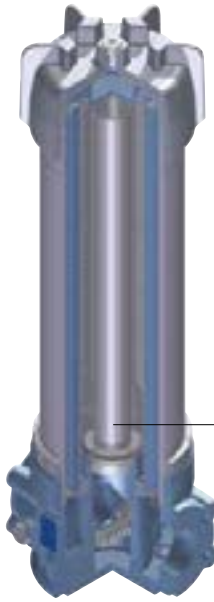
Filter housings Δp pressure drop



Bypass valve pressure drop



EXECUTION P2



Execution P02
"Internal tube for reduced flow rate"
is recommended for flow rate
values below 100/150 l/min.

The use of option P02
makes it easier to fill the housing
with the operating fluid.

"Internal tube for reduced flow rates"

LMP400-401

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP401 | 3 | B | A | G1 | A10 | N | P01

Series and size
LMP400 | **LMP401**

Length
2 | **3** | **4** | **5** | **6**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments (Filtration rating: Axx | Mxx | Pxx)
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Connections
G1 G1/2"
G2 G2"
G3 1 1/2" NPT
G4 2" NPT
G5 SAE 24 - 1 7/8" - 12 UN
G6 SAE 32 - 2 1/2" - 12 UN
F1 2" SAE 3000 psi/M
F2 2 1/2" SAE 3000 psi/M
F3 2" SAE 3000 psi/UNC
F4 2 1/2" SAE 3000 psi/UNC

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution (Filter length: 2 | 3 | 4 | 5 | 6)
P01 MP Filtri standard • • • • •
P02 Maintenance from the bottom of the housing • •
Pxx Customized

FILTER ELEMENT

Configuration example: CU400 | 3 | A10 | A | N | P01

Element series and size
CU400

Element length
2 | **3** | **4** | **5** | **6**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals (Filtration rating: Axx | Mxx | Pxx)
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

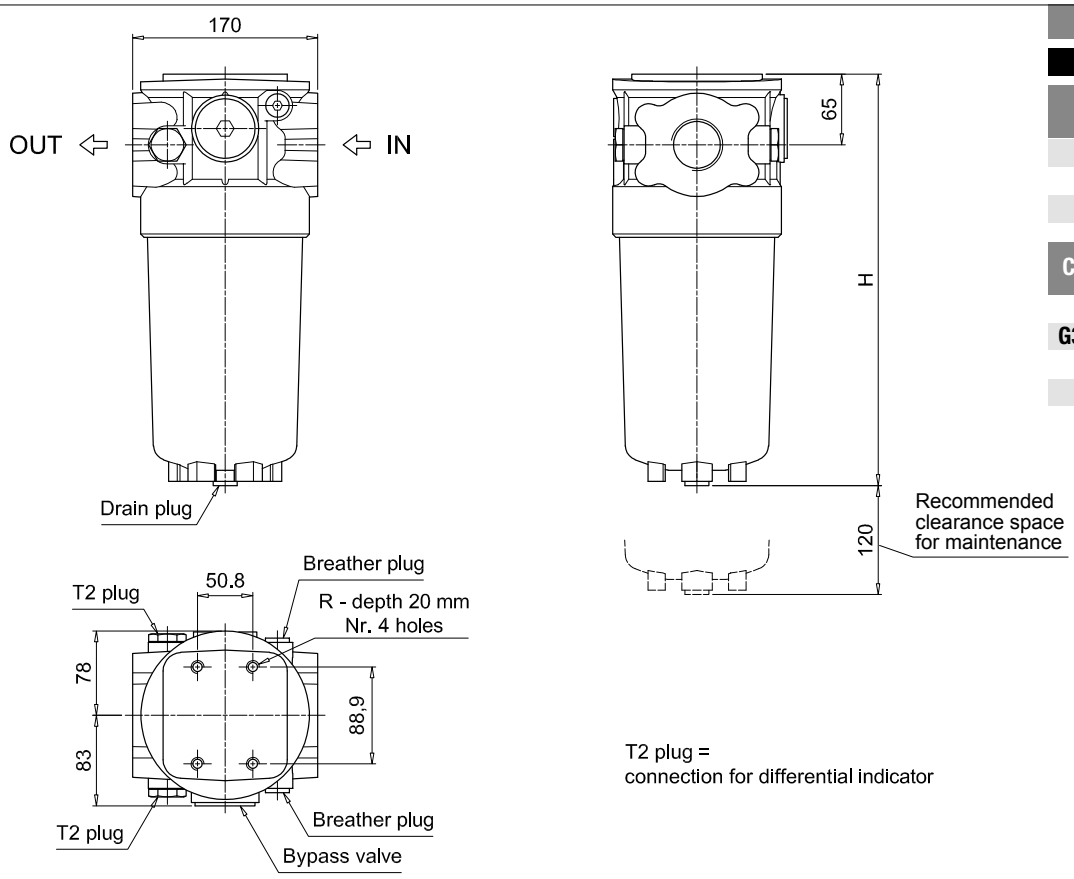
ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

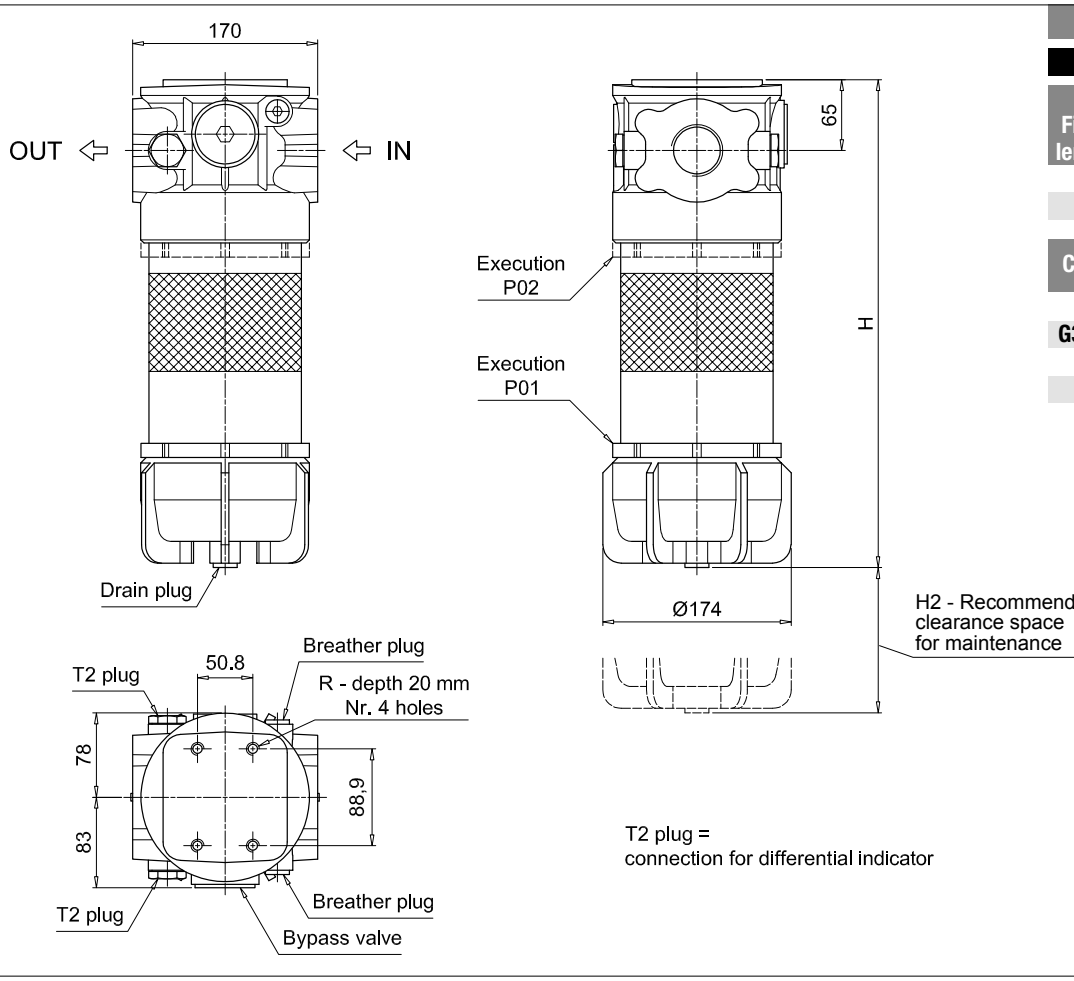


LMP400

Length 2 - 3 - 4

Filter length	H [mm]
2	378
3	478
4	578

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC



LMP400

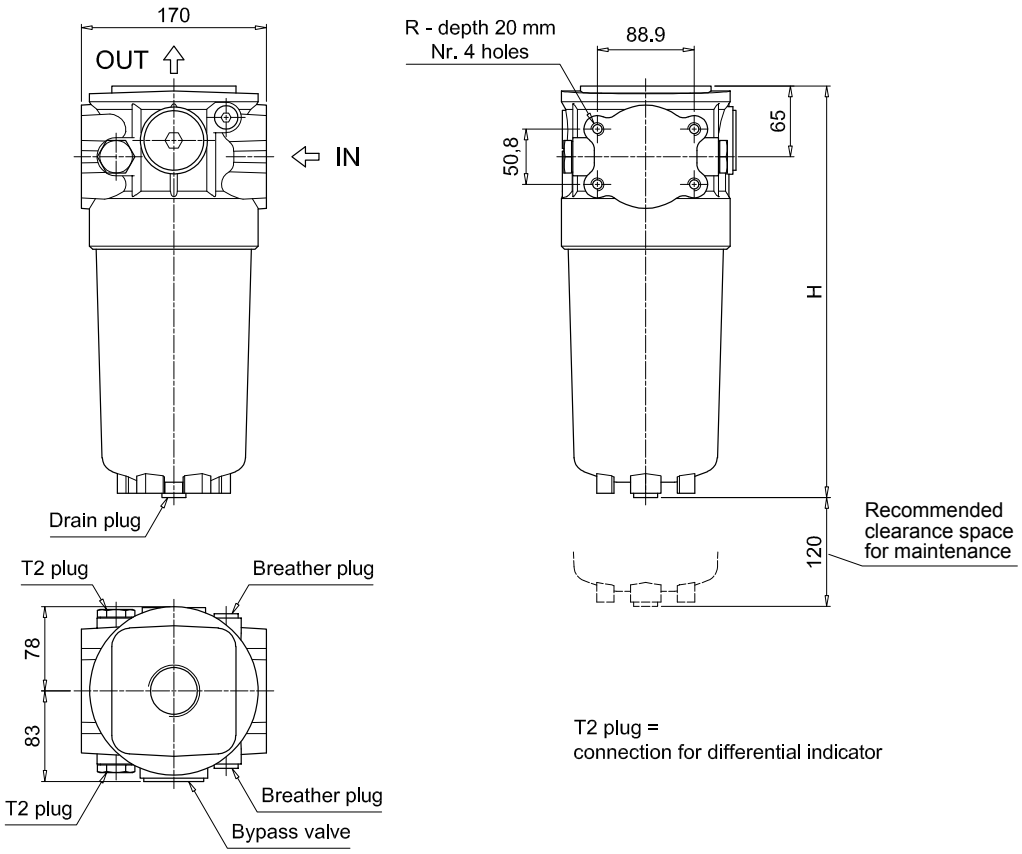
Length 5 - 6

Filter length	H [mm]	H2 [mm] Execution P01	H2 [mm] Execution P02
5	828	120	660
6	1158	120	690

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC

LMP400-401

Dimensions

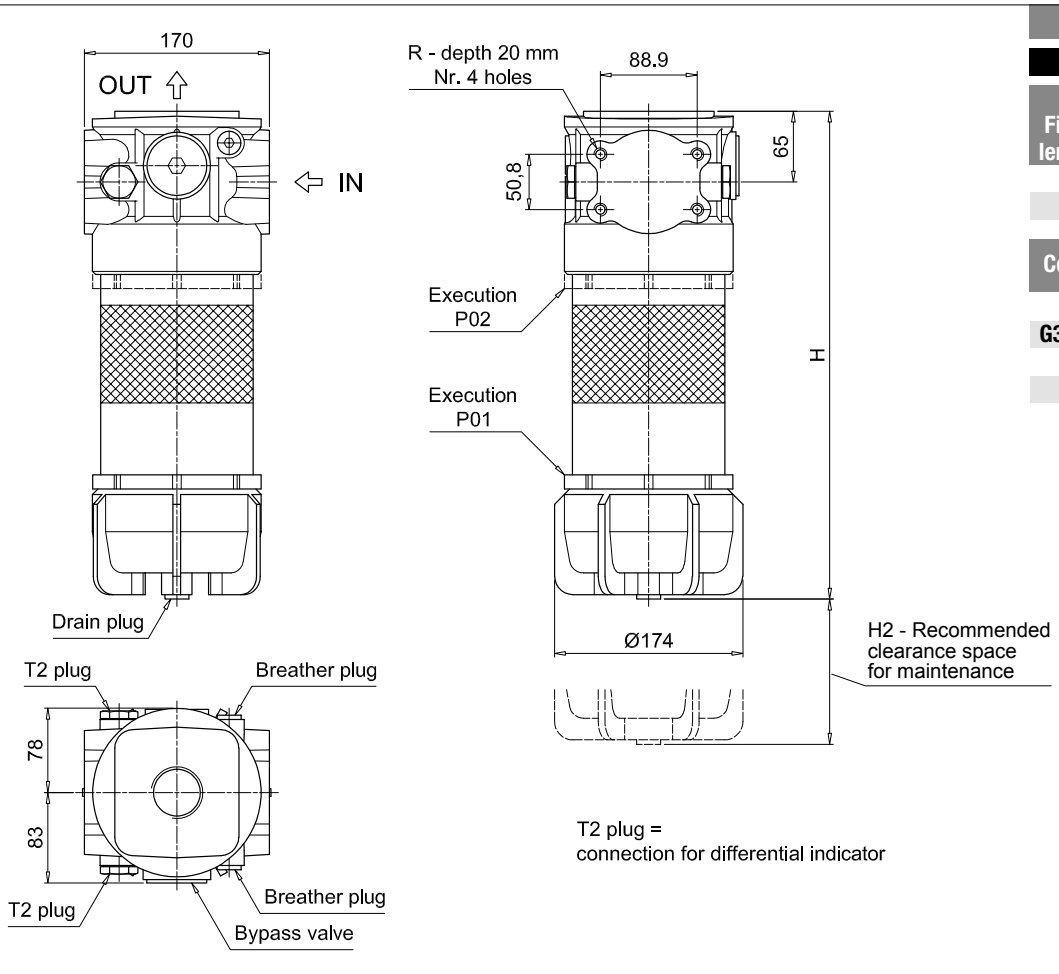


LMP401

Length 2 - 3 - 4

Filter length	H [mm]
2	378
3	478
4	578

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC



LMP401

Length 5 - 6

Filter length	H [mm]	H2 [mm] Execution	
		P01	P02
5	828	120	660
6	1158	120	690

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC

LMP430-431

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP431 | 5 | B | A | G1 | A10 | N | P01

Series and size
LMP430 | **LMP431**

Length
5 | **6**

Bypass valve

S	Without bypass	**B**	3.5 bar

Seals and treatments		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections

G1	G1 1/2"	**F1**	2" SAE 3000 psi/M
G2	G2"	**F2**	2 1/2" SAE 3000 psi/M
G3	1 1/2" NPT	**F3**	2" SAE 3000 psi/UNC
G4	2" NPT	**F4**	2 1/2" SAE 3000 psi/UNC
G5	SAE 24 - 1 7/8" - 12 UN		
G6	SAE 32 - 2 1/2" - 12 UN		

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
P02 With internal reduced flow rate tube
Pxx Customized

FILTER ELEMENT

Configuration example: CU400 | 5 | A10 | A | N | P01

Element series and size
CU400

Element length
5 | **6**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

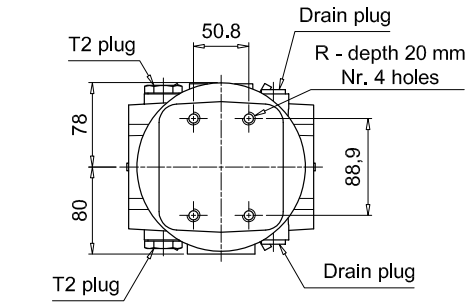
ACCESSORIES

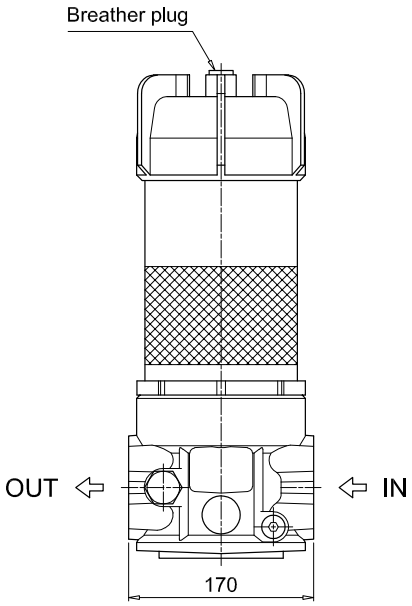
Differential indicators		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421

		page
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

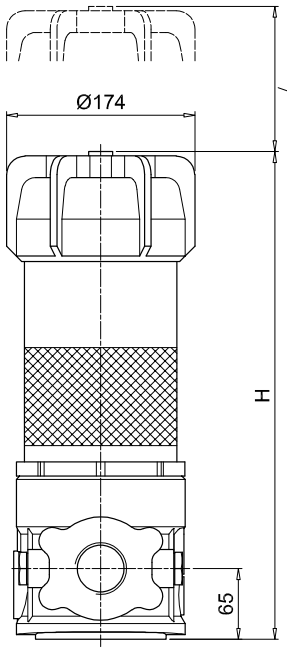
Additional features		page
T2	Plug	423

Dimensions





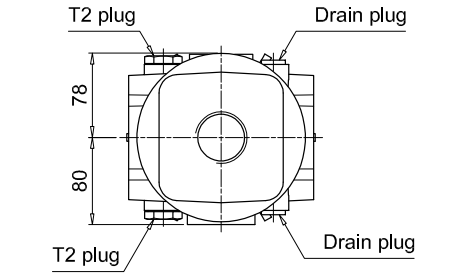
T2 plug =
connection for differential indicator

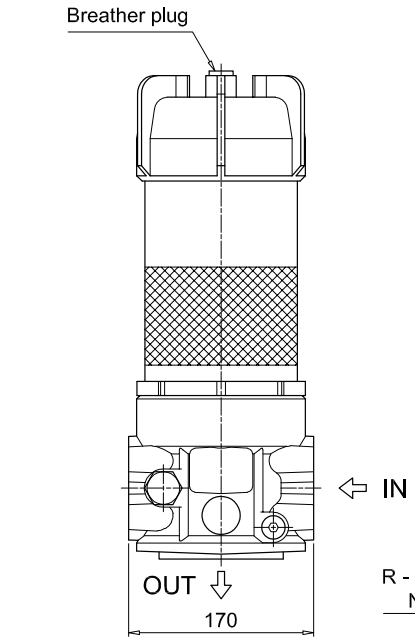


LMP430

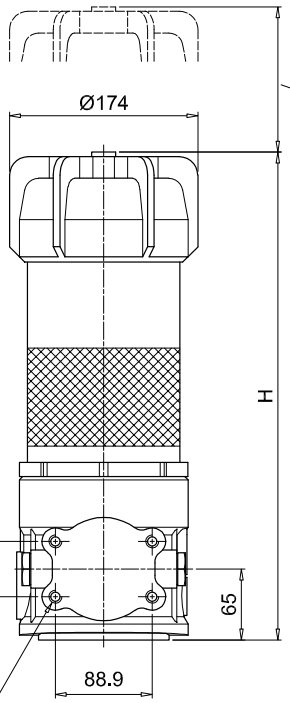
Filter length	H [mm]	H2 [mm]
5	828	660
6	1158	690

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC





T2 plug =
connection for differential indicator



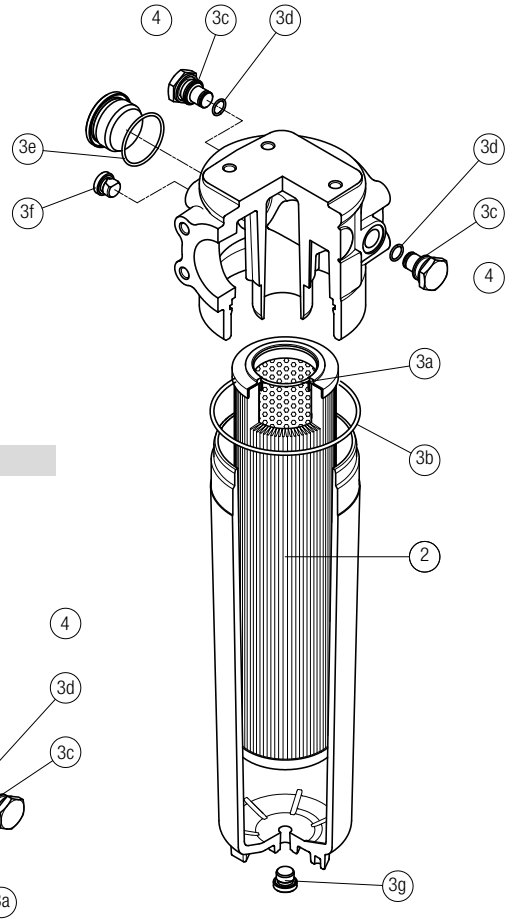
LMP431

Filter length	H [mm]	H2 [mm]
5	828	660
6	1158	690

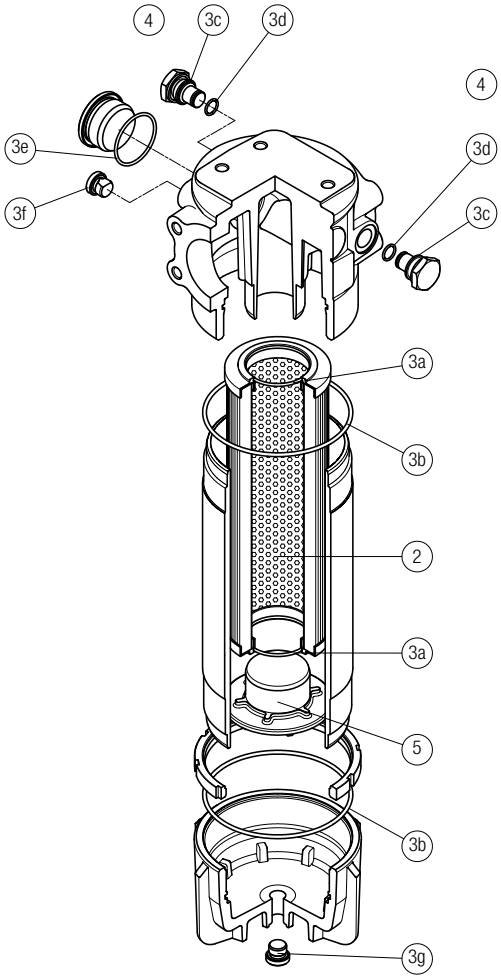
Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC

Order number for spare parts

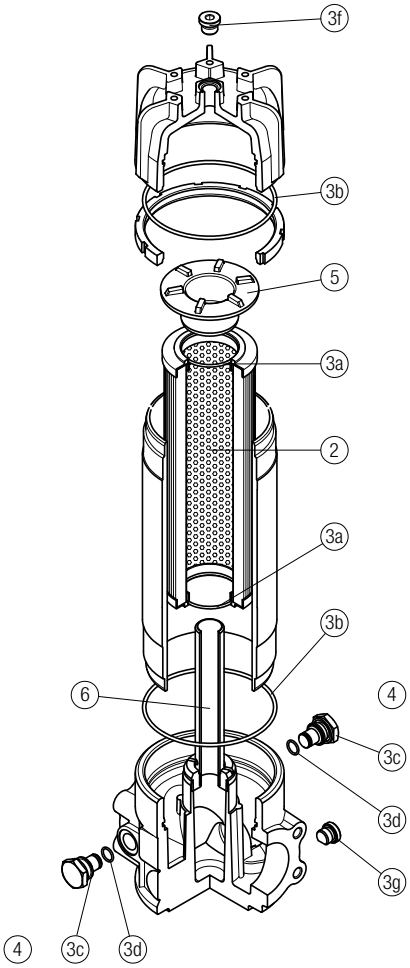
LMP 400 - 401
length 2 - 3 - 4



LMP 400 - 401
length 5 - 6



LMP 430 - 431
length 5 - 6



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 2 pcs. 4		Q.ty: 2 pcs. 5		Q.ty: 1 pc. 6	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Housing spigot no bypass**	**with bypass**	**Tube assembly**	
LMP 400 - 401 length 2 - 3 - 4	See order table	02050391	02050392	T2H	T2V				
LMP 400 - 401 length 5 - 6		02050393	02050394			01044108			
LMP 430 - 431 lenght 5 - 6		02050393	02050394			01044108	02001414	Length 5: 02025041	Length 6: 02025042

LMP 900-901 series

Filter element according to DIN 24550

Maximum pressure up to 30 bar - Flow rate up to 2000 l/min

Technical data

Low & Medium Pressure filters

Maximum pressure up to 30 bar - Flow rate up to 2000 l/min
Filter element according to DIN 24550

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Anodized Aluminium
- Bypass valve: Steel

Pressure
- Working pressure: 3 MPa (30 bar)
- Test pressure: 4.5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Number of filter elements
LMP 900-1: 1 filter element CU900
LMP 900-2: 2 filter elements CU900

Filter elements
Filter element in according to with DIN 24550
Size: 1000

Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Connections
LMP 900: In-line Inlet/Outlet
LMP 901: 90° Inlet/Outlet

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

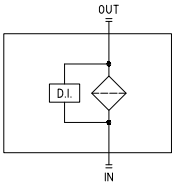
Note
LMP 900 - 901 filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

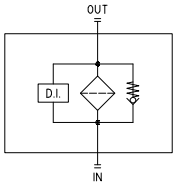
	Weights [kg]			Volumes [dm³]		
	Length	1	2	Length	1	2
LMP 900 - 901		19.2	30.4		16	24

Hydraulic symbols

LMP 210-400-900-950
execution **S**



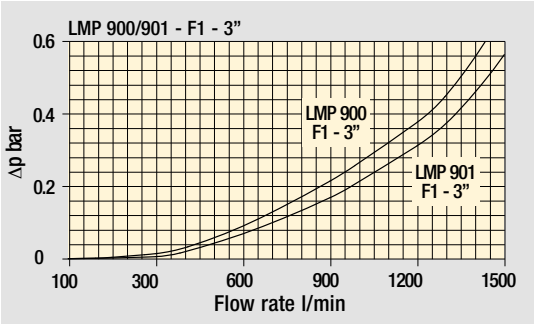
LMP 210-400-900-950
execution **B**

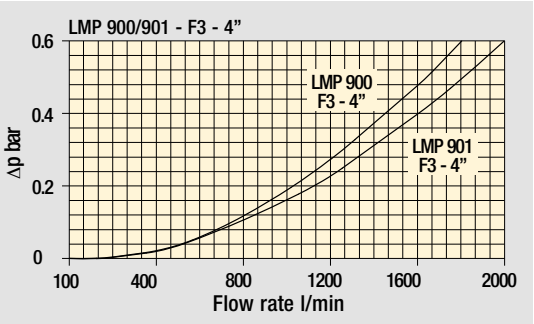


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

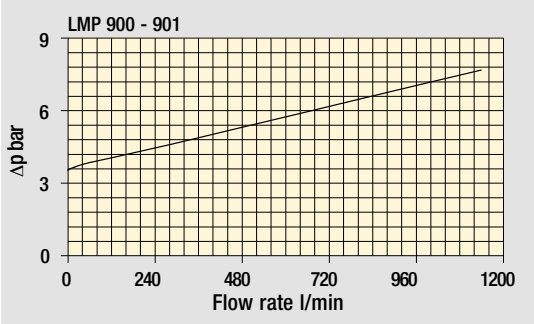
Pressure drop

Filter housings Δp pressure drop

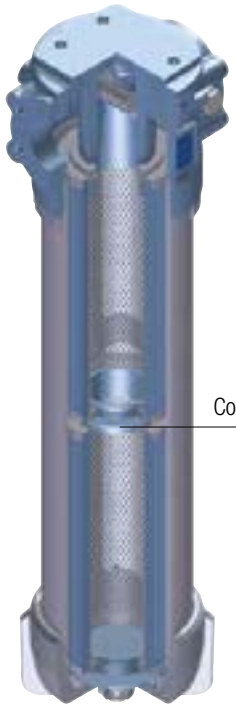




Bypass valve pressure drop



P2 EXECUTION



LMP 900 - 901 filters are equipped with two 1000 size cartridges in compliance with DIN 24550 standard, connected by means of a removable coupling spigot.

Coupling spigot

LMP900-901

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP901 | 2 | B | A | F2 | A10 | N | P01

Series and size
LMP900 | **LMP901**

Length
1 | **2**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments
A NBR
V FPM

Connections
F1 3" SAE 3000 psi/M
F2 3" SAE 3000 psi/UNC
F3 4" SAE 3000 psi/M
F4 4" SAE 3000 psi/UNC

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Element Δp
N 20 bar

Execution

	Filter length 1	2
P01 MP Filtri standard	•	•
P02 Maintenance from the bottom of the housing		•
Pxx Customized		

FILTER ELEMENT

Configuration example: CU900 | A10 | A | N | P01

Element series and size
CU900

Length
1 Nr. 1 filter element
2 Nr. 2 filter elements

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

		page
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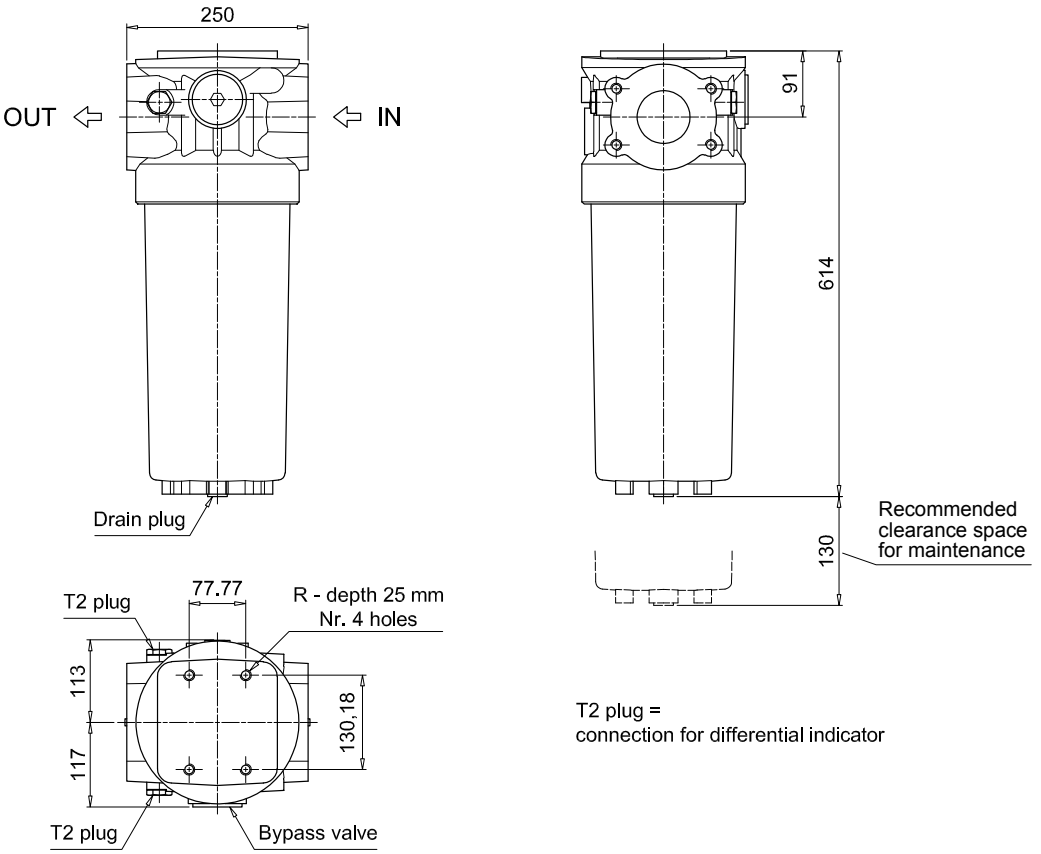
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

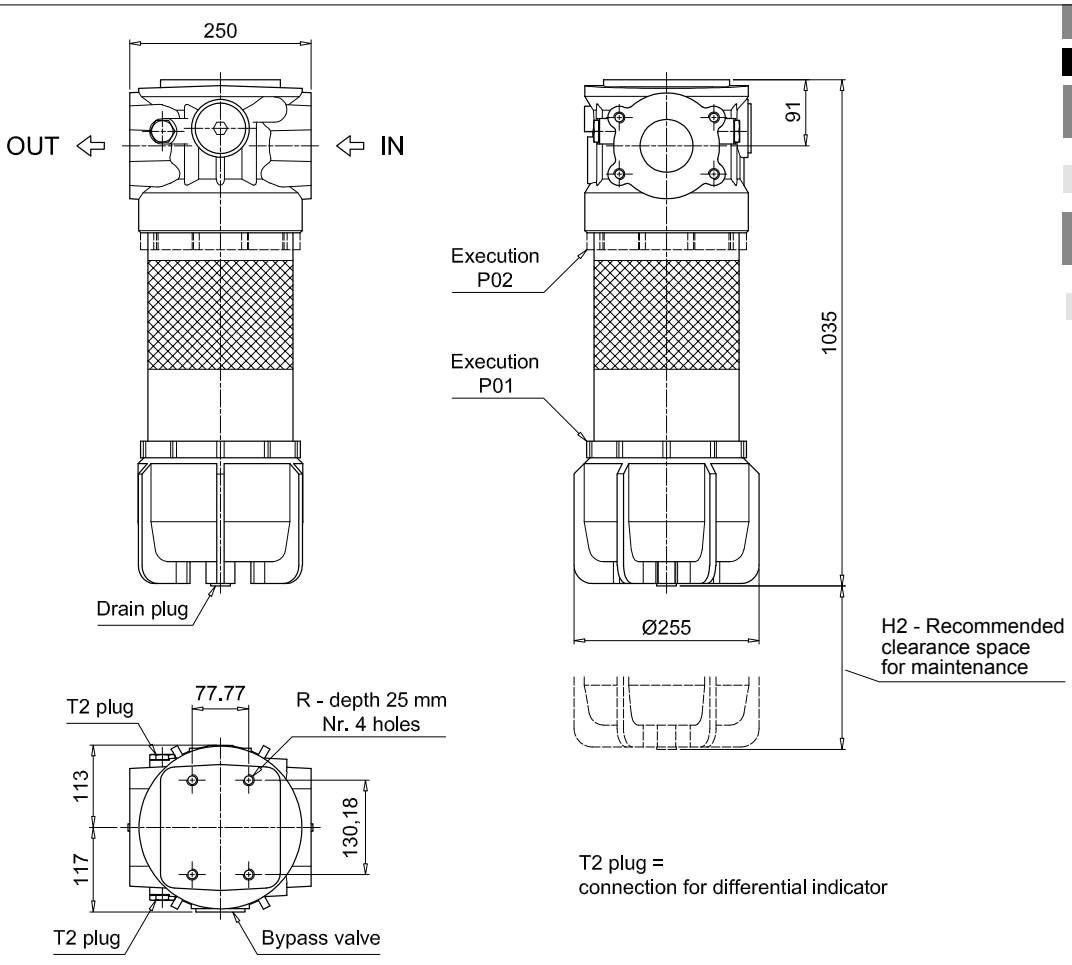
		page
T2	Plug	423



LMP900

Length 1

Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC



LMP900

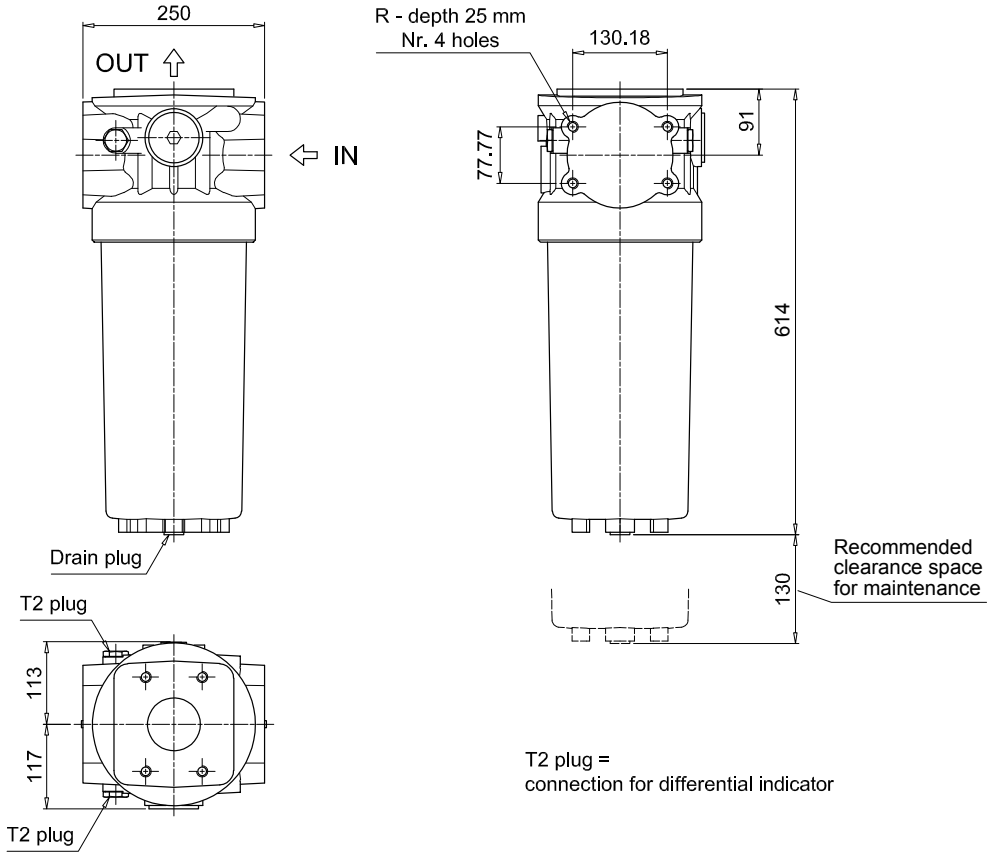
Length 2

Execution	H2 [mm]
P01	130
P02	800

Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC

LMP900-901

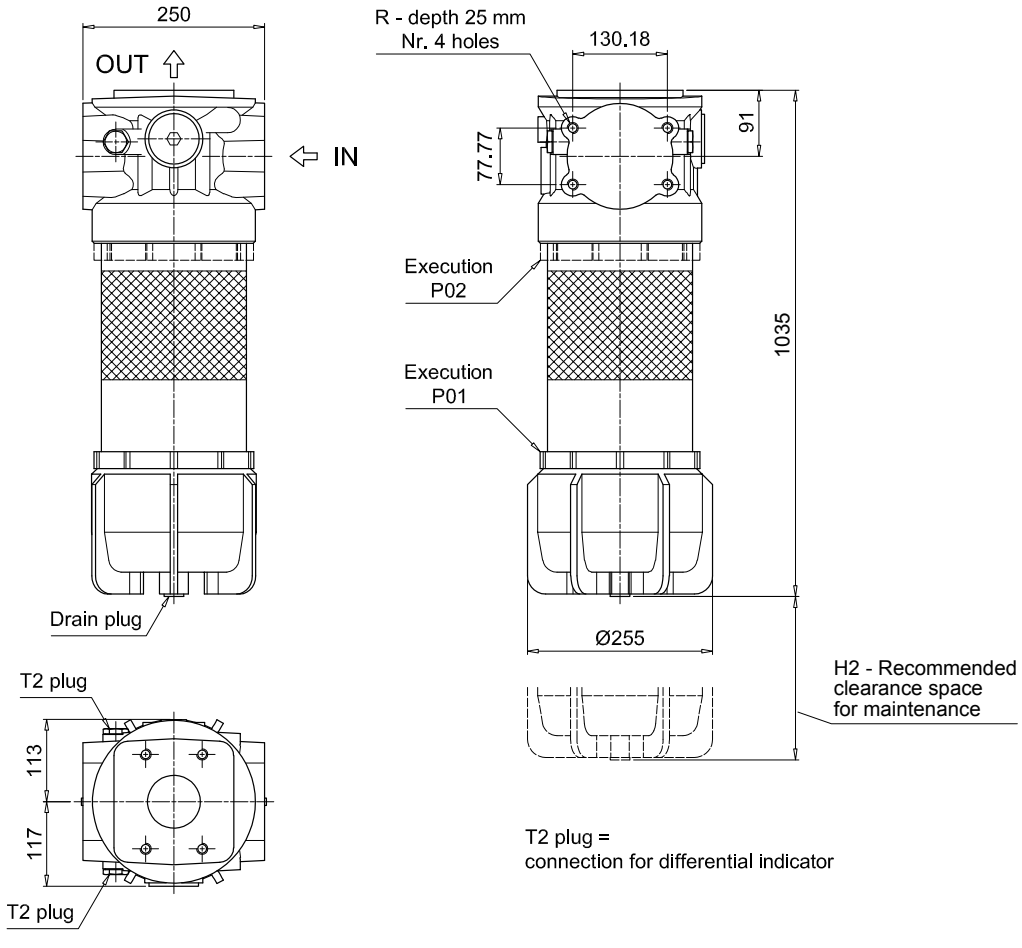
Dimensions



LMP901

Length 1

Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC



LMP901

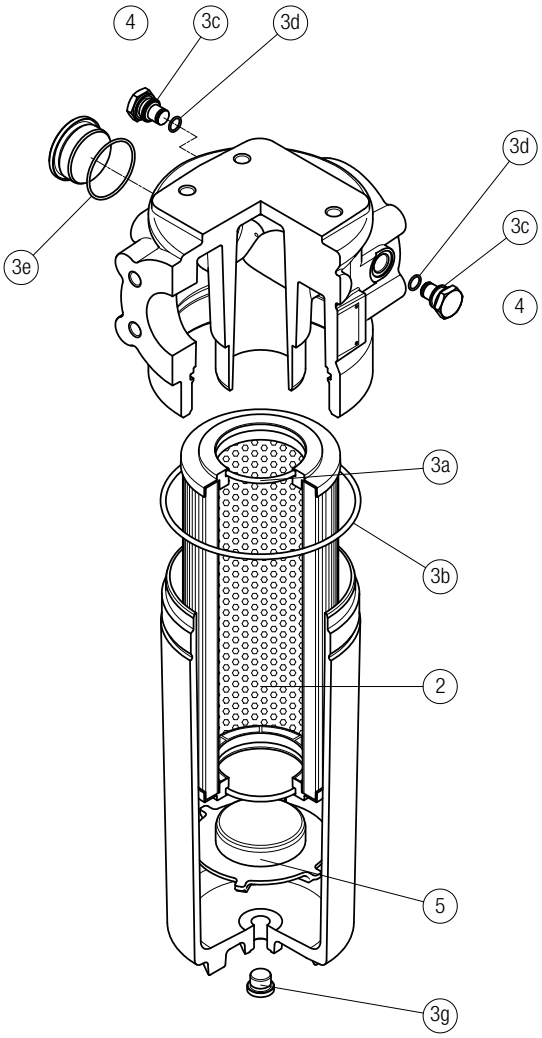
Length 2

Execution	H2 [mm]
P01	130
P02	800

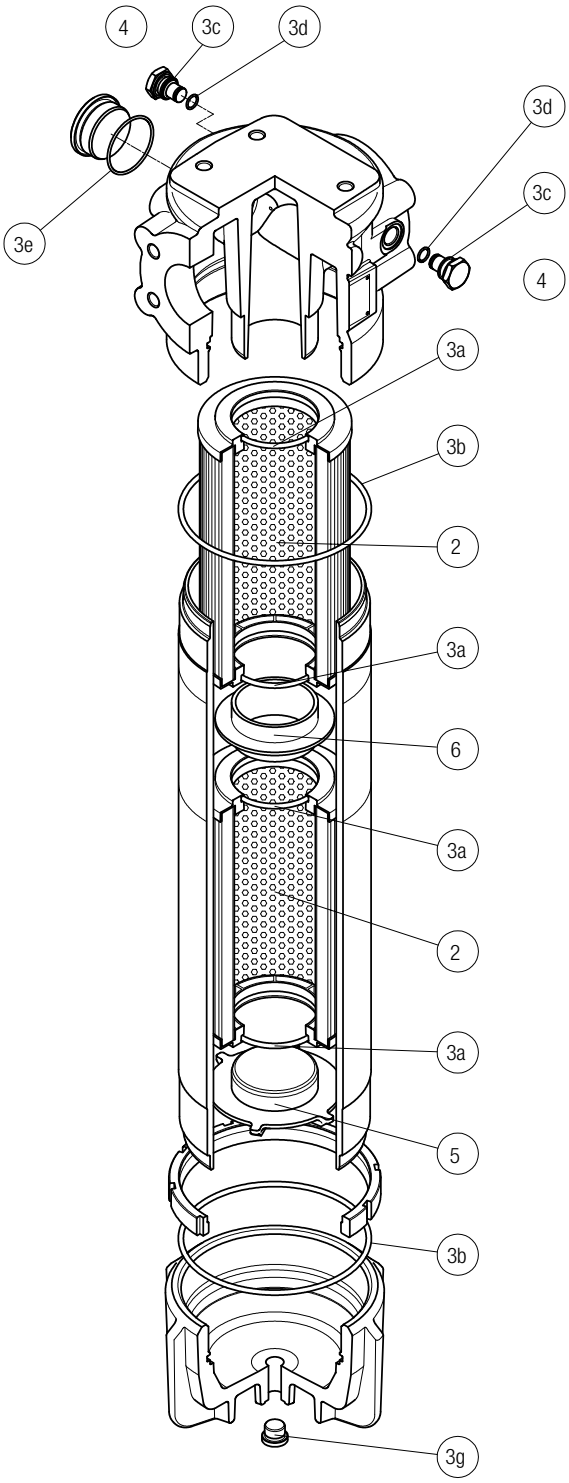
Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC

Order number for spare parts

LMP 900 - 901
length 1



LMP 900 - 901
length 2



Item:	2		3 (3a ÷ 3g)			4			5		6	
Filter series	Filter element Q.ty		Seal Kit code number Q.ty	NBR	FPM	Indicator connection plug Q.ty	NBR	FPM	Housing spigot Q.ty		Coupling spigot Q.ty	
LMP 900 - 901 length 1	1 pc.	See order table	1 pc.	02050363	02050364	2 pcs.	T2H	T2V	1 pc.	01044104	-	01044099
LMP 900 - 901 length 2	2 pcs.		1 pc.	02050365	02050366	2 pcs.			1 pc.		1 pc.	

LMP 902-903 series

Filter element according to DIN 24550

Maximum pressure up to 20 bar - Flow rate up to 3000 l/min

Technical data

Low & Medium Pressure filters

Maximum pressure up to 20 bar - Flow rate up to 3000 l/min
Filter element according to DIN 24550

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Phosphated Steel
- Bypass valve: Steel
- Size 1000 filter elements complying with DIN 24550 standard

Number of filter elements
LMP 902: 4 filter elements CU900
LMP 903: 6 filter elements CU900

Filter elements
Filter element in according to with DIN 24550
Size: 1000

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Pressure
- Working pressure: 2.5 MPa (25 bar)
- Test pressure: 3.5 MPa (35 bar)

Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Note
LMP 902 - 903 filters are provided for vertical mounting

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

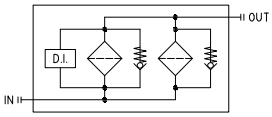
Connections
LMP 902-903: In-line Inlet/Outlet

Weights [kg] and volumes [dm³]

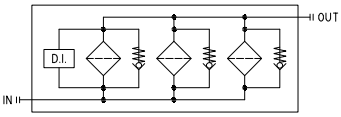
	Weights [kg]	Volumes [dm³]
	Length 1	Length 1
LMP 902	89.6	58
LMP 903	129.2	87

Hydraulic symbols

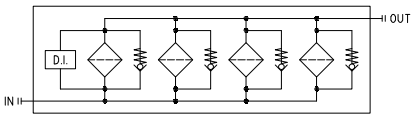
LMP 902 - 952



LMP 903 - 953



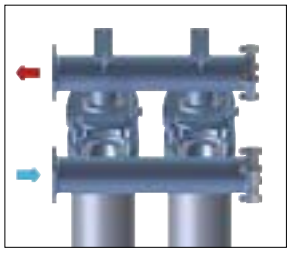
LMP 954



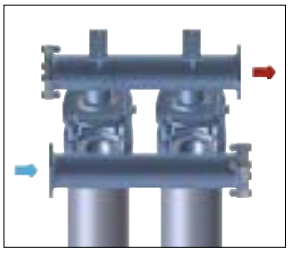
Manifolds

Position of manifolds IN - OUT connections

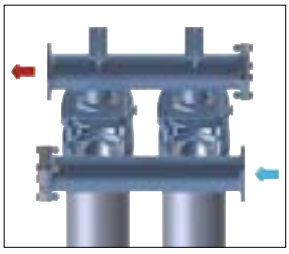
FA



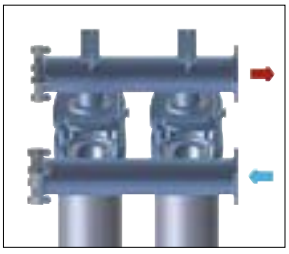
FB



FC



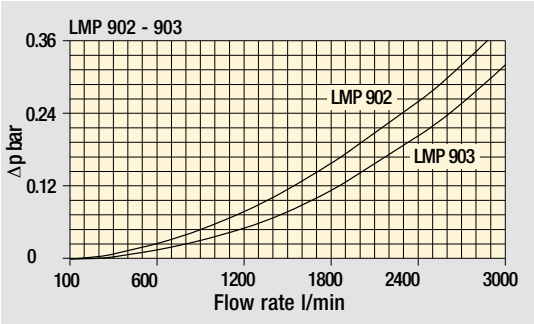
FD



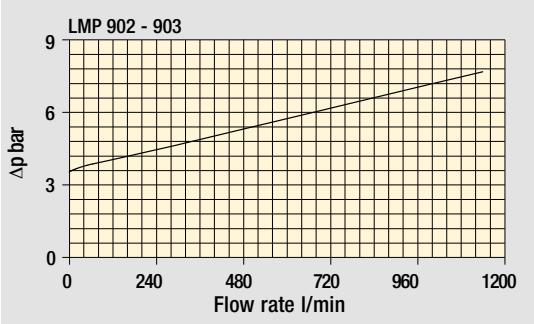
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

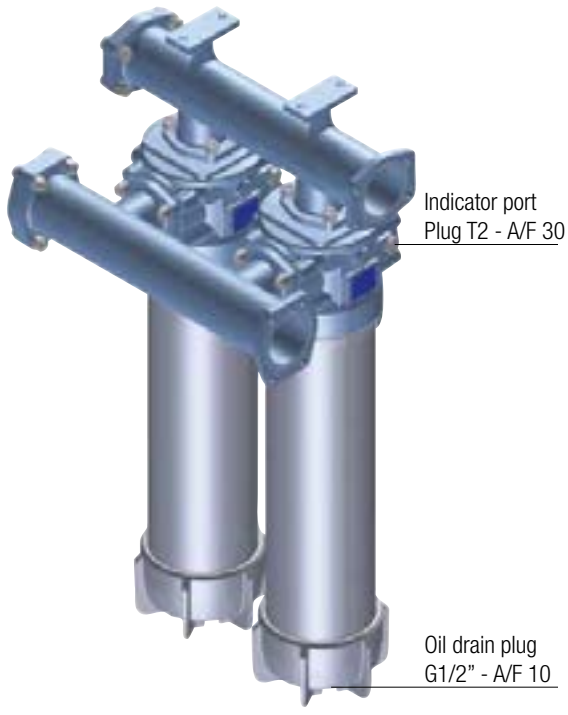
Filter housings Δp pressure drop

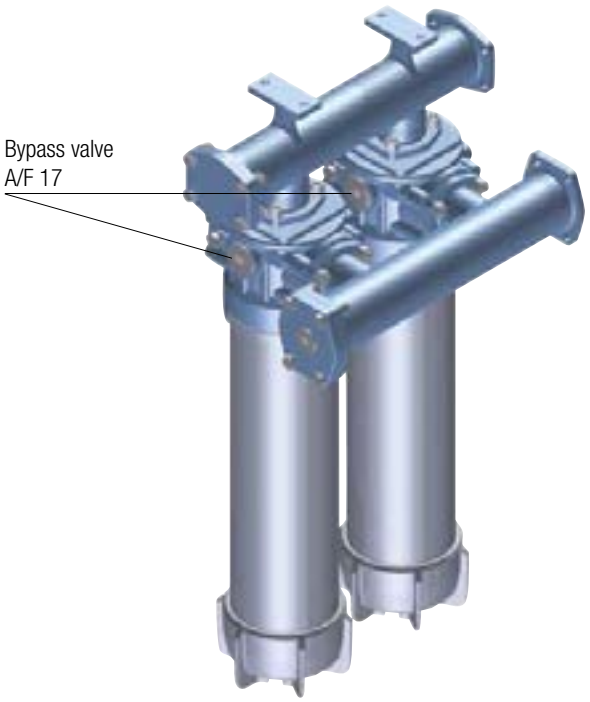


Bypass valve pressure drop



Focus on:





LMP902-903

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP902 | 2 | B | A | FA | A10 | N | P01

Series and size
LMP902 | **LMP903**

Length
2

Bypass valve

S	Without bypass	**B**	3.5 bar

Seals and treatments

A	NBR
V	FPM

Connections

		IN	OUT
FA	4” SAE 3000 psi	left	left
FB	4” SAE 3000 psi	left	right
FC	4” SAE 3000 psi	right	left
FD	4” SAE 3000 psi	right	right

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm		
A25	Inorganic microfiber 25 µm		

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: CU900 | A10 | A | N | P01

Element series and size
CU900

Filter series and size

LMP902	Nr. 4 filter elements
LMP903	Nr. 6 filter elements

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm		
A25	Inorganic microfiber 25 µm		

Seals

A	NBR
V	FPM

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

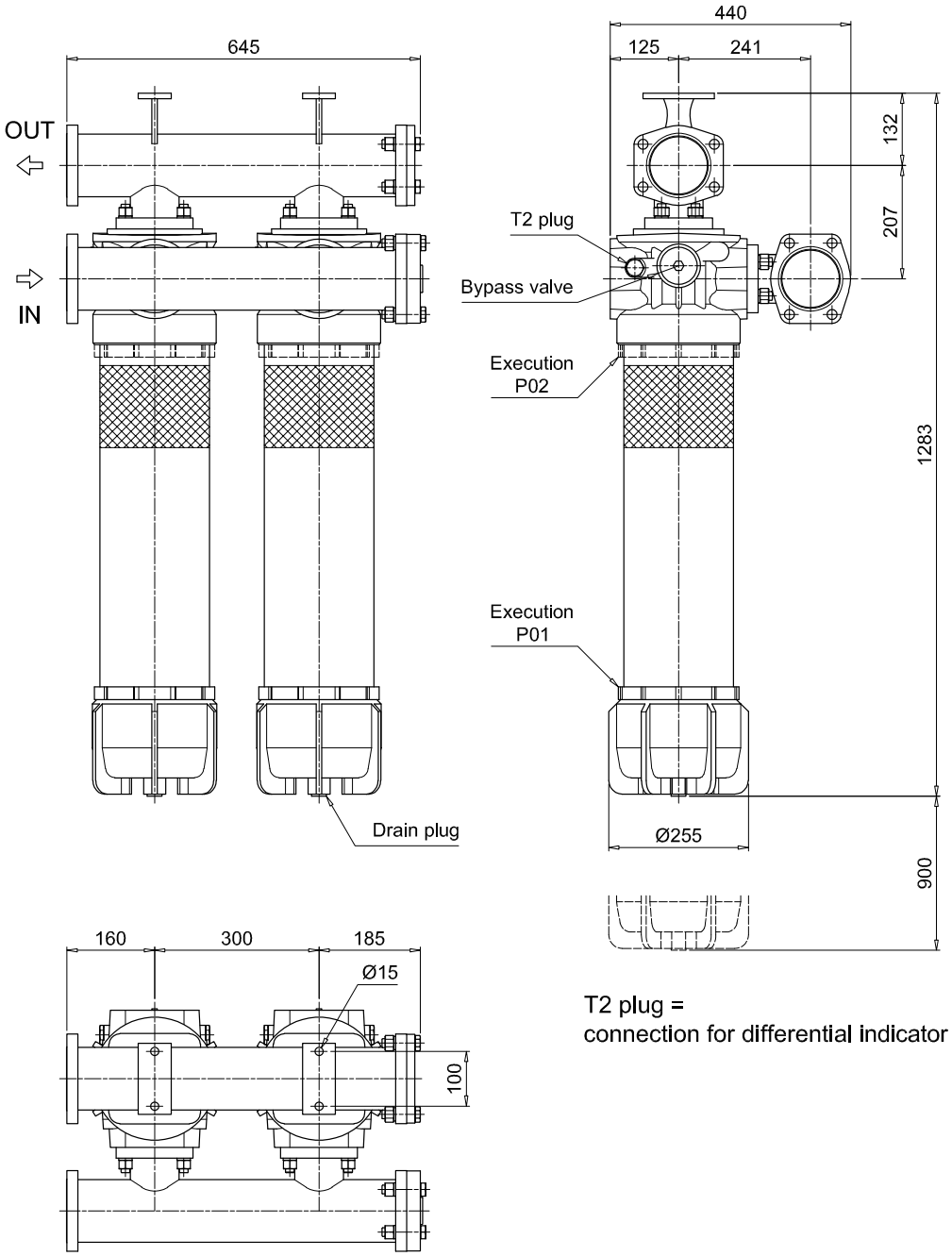
Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

LMP902

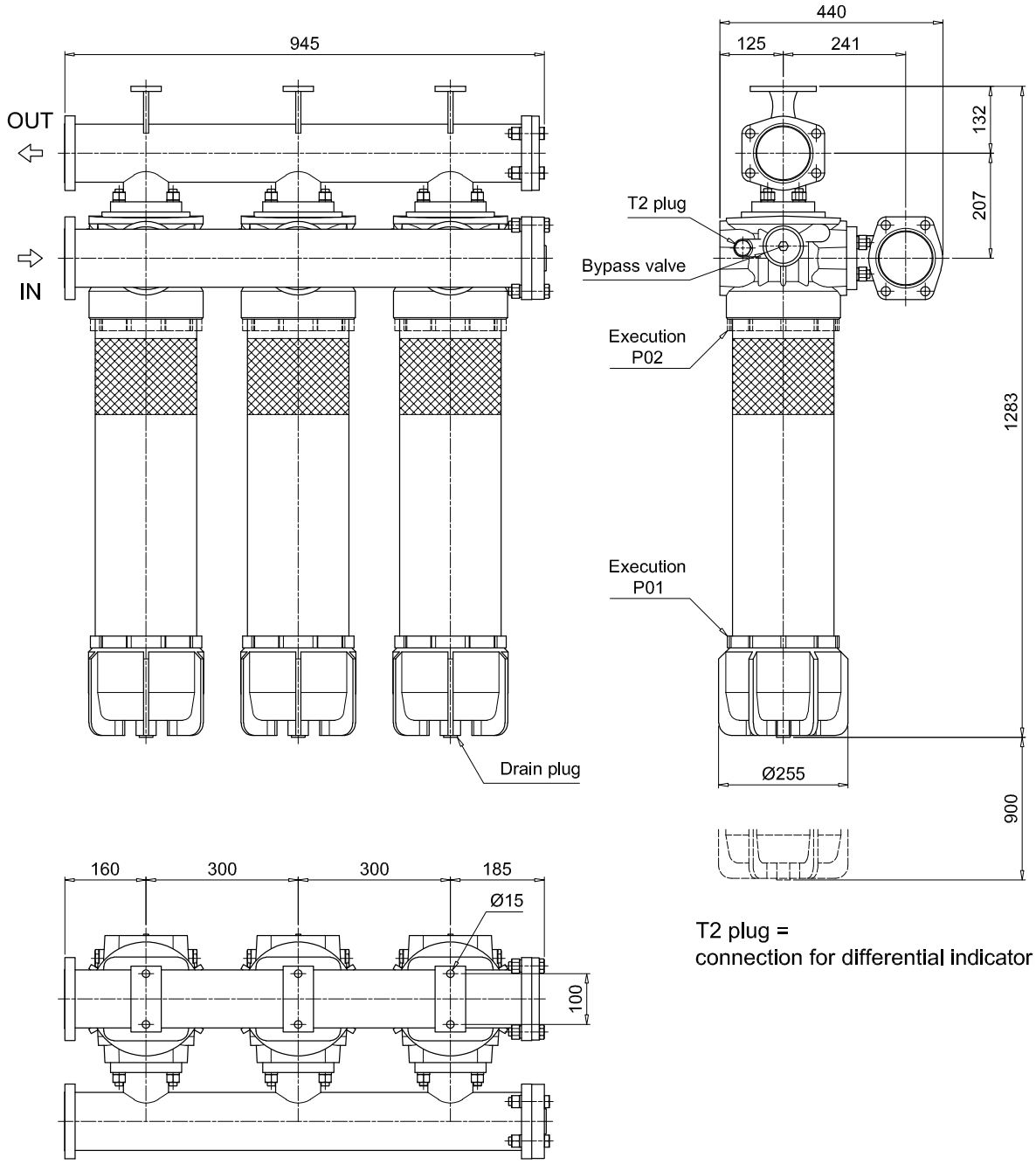


T2 plug =
connection for differential indicator

LMP902-903

Dimensions

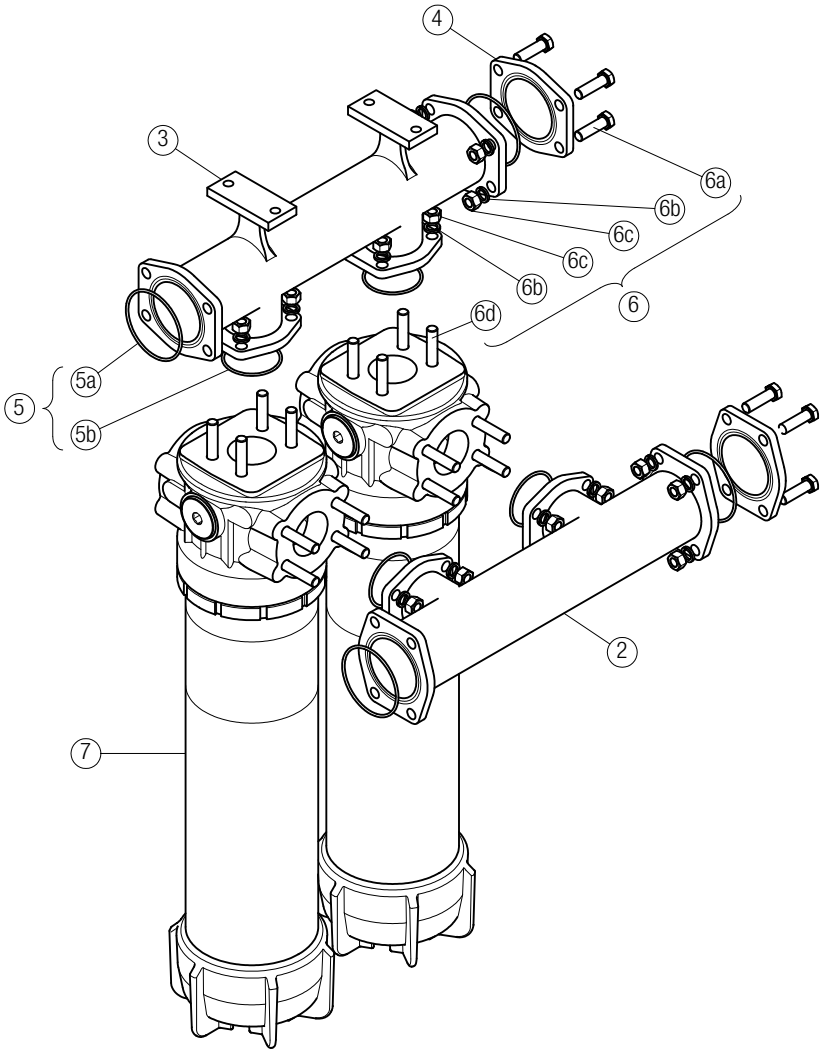
LMP903



T2 plug =
connection for differential indicator

Order number for spare parts

LMP 902 - 903



Item 7:
for complete filter code and spare parts, see LMP 900 - 901 series chapter

Quantity:
- filter spare parts:
LMP 902 - 2 pcs.
LMP 903 - 3 pcs.

- filter seal kit:
LMP 902 - 2 pcs.
LMP 903 - 3 pcs.

Item:	2	3		4		5 (5a-5b)			6 (6a ÷ 6d)		7	
Filter series	Manifold Q.ty	IN	OUT	4" SAE 3000 psi plugged flange Q.ty		Manifolds seal kit Q.ty	NBR	FPM	Threaded fasteners kit Q.ty		Filter Q.ty	
LMP 902	1 pc.	01039270	01039271	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	LMP9012xxF1xxxNP02
LMP 903	1 pc.	01039337	01039338	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.	

LMP 950-951 series

Maximum pressure up to 30 bar - Flow rate up to 2400 l/min

Technical data

Low & Medium Pressure filters **Maximum pressure up to 30 bar - Flow rate up to 2400 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Bypass valve: Anodized Aluminium

Pressure
- Working pressure: 3 MPa (30 bar)
- Test pressure: 4,5 MPa (45 bar)
- Burst pressure: 12 MPa (120 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 3 MPa (30 bar)

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
LMP 950: In-line Inlet/Outlet
LMP 951: 90° Inlet/Outlet

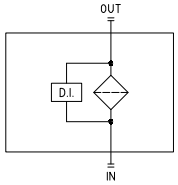
Note
LMP 950 - 951 filters
are provided for vertical mounting

Weights [kg] and volumes [dm³]

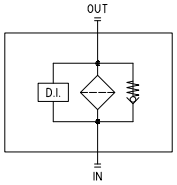
	Weights [kg]			Volumes [dm³]		
	Length	1	2	Length	1	2
LMP 950		25.1	33.5		15	28

Hydraulic symbols

LMP 210-400-900-950
execution **S**

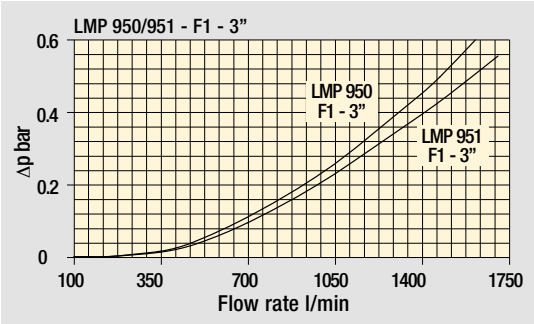


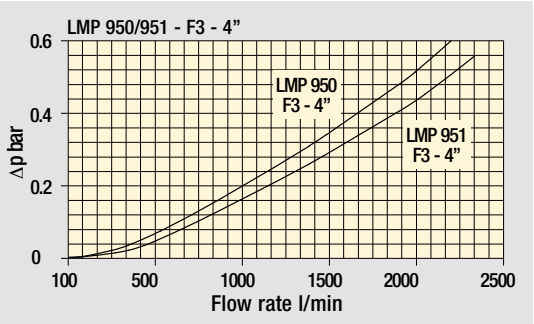
LMP 210-400-900-950
execution **B**



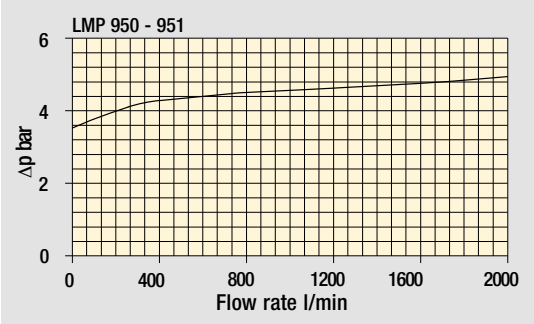
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop



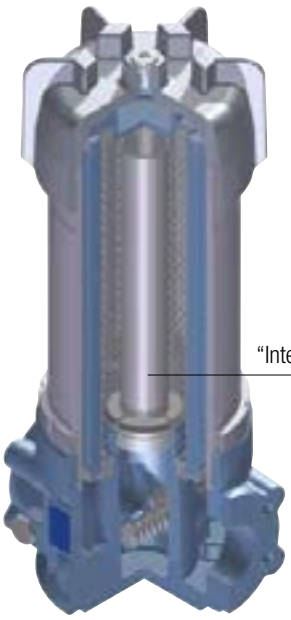


Filter housings Δp pressure drop



Bypass valve pressure drop

P2 EXECUTION



Execution P02
“Internal tube for reduced flow rate”
recommended for flow rate
values below 100/150 l/min.

The use of option P02
makes it easier to fill the housing
with the operating fluid.

“Internal tube for reduced flow rates”

LMP950-951

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP951 | 2 | B | A | F2 | A10 | N | P01

Series and size
LMP950 | **LMP951**

Length
2 | **3**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments
A NBR
V FPM

Connections
F1 3" SAE 3000 psi/M
F2 3" SAE 3000 psi/UNC
F3 4" SAE 3000 psi/M
F4 4" SAE 3000 psi/UNC

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
P02 With internal reduced flow rate tube
Pxx Customized

FILTER ELEMENT

Configuration example: CU950 | 2 | A10 | A | N | P01

Element series and size
CU950

Element length
2 | **3**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

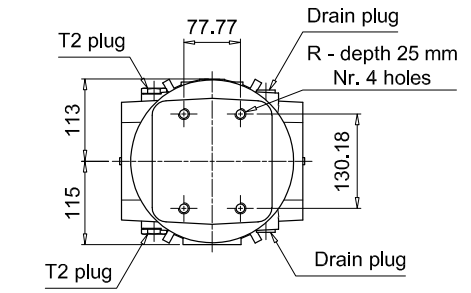
Differential indicators

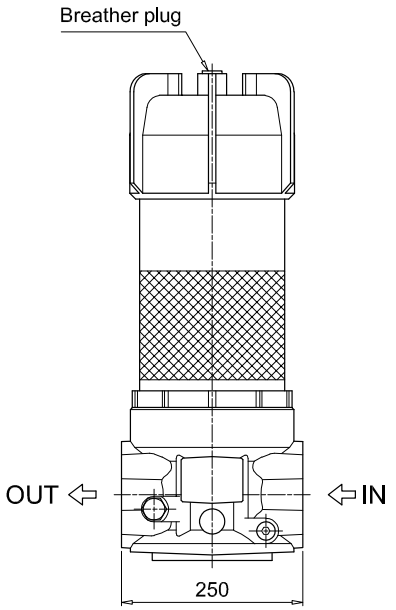
		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

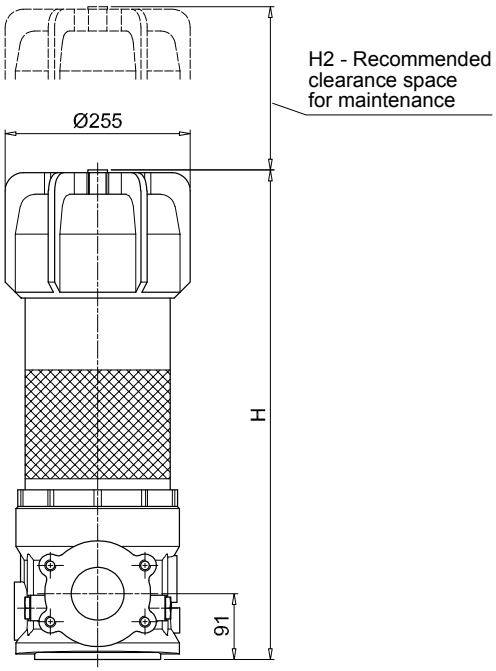
		page
T2	Plug	423

Dimensions





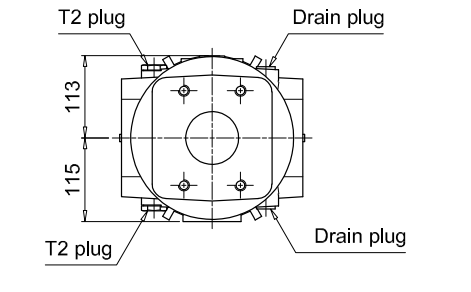
T2 plug =
connection for differential indicator

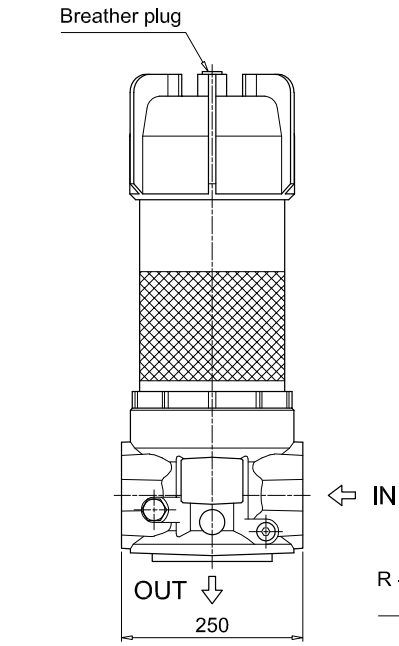


LMP950

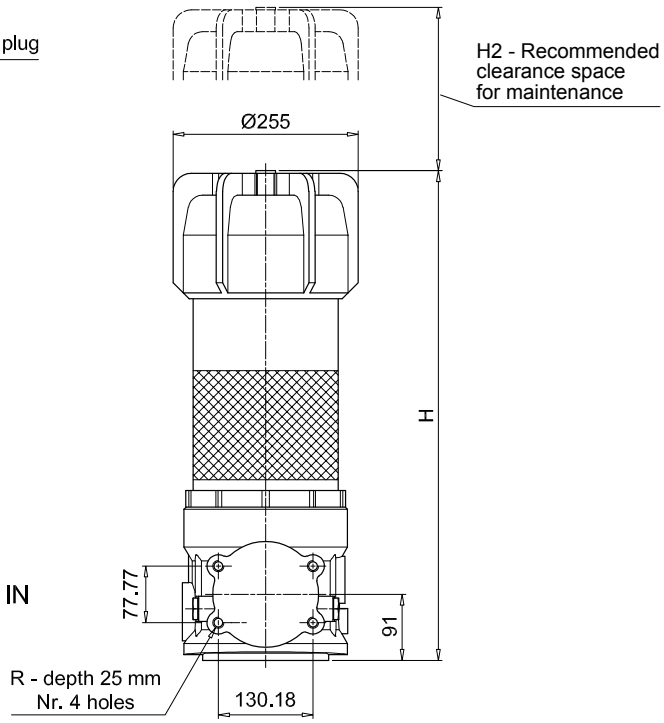
Filter length	H [mm]	H2 [mm]
2	680	350
3	1230	900

Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC





T2 plug =
connection for differential indicator



LMP951

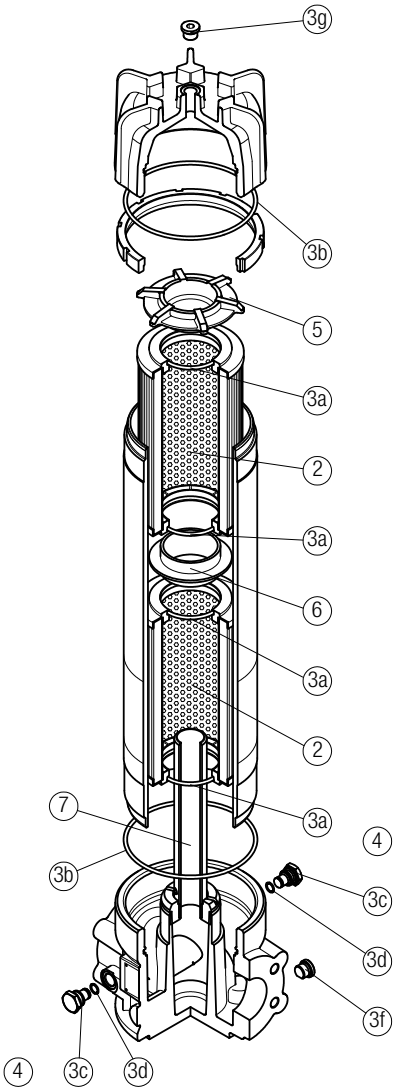
Filter length	H [mm]	H2 [mm]
2	680	350
3	1230	900

Connections	R
F1 - F3	M16
F2 - F4	5/8" UNC

LMP950-951 SPARE PARTS

Order number for spare parts

LMP 950 - 951



Item:	Q.ty: 2 pcs. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 2 pcs. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	Q.ty: 1 pc. 7	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Housing spigot no bypass**	**with bypass**	**Coupling spigot**	**Tube assembly length 2**	**length 3**
LMP 950 - 951 length 2 - 3	See order table	02050367	02050368	T2H	T2V	01044106	02001379	01044099	02025032	02025033

LMP 952-953-954 series

Maximum pressure up to 25 bar - Flow rate up to 3000 l/min

LMP952-953-954 GENERAL INFORMATION

Technical data

Low & Medium Pressure filters **Maximum pressure up to 25 bar - Flow rate up to 3000 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Phosphated Steel
- Bypass valve: Anodized Aluminium

Pressure
- Working pressure: 2.5 MPa (25 bar)
- Test pressure: 3.5 MPa (35 bar)

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Number of filter elements
- LMP 952: 2 filter elements CU950-3
- LMP 953: 3 filter elements CU950-3
- LMP 954: 4 filter elements CU950-3

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
LMP 952-953-954:
In-line Inlet/Outlet

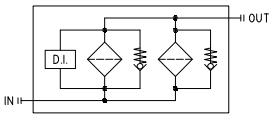
Note
LMP 952 - 953 - 954 filters
are provided for vertical mounting

Weights [kg] and volumes [dm³]

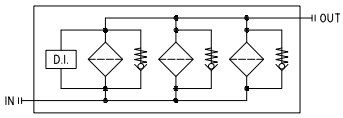
	Weights [kg]	Volumes [dm³]
	Length 3	Length 3
LMP 952	96	66
LMP 953	138	99
LMP 954	192	132

Hydraulic symbols

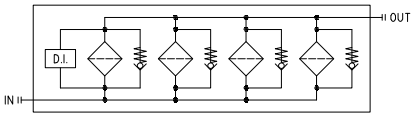
LMP 902 - 952



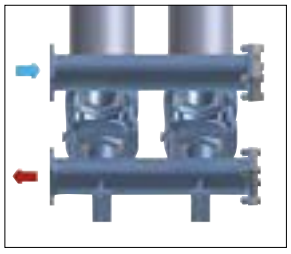
LMP 903 - 953



LMP 954



Manifolds



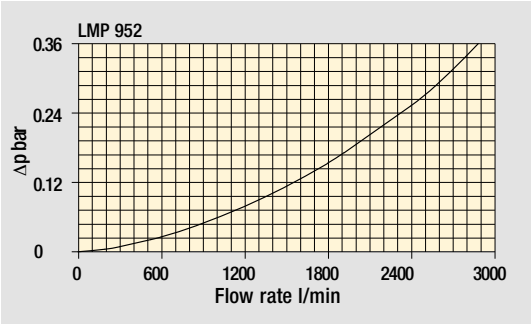
FA

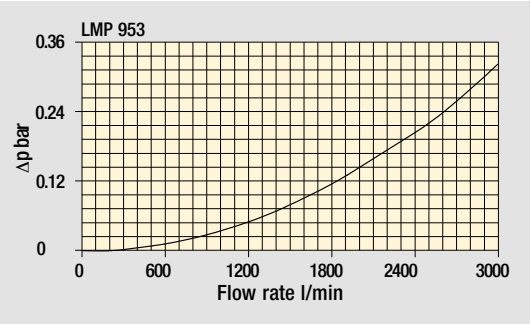
Position of manifolds
IN - OUT connections

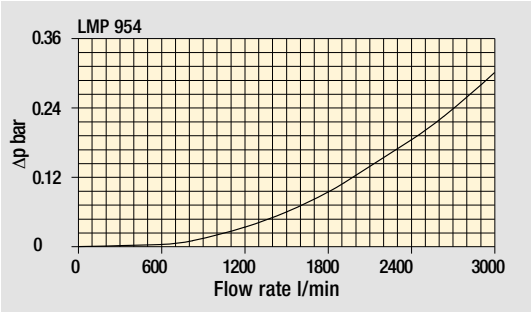
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

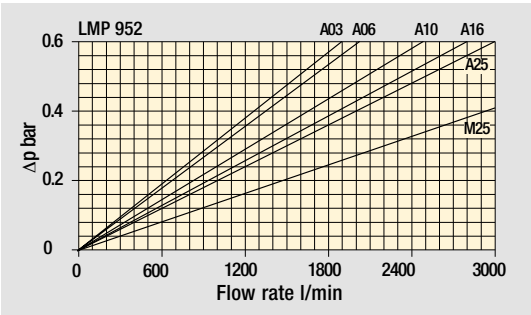
Filter housings Δp pressure drop

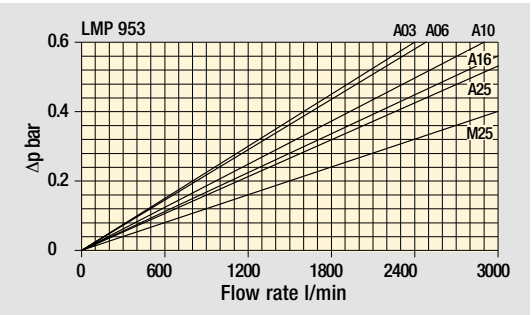


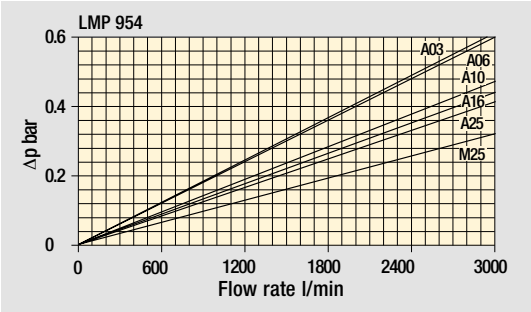




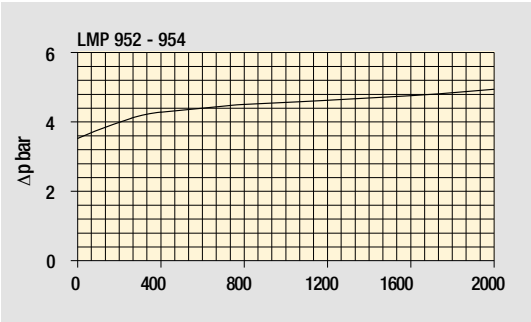
Pressure drop of filter complete with cartridge, oil viscosity 30 mm²/s (cSt)





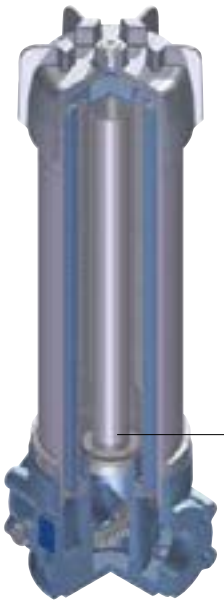


Bypass valve pressure drop



Options

P2 EXECUTION



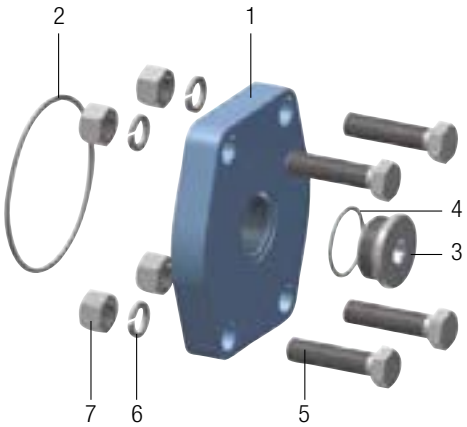
Execution P02
"Internal tube for reduced flow rate"
is recommended for flow rate
values below:
LMP 952 - 300 l/min
LMP 953 - 450 l/min
LMP 954 - 600 l/min

The use of option P02
makes it easier to fill the housing
with the operating fluid.

"Internal tube for reduced flow rates"

CMV4 & CUV4 FLANGE OPTION

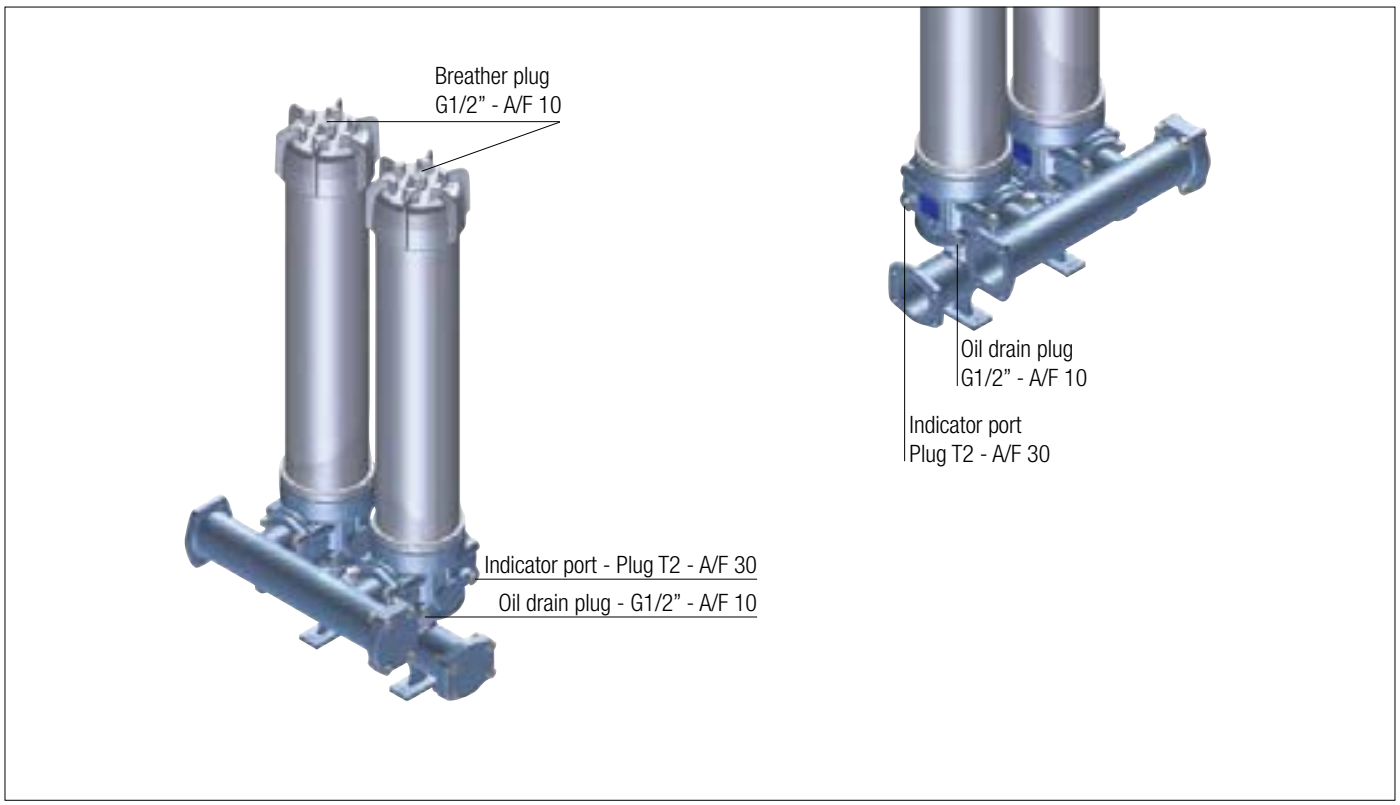
Flange with oil drain plug for rapid discharge



Oil drain plug

Code	CMV4	CUV4
Thread	G1 1/4"	SAE 20
Materials	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug G 1-1/4" 4 - O-R 3168 for plug (FPM) 5 - No. 4 Hex bolt screws UNI-EN 24017 M16 x 65-10.9 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts UNI 5587 - M16	1 - 4" SAE flange 2 - O-R 4437 (FPM) for flange 3 - Plug SAE 20 1 5/8" - 12 UN 4 - 1147 O-R for plug (FPM) 5 - No. 4 Hex bolt screws 5/8" UNC x 2 1/2" 6 - No. 4 Spring washers UNI 1751-B 16 7 - No. 4 Nuts 5/8" UNC

Focus on:


Breather plug
G1/2" - A/F 10
Indicator port - Plug T2 - A/F 30
Oil drain plug - G1/2" - A/F 10
Oil drain plug
G1/2" - A/F 10
Indicator port
Plug T2 - A/F 30

LMP952-953-954

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMP952 | 2 | B | A | FA | A10 | N | P01

Series and size
LMP952 | **LMP953** | **LMP954**

Length
3

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments
A NBR
V FPM

Connections
FA 4" SAE 3000 psi

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
P02 With internal reduced flow rate tube
Pxx Customized

FILTER ELEMENT

Configuration example: CU950 | 3 | A10 | A | N | P01

Element series and size
CU950

Element length
3

Filter series and size
LMP952 Nr. 2 filter elements
LMP953 Nr. 3 filter elements
LMP954 Nr. 4 filter elements

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

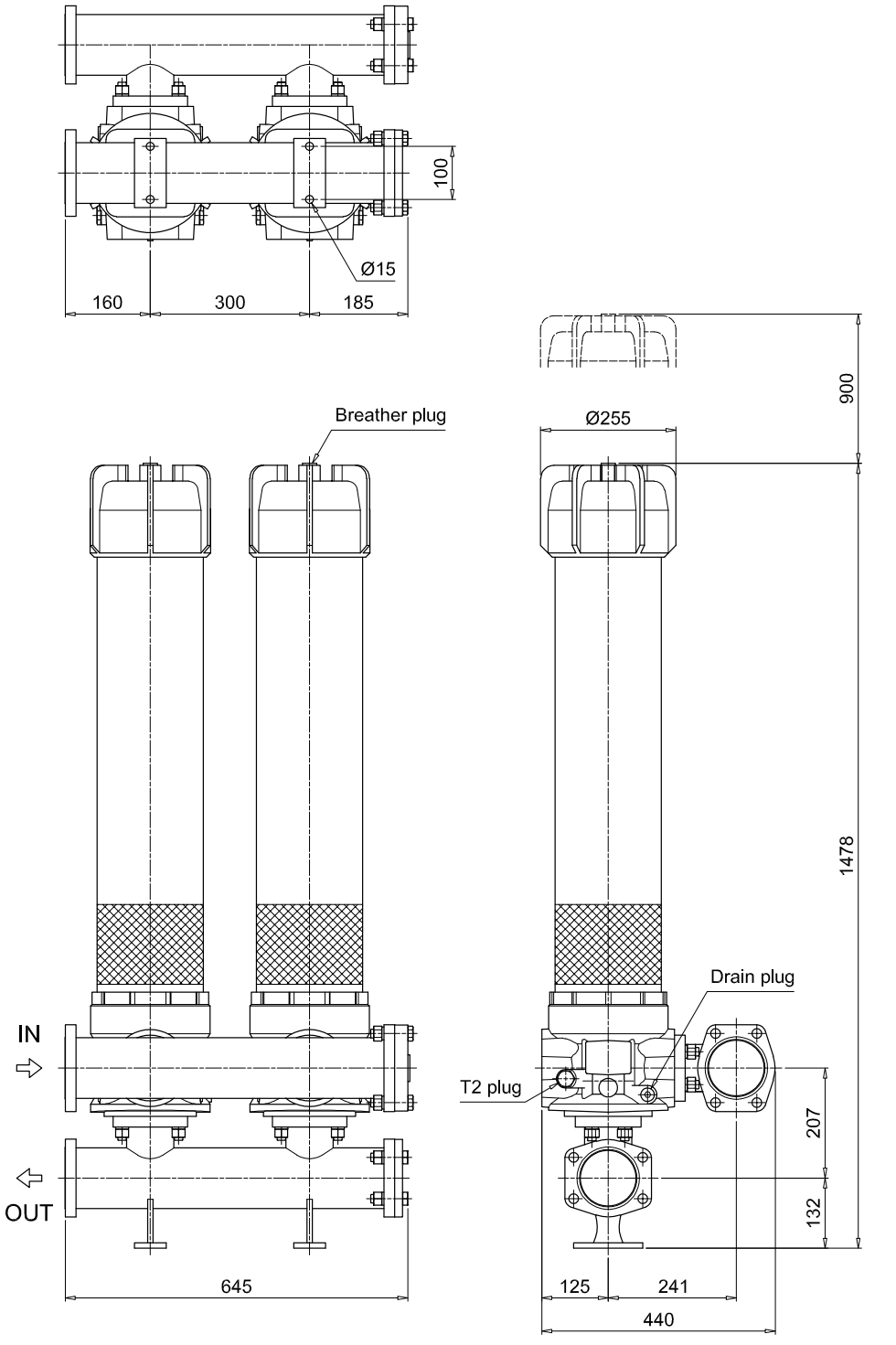
Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

LMP952

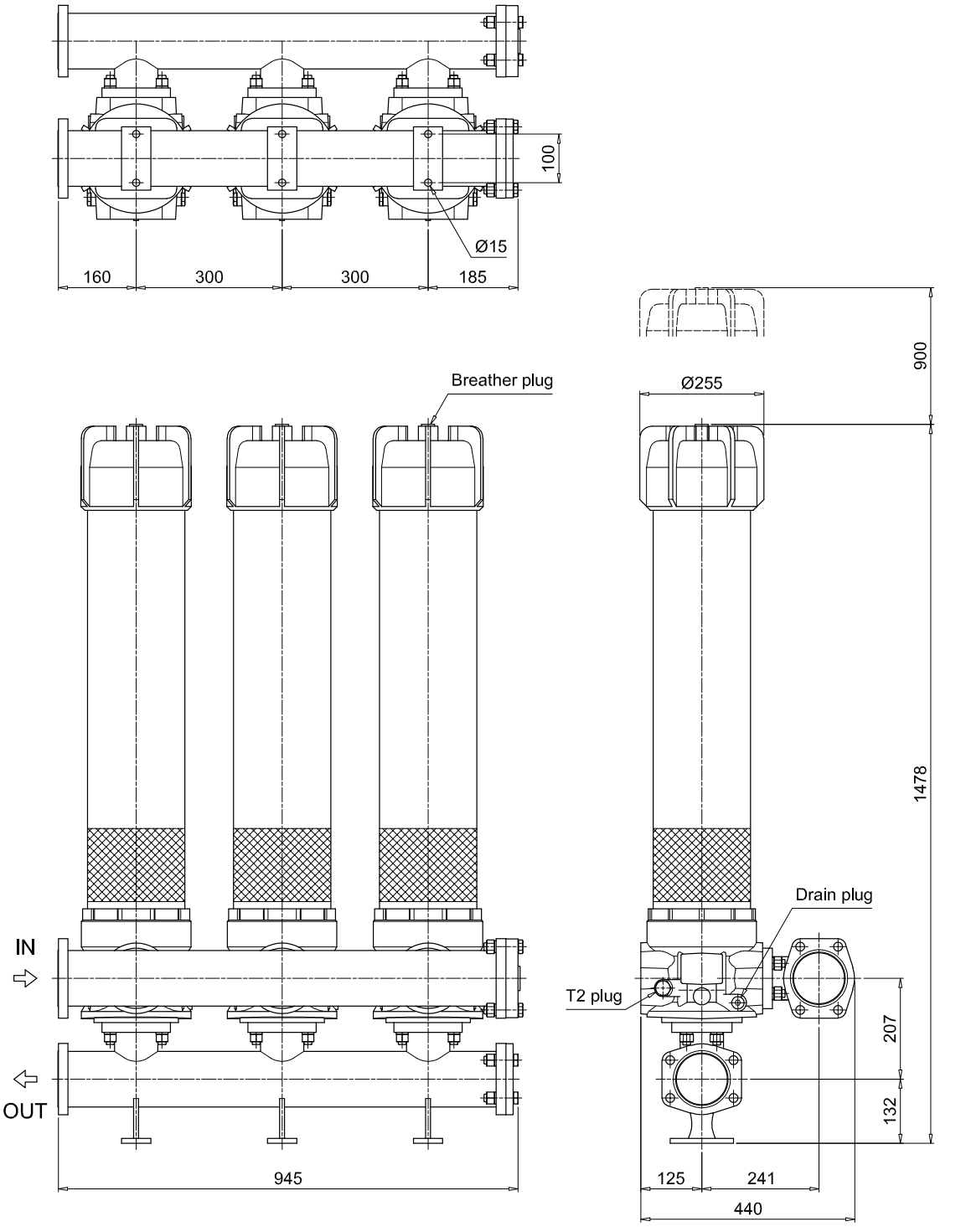


T2 plug =
connection for differential indicator

LMP952-953-954

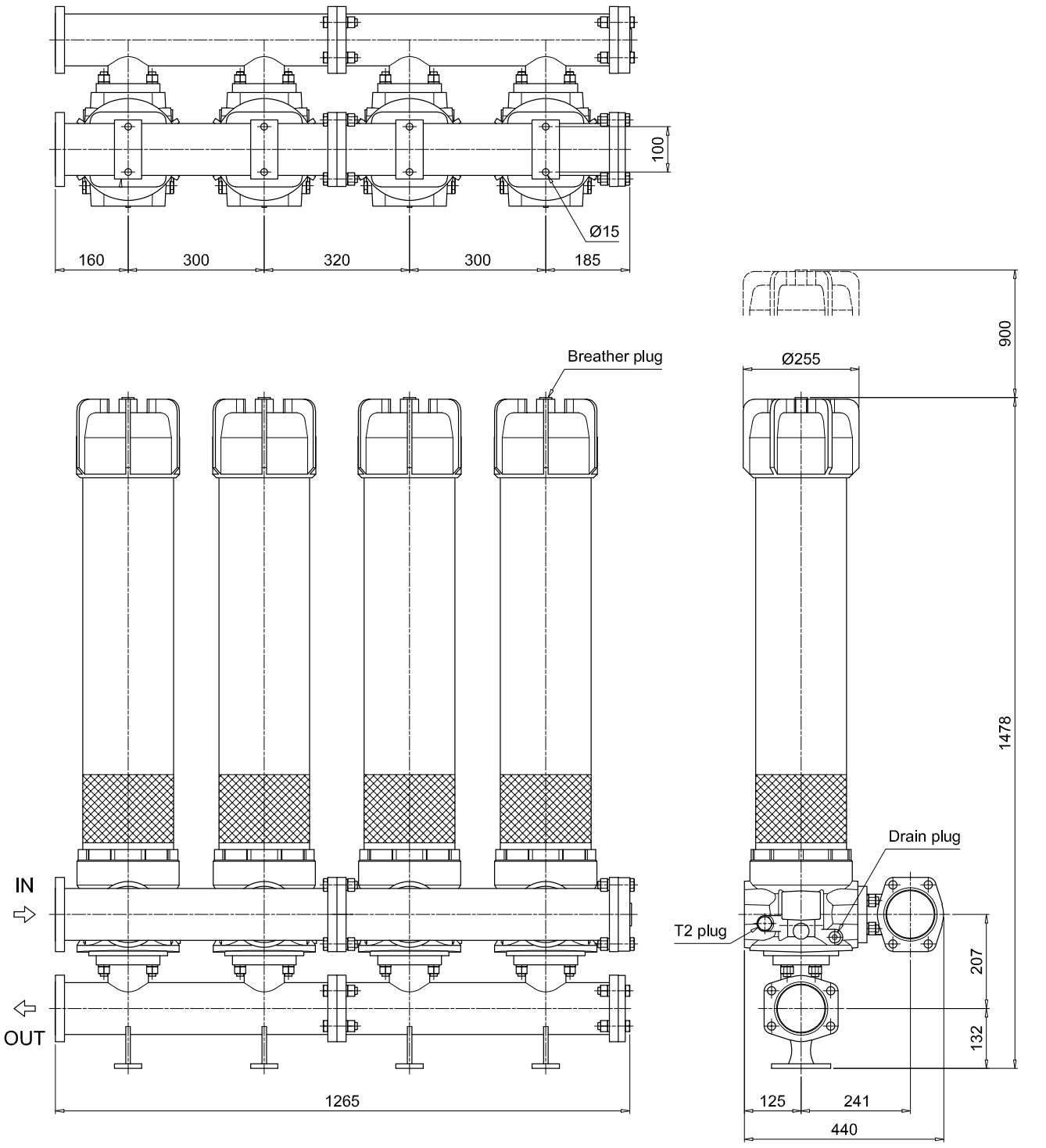
Dimensions

LMP953



T2 plug =
connection for differential indicator

LMP954

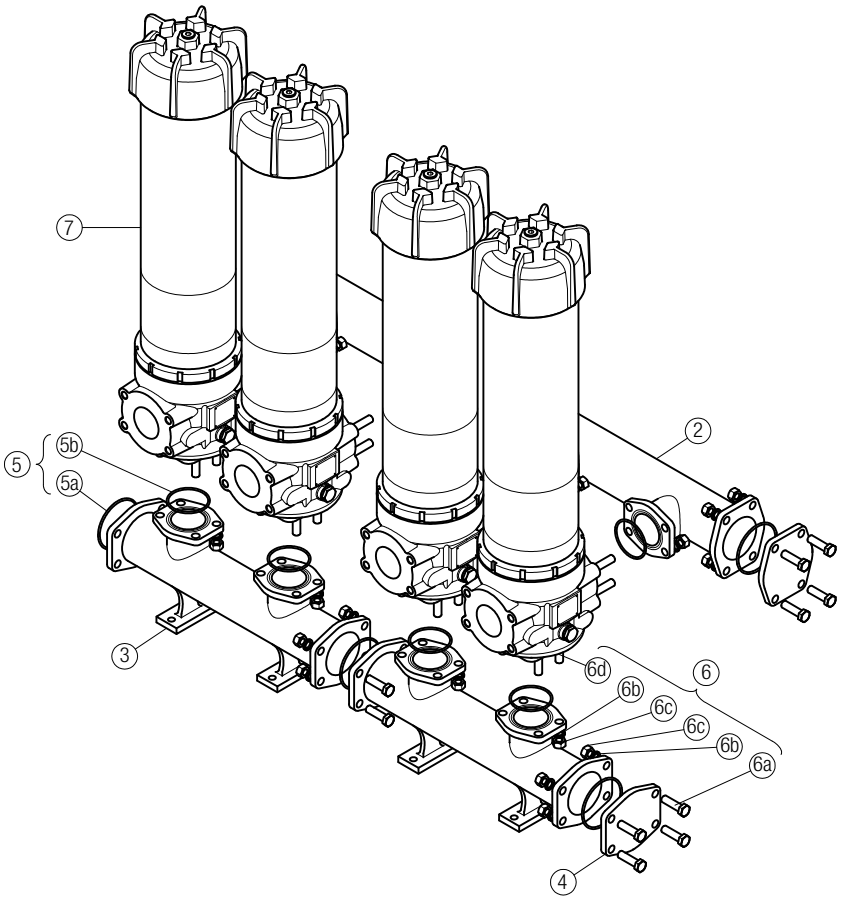


T2 plug =
connection for differential indicator

LMP952-953-954 SPARE PARTS

Order number for spare parts

LMP 952 - 953 - 954



Item 7:
for complete filter code and spare parts, see LMP 950 - 951 series chapter

Quantity:
- filter spare parts:
LMP 952 - 2 pcs.
LMP 953 - 3 pcs.
LMP 954 - 4 pcs.

- filter seal kit:
LMP 952 - 2 pcs.
LMP 953 - 3 pcs.
LMP 954 - 4 pcs.

Item:	2		3	4		5 (5a-5b)			6 (6a ÷ 6d)		7	
Filter series	Manifold Q.ty	IN	OUT	4" SAE 3000 psi plugged flange Q.ty		Manifolds seal kit Q.ty	NBR	FPM	Threaded fasteners kit Q.ty		Filter Q.ty	
LMP 952	1 pc.	01039270	01039271	2 pcs.		1 pc.	02050404	02050405	1 pc.	02049051	2 pcs.	
LMP 953	1 pc.	01039337	01039338	2 pcs.	01042012	1 pc.	02050404	02050405	1 pc.	02049052	3 pcs.	LMP9513xxF1xxxNP0x
LMP 954	2 pcs.	01039270	01039271	2 pcs.		1 pc.	02050406	02050407	1 pc.	02049053	4 pcs.	

LMD 211 series

Maximum pressure up to 60 bar - Flow rate up to 330 l/min

LMD211 GENERAL INFORMATION

Technical data

Low & Medium Pressure filters **Maximum pressure up to 60 bar - Flow rate up to 330 l/min**

Filter housing materials
- Head: Aluminium
- Bowl: Cataphoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

Temperature
From -25° C to +110° C

Connections
Inlet/Outlet In-Line

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Note
LMD 210 - 211 filters are provided for vertical mounting

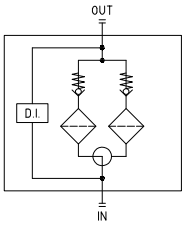
Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

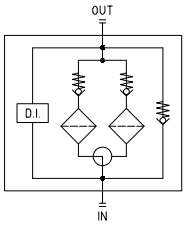
	Weights [kg]				Volumes [dm³]			
	Length	1	2	3	Length	1	2	3
LMD 211		9.5	11.2	12.8		4.1	4.6	5.3

Hydraulic symbols

Style **S**



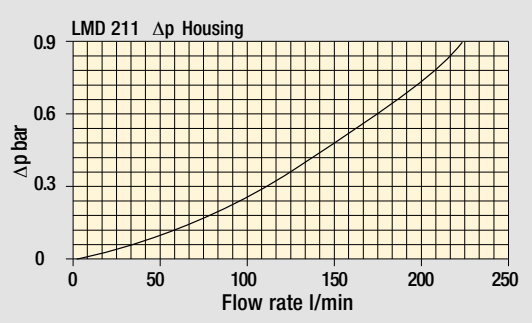
Style **B**



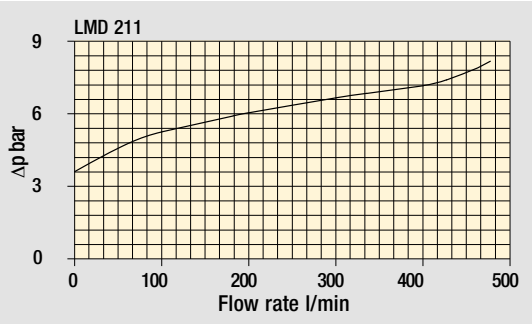
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Filter housings Δp pressure drop



Bypass valve pressure drop



LMD211

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMD211 | 3 | B | A | C | 6 | A10 | N | P01

Series and size
LMD211

Length
1 | **2** | **3**

Bypass valve

S	Without bypass	**B**	3.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections

C	G1 1/2"
F	1 1/2" NPT
I	SAE 24 - 1 7/8" - 12 UN
L	1 1/2" SAE 3000 psi/M + G1 1/4"
M	1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT
N	1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN

Connection for differential indicator

6	With plugged connection

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: CU210 | 3 | A10 | A | N | P01

Element series and size
CU210

Element length
1 | **2** | **3** |

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**M25**	Wire mesh 25 µm
A06	Inorganic microfiber 6 µm	**M60**	Wire mesh 60 µm
A10	Inorganic microfiber 10 µm	**M90**	Wire mesh 90 µm
A16	Inorganic microfiber 16 µm	**P10**	Resin impregnated paper 10 µm
A25	Inorganic microfiber 25 µm	**P25**	Resin impregnated paper 25 µm

Seals

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp

N	20 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators

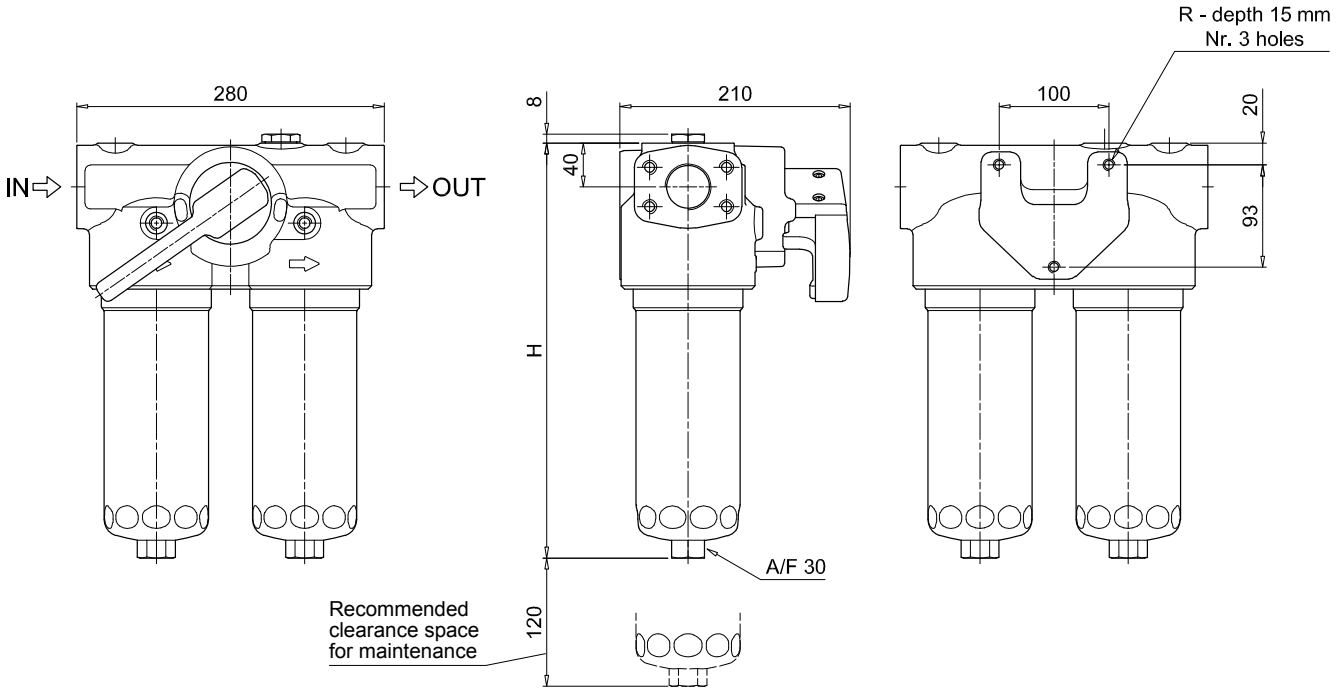
		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

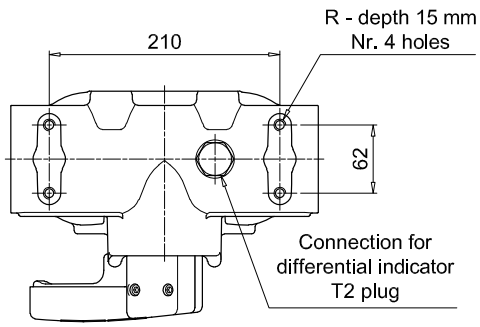
Additional features

		page
T2	Plug	423

LMD211	
Filter length	**H [mm]**
1	380
2	510
3	648

Connections	**R**
C	M10
F - I	3/8" UNC
L	M10
M - N	3/8" UNC

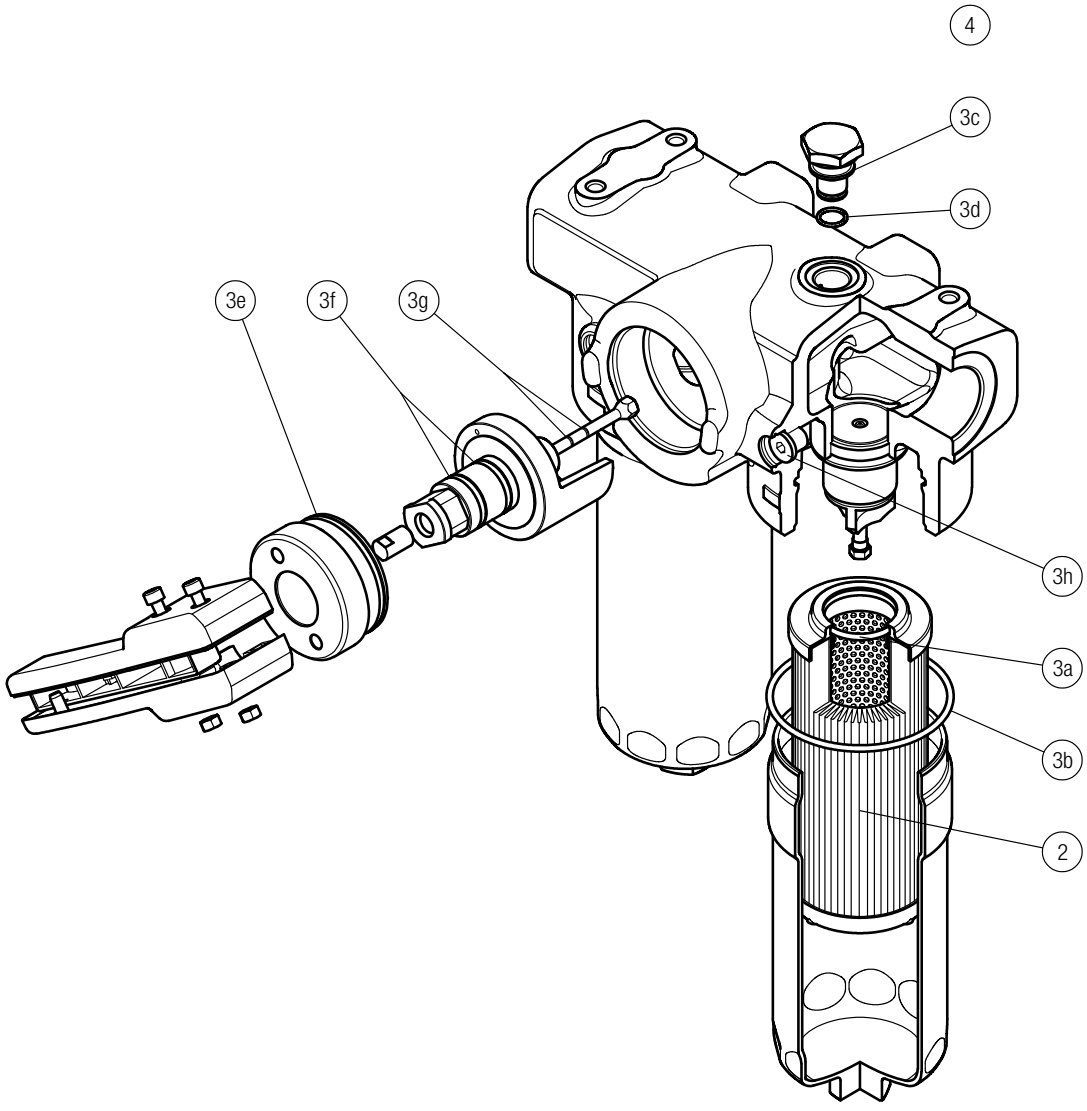




LMD211 SPARE PARTS

Order number for spare parts

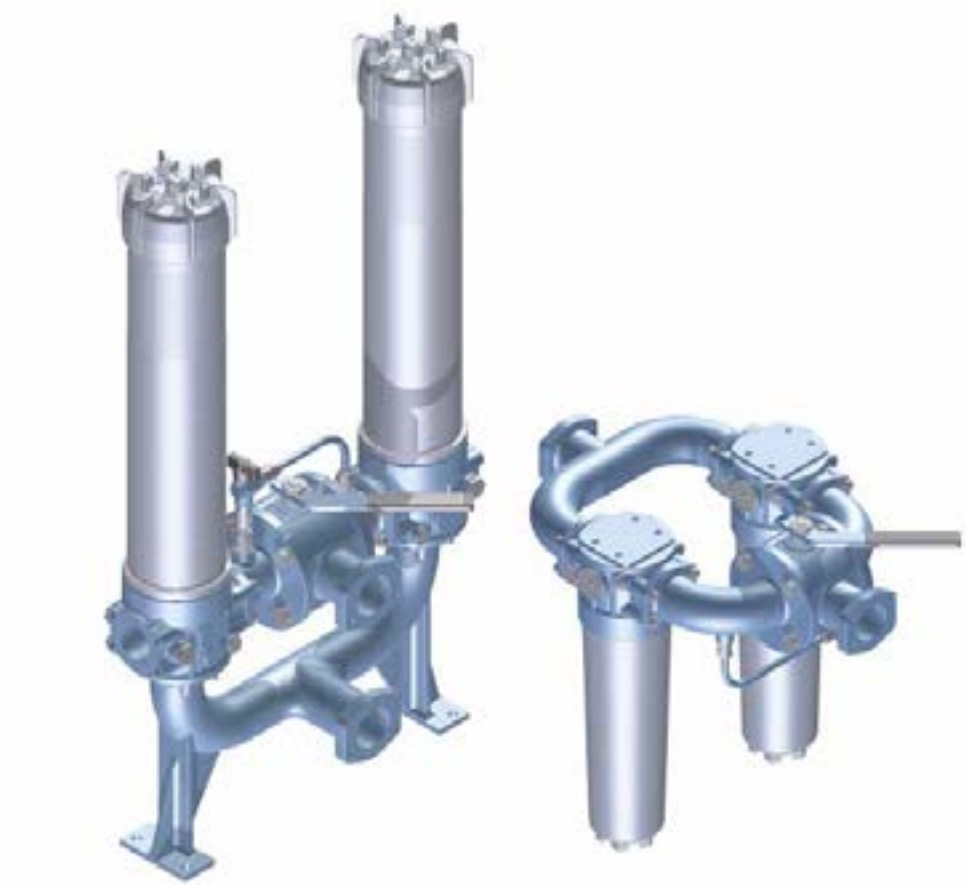
LMD 211



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3h)		Q.ty: 2 pcs. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
LDD	See order table	02050671	02050672	T2H	T2V

LMD 400-401 & 431 series

Maximum pressure up to 16 bar - Flow rate up to 590 l/min



Technical data

Low & Medium Pressure filters **Maximum pressure up to 16 bar - Flow rate up to 590 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Steel - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel housings - Stainless Steel ball
- Valve: Phosphated Steel - Stainless Steel

Pressure
- Working pressure: 1.6 MPa (16 bar)
- Test pressure: 2.5 MPa (25 bar)

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N - W: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
FPM series V

Temperature
From -25° C to +110° C

Connections
- LMD 400-401: In-line Inlet/Outlet
- LMD 401: Same side
- LMD 400-401-431: In-Line

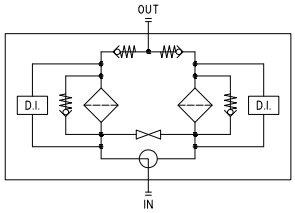
Note
LMP 400 - 401 - 431 filters
are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]				Volumes [dm³]			
	Length	4	5	6	Length	4	5	6
LMD 400 - 401		60	65	72		20	28	33
LMD 431		-	68	78		-	28	33

Hydraulic symbols

LMD 400-401-431-951



P2 EXECUTION

Execution P02
"Internal tube for reduced flow rate"
is recommended for flow rate
values below 150 l/min.

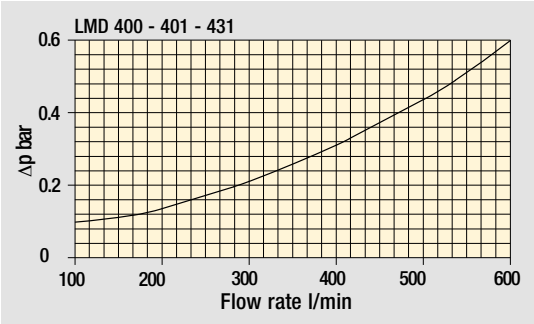
The use of option P02
makes it easier to fill the housing
with the operating fluid.

"Internal tube for reduced flow rates"

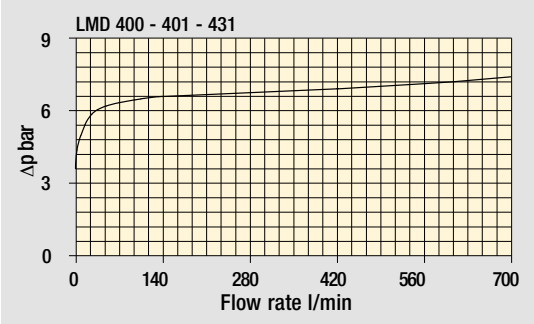
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Filter housings Δp pressure drop



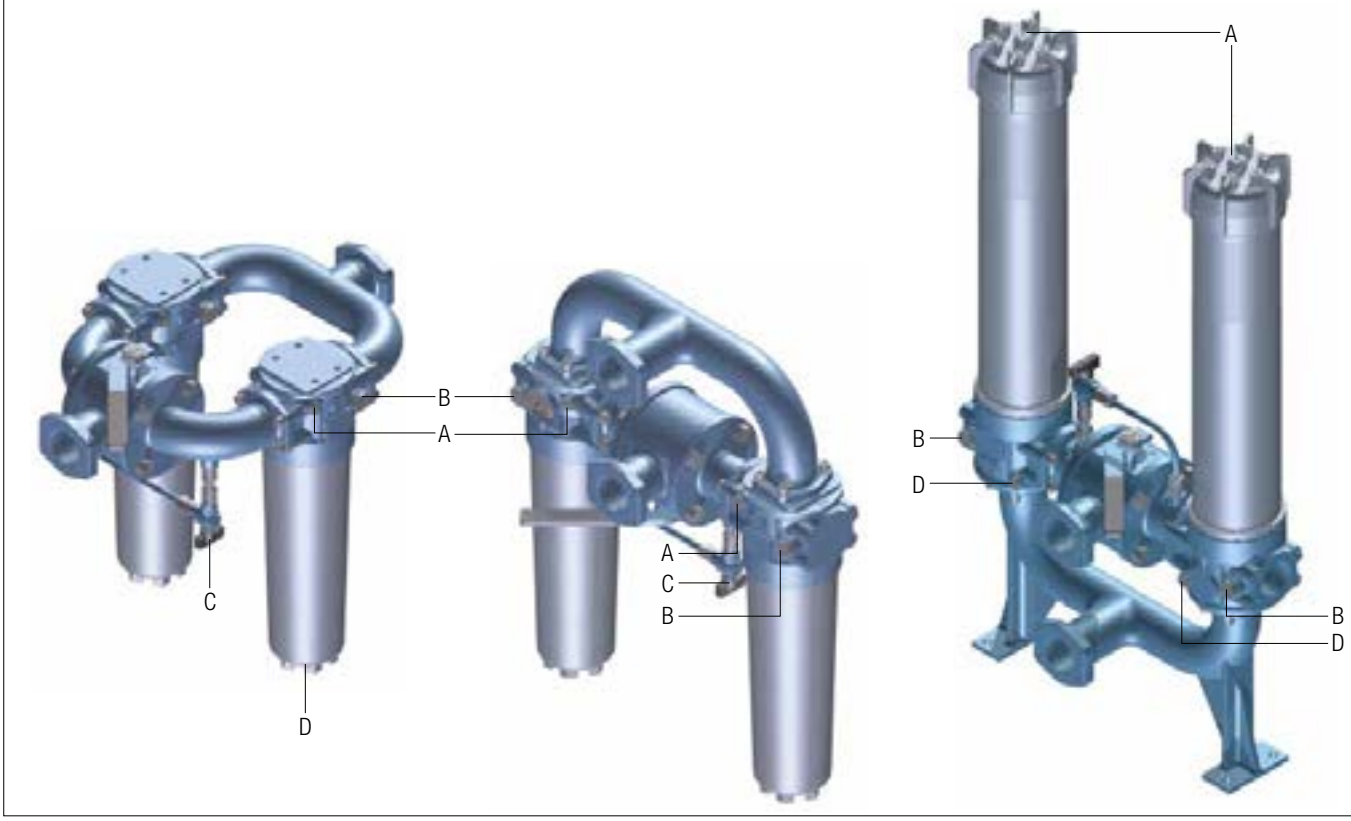
Bypass valve pressure drop



Focus on

A Breather plug G3/8" - A/F 8
B Indicator port Plug T2 - A/F 30
C Compensation valve
D Oil drain plug G3/8" - A/F 8

LMP 400 - 401 - 431
Fit one differential indicator for individual filter assembly.



LMD400-401

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMD401 | 4 | B | V | F1 | A10 | N | P01

Series and size
LMD400 | **LMD401**

Length
4 | **5** | **6**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments	Filtration rating Axx	Mxx	Pxx
V FPM	•	•	•
Z FPM compatible with fluids HFA-HFB-HFC	•	•	

Connections	LMD400	LMD401
F1 2 1/2" SAE 3000 psi/M	•	•
F2 2 1/2" SAE 3000 psi/UNC	•	•
F3 2 1/2" SAE 3000 psi/M, In-line connections		•
F4 2 1/2" SAE 3000 psi/UNC, In-line connections		•

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm	**M25** Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	**M60** Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	**M90** Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	**P10** Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	**P25** Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution	Filter length 4	5	6
P01 MP Filtri standard	•	•	•
P02 Maintenance from the bottom of the housing		•	•
Pxx Customized			

FILTER ELEMENT

Configuration example: CU400 | 4 | A10 | V | N | P01

Element series and size
CU400

Element length
4 | **5** | **6**

Filtration rating (filter media)

A03 Inorganic microfiber 3 µm	**M25** Wire mesh 25 µm
A06 Inorganic microfiber 6 µm	**M60** Wire mesh 60 µm
A10 Inorganic microfiber 10 µm	**M90** Wire mesh 90 µm
A16 Inorganic microfiber 16 µm	**P10** Resin impregnated paper 10 µm
A25 Inorganic microfiber 25 µm	**P25** Resin impregnated paper 25 µm

Seals	Filtration rating Axx	Mxx	Pxx
V FPM	•	•	•
Z FPM compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

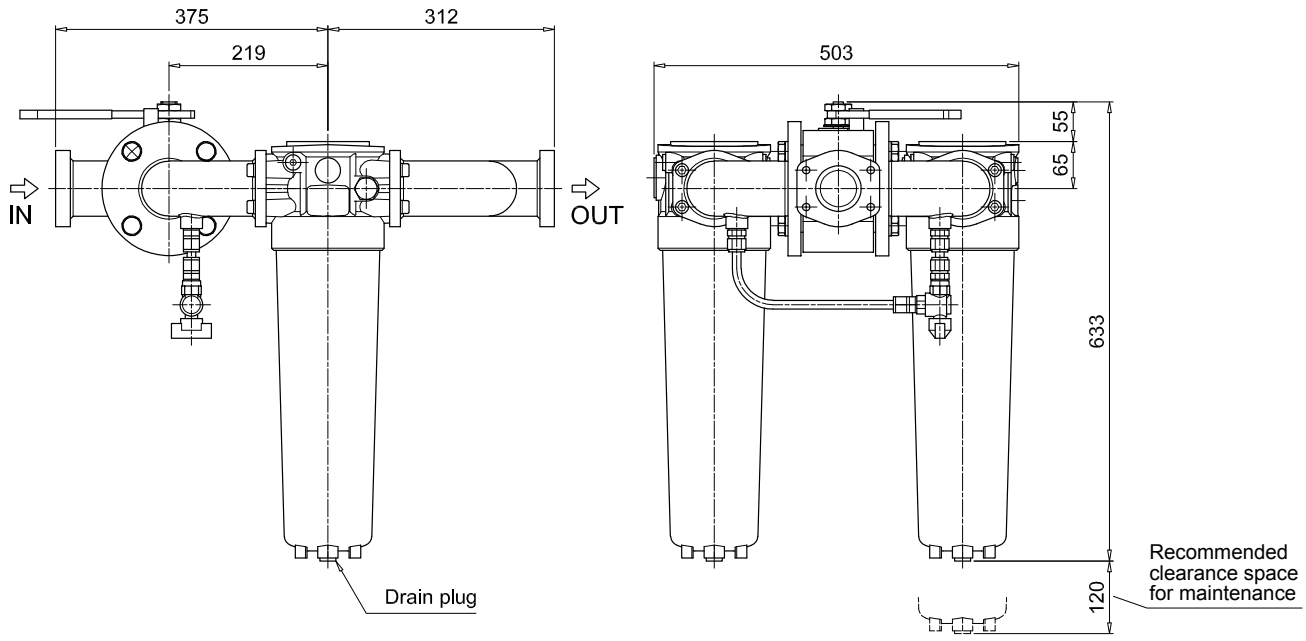
ACCESSORIES

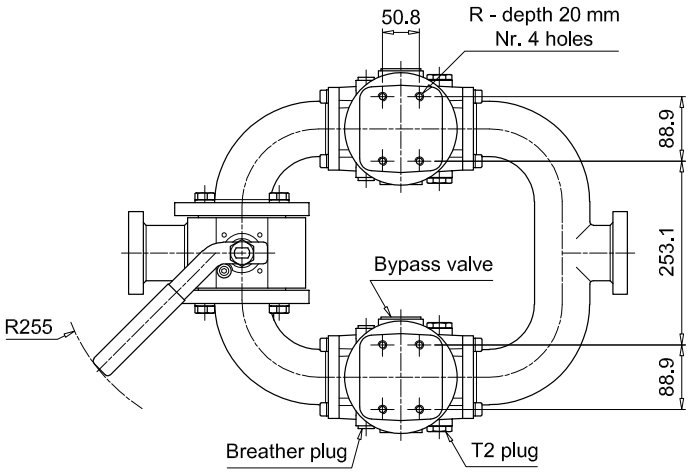
Differential indicators	page
DEA Electrical differential indicator	419
DEM Electrical differential indicator	419-420
DLA Electrical / visual differential indicator	420-421
DLE Electrical / visual differential indicator	421
DTA Electronic differential indicator	422
DVA Visual differential indicator	422
DVM Visual differential indicator	422

Additional features	page
T2 Plug	423

Dimensions

LMD400	
Length 4	
Connections	**R**
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC





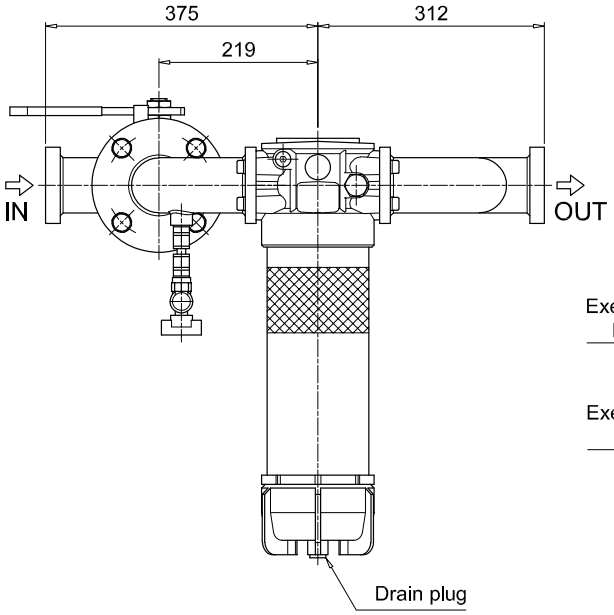
T2 plug =
connection for differential indicator

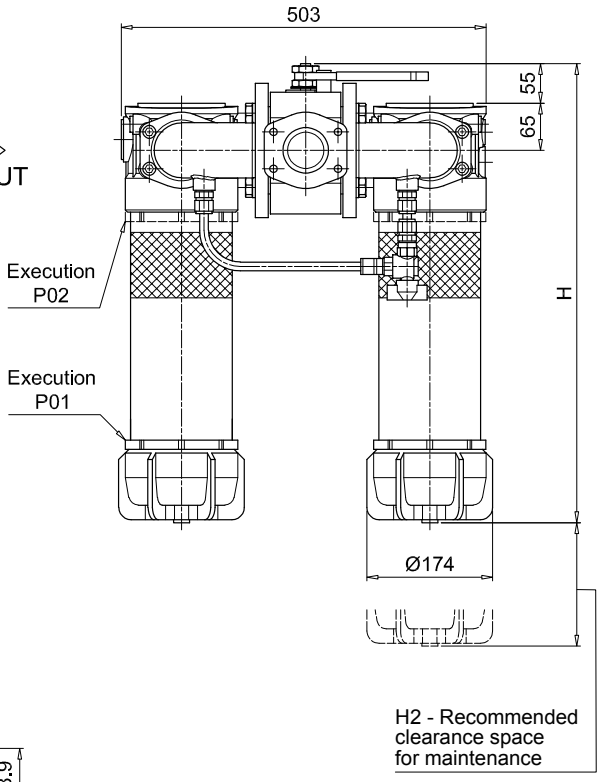
LMD400-401

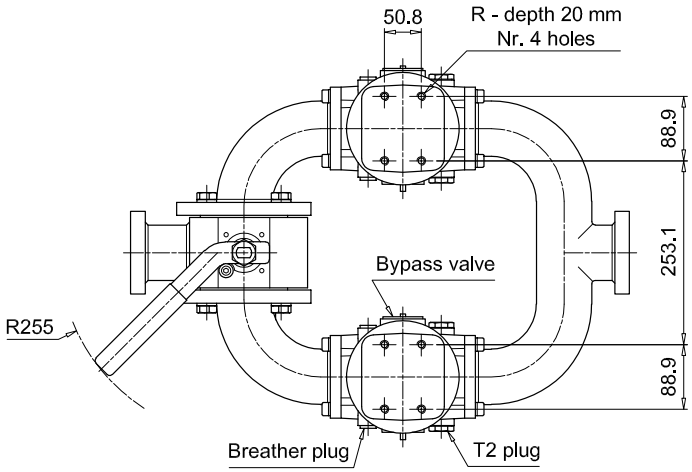
Dimensions

LMD400			
Length 5 - 6			
Filter length	**H [mm]**	**H2 [mm] Execution P01**	**P02**
5	883	120	660
6	1213	120	690

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC





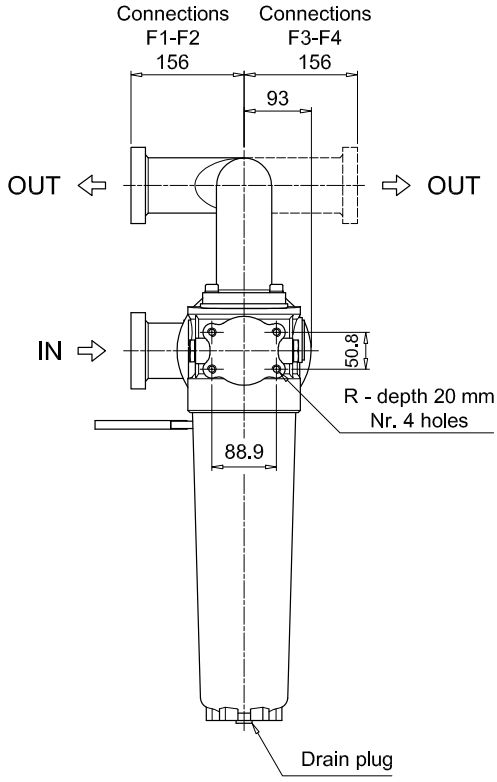


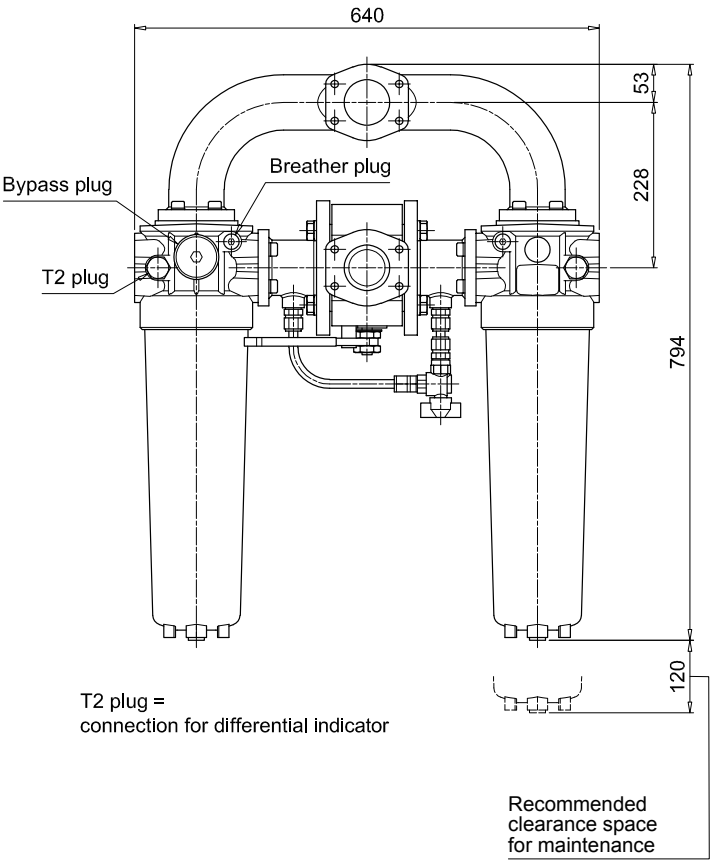
T2 plug =
connection for differential indicator

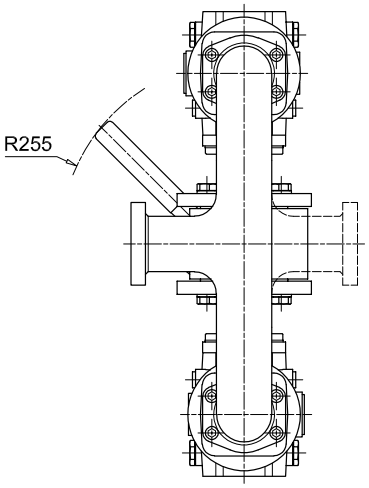
LMD401

Length 4

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC







LMD400-401

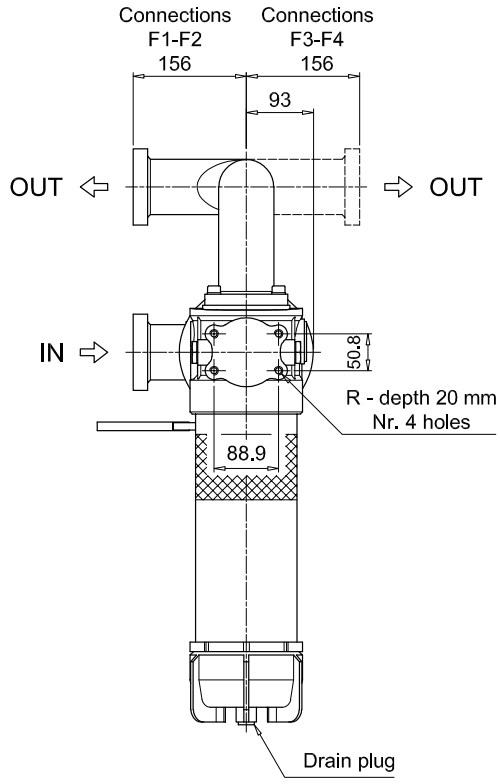
Dimensions

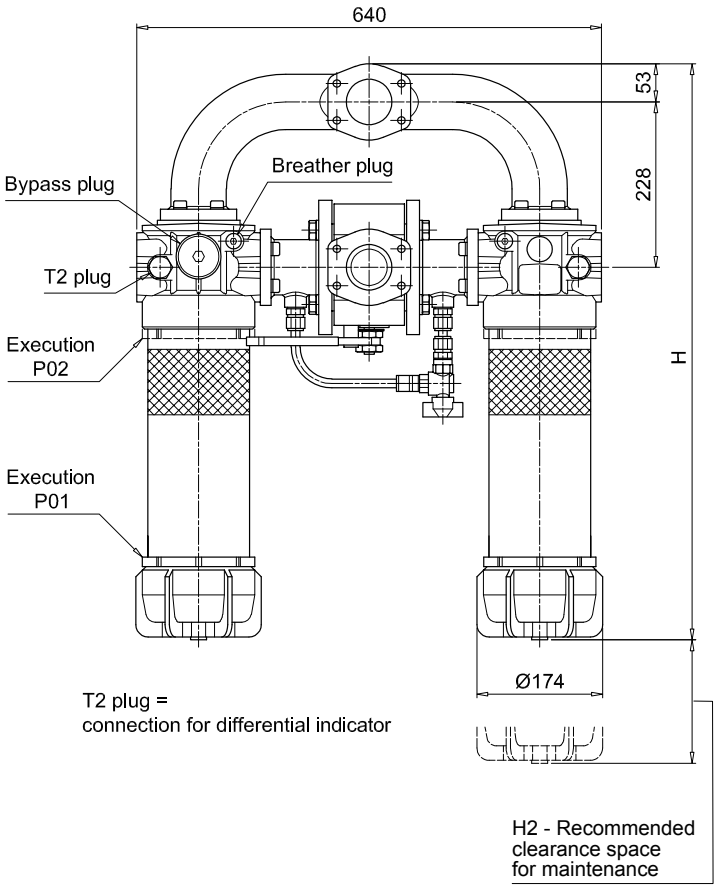
LMD401

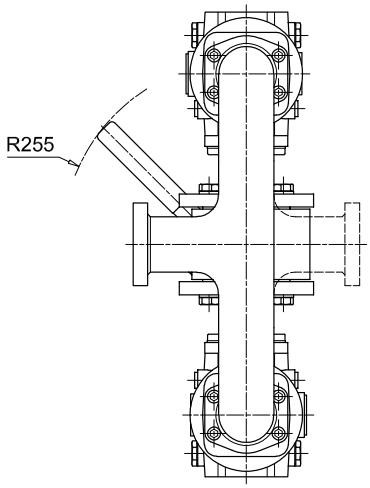
Length 5 - 6

Filter length	H [mm]	H2 [mm] Execution P01	H2 [mm] Execution P02
5	1044	120	660
6	1374	120	690

Connections	R
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC







LMD431

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMD431 | 5 | B | V | F1 | A10 | N | P01

Series and size
LMD431

Length
5 | **6**

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments	Filtration rating Axx	Mxx	Pxx
V FPM	•	•	•
Z FPM compatible with fluids HFA-HFB-HFC	•	•	

Connections
F1 2 1/2" SAE 3000 psi/M
F2 2 1/2" SAE 3000 psi/UNC
F3 2 1/2" SAE 3000 psi/M, In-line connections
F4 2 1/2" SAE 3000 psi/UNC, In-line connections

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
P02 With internal reduced flow rate tube
Pxx Customized

FILTER ELEMENT

Configuration example: CU400 | 5 | A10 | V | N | P01

Element series and size
CU400

Element length
5 | **6**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals	Filtration rating Axx	Mxx	Pxx
V FPM	•	•	•
Z FPM compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

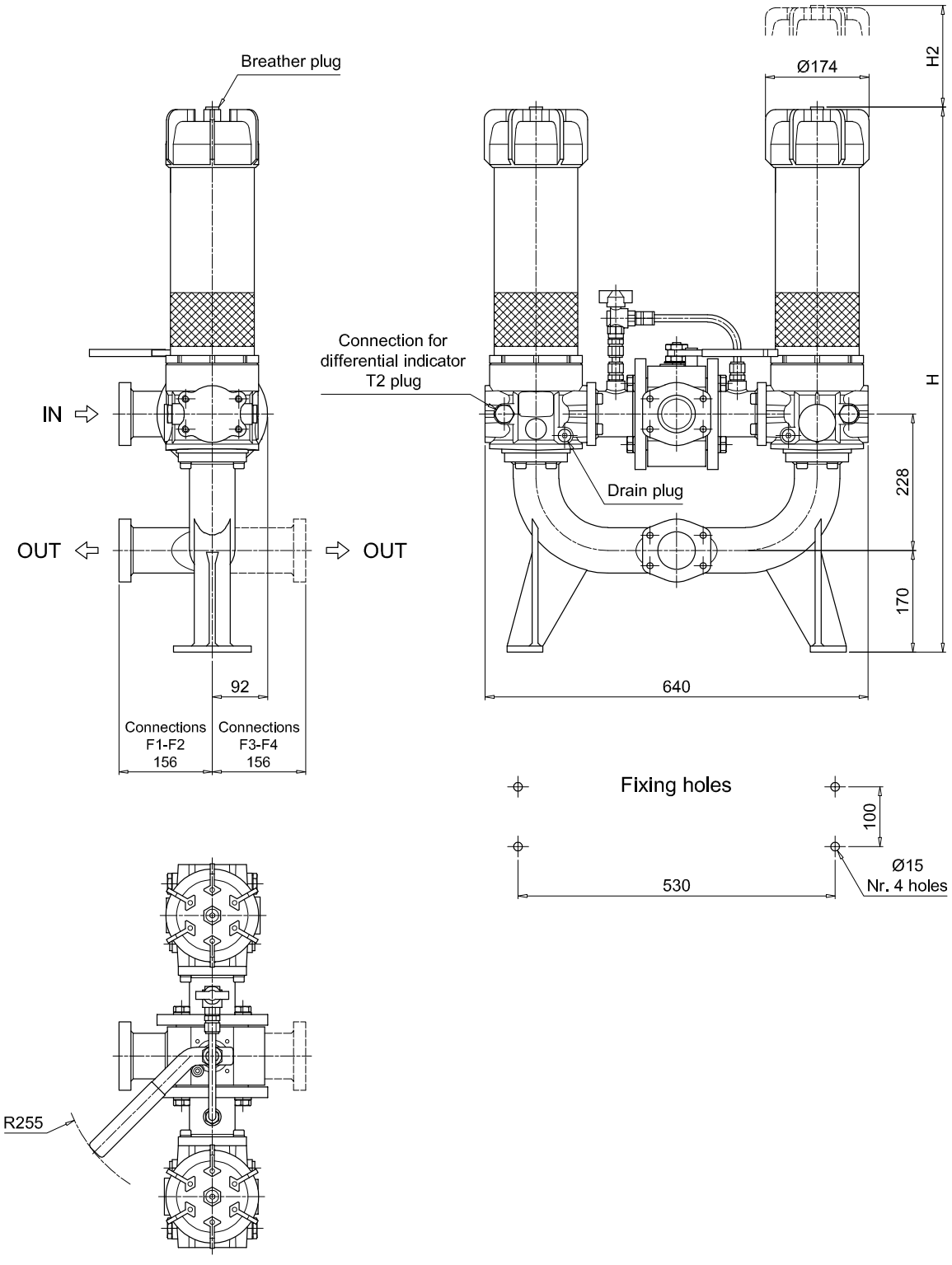
ACCESSORIES

Differential indicators	page
DEA Electrical differential indicator	419
DEM Electrical differential indicator	419-420
DLA Electrical / visual differential indicator	420-421
DLE Electrical / visual differential indicator	421
DTA Electronic differential indicator	422
DVA Visual differential indicator	422
DVM Visual differential indicator	422

Additional features	page
T2 Plug	423

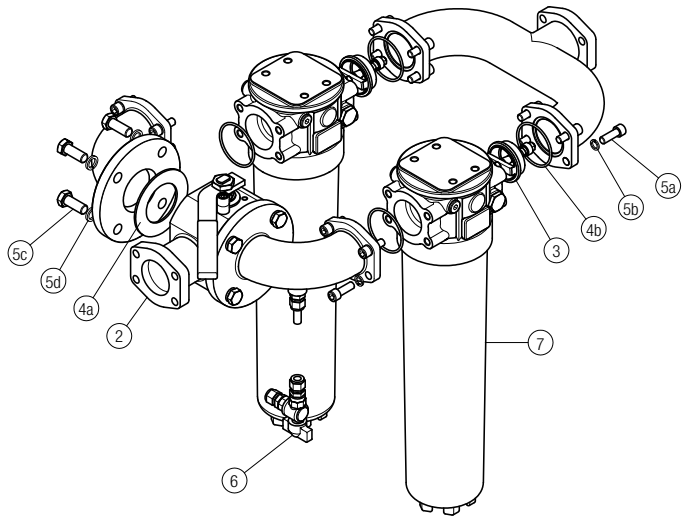
Dimensions

LMD431		
Filter length	**H [mm]**	**H2 [mm]**
5	1161	660
6	1491	690

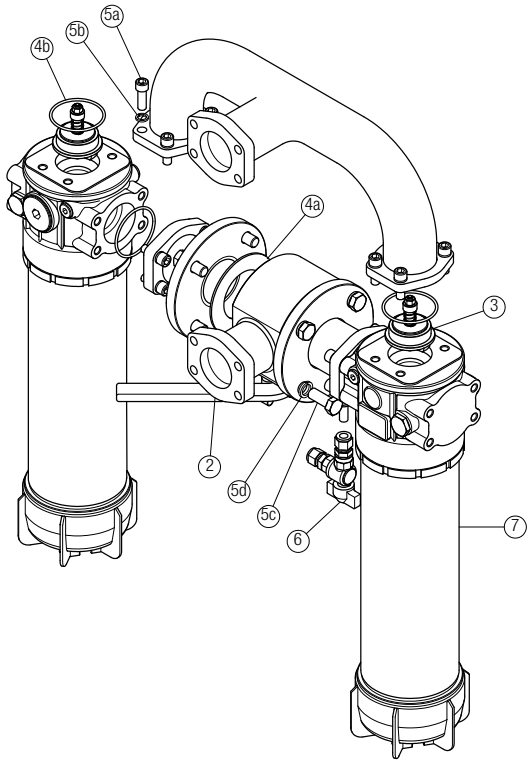


Order number for spare parts

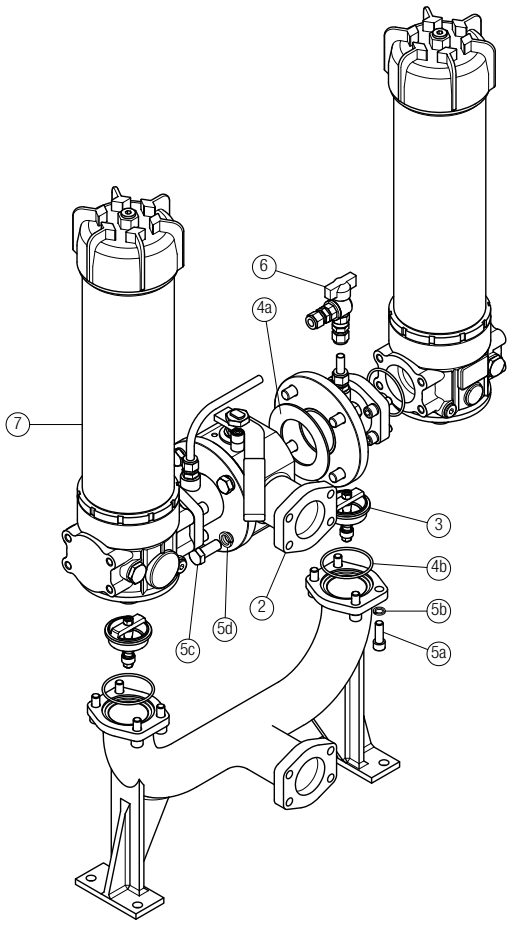
LMD 400



LMD 401



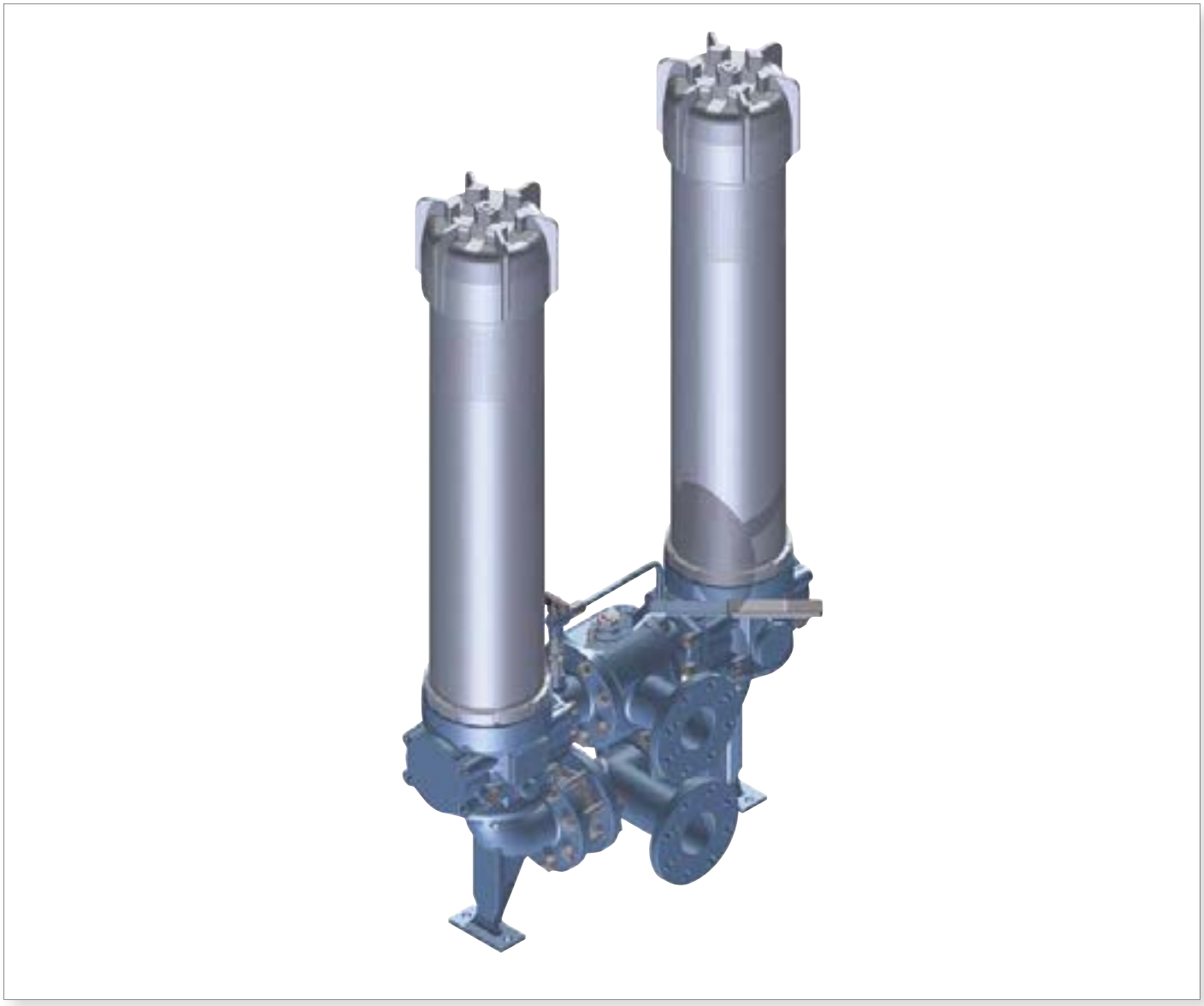
LMD 431



Item:	Q.ty: 1 pc. 2		Q.ty: 2 pcs. 3	Q.ty: 1 pc. 4 (4a ÷ 4b)	Q.ty: 1 pc. 5 (5a ÷ 5d)	Q.ty: 1 pc. 6	Q.ty: 2 pcs. 7
Filter series	**3-way ball valve PN 16** 2 1/2" SAE 3000 psi/M	2 1/2" SAE 3000 psi/UNC	**One-way valve**	**Seal Kit**	**Threaded fasteners kit**	**Kit ball valve with hose fitting**	**Filter** See order table
LMD 400 - 401 - 431	02001440	02001441	02001429	02050399	02049062	02025043	LMP400xF2.....

LMD 951 series

Maximum pressure up to 16 bar - Flow rate up to 1200 l/min



LMD951 GENERAL INFORMATION

Technical data

Low & Medium Pressure filters **Maximum pressure up to 16 - 25 bar - Flow rate up to 1200 l/min**

Filter housing materials
- Head: Anodized Aluminium
- Housing: Anodized Aluminium
- Manifolds: Welded - Painted black
- Bypass valve: Steel
- 3-way ball valve: Steel body - Stainless Steel ball
- Check valve: Cast Iron body - AISI 304 leaf

Pressure
- SAE + DIN Flange
- Working pressure: 1.6 MPa (16 bar)
- Test pressure: 2.5 MPa (25 bar)

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Number of filter elements
LMD 951: 2 filter elements CU950-3

Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
FPM series V

Temperature
From -25° C to +110° C

Connections
- LMD 951: In-line Inlet/Outlet
- Same side

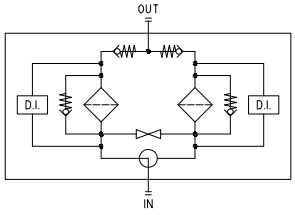
Note
LMD 951 filters
are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]		Volumes [dm³]	
	DN 80	DN 100	DN 80	DN 100
LMD 951	102	130	62	66

Hydraulic symbols

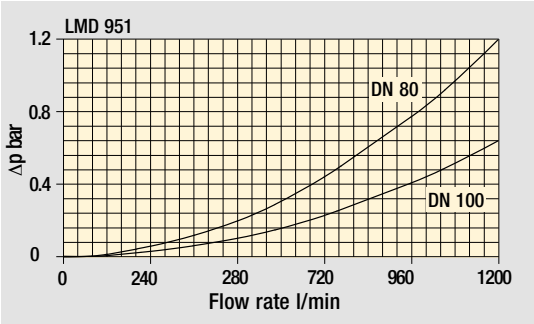
LMD 400-401-431-951



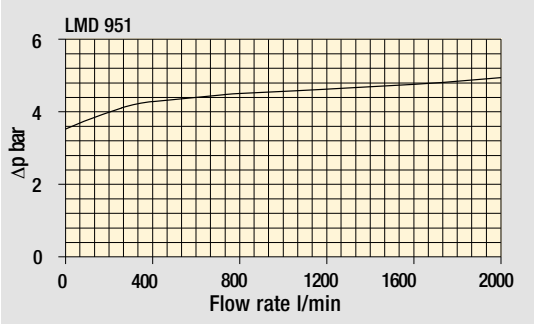
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Filter housings Δp pressure drop

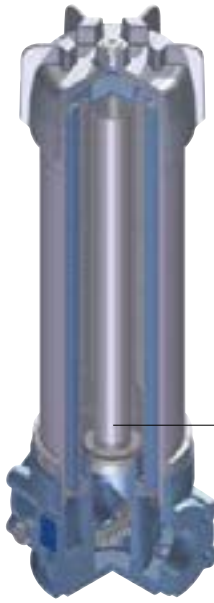


Bypass valve pressure drop



Focus on

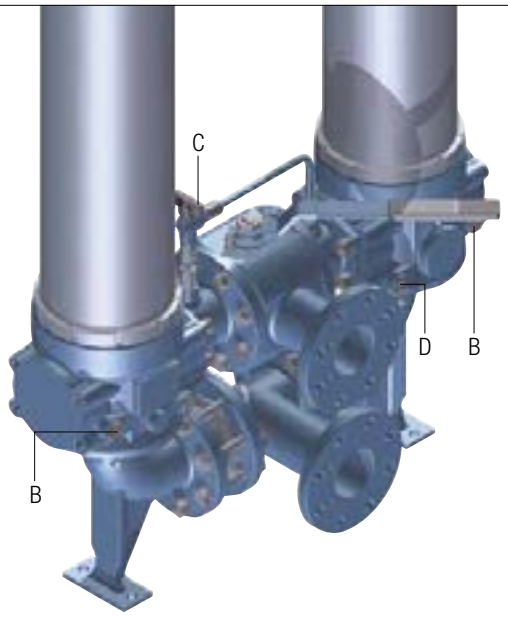
P2 EXECUTION



Execution P02
"Internal tube for reduced flow rate"
is recommended for flow rates
lower than 150 l/min.

The use of option P02
makes it easier to fill the housing
with the operating fluid.

"Internal tube for reduced flow rates"



LMD 951
Fit one differential indicator
for individual filter assembly.

A	Breather plug G1/2" - A/F 10
B	Indicator port Plug T2 - A/F 30
C	Compensation valve
D	Oil drain plug G1/2" - A/F 10

LMD951

Designation & Ordering code

COMPLETE FILTER

Configuration example: LMD951 | 3 | B | V | F1 | A10 | N | P01

Series and size
LMD951

Length
3

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments
V FPM

Connections
F1 3” SAE 3000 psi/M
F2 3” SAE 3000 psi/UNC
F3 4” SAE 3000 psi/M
F4 4” SAE 3000 psi/UNC
F5 3” SAE 3000 psi/M, In-line connections
F6 3” SAE 3000 psi/UNC, In-line connections
F7 4” SAE 3000 psi/M, In-line connections
F8 4” SAE 3000 psi/UNC, In-line connections

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
P02 With internal reduced flow rate tube
Pxx Customized

FILTER ELEMENT

Configuration example: CU950 | 3 | A10 | V | N | P01

Element series and size
CU950

Element length
3

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

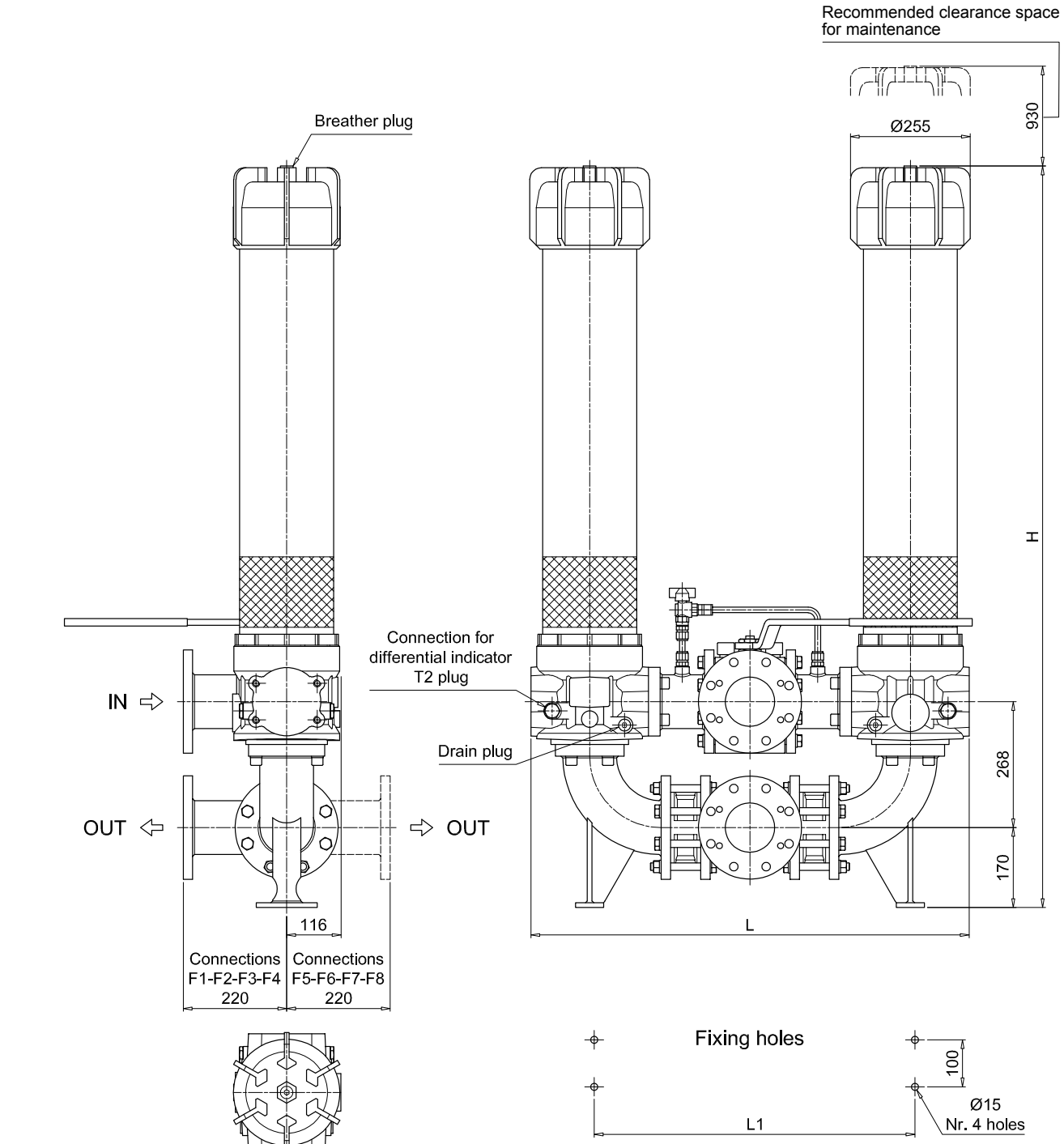
Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

Dimensions

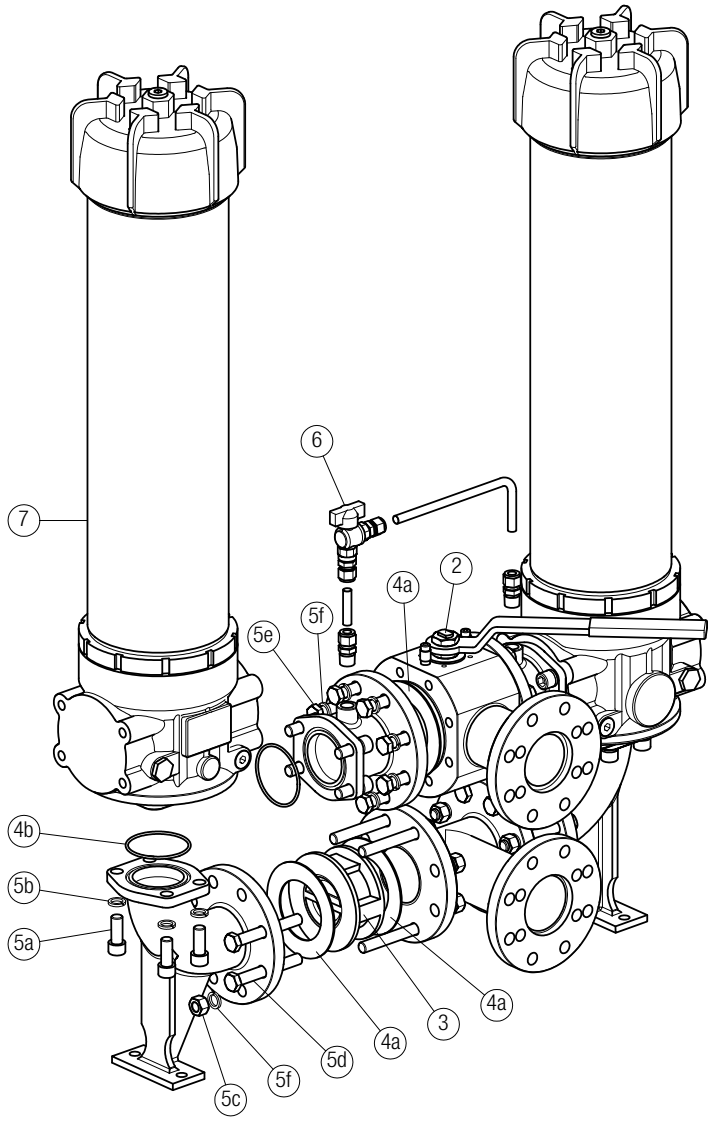


LMD951				
Connections	**H [mm]**	**L [mm]**	**L1 [mm]**	**M [mm]**
F1	1530	838	588	370
F2	1530	838	588	370
F3	1577	932	682	650
F4	1577	932	682	650
F5	1530	838	588	370
F6	1530	838	588	370
F7	1577	932	682	650
F8	1577	932	682	650

LMD951 SPARE PARTS

Order number for spare parts

LMD 951



Item 7:
for complete filter code and spare parts, see LMP 950 - 951 series chapter

Quantity:
- filter spare parts: 2 pcs.
- filter seal kit: 2 pcs.

Item:	Q.ty: 1 pc. 2		Q.ty: 2 pcs. 3	Q.ty: 1 pc. 4	Q.ty: 1 pc. 5 (5a ÷ 5f)	Q.ty: 1 pc. 6	Q.ty: 2 pcs. 7
Filter series LMD 951	**3-way ball valve PN 16**		**One-way valve**	**Seal Kit**	**Threaded fasteners kit**	**G 1/2" Ball Valve Kit with straight fittings**	**Filter**
F1 - F2 - F5 - F6 / D1 - D3 (3" SAE / DIN PN16 DN 80)	3" SAE 3000 psi/M 02001135	3" SAE 3000 psi/UNC 02001438	02001418	02050388	02049056	02025043	LMP9513xVF1xxxNP01
F3 - F4 - F7 - F8 / D2 - D4 (4" SAE / DIN PN16 DN 100)	4" SAE 3000 psi/M 02001162	4" SAE 3000 psi/UNC 02001439	02001419	02050389	02049057		LMP9513xVF3xxxNP01

LDP & LDD series

Maximum pressure up to 60 bar - Flow rate up to 330 l/min

DIN 24550

Filter element according to DIN 24550

LDP & LDD GENERAL INFORMATION

Filter element according to DIN 24550

Technical data

Low & Medium Pressure filters **Maximum pressure up to 60 bar - Flow rate up to 330 l/min**

Filter housing materials
- Head: Aluminium
- Bowl: Cataphoretic Painted Steel
- Bypass valve: AISI 304 - Nylon

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 6 MPa (60 bar)
- Test pressure: 9 MPa (90 bar)
- Burst pressure: 21 MPa (210 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 6 MPa (60 bar)

Temperature
From -25° C to +110° C

Connections
Inlet/Outlet In-Line

Bypass valve
- Opening pressure 3.5 bar ±10%
- Other opening pressures on request.

Note
LDP - LDD filters are provided for vertical mounting

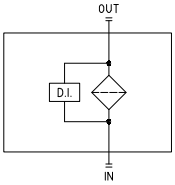
Δp element type
- Microfibre filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Weights [kg] and volumes [dm³]

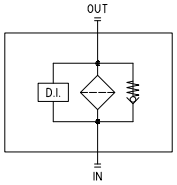
	Weights [kg]	Volumes [dm³]
	Length 1	Length 1
LDP - LDD 016	9.3	3.6
LDP - LDD 025	9.5	4.1
LDP - LDD 040	11.3	4.8

Hydraulic symbols

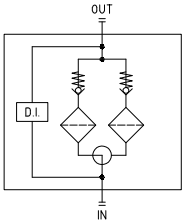
LDP execution **S**



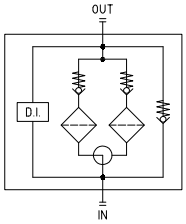
LDP execution **B**



LDD execution **S**



LDD execution **B**

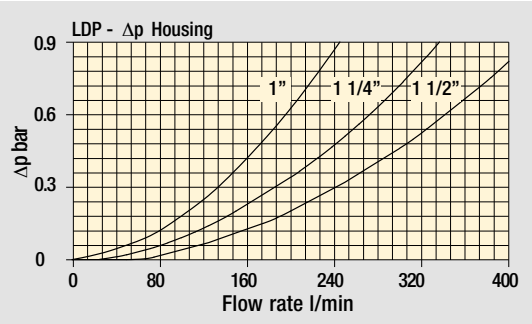


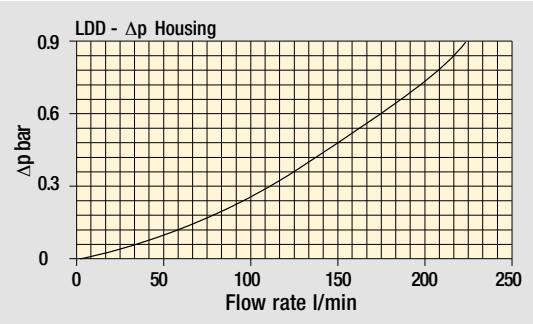
Filter element according to DIN 24550

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

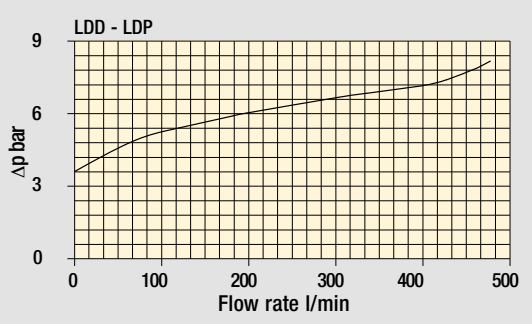
Pressure drop

Filter housings Δp pressure drop





Bypass valve pressure drop



LDP Filter element according to DIN 24550

Designation & Ordering code

COMPLETE FILTER

Configuration example: LDP | 025 | B | A | D | 6 | A10 | N | P01

Series and size
LDP

Size
016 Element according to DIN 24550 - T3 DN160
025 Element according to DIN 24550 - T3 DN250
040 Element according to DIN 24550 - T3 DN400

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments (Filtration rating: Axx | Mxx | Pxx)
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Connections
A G1”
B G1 1/4”
C G1 1/2”
D 1” NPT
E 1 1/4” NPT
F 1 1/2” NPT
G SAE 16 - 1 5/16” - 12 UN
H SAE 20 - 1 5/8” - 12 UN
I SAE 24 - 1 7/8” - 12 UN

Connection for differential indicator
6 With plugged connection

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: DN | 025 | A10 | A | N | P01

Element series and size
DN

Element size
016 Element according to DIN 24550 - T3 DN160
025 Element according to DIN 24550 - T3 DN250
040 Element according to DIN 24550 - T3 DN400

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals (Filtration rating: Axx | Mxx | Pxx)
A NBR • • •
V FPM • • •
W NBR compatible with fluids HFA-HFB-HFC • •

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

		page
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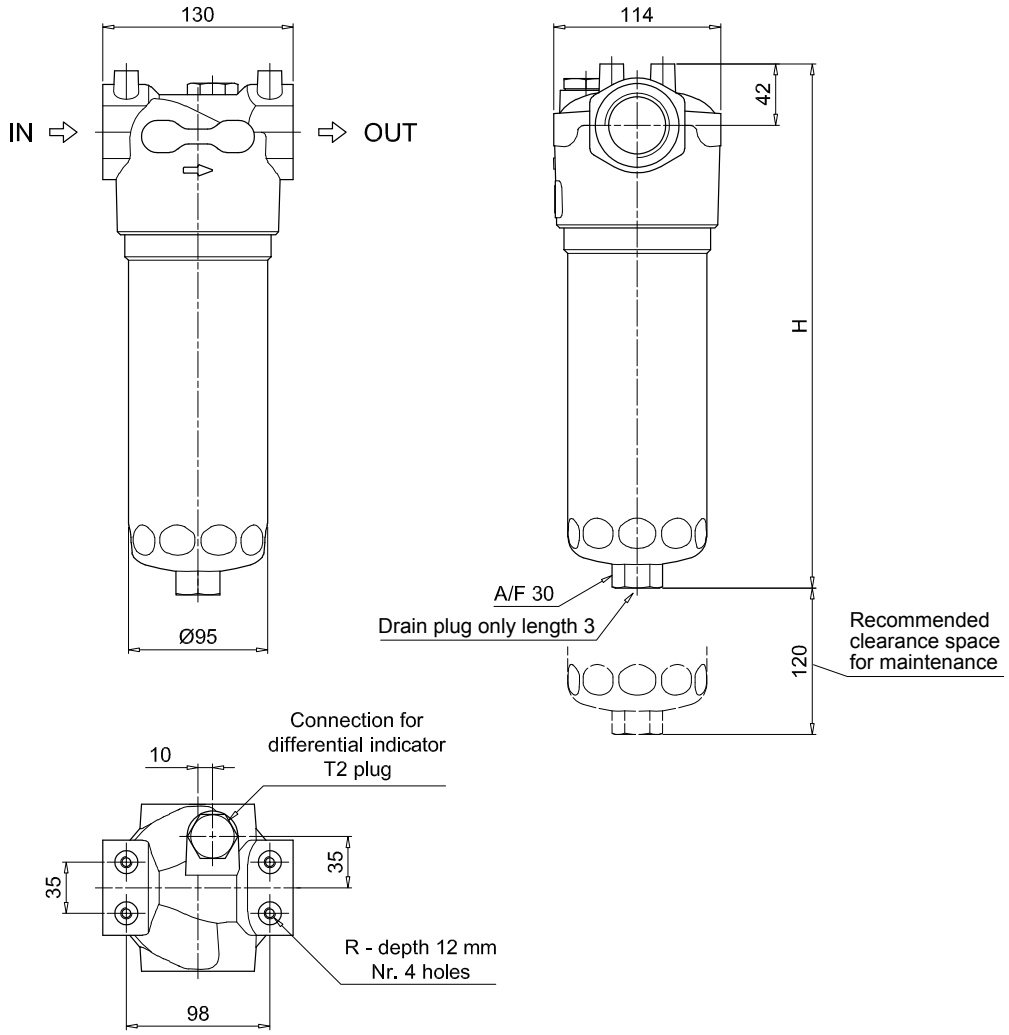
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

Additional features

		page
T2	Plug	423

Dimensions



LDP	
Filter size	**H [mm]**
016	268
025	358
040	508

Connections	R
A-B-C	M8
D-E-F-G-H-I	5/16" UNC

LDD Filter element according to DIN 24550

Designation & Ordering code

COMPLETE FILTER

Configuration example: LDD | 025 | B | A | C | 6 | A10 | N | P01

Series and size
LDD

Size
016 Element according to DIN 24550 - T3 DN160
025 Element according to DIN 24550 - T3 DN250
040 Element according to DIN 24550 - T3 DN400

Bypass valve
S Without bypass
B 3.5 bar

Seals and treatments

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Connections
C G1 1/2"
F 1 1/2" NPT
I SAE 24 - 1 7/8" - 12 UN
L 1 1/2" SAE 3000 psi/M + G1 1/4"
M 1 1/2" SAE 3000 psi/UNC + 1 1/4" NPT
N 1 1/2" SAE 3000 psi/UNC + SAE 20 - 1 5/8" UN

Connection for differential indicator
6 With plugged connection

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: DN | 025 | A10 | A | N | P01

Element series and size
DN

Element size
016 Element according to DIN 24550 - T3 DN160
025 Element according to DIN 24550 - T3 DN250
040 Element according to DIN 24550 - T3 DN400

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm
M25 Wire mesh 25 µm
M60 Wire mesh 60 µm
M90 Wire mesh 90 µm
P10 Resin impregnated paper 10 µm
P25 Resin impregnated paper 25 µm

Seals

		Filtration rating Axx	Mxx	Pxx
A	NBR	•	•	•
V	FPM	•	•	•
W	NBR compatible with fluids HFA-HFB-HFC	•	•	

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	419
DEM	Electrical differential indicator	419-420
DLA	Electrical / visual differential indicator	420-421
DLE	Electrical / visual differential indicator	421
DTA	Electronic differential indicator	422
DVA	Visual differential indicator	422
DVM	Visual differential indicator	422

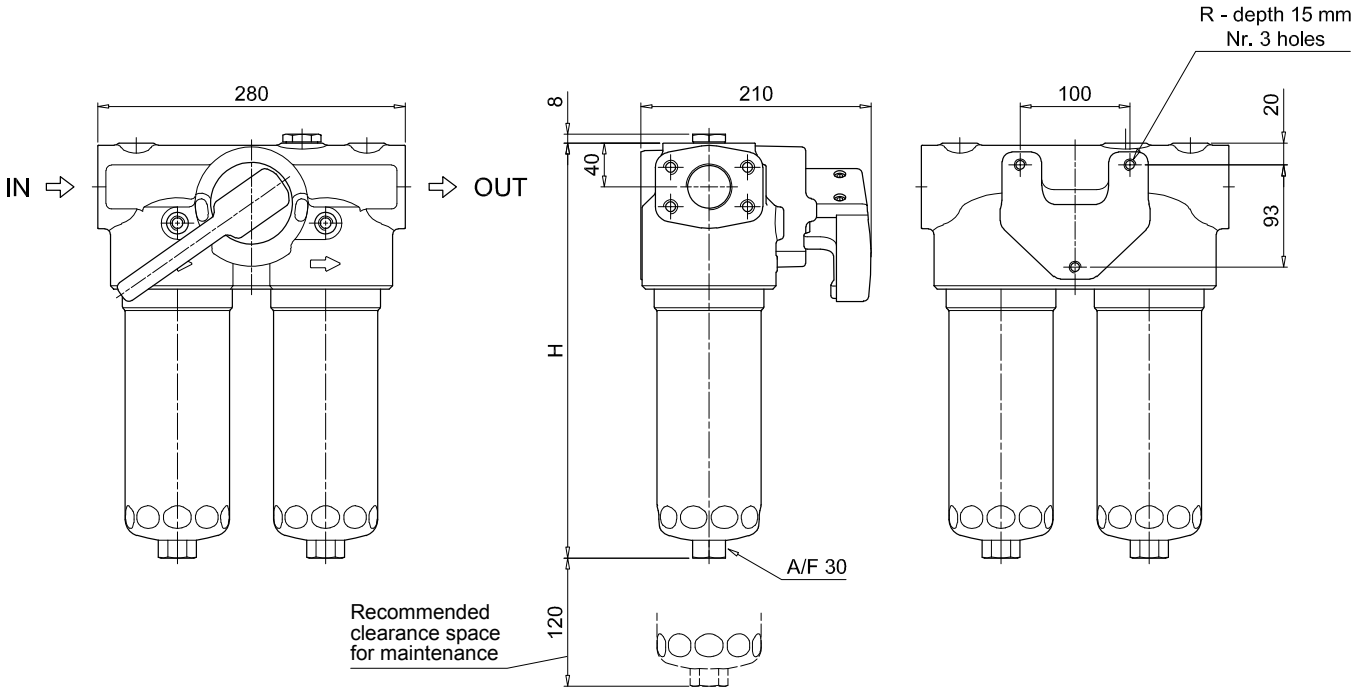
Additional features

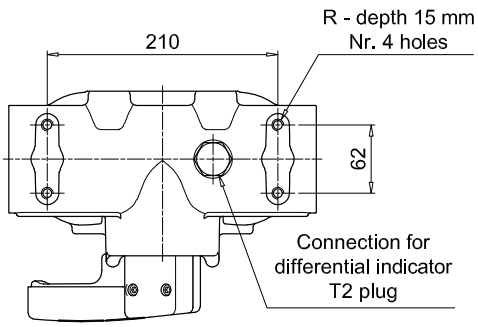
		page
T2	Plug	423

Dimensions

LDD	
Filter size	**H [mm]**
016	290
025	380
040	530

Connections	**R**
C	M10
F - I	3/8" UNC
L	M10
M - N	3/8" UNC

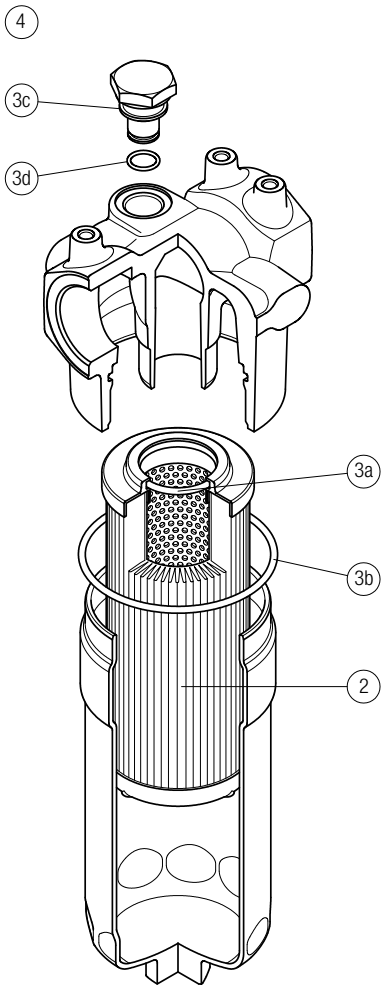




Filter element according to DIN 24550

Order number for spare parts

LDP

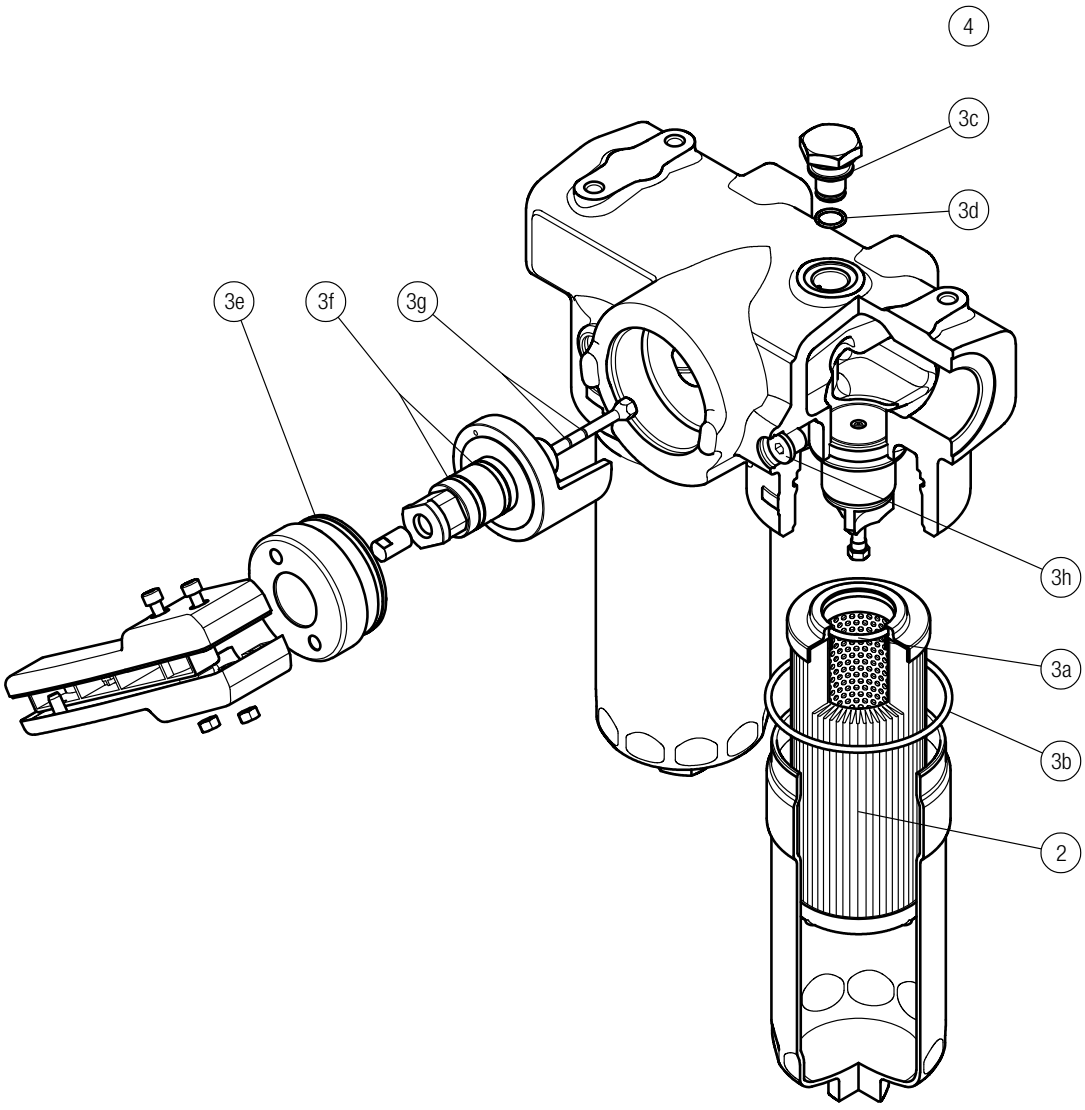


Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3d)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
LDP	See order table	02050435	02050436	T2H	T2V

Filter element according to DIN 24550

Order number for spare parts

LDD



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3h)		Q.ty: 2 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
LDD	See order table	02050671	02050672	T2H	T2V

Clogging indicators

Differential indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.
This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

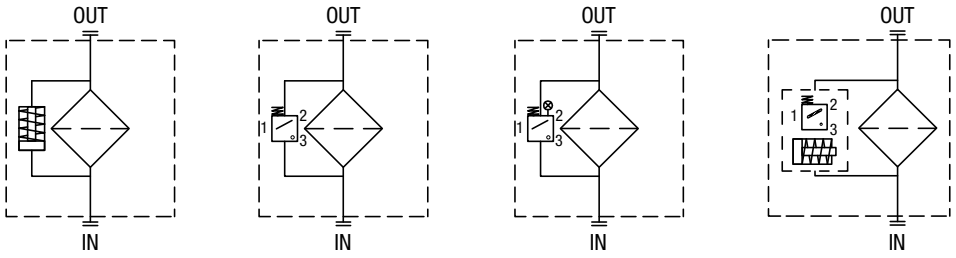
The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply differential pressure indicators with a visual, electrical or both signals.

Suitable indicator types

DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



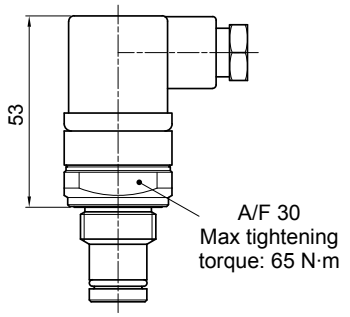
Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
With bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 902 - 903 - 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 902 - 903 - 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01

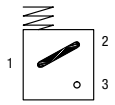
DEA*50

Electrical Differential Indicator

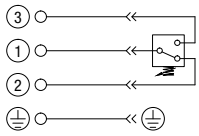
Settings	Ordering code
2 bar ±10%	DE A 20 x A 50 P01
5 bar ±10%	DE A 50 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

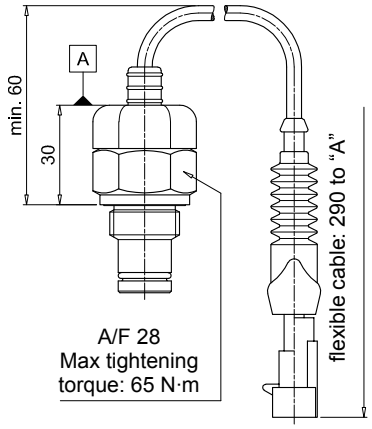
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

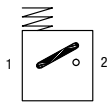
DEM*10

Electrical Differential Indicator

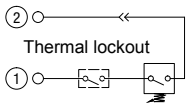
Settings	Ordering code
2 bar ±10%	DE M 20 x x 10 P01
5 bar ±10%	DE M 50 x x 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

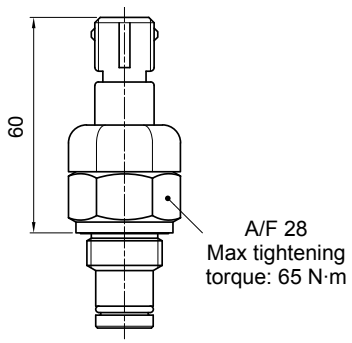
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

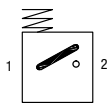
DEM*20

Electrical Differential Indicator

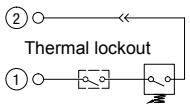
Settings	Ordering code
2 bar ±10%	DE M 20 x x 20 P01
5 bar ±10%	DE M 50 x x 20 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

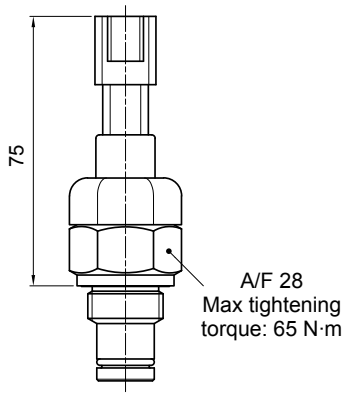
Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

Dimensions

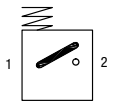
DEM*30

Electrical Differential Indicator

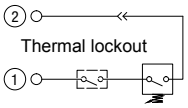
Settings	Ordering code
2 bar ±10%	DE M 20 x x 30 P01
5 bar ±10%	DE M 50 x x 30 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

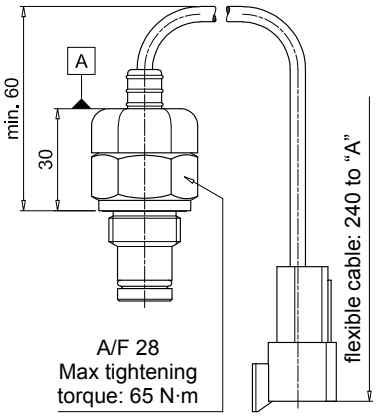
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option “F”)

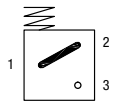
DEM*35

Electrical Differential Indicator

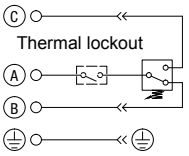
Settings	Ordering code
2 bar ±10%	DE M 20 x x 35 P01
5 bar ±10%	DE M 50 x x 35 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

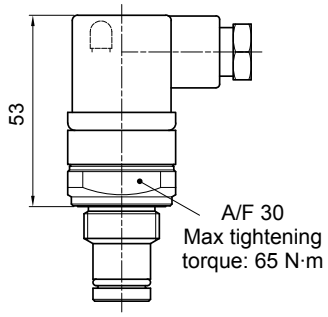
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option “F”)

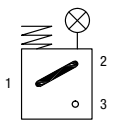
DLA*51 - DLA*52

Electrical/Visual Differential Indicator

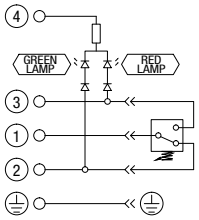
Settings	Ordering code
2 bar ±10%	DL A 20 x A x x P01
5 bar ±10%	DL A 50 x A x x P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

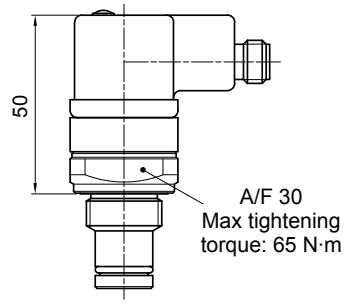
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc

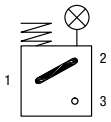
DLA*71

Electrical/Visual Differential Indicator

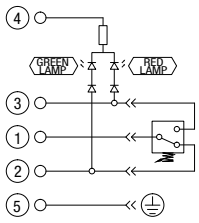
Settings	Ordering code
2 bar ±10%	DL A 20 x A 71 P01
5 bar ±10%	DL A 50 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

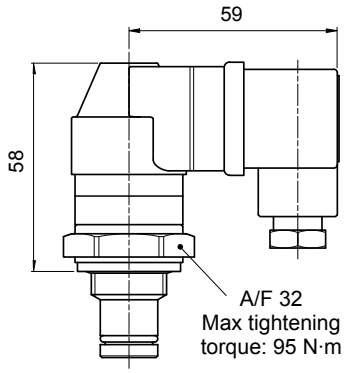
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

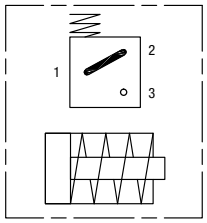
DLE*A50

Electrical/Visual Differential Indicator

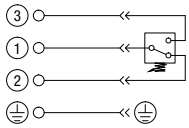
Settings	Ordering code
2 bar ±10%	DL E 20 x A 50 P01
5 bar ±10%	DL E 50 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

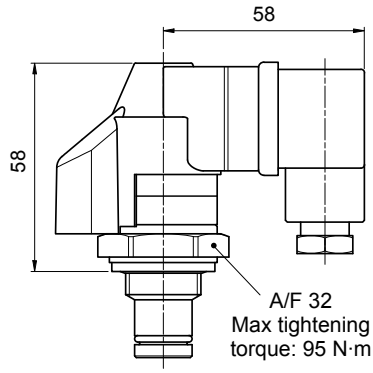
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

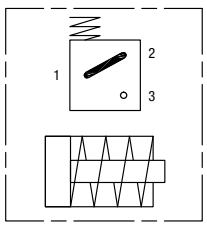
DLE*F50

Electrical/Visual Differential Indicator

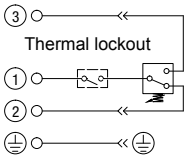
Settings	Ordering code
2 bar ±10%	DL E 20 x F 50 P01
5 bar ±10%	DL E 50 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

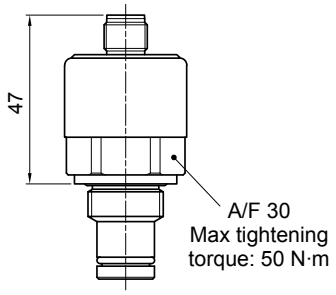
Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

Dimensions

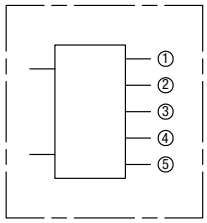
DTA*70

Electronic Differential Indicator

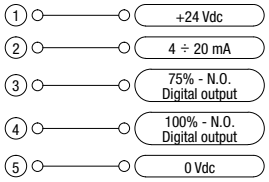
Settings	Ordering code
2 bar ±10%	DT A 20 x x 70 P01
5 bar ±10%	DT A 50 x x 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

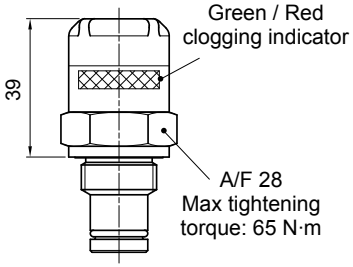
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

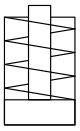
DVA

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV A 20 x P01
5 bar ±10%	DV A 50 x P01



Hydraulic symbol



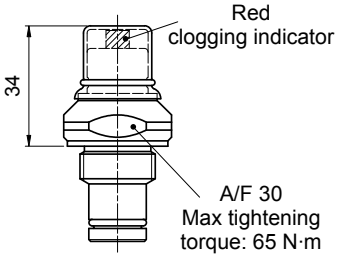
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

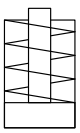
DVM

Visual Differential Indicator

Settings	Ordering code
2 bar ±10%	DV M 20 x P01
5 bar ±10%	DV M 50 x P01



Hydraulic symbol



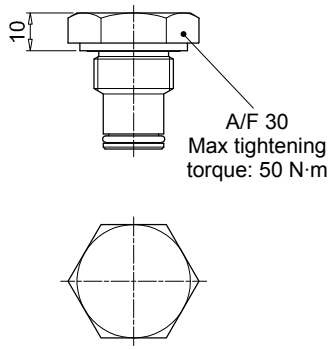
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

T2

Indicator plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V



Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	M	20	H	F	50	P01
Configuration example 2:	DL	E	50	V	A	71	P01
Configuration example 3:	DT	A	20	H	F	70	P01
Configuration example 4:	DV	M	50	V			P01

Series

- **DE** Electrical differential indicator
- **DL** Electrical/Visual differential indicator
- **DT** Electronic differential indicator
- **DV** Visual differential indicator

Type	DE	DL	DT	DV
A Standard type	•	•	•	**A** With automatic reset
M With wired electrical connection	•			**M** With manual reset
E For high power supply		•		

Pressure setting

- **20** 2 bar
- **50** 5 bar

Seals

- **H** HNBR
- **V** FPM

Thermostat	DEA	DEM	DLA	DLE	DT	DV
A Without	•	•	•	•		
F With thermostat		•		•	•	

Electrical connections	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option

- **P01** MP Filtri standard
- **Pxx** Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	T2	H

Series

- **T2** Indicator plug

Seals

- **H** HNBR
- **V** FPM

High pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.
11 versions are available with operating pressures range from 110 bar up to 560 bar.
A range of products is available to resolve all filter mounting problems, in the following configurations:

- In-line, with threaded and flange mounting
- Manifold top mounting
- Manifold side mounting
- Manifold mounting, to DIN 24340 CETOP R 35 H
- Manifold threaded/flange mounting in the top extraction filter cartridge version
- Duplex versions for continuous operation requirements

FMP series is specifically designed and suitable for:
- feed pumps of hydrostatic drives
- pressure lubrication
- hydraulic systems in the high pressure range

FMM series is optimized for the protection of servo and proportional hydraulics:
- in agricultural machinery
- in construction machinery
- in commercial vehicles

FHP & FHA series are the typical high-pressure filters optimized for industrial applications world with high operating pressure.

FHM series is designed for intermediate plate construction, CETOP design.

FHB series is designed for block mounting; the filter head can be screwed in from the outside.

FHF series is designed to assemble filter element according to SAE J2066-HF4

FHD series is the duplex high pressure filter; with two independent filter heads, the flow can be switched without interruption during operation.

The range includes a complete set of valves:

- Bypass valve
- Check valve
- Bypass + check valve
- Reverse-flow valve
- Reverse-flow + bypass valve

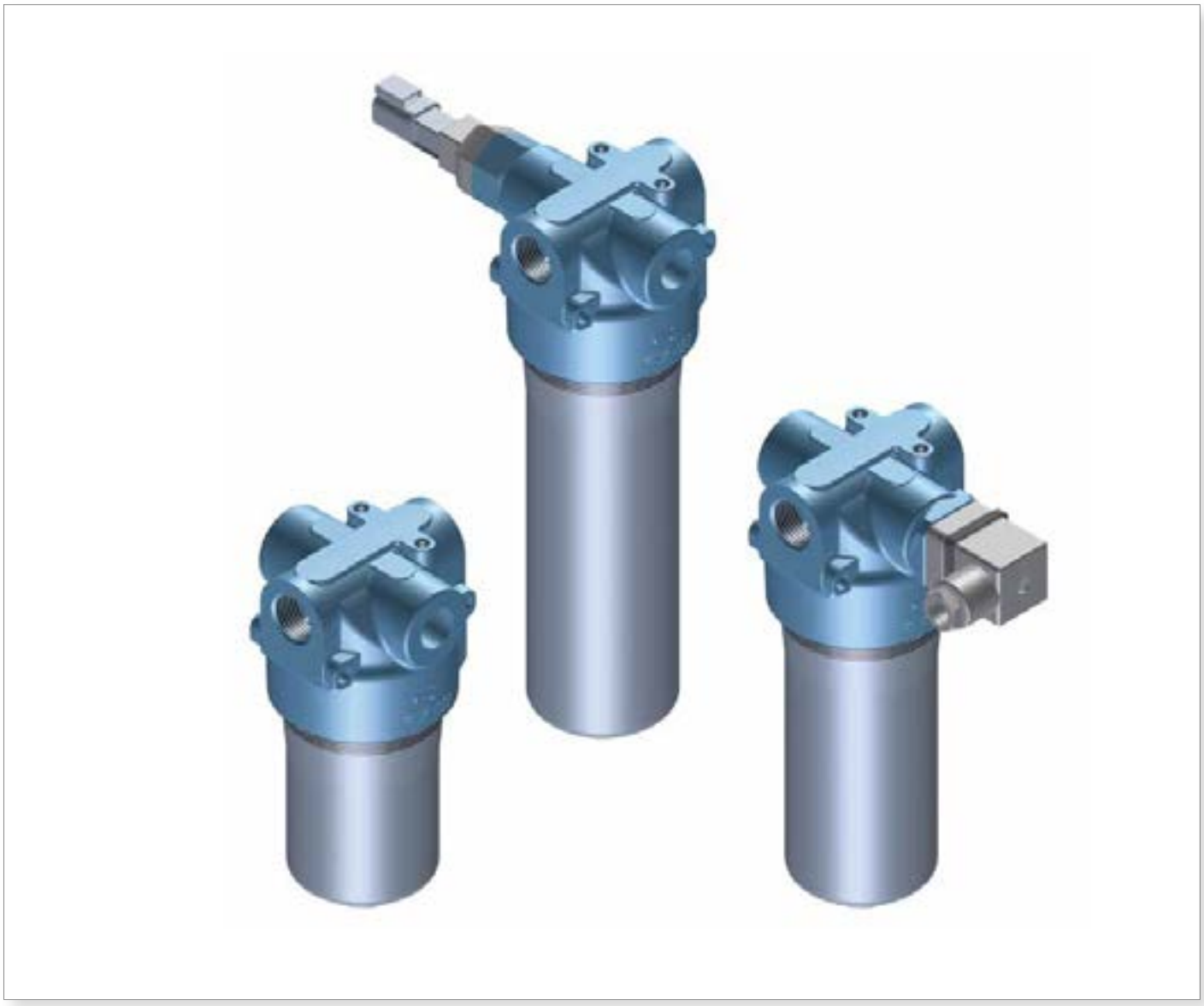
FILTER SIZING

For the proper corrective factor Y see chapter at page 22

High pressure filters

FMP 039 series

Maximum pressure up to 110 bar - Flow rate up to 80 l/min



FMP039 GENERAL INFORMATION

Technical data

High Pressure filters **Maximum pressure up to 110 bar - Flow rate up to 80 l/min**

Filter housing materials
- Head: Anodized aluminium
- Housing: Anodized aluminium
- Bypass valve: Steel

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Seals
- Standard NBR series A
- Optional FPM series V

Pressure
- Working pressure: 11 MPa (110 bar)
- Test pressure: 17 MPa (170 bar)
- Burst pressure: 33 MPa (330 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 11 MPa (110 bar)

Δp element type
- Microfibre filter elements - series N: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Temperature
From -25 °C to +110 °C

Connections
In-line Inlet/Outlet

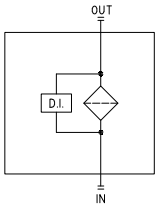
Note
FMP 039 filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

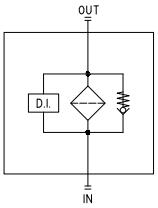
	Weights [kg]				Volumes [dm³]			
	Length	2	3	4	Length	2	3	4
FMP 039		0.60	0.70	0.80		0.19	0.26	0.34

Hydraulic symbols

Style **S**



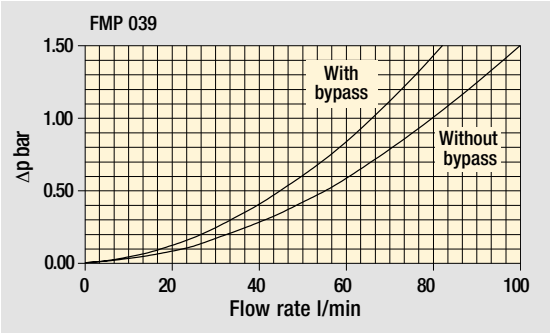
Style **B**



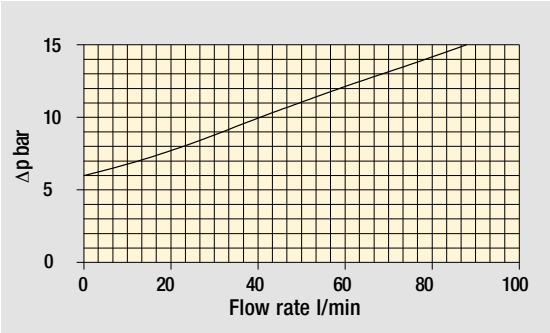
The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Filter housings Δp pressure drop



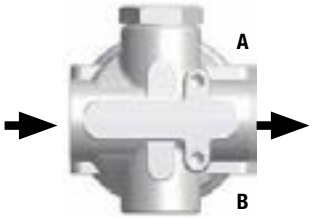
Bypass valve pressure drop



Executions

Execution 1:
without indicator connection

Execution 6
double indicator connection (A - B)

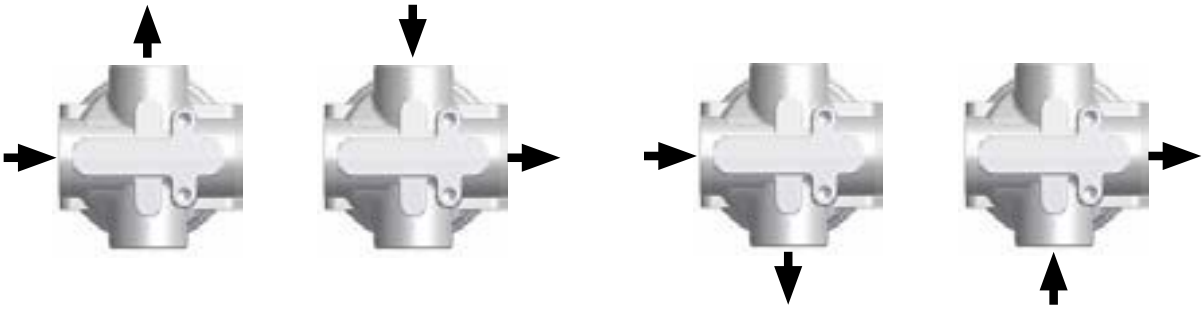


A:
Closure cap
with standard T2 steel.
The position of the cap
is reversible.

B:
Standard closure cap
with plastic
thread protection.

If necessary,
a second T2 plug is available,
see ordering information.

Special connections on request



FMP039

Designation & Ordering code

COMPLETE FILTER

Configuration example: FMP039 | 3 | B | A | B | 6 | A03 | N | P01

Series and size
FMP039

Length
2 | **3** | **4**

Valves
S Without bypass
B 6 bar

Seals
A NBR
V FPM

Connections
A G1/2"
B 1/2" NPT
C SAE 8 - 3/4" - 16 UNF

Connection for differential indicator
1 Without
6 With two connections on both sides

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP039 | 3 | A03 | A | N | P01

Element series and size
HP039

Element length
2 | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

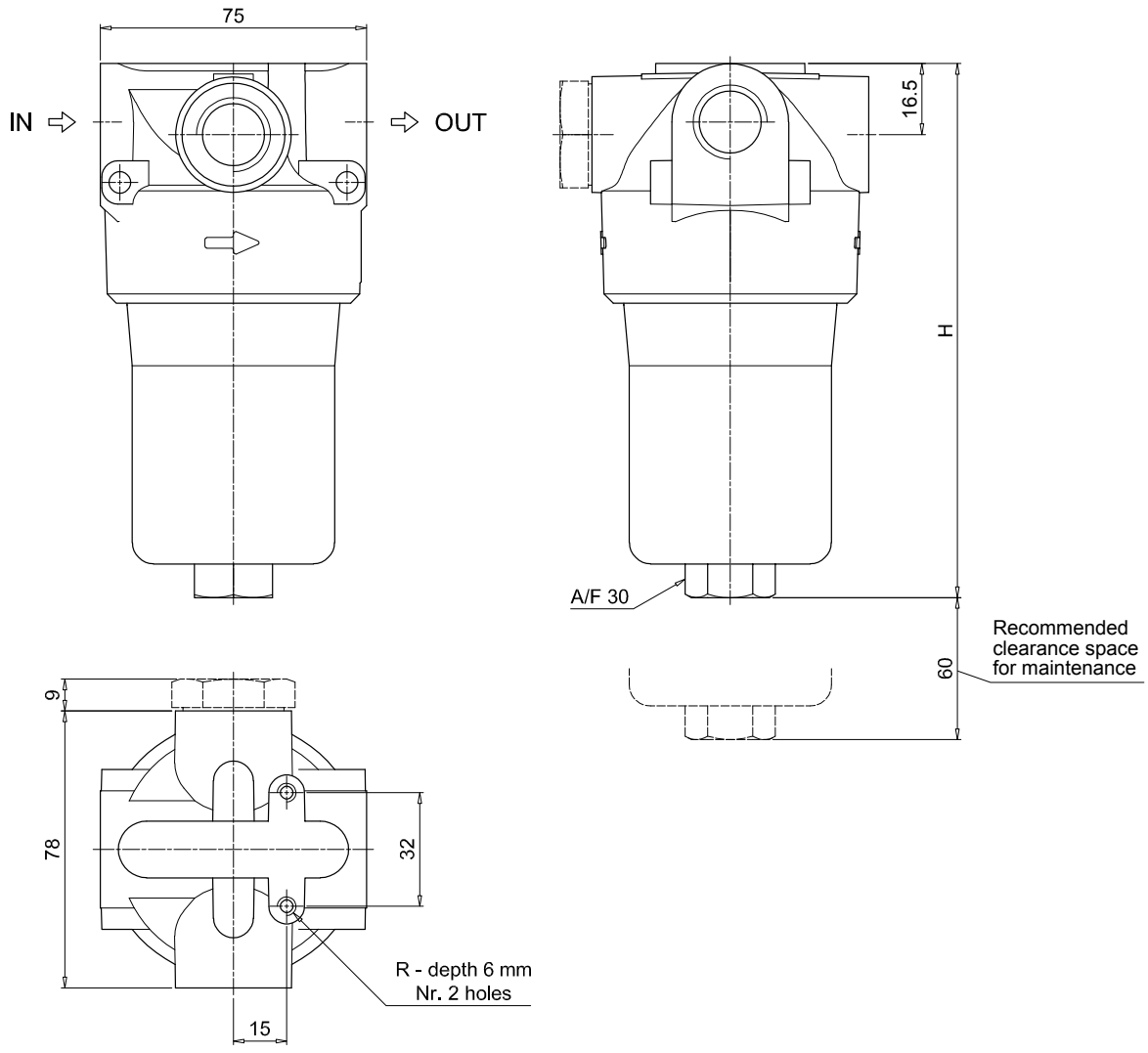
ACCESSORIES

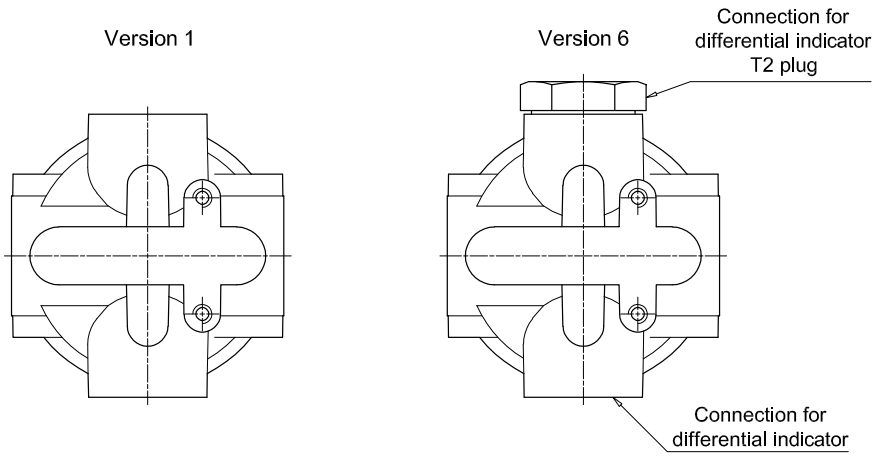
Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

		page
T2	Plug	521





The position of the T2 plug is reversible

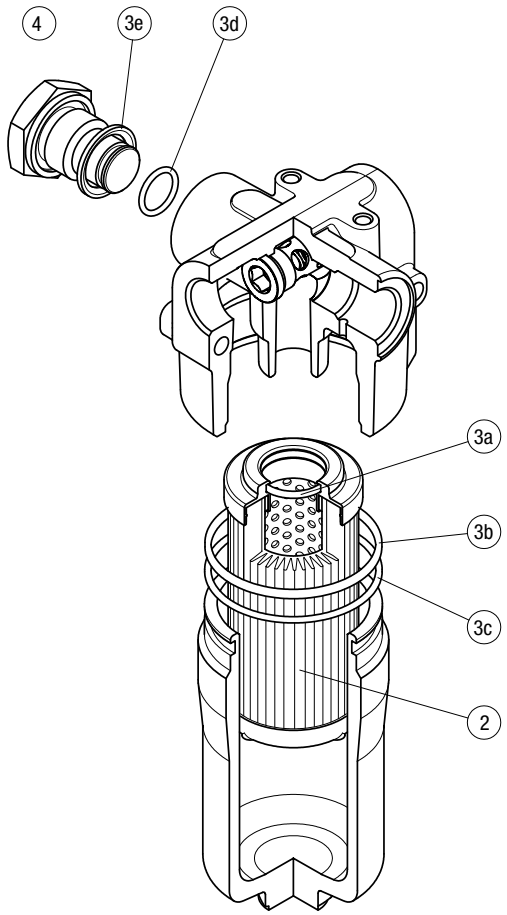
FMP039	
Filter length	**H [mm]**
2	151
3	194
4	138

Connections	**R**
A	M6
B - C	1/4" UNC

FMP039 SPARE PARTS

Order number for spare parts

FMP 039



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**
FMP 039	See order table	02050509	02050510

FMP series

Maximum pressure up to 320 bar - Flow rate up to 475 l/min

Technical data

High Pressure filters **Maximum pressure up to 320 bar - Flow rate up to 475 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Brass
- Reverse Flow: Steel (only for series FMP 320)
- Check valve: Steel

Pressure
- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
In-line Inlet/Outlet

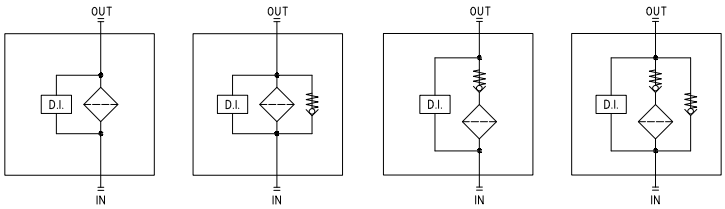
Note
FMP filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]					Volumes [dm³]				
	Lenght	1	2	3	4	Lenght	1	2	3	4
FMP 065		3.26	3.62	4.83	-		0.36	0.47	0.84	-
FMP 135		5.61	7.21	8.27	-		0.45	0.78	1.00	-
FMP 320		10.95	13.08	15.37	17.85		1.03	1.75	2.52	3.35

Hydraulic symbols

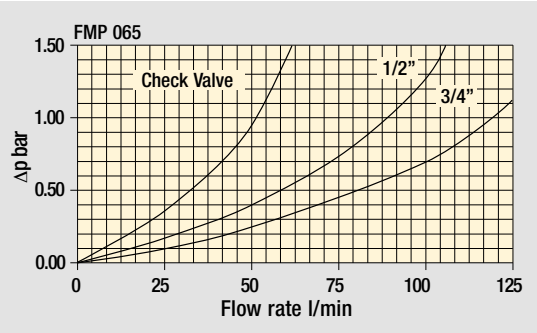
Style **S** Style **B** Style **T** Style **D**

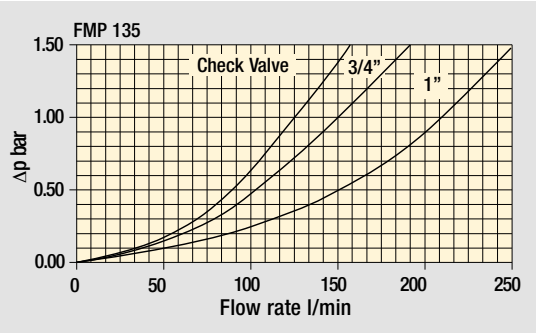


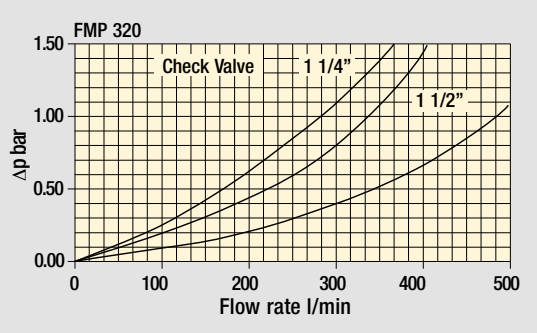
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

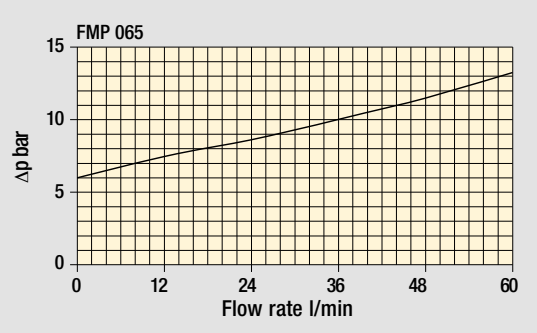
Filter housings Δp pressure drop

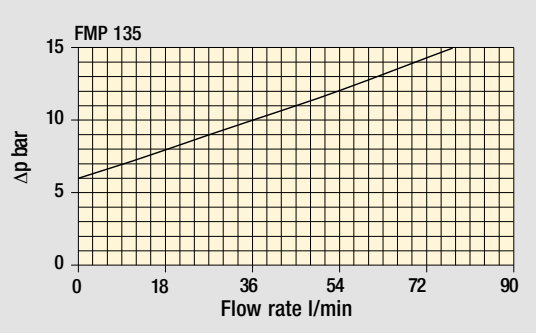


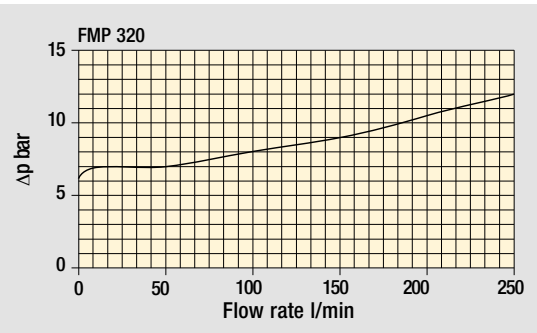




Bypass valve pressure drop



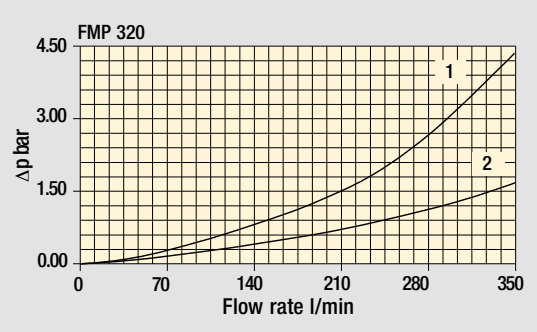




Valves

Filter housing with check valve

1 - Reverse flow
2 - In filter direction



FMP FMP065 - FMP135 - FMP320

Designation & Ordering code

COMPLETE FILTER

Configuration example: FMP065 | 3 | T | A | G1 | M25 | S | P01

Series and size

FMP065 | **FMP135** | **FMP320**

Length	FMP065	FMP135	FMP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Valves

S	Without bypass	**C**	With bypass 6 bar, plug on the opposite side
E	Without bypass, plug on the opposite side	**T**	With check valve, without bypass
B	With bypass 6 bar	**D**	With check valve, with bypass

Seals

A	NBR	**V**	FPM

Connections	FMP065	FMP135	FMP320
G1	G1/2”	G3/4”	G1 1/4”
G2	G3/4”	G1”	G1 1/2”
G3	1/2” NPT	3/4” NPT	1 1/4” NPT
G4	3/4” NPT	1” NPT	1 1/2” NPT
G5	SAE 8 - 3/4” - 16 UNF	SAE 12 - 1 1/16” - 12 UN	SAE 20 - 1 5/8” - 12 UN
G6	SAE 12 - 1 1/16” - 12 UN	SAE 16 - 1 5/16” - 12 UN	SAE 24 - 1 7/8” - 12 UN
F1	-	3/4” SAE 3000 psi/M	1 1/4” SAE 3000 psi/M
F2	-	1” SAE 3000 psi/M	1 1/2” SAE 3000 psi/M
F3	-	3/4” SAE 3000 psi/UNC	1 1/4” SAE 3000 psi/UNC
F4	-	1” SAE 3000 psi/UNC	1 1/2” SAE 3000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Element Δp		Valves S	E	B	C	T	D
N	20 bar			•	•		
R	20 bar						•
H	210 bar	•	•				
S	210 bar					•	

Execution		Filter length 1	2	3	4
P01	MP Filtri standard	•	•	•	•
P02	Maintenance from the bottom of the housing				•
Pxx	Customized				

FILTER ELEMENT

Configuration example: HP065 | 3 | M25 | A | S | P01

Element series and size

HP065 | **HP135** | **HP320**

Element length	HP065	HP135	HP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
R	20 bar
H	210 bar
S	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

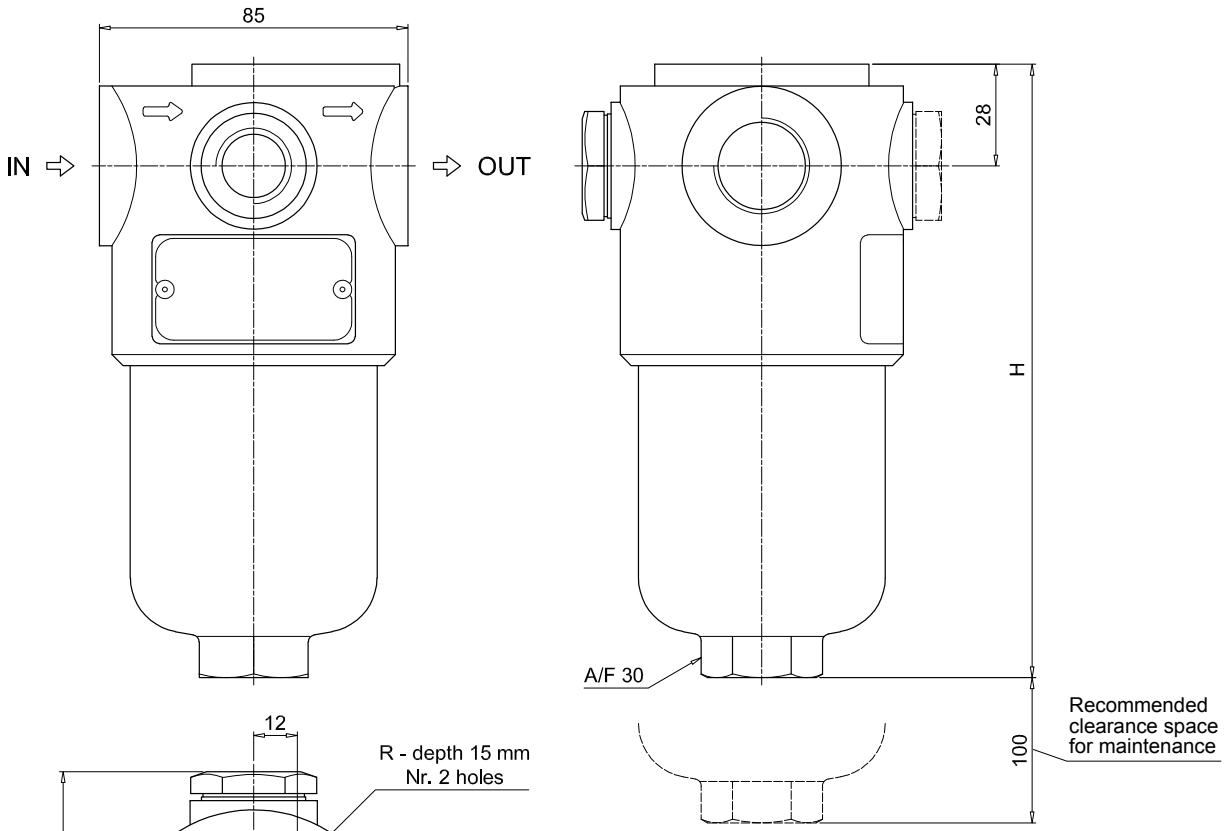
ACCESSORIES

Differential indicators

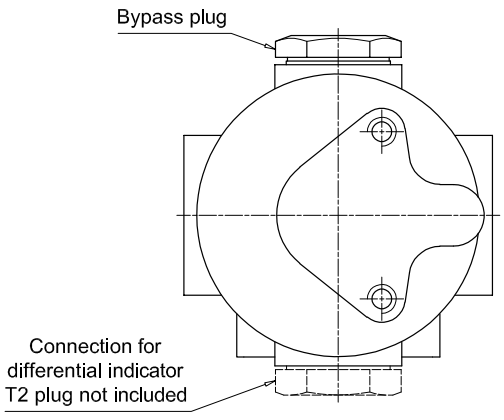
		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

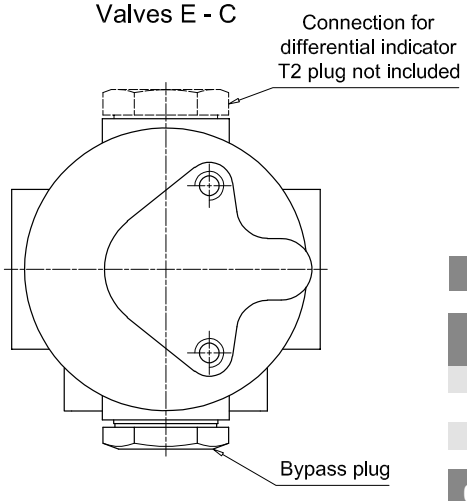
		page
T2	Plug	521



Valves S - B - T - D



Valves E - C

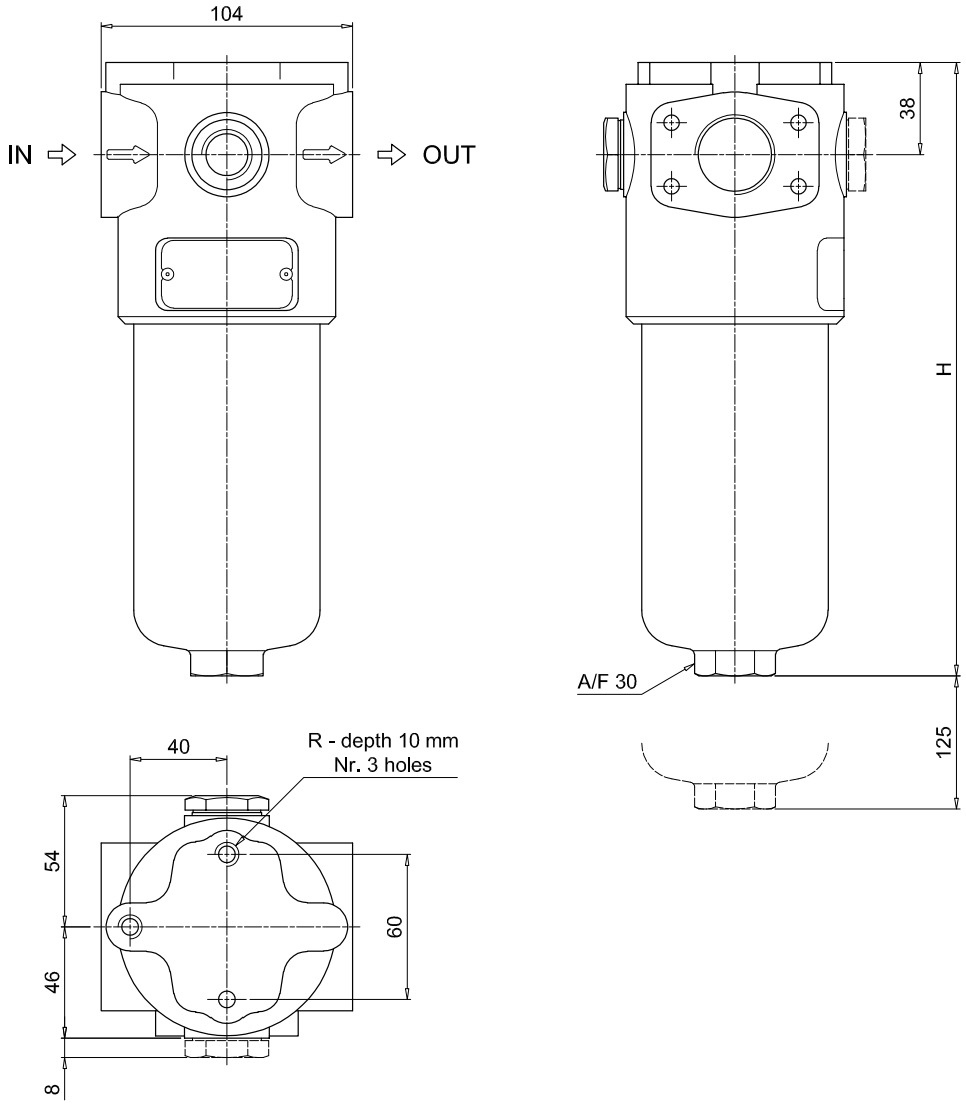


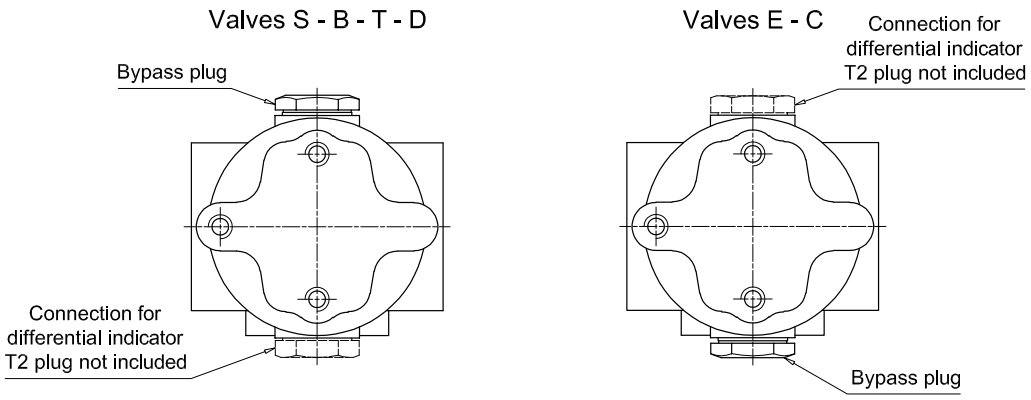
FMP065

Filter length	H [mm]
1	169
2	200
3	302

Connections	R
G1-G2	M8
G3-G4-G5-G6	5/16" UNC

Dimensions

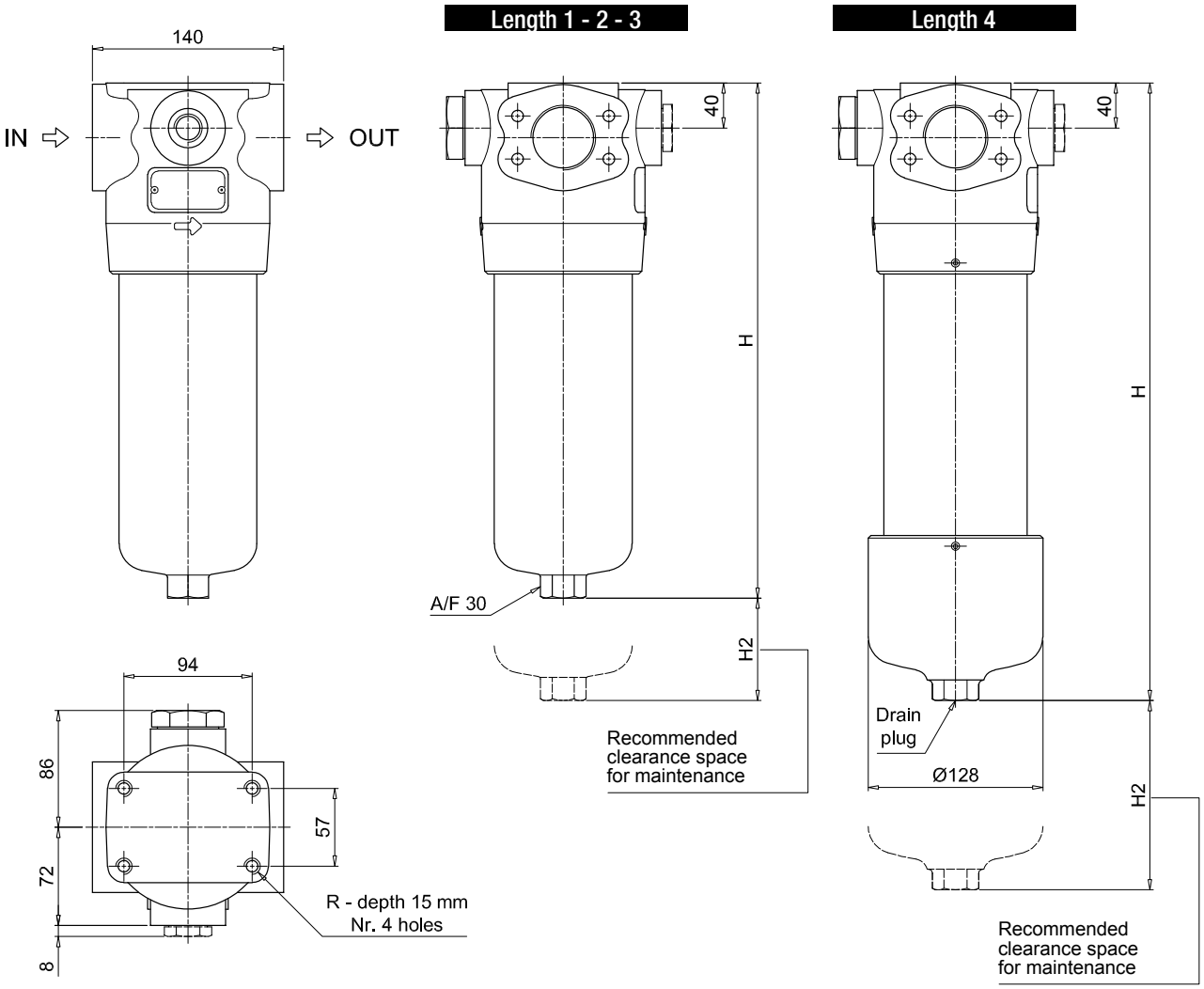


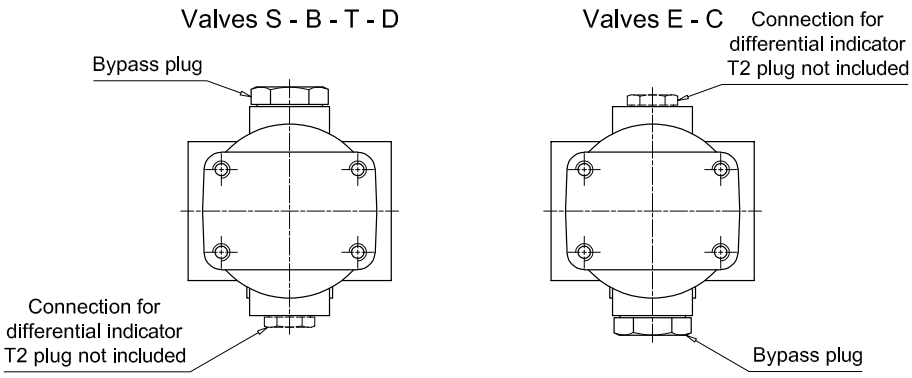


FMP135

Filter length	H [mm]
1	221
2	334
3	409

Connections	R
G1-G2	M10
G3-G4-G5-G6	3/8" UNC
F1-F2	M10
F3-F4	3/8" UNC



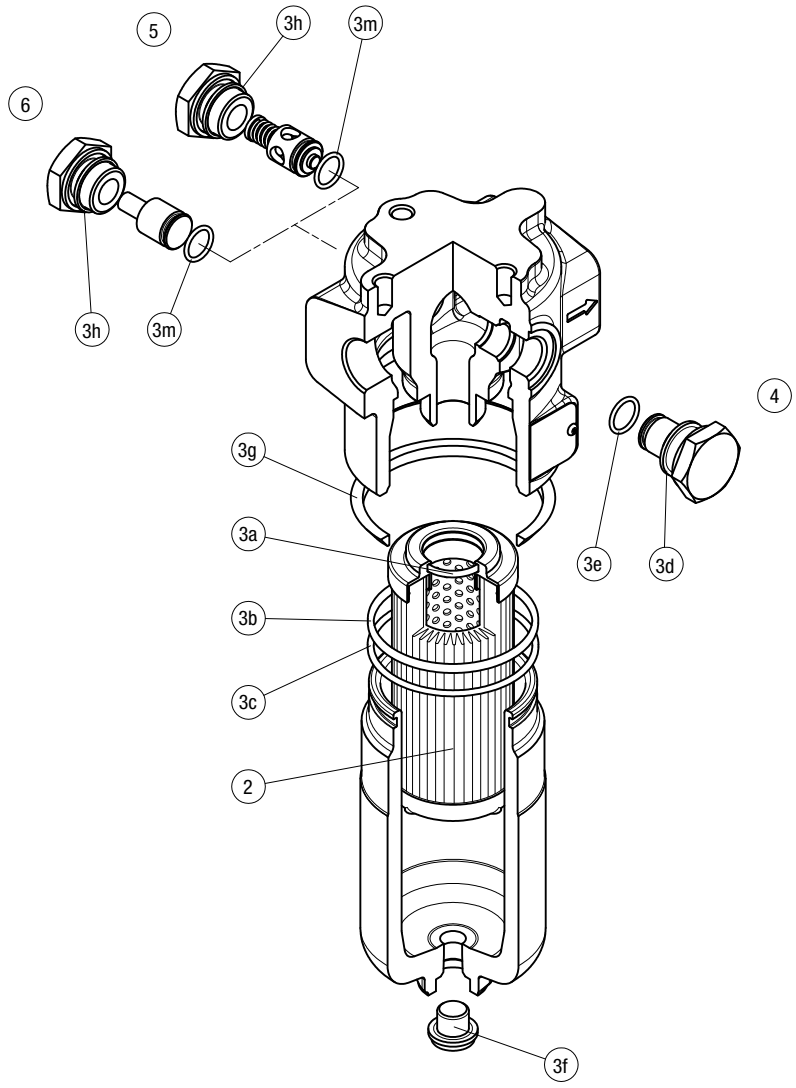


FMP320			
Filter length	H [mm]	H2 [mm] Execution P01	P02
1	263	150	-
2	386	150	-
3	518	150	-
4	671	150	550

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC

Order number for spare parts

FMP 065 - 135 - 320



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Bypass assembly NBR**	**FPM**	**Non-bypass assembly NBR**	**FPM**
FMP 065	See order table	02050267	02050278	T2H	T2V	02001312	02001385	02001314	02001386
FMP 135		02050293	02050294			02001312	02001385	02001314	02001386
FMP 320		02050274	02050285			02001396	02001397	02001398	02001399

FHP series

Maximum pressure up to 420 bar - Flow rate up to 750 l/min

Technical data

High Pressure filters **Maximum pressure up to 420 bar - Flow rate up to 750 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve:
  AISI 316L (FHP 010 - 011)
  Brass (FHP 065 - 135 - 320)
  Steel (FHP 500)
- Reverse Flow: Steel (FHP 320 - FHP 500)
- Check valve: Steel

Pressure
- Working pressure: 42 MPa (420 bar)
- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series R: 20 bar (not available for FHP 010-011 and FHP 500)
- Microfibre filter elements - series H: 210 bar
- Microfibre filter elements - series S: 210 bar (only for FHP 500)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
FHP 010 - 065 - 135 - 500:
In-line Inlet/Outlet

FHP 011 - 320:
90° Inlet/Outlet

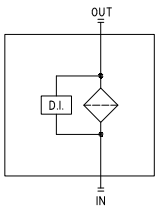
Note
FHP filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

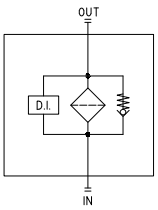
	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
FHP 010		2.05	2.18	2.64	3.13	-		0.10	0.12	0.15	0.20	-
FHP 065		4.26	4.62	5.83	-	-		0.25	0.30	0.50	-	-
FHP 135		7.11	8.71	9.76	-	-		0.43	0.76	0.97	-	-
FHP 320		13.95	16.08	18.37	20.85	-		1.00	1.72	2.49	3.32	-
FHP 500		27.00	31.17	34.69	46.70	52.5		1.71	2.43	3.04	5.18	6.51

Hydraulic symbols

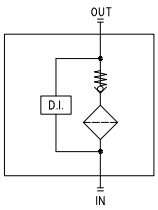
Style **S**



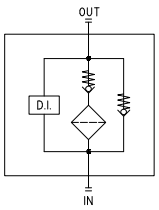
Style **B**



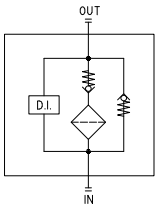
Style **T**



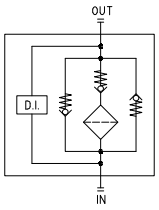
Style **D**



Style **V**



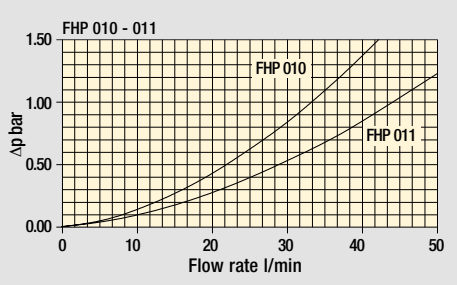
Style **Z**

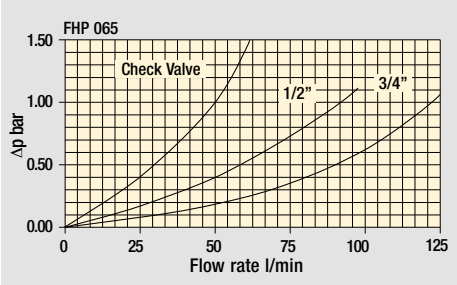


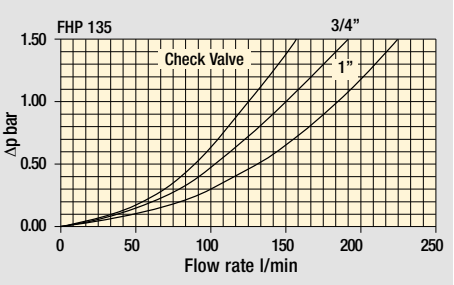
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

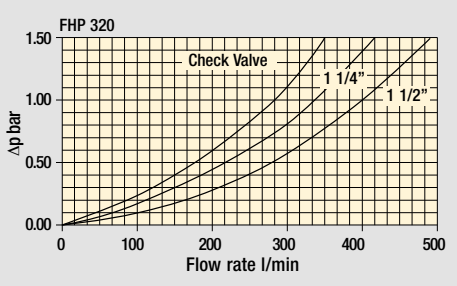
Pressure drop

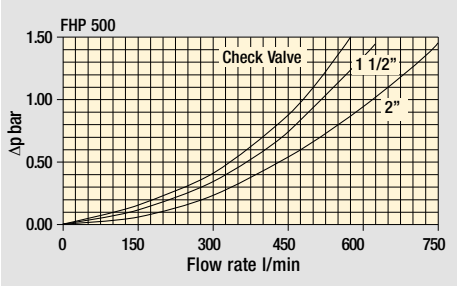
Filter housings Δp pressure drop



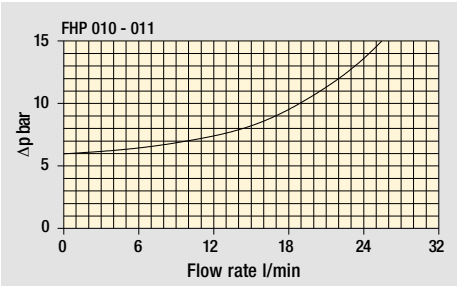


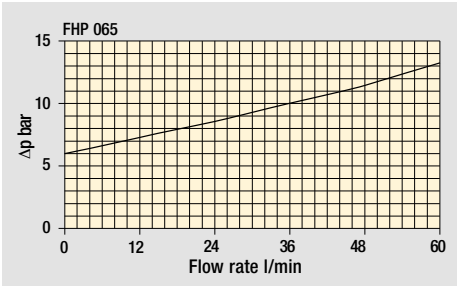


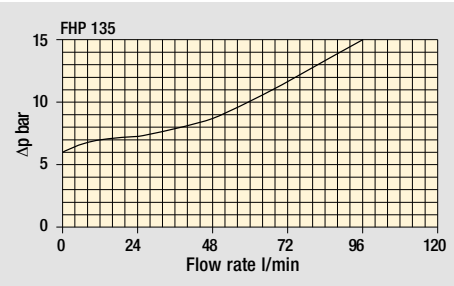


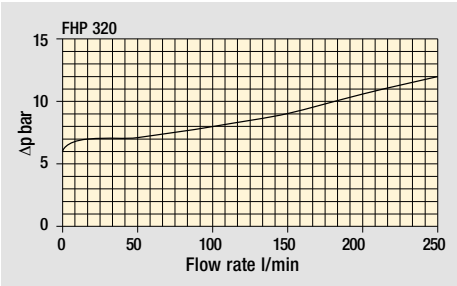


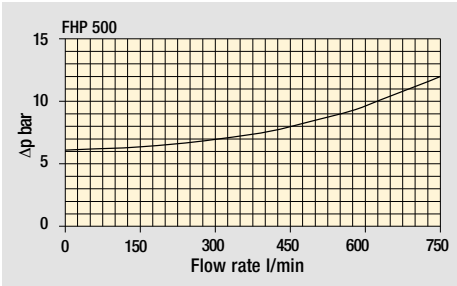
Bypass valve pressure drop



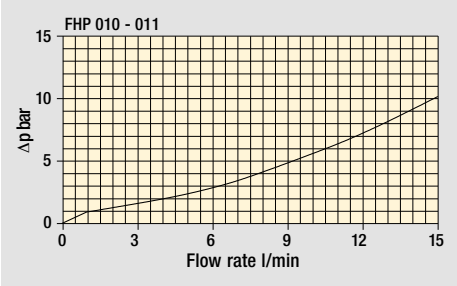




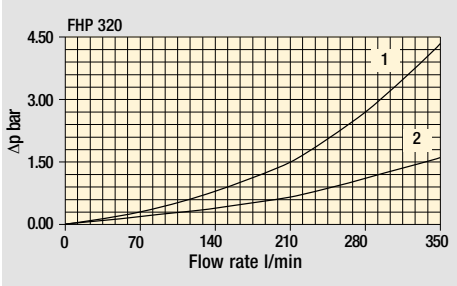




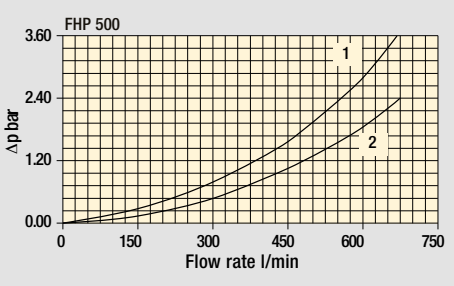
Valves



Filter housing with check valve



Pressure drop in reverse flow valves



Pressure drop in reverse flow valves

1 - Reverse flow
2 - In filter direction

FHP FHP010 - FHP011

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHP010 | 2 | B | A | B | 2 | A03 | N | P01

Series and size
FHP010 | FHP011

Length
1 | 2 | 3 | 4 |

Valves
S Without bypass
B With bypass 6 bar
V With reverse flow, without bypass
Z With reverse flow, with bypass 6 bar

Seals
A NBR
V FPM

Connections
A G1/4"
B 1/4" NPT
C SAE 5 - 1/2" - 20 UNF
D G3/8"
E 3/8" NPT
F SAE 6 - 9/16" - 18 UNF

Connection for differential indicator
1 Without
2 With connection

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp		Valves S	B	V	Z
N	20 bar		•		•
H	210 bar	•		•	

Execution	
P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP011 | 2 | A03 | A | N | P01

Element series and size
HP011

Element length
1 | 2 | 3 | 4 |

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals
A NBR
V FPM

Element Δp	
N	20 bar
H	210 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

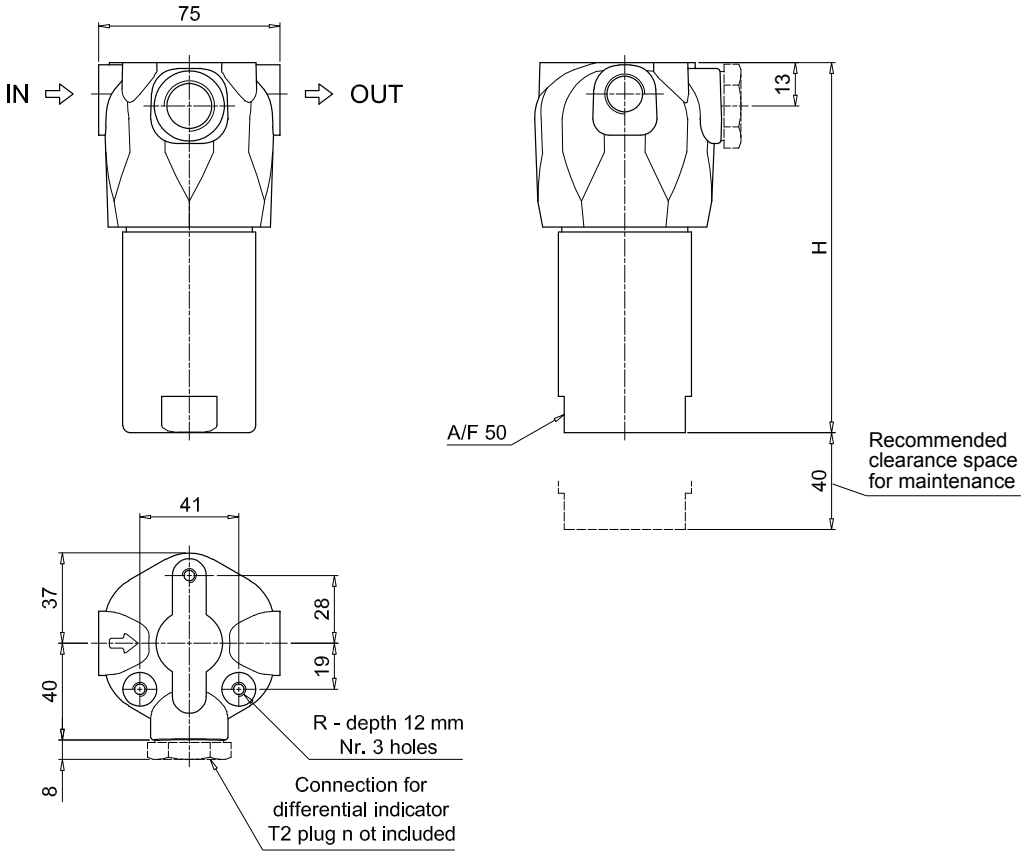
ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519

		page
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

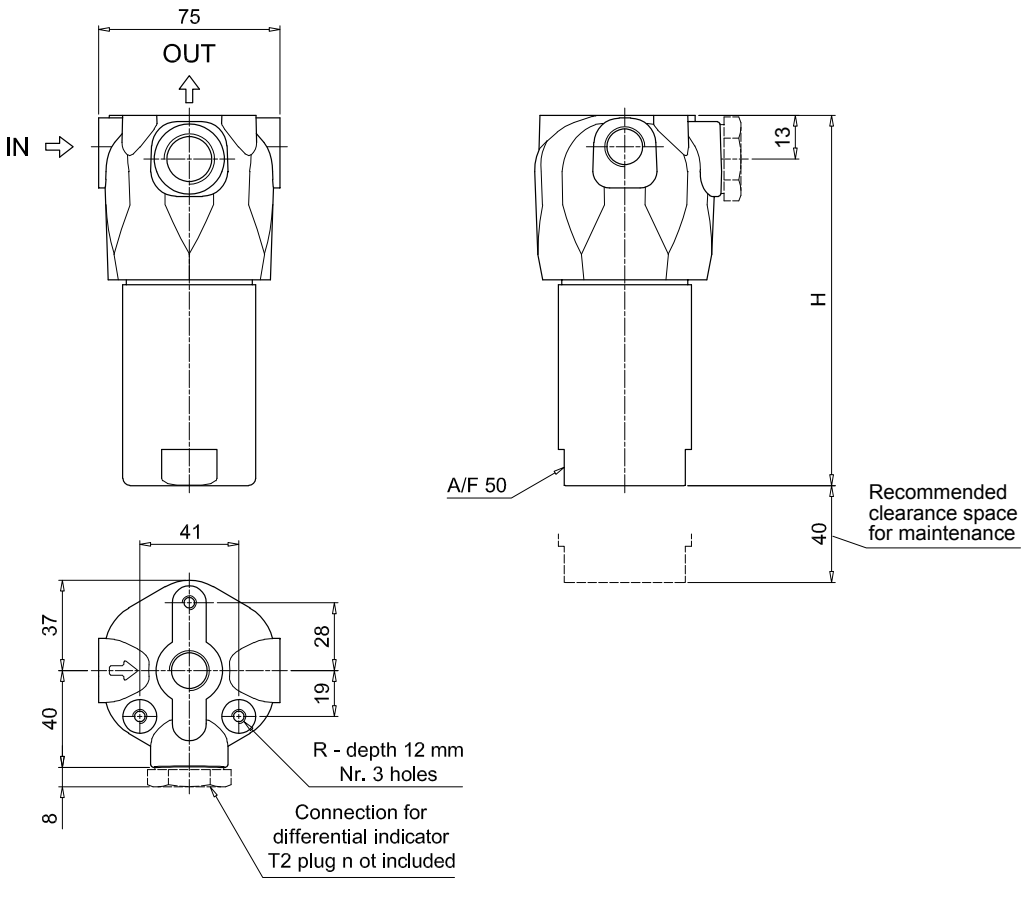
Additional features		page
T2	Plug	521

Dimensions



FHP010	
Filter length	**H [mm]**
1	92
2	103
3	153
4	203

Connections	**R**
A	M6
B - C	1/4" UNC
D	M6
E - F	1/4" UNC



FHP011	
Filter length	**H [mm]**
1	92
2	103
3	153
4	203

Connections	**R**
A	M6
B - C	1/4" UNC
D	M6
E - F	1/4" UNC

Designation & Ordering code

COMPLETE FILTER

Series and size
FHP065 | **FHP135** | **FHP320**

Configuration example: FHP320 | 4 | V | A | G1 | A06 | S | P01

Length	FHP065	FHP135	FHP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Valves	FHP065	FHP135	FHP320
S Without bypass	•	•	•
B With bypass 6 bar	•	•	•
T With check valve, without bypass	•	•	•
D With check valve, with bypass 6 bar			•
V With reverse flow, without bypass			•
Z With reverse flow, with bypass 6 bar			•

Seals
A NBR
V FPM

Connections	FHP065	FHP135	FHP320
G1	G1/2"	G3/4"	G1 1/4"
G2	G3/4"	G1"	G1 1/2"
G3	1/2" NPT	3/4" NPT	1 1/4" NPT
G4	3/4" NPT	1" NPT	1 1/2" NPT
G5	SAE 8 - 3/4" - 16 UNF	SAE 12 - 1 1/16" - 12 UN	SAE 20 - 1 5/8" - 12 UN
G6	SAE 12 - 1 1/16" - 12 UN	SAE 16 - 1 5/16" - 12 UN	SAE 24 - 1 7/8" - 12 UN
F1	-	3/4" SAE 3000 psi/M	1 1/4" SAE 3000 psi/M
F2	-	1" SAE 3000 psi/M	1 1/2" SAE 3000 psi/M
F3	-	3/4" SAE 3000 psi/UNC	1 1/4" SAE 3000 psi/UNC
F4	-	1" SAE 3000 psi/UNC	1 1/2" SAE 3000 psi/UNC
F5	-	3/4" SAE 6000 psi/M	1 1/4" SAE 6000 psi/M
F6	-	3/4" SAE 6000 psi/UNC	1 1/4" SAE 6000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
M25	Wire mesh	25 µm

Element Δp	Valves S	B	T	D	V	Z
N 20 bar		•				
R 20 bar				•		•
H 210 bar	•					
S 210 bar			•		•	

Execution	Filter length 1	2	3	4
P01 MP Filtri standard	•	•	•	•
P02 Maintenance from the bottom of the housing				•
Pxx Customized				

FILTER ELEMENT

Element series and size
HP065 | **HP135** | **HP320**

Configuration example: HP320 | 4 | A06 | A | S | P01

Element length	HP065	HP135	HP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
R	20 bar
H	210 bar
S	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

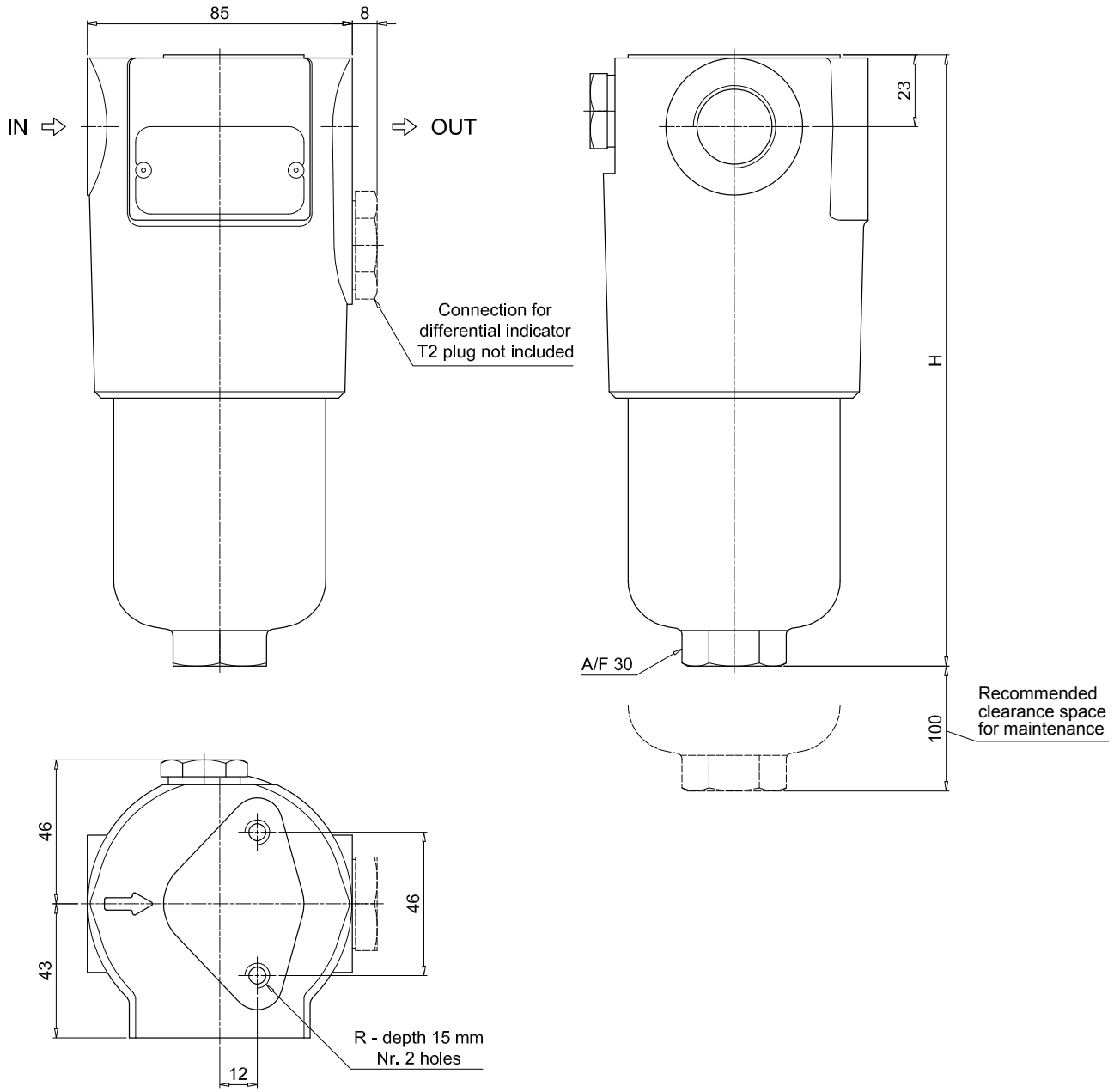
ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

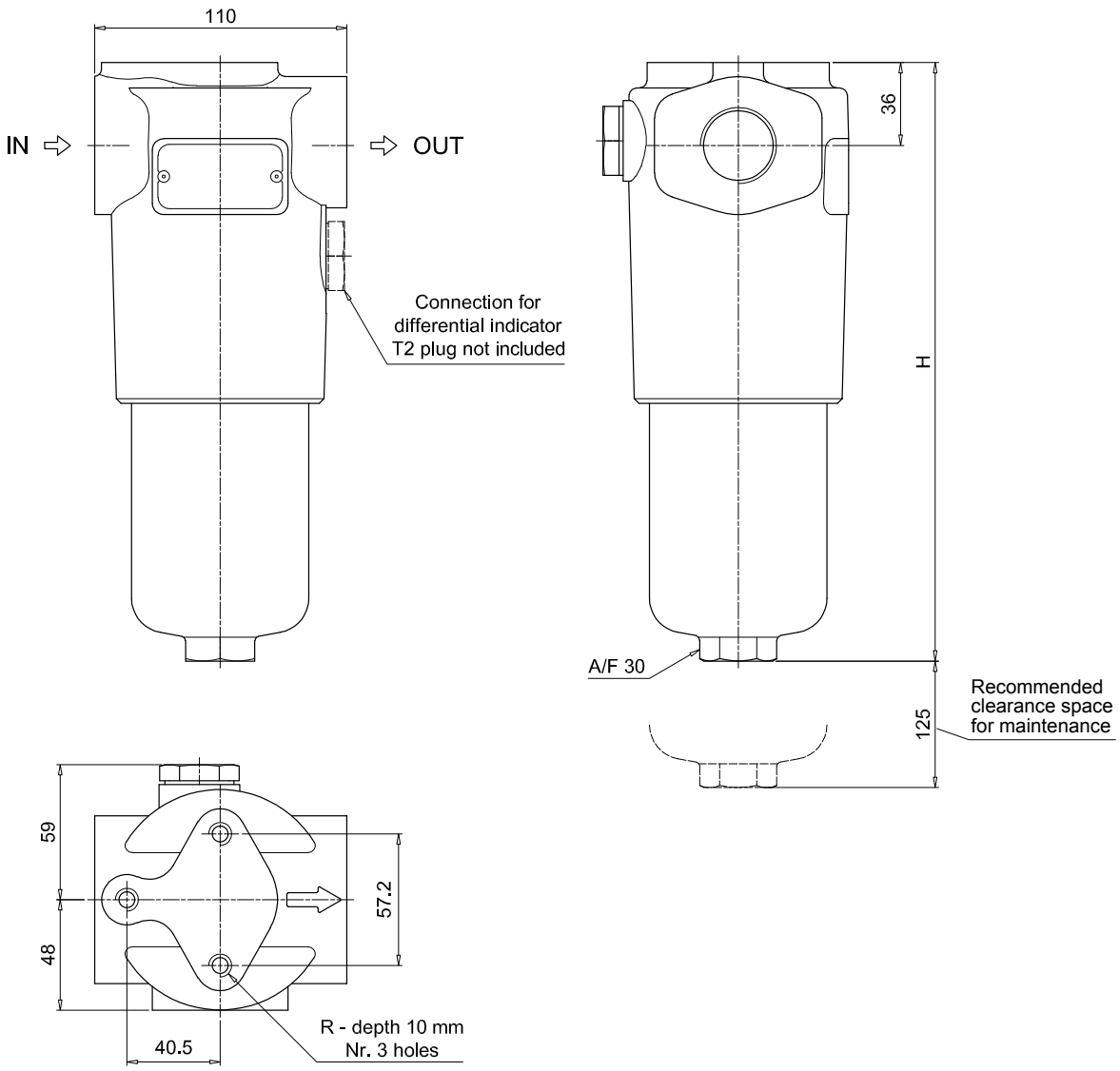
		page
T2	Plug	521



FHP065	
Filter length	**H [mm]**
1	196
2	227
3	329

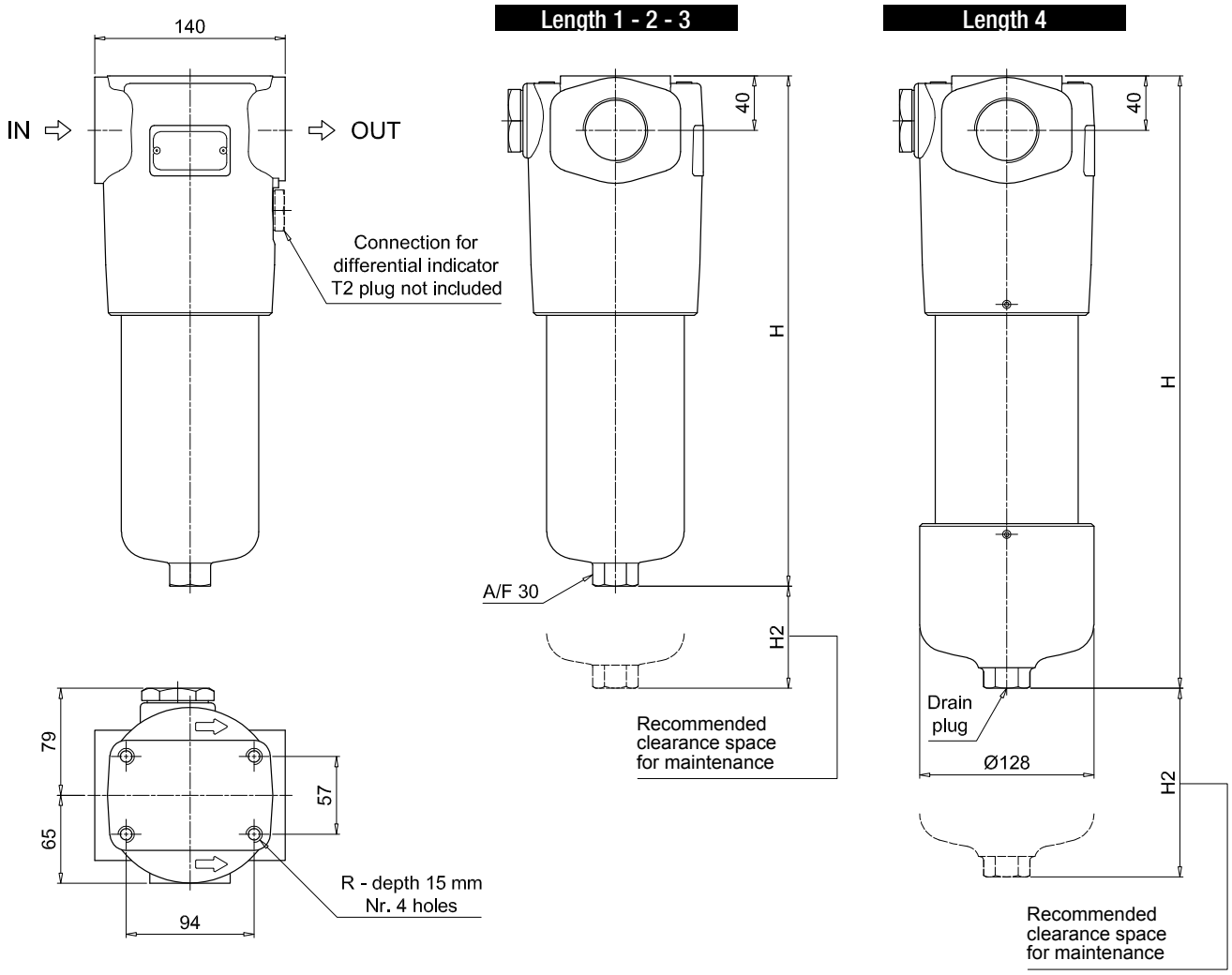
Connections	**R**
G1-G2	M8
G3-G4-G5-G6	5/16" UNC

Dimensions



FHP135	
Filter length	**H [mm]**
1	260
2	373
3	448

Connections	R
G1-G2	M10
G3-G4-G5-G6	3/8" UNC
F1-F2	M10
F3-F4	3/8" UNC
F5	M10
F6	3/8" UNC



FHP320			
Filter length	H [mm]	H2 [mm] Execution P01	P02
1	299	150	-
2	422	150	-
3	554	150	-
4	707	150	550

Connections	R
G1-G2	M12
G3-G4-G5-G6	1/2" UNC
F1-F2	M12
F3-F4	1/2" UNC
F5	M12
F6	1/2" UNC

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHP500 | 4 | V | A | G1 | A06 | S | P01

Series and size
FHP500

Length
1 | **2** | **3** | **4** | **5**

Valves

S	Without bypass
B	With bypass 6 bar
T	With check valve, without bypass
D	With check valve, with bypass 6 bar
V	With reverse flow, without bypass
Z	With reverse flow, with bypass 6 bar

Seals

A	NBR
V	FPM

Connections

G1	G1 1/2”	**F4**	2” SAE 3000 psi/UNC
G2	1 1/2” NPT	**F5**	1 1/2” SAE 6000 psi/M
G3	SAE 24 - 1 7/8” - 12 UN	**F6**	1 1/2” SAE 6000 psi/UNC
F1	1 1/2” SAE 3000 psi/M	**F7**	2” SAE 6000 psi/M
F2	1 1/2” SAE 3000 psi/UNC	**F8**	2” SAE 6000 psi/UNC
F3	2” SAE 3000 psi/M		

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•		•		•
S	210 bar	•		•		•	

Execution		Filter length 1	2	3	4	5
P01	MP Filtri standard	•	•	•	•	•
P02	Maintenance from the bottom of the housing				•	•
P03	Drain plug on length 1 - 2 - 3	•	•	•		
Pxx	Customized					

FILTER ELEMENT

Configuration example: HP500 | 4 | A06 | A | S | P01

Element series and size
HP500

Element length
1 | **2** | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
S	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

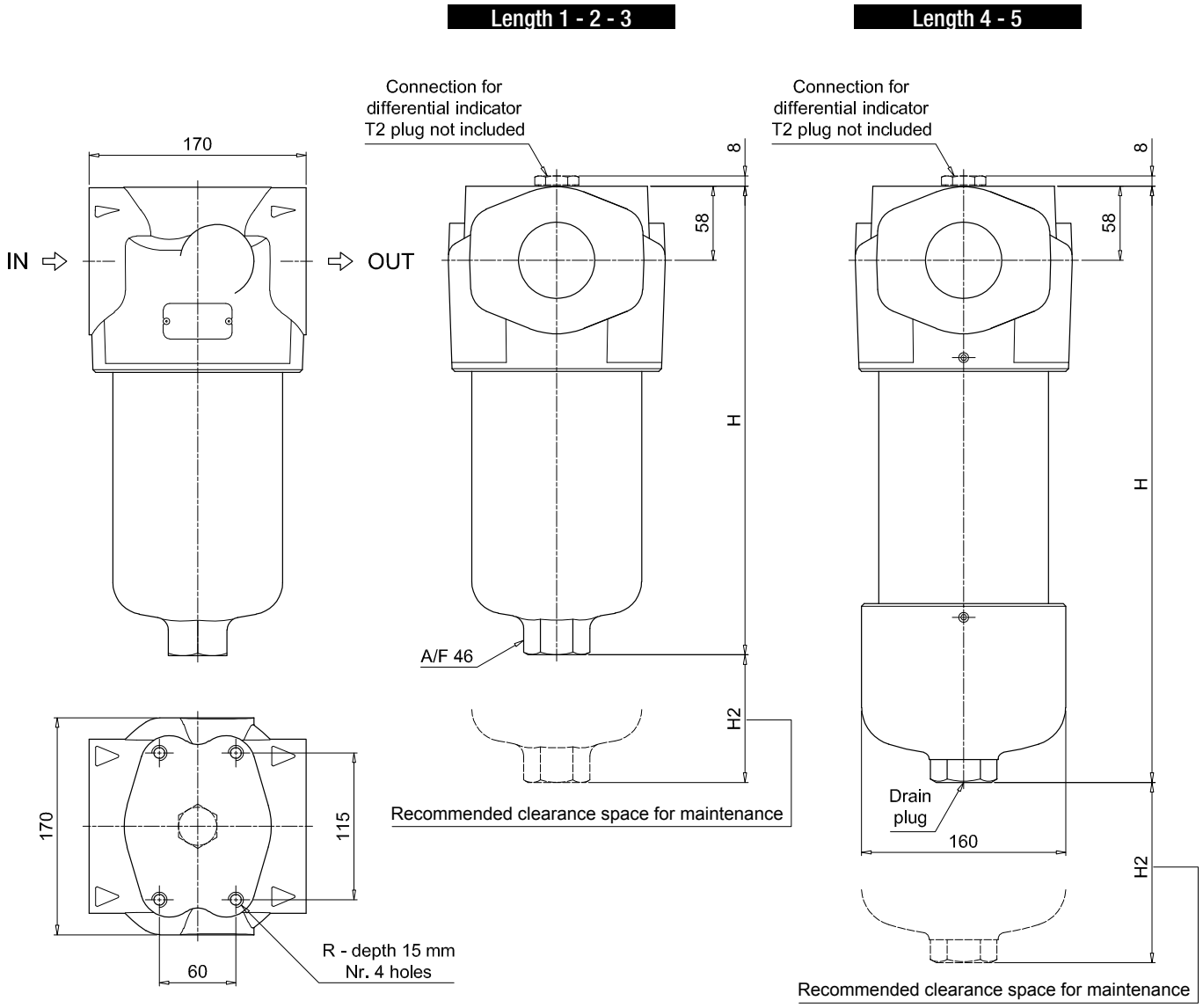
ACCESSORIES

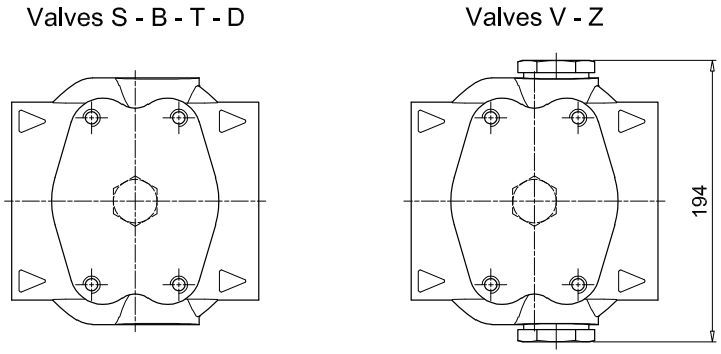
Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

		page
T2	Plug	521





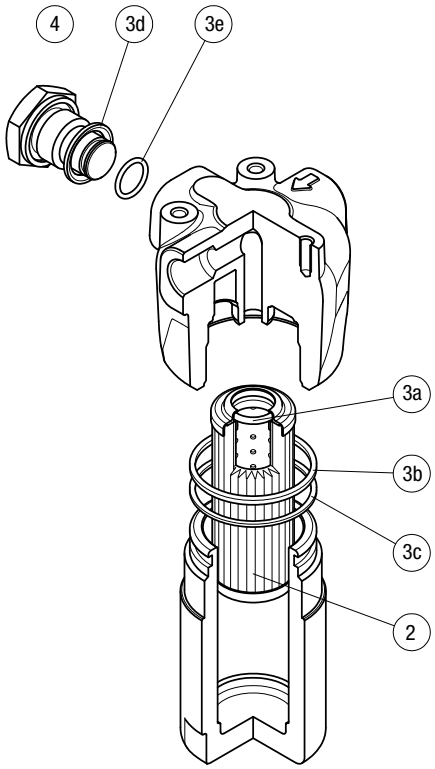
FHP500

Filter length	H [mm]	H2 [mm] Execution P01	P02
1	330	150	-
2	420	150	-
3	496	150	-
4	654	150	480
5	820	150	650

Connections	R
G1	M12
G2-G3	1/2" UNC
F1	M12
F2	1/2" UNC
F3	M12
F4	1/2" UNC
F5	M12
F6	1/2" UNC
F7	M12
F8	1/2" UNC

Order number for spare parts

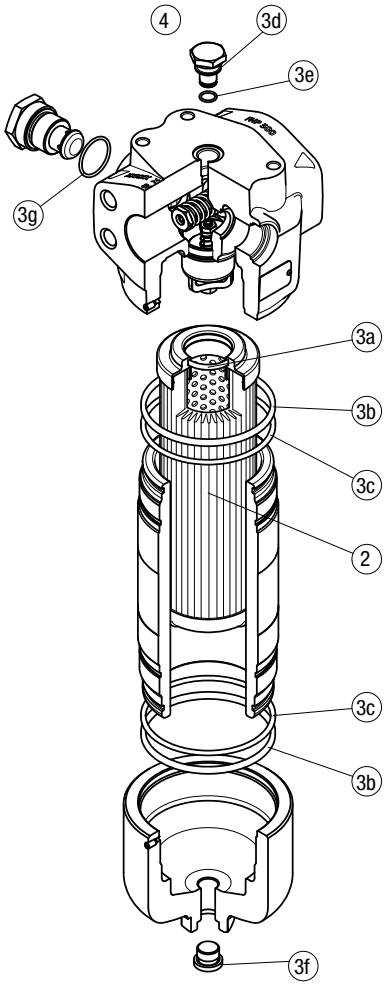
FHP 010 - 011



Q.ty:
nr. 0 pcs. for version 1 (without indicator port)
nr. 1 pc. for version 2 (with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)		4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FHP 010 - 011	See order table	02050501	02050492	T2H	T2V

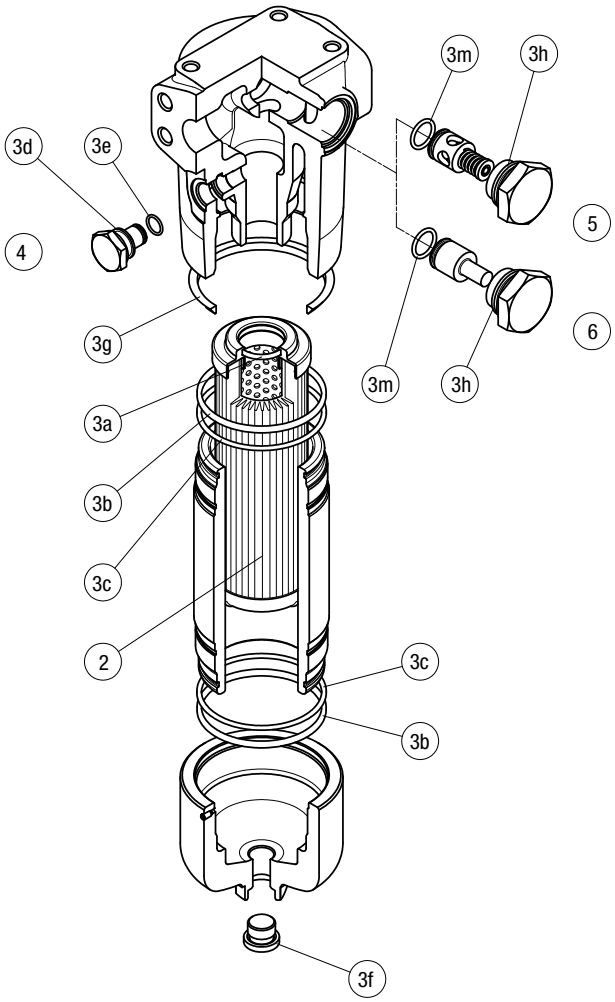
FHP 500



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FHP 500	See order table	02050330	02050331	T2H	T2V

Order number for spare parts

FHP 065 - 135 - 320



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Bypass assembly NBR**	**FPM**	**Non-bypass assembly NBR**	**FPM**
FHP 065	See order table	02050265	02050276	T2H	T2V	02001116	02001136	02001142	02001139
FHP 135		02050269	02050280			02001117	02001137	02001143	02001392
FHP 320		02050272	02050283			02001118	02001138	02001144	02001395

FMM 050 series | FHA 051 series

Maximum pressure up to 420 bar - Flow rate up to 152 l/min

Maximum pressure up to 560 bar - Flow rate up to 140 l/min

Technical data

High Pressure filters

FMM 050
Maximum pressure up to 420 bar
Flow rate up to 152 l/min

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel

Pressure
- Working pressure: 42 MPa (420 bar)
- Test pressure: 63 MPa (630 bar)
- Burst pressure: 126 MPa (1260 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 42 MPa (420 bar)

FHA 051
Maximum pressure up to 560 bar
Flow rate up to 140 l/min

Filter housing materials
- Head: Steel (chemical heat treatment)
- Housing: Steel (chemical heat treatment)
- Bypass valve: Steel

Pressure
- Working pressure: 56 MPa (560 bar)
- Test pressure: 84 MPa (840 bar)
- Burst pressure: 168 MPa (1680 bar)
- Pulse pressure fatigue test: 1 00 000 cycles with pressure from 0 to 56 MPa (560 bar)

FMM 050 & FHA 051

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series S: 210 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
In-line Inlet/Outlet

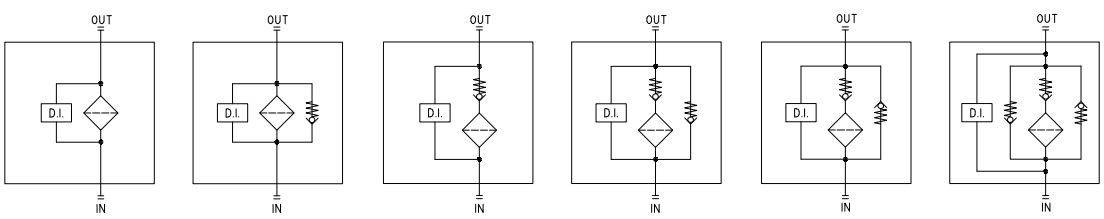
Note
Both FMM and FHA filters
are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
FMM 050		3.11	3.48	3.90	4.36	5.54		0.34	0.48	0.63	0.81	1.23
FHA 051		3.28	3.65	4.06	4.54	5.74		0.33	0.47	0.62	0.79	1.23

Hydraulic symbols

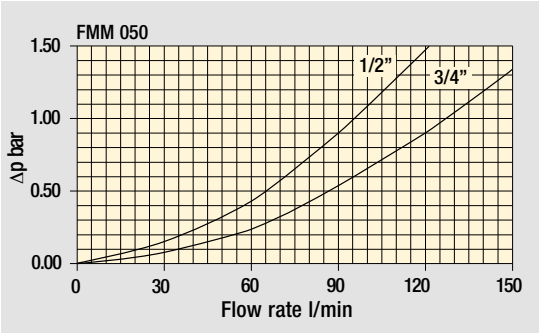
Style **S** Style **B** Style **T** Style **D** Style **V** Style **Z**

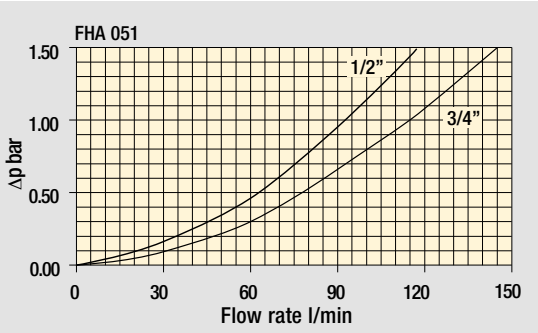


The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

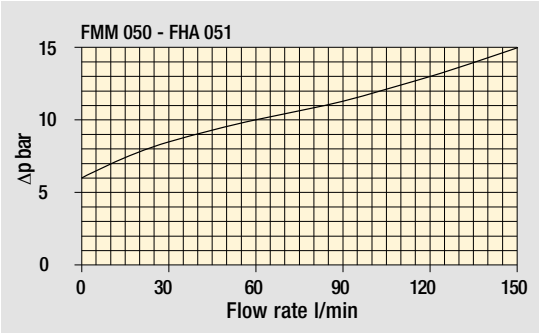
Pressure drop

Filter housings Δp pressure drop



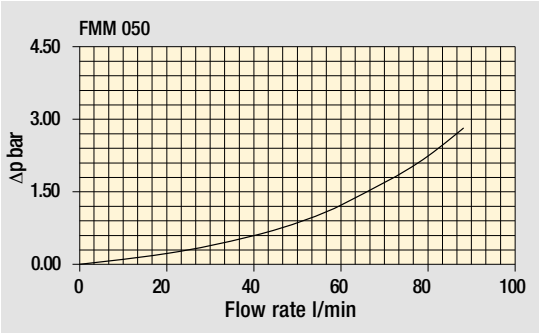


Bypass valve pressure drop



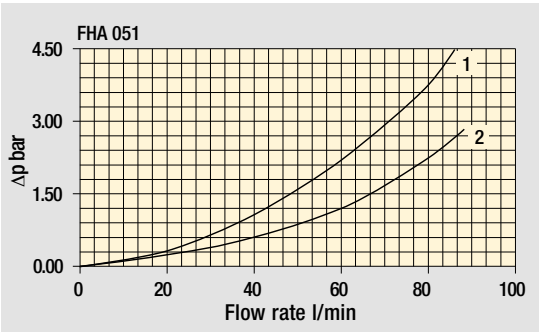
Valves

Filter housing with check valve



Pressure drop in reverse flow valves

1 - Reverse flow
2 - In filter direction



FMM - FHA

Designation & Ordering code

COMPLETE FILTER

Configuration example: FMM050 | 3 | B | A | G | A10 | N | P01

Series and size

FMM050 | **FHA051**

Length

1 | **2** | **3** | **4** | **5** |

Valves

		FMM050	FHA051
S	Without bypass	•	•
B	With bypass 6 bar	•	•
T	With check valve, without bypass	•	•
D	With check valve, with bypass 6 bar	•	•
V	With reverse flow, without bypass		•
Z	With reverse flow, with bypass 6 bar		•

Seals

A	NBR
V	FPM

Connections

A	M18x1.5 - ISO 6149	**E**	1/2" NPT
B	M22x1.5 - ISO 6149	**F**	3 /4" NPT
C	G1/2"	**G**	SAE 8 - 3/4" - 16 UNF
D	G3 /4"	**H**	SAE 12 - 1 1/16" - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•				
R	20 bar				•		•
S	210 bar	•		•		•	

Execution

P01	Upper connection for clogging indicator
P02	Without connection for clogging indicator
P03	Frontal connection for clogging indicator
Pxx	Customized

FILTER ELEMENT

Configuration example: HP050 | 3 | A10 | A | N | P01

Element series and size

HP050

Element length

1 | **2** | **3** | **4** | **5** |

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
R	20 bar
S	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

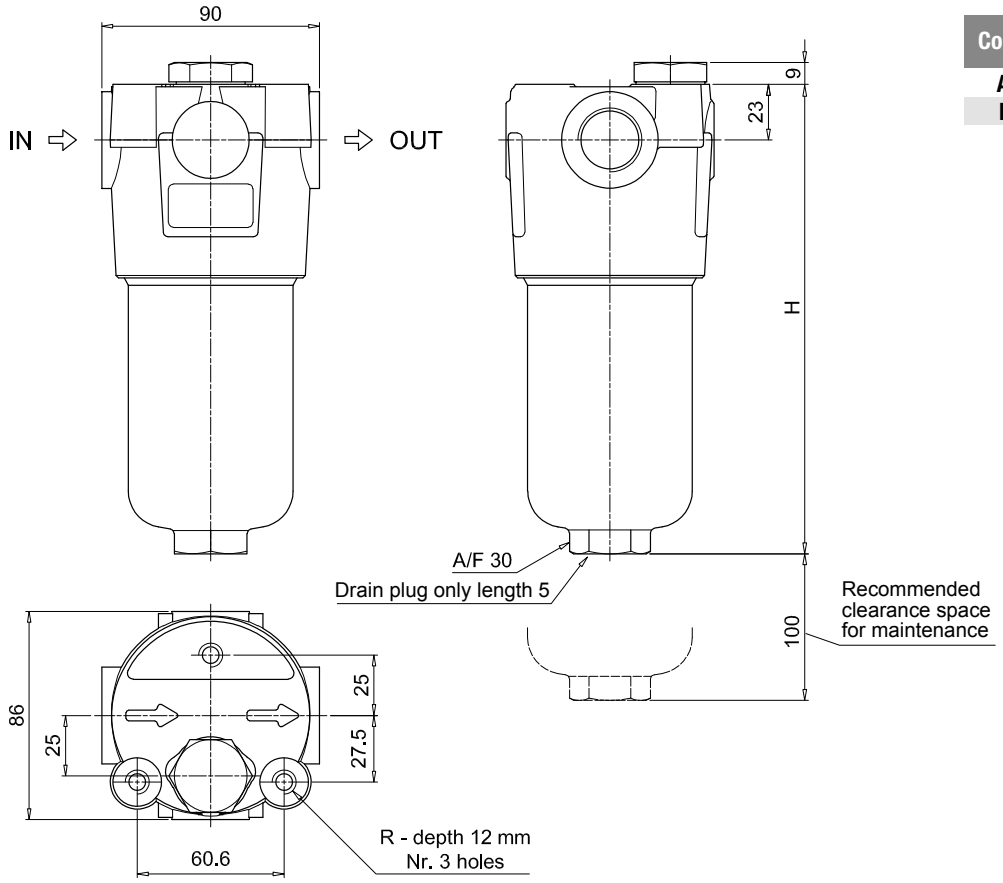
		page
T2	Plug	521

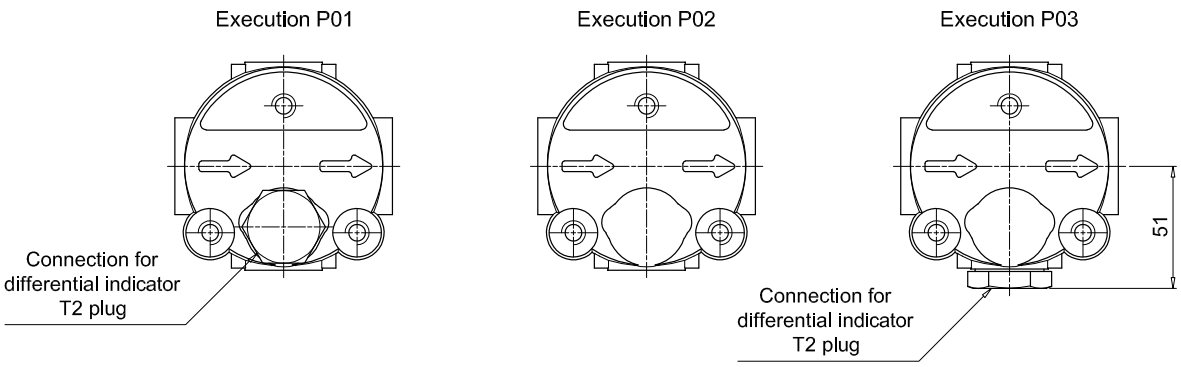
Dimensions

FMM050

Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407

Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC





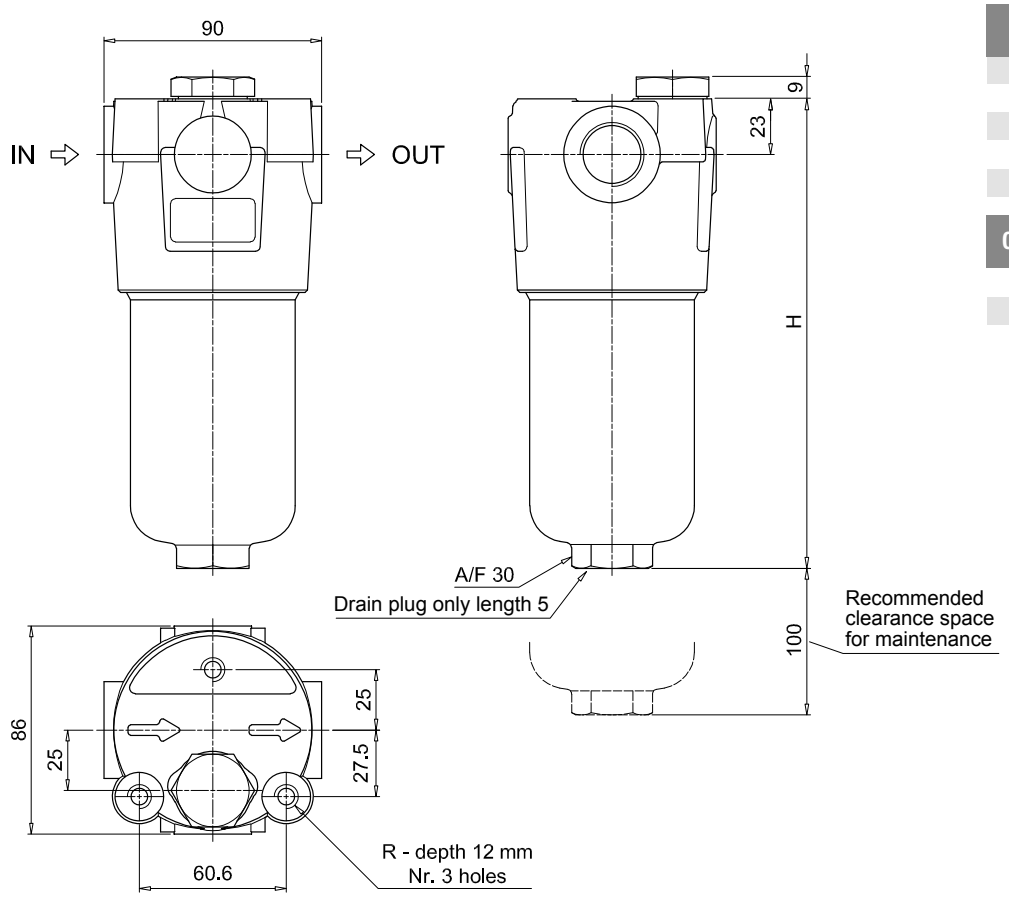
FMM - FHA

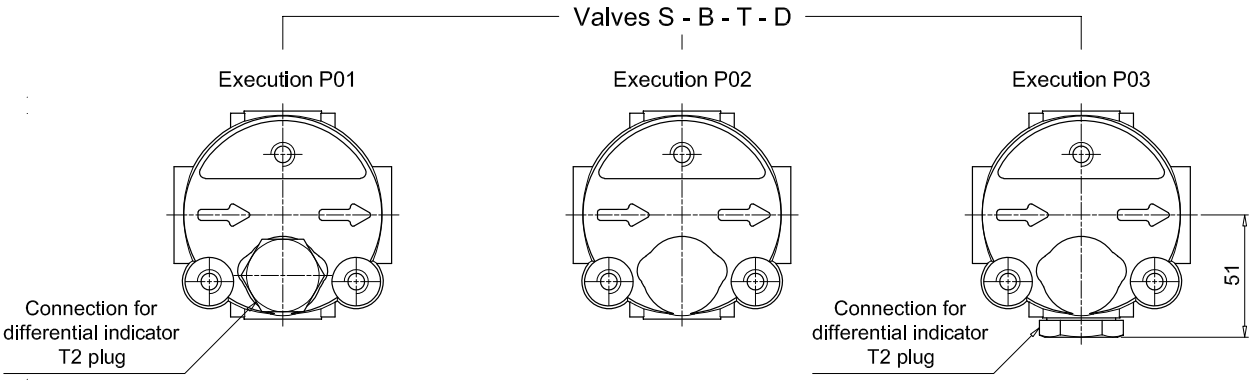
Dimensions

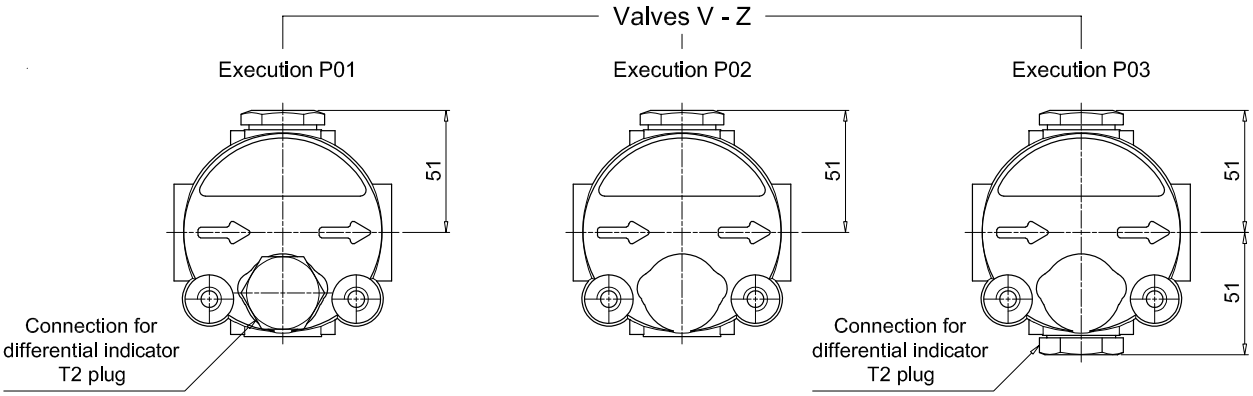
FHA051

Filter length	H [mm]
1	158
2	195
3	237
4	285
5	407

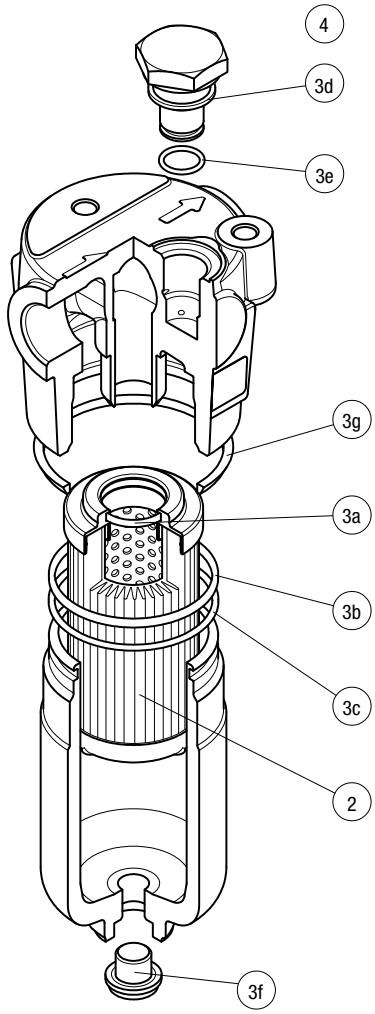
Connections	R
A-B-C-D	M10
E-F-G-H	3/8" UNC







FMM 050 - FHA 051



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FMM 050	See order table	02050314	02050315	T2H	T2V
FHA 051		02050288	02050305		

FHM series

Maximum pressure up to 320 bar - Flow rate up to 450 l/min

Technical data

High Pressure filters **Maximum pressure up to 320 bar - Flow rate up to 450 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

Pressure
- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series H: 210 bar (not available for FHP 050 and FHP 500)
- Microfibre filter elements - series S: 210 bar (only for FHP050 andFHP 500)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
Manifold mounting

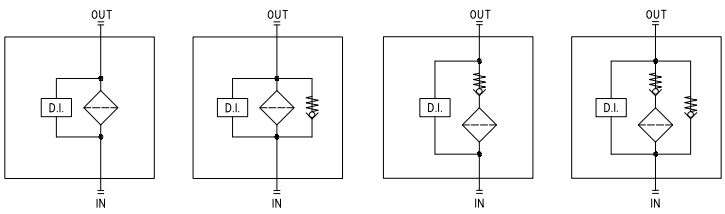
Note
FHM filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
FHM 006		2.17	-	-	-	-		0.12	-	-	-	-
FHM 007		-	4.74	5.95	-	-		-	0.30	0.50	-	-
FHM 010		-	4.74	5.95	-	-		-	0.30	0.50	-	-
FHM 050		5.31	5.68	6.09	6.56	7.74		0.29	0.38	0.48	0.60	0.89
FHM 065		5.47	5.83	7.04	-	-		0.27	0.34	0.56	-	-
FHM 135		8.78	10.38	11.43	-	-		0.49	0.82	1.03	-	-
FHM 320		19.80	21.93	24.22	26.70	-		1.04	1.76	2.53	3.36	-
FHM 500		35.00	39.17	42.69	54.70	60.50		1.63	2.35	2.96	5.11	6.44

Hydraulic symbols

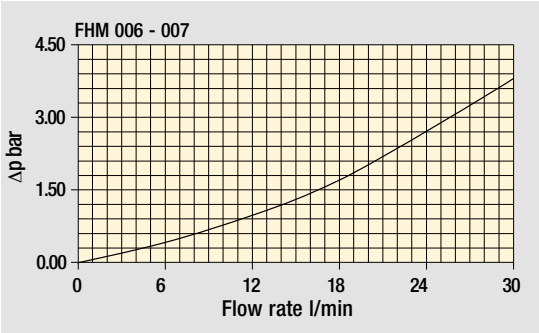
Style **S** Style **B** Style **T** Style **D**

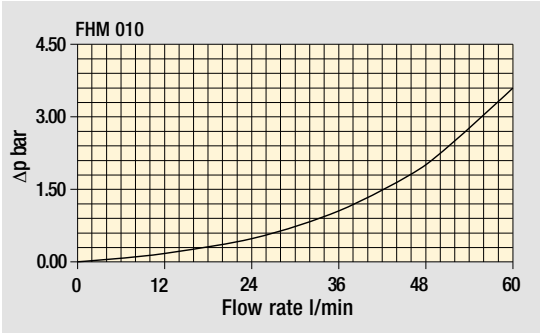


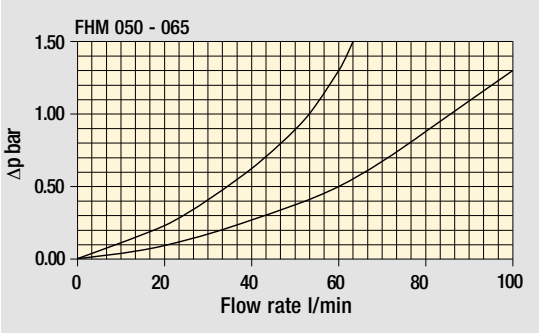
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

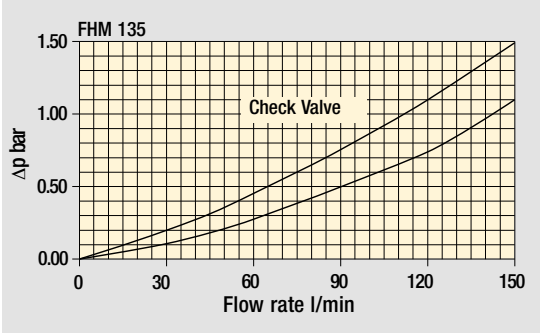
Pressure drop

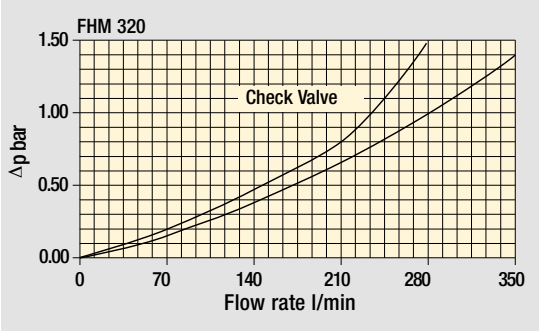
Filter housings Δp pressure drop

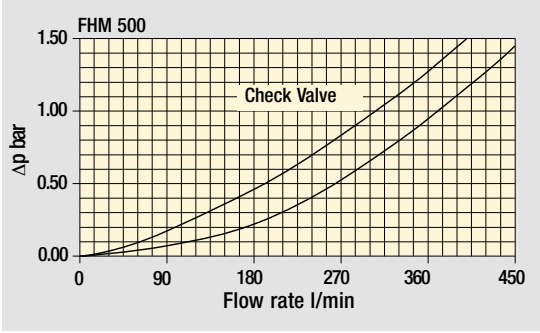




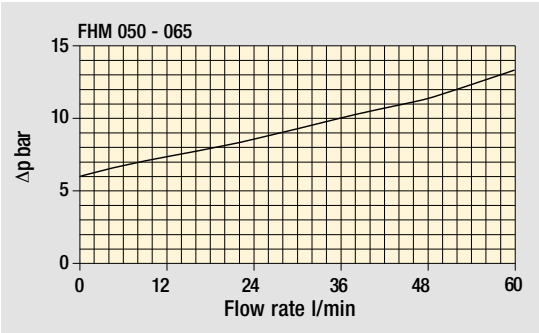


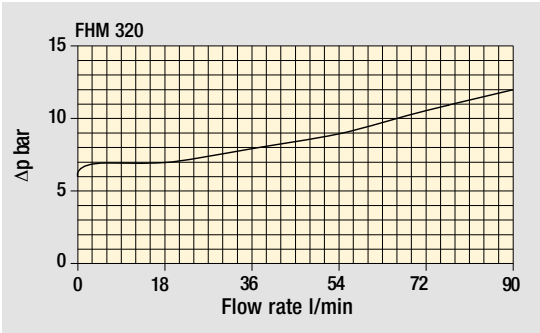


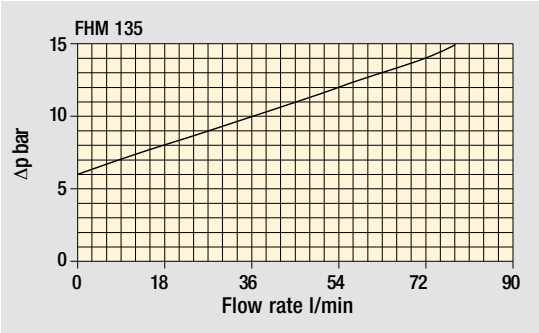




Bypass valve pressure drop







FHM FHM006 - FHM007 - FHM010

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHM010 | 2 | S | V | G1 | A03 | H | P01

Series and size
FHM006 | **FHM007** | **FHM010**

Length	FHM006	FHM007	FHM010
1	•		
2		•	•
3		•	•

Valves
S Without bypass

Seals
A NBR
V FPM

Connections
G1 Manifold side “A”
G2 Manifold side “B”

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp
H 210 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP065 | 2 | A03 | A | H | P01

Element series and size

	FHM006	FHM007	FHM010
HP011	•		
HP065		•	•

Element length	FHM006	FHM007	FHM010
2		•	•
3	•	•	•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals
A NBR
V FPM

Element Δp
H 210 bar

Execution
P01 MP Filtri standard
Pxx Customized

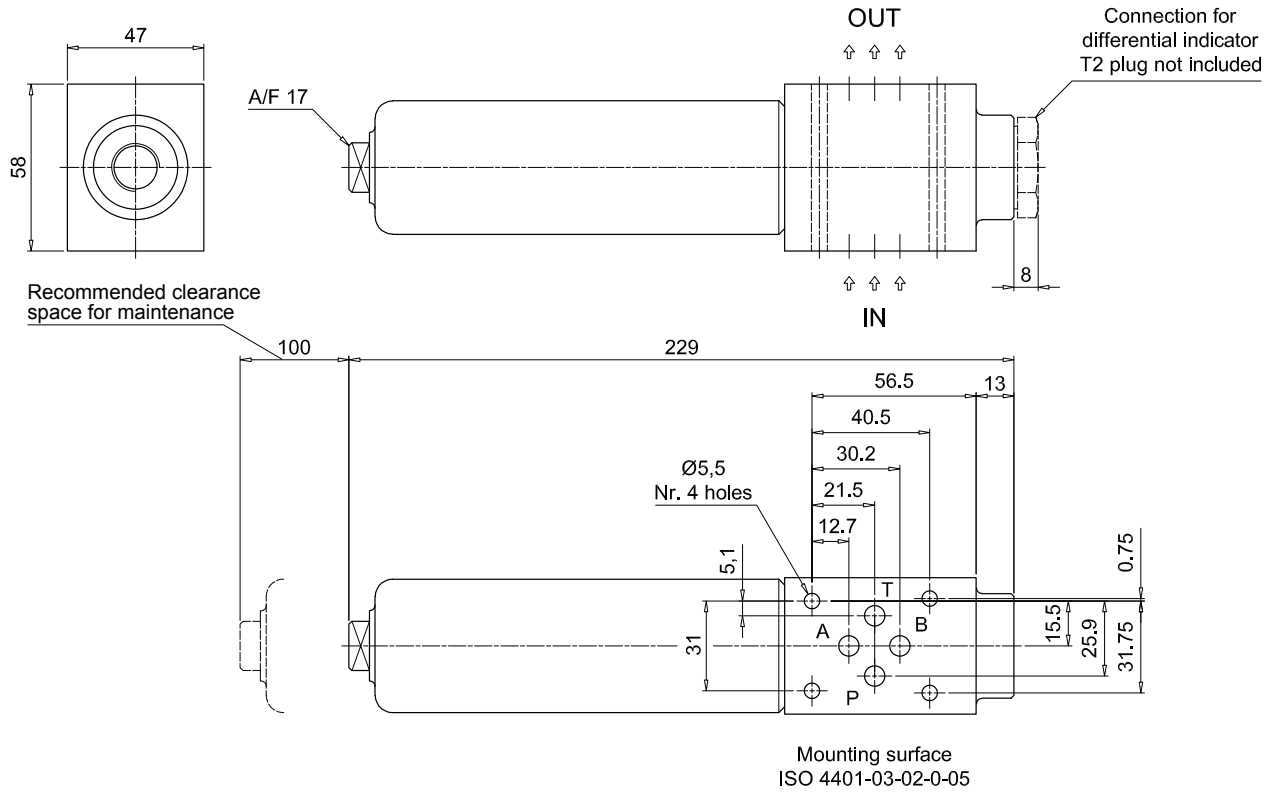
ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519

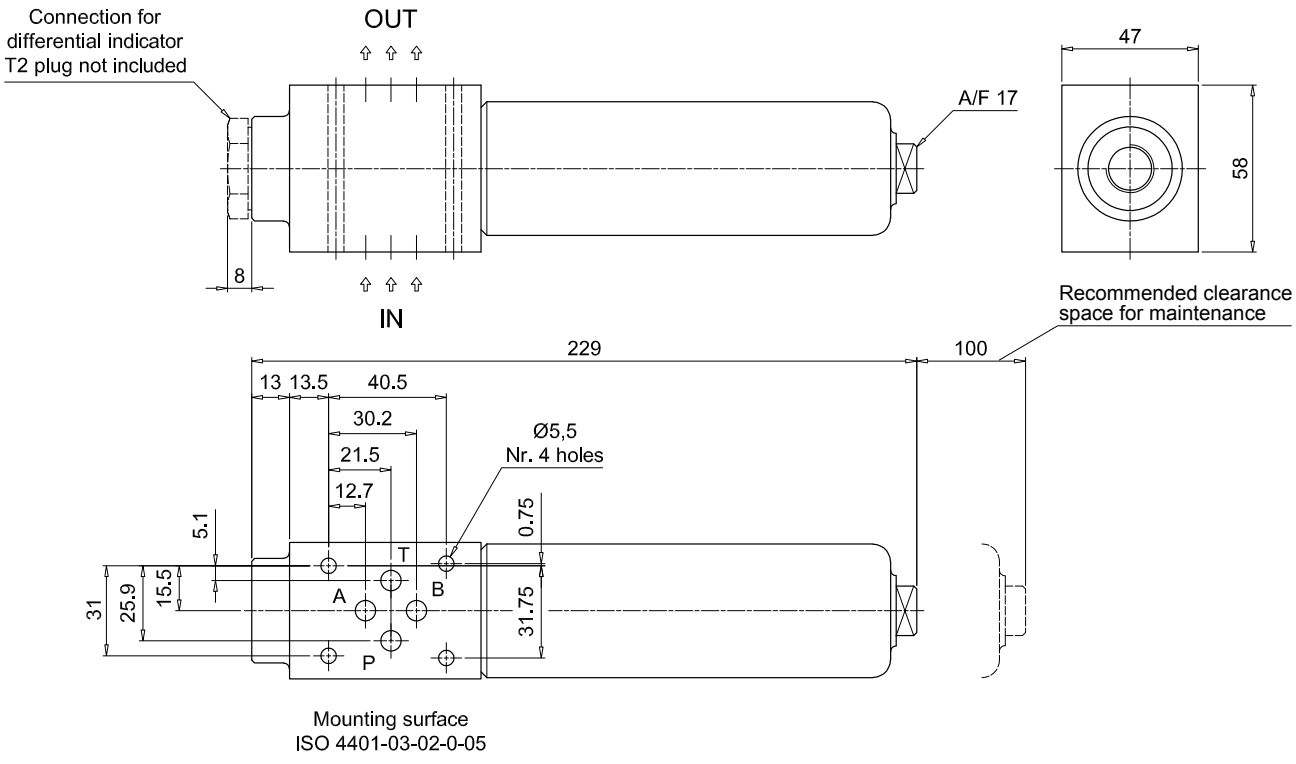
		page
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features		page
T2	Plug	521

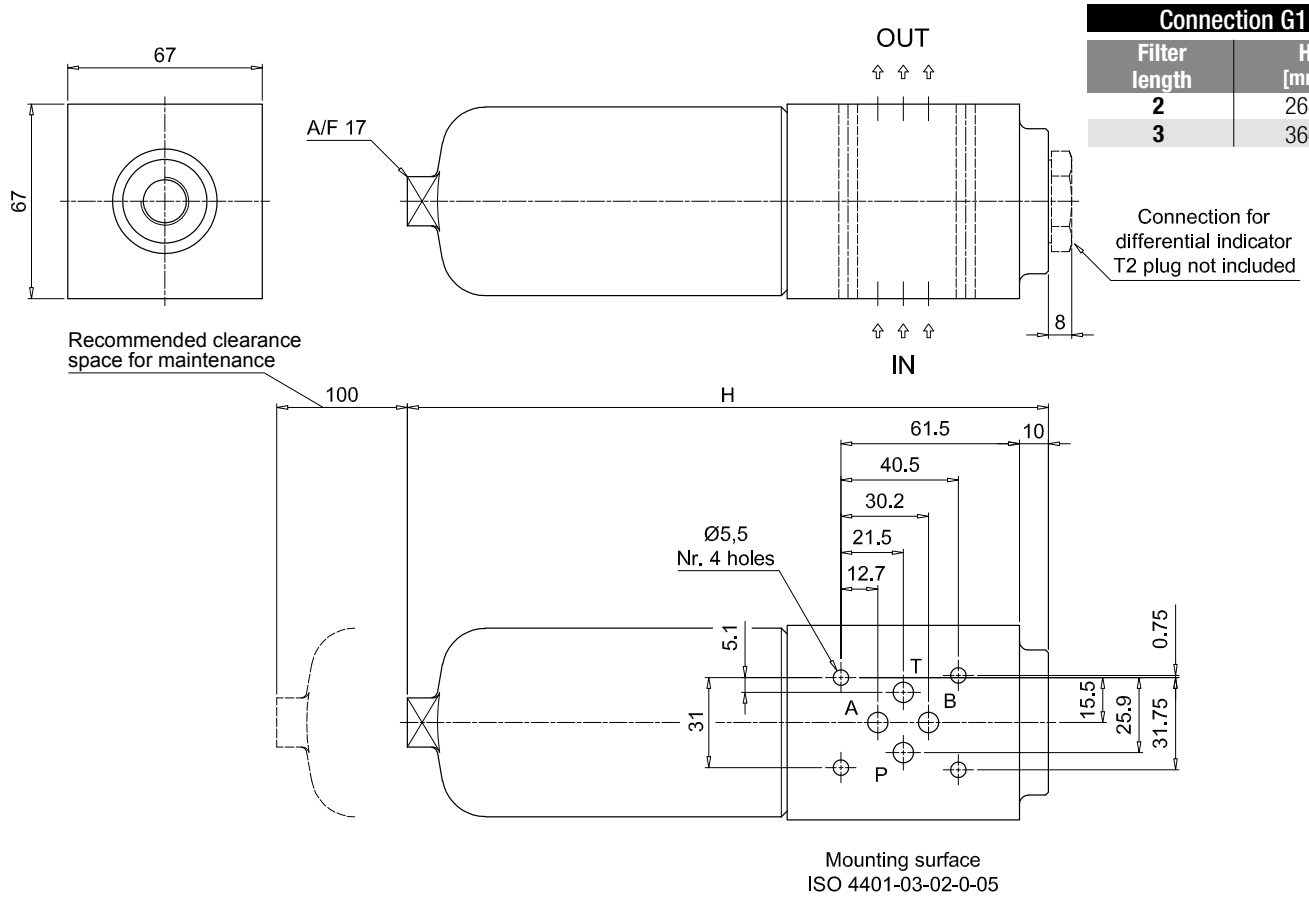
FHM006
Connection G1



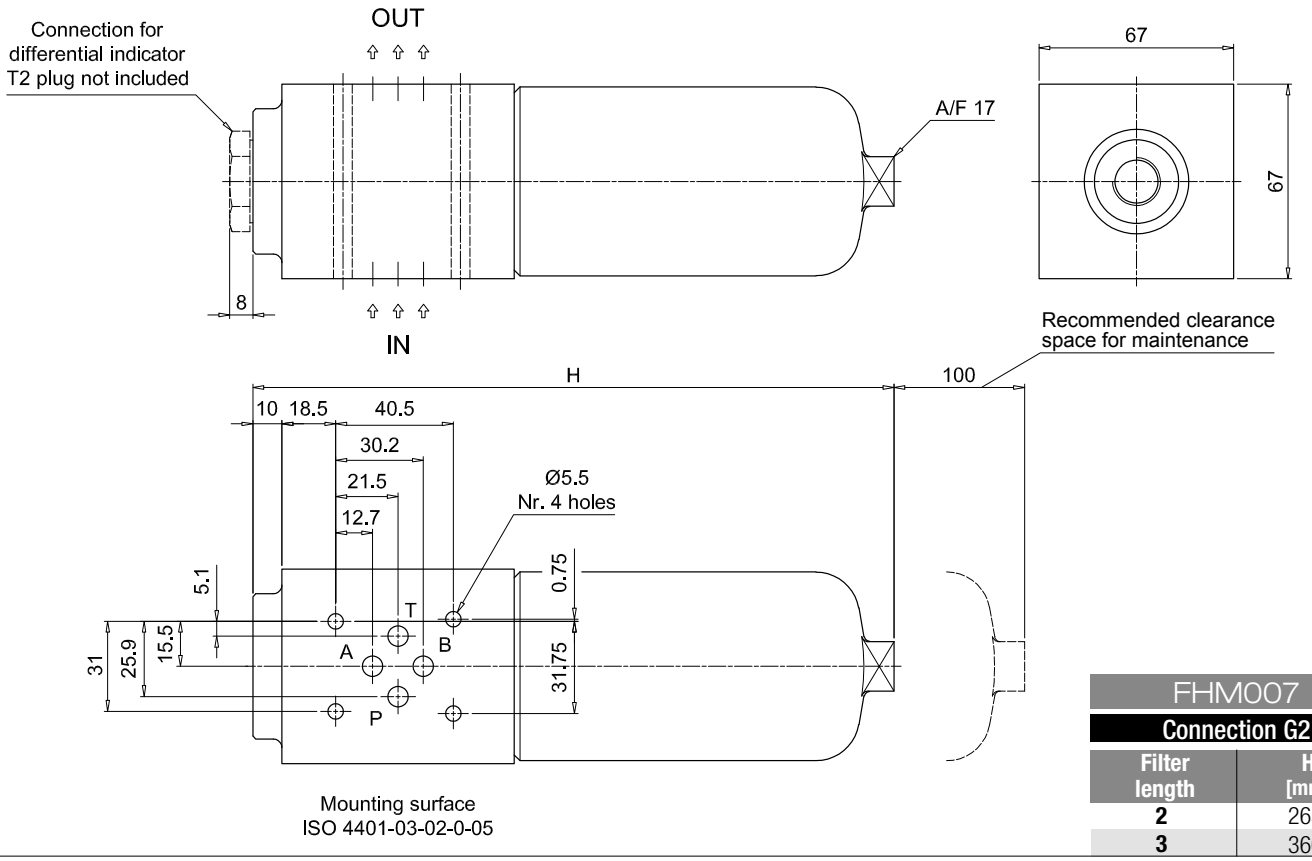
FHM006
Connection G2



Dimensions

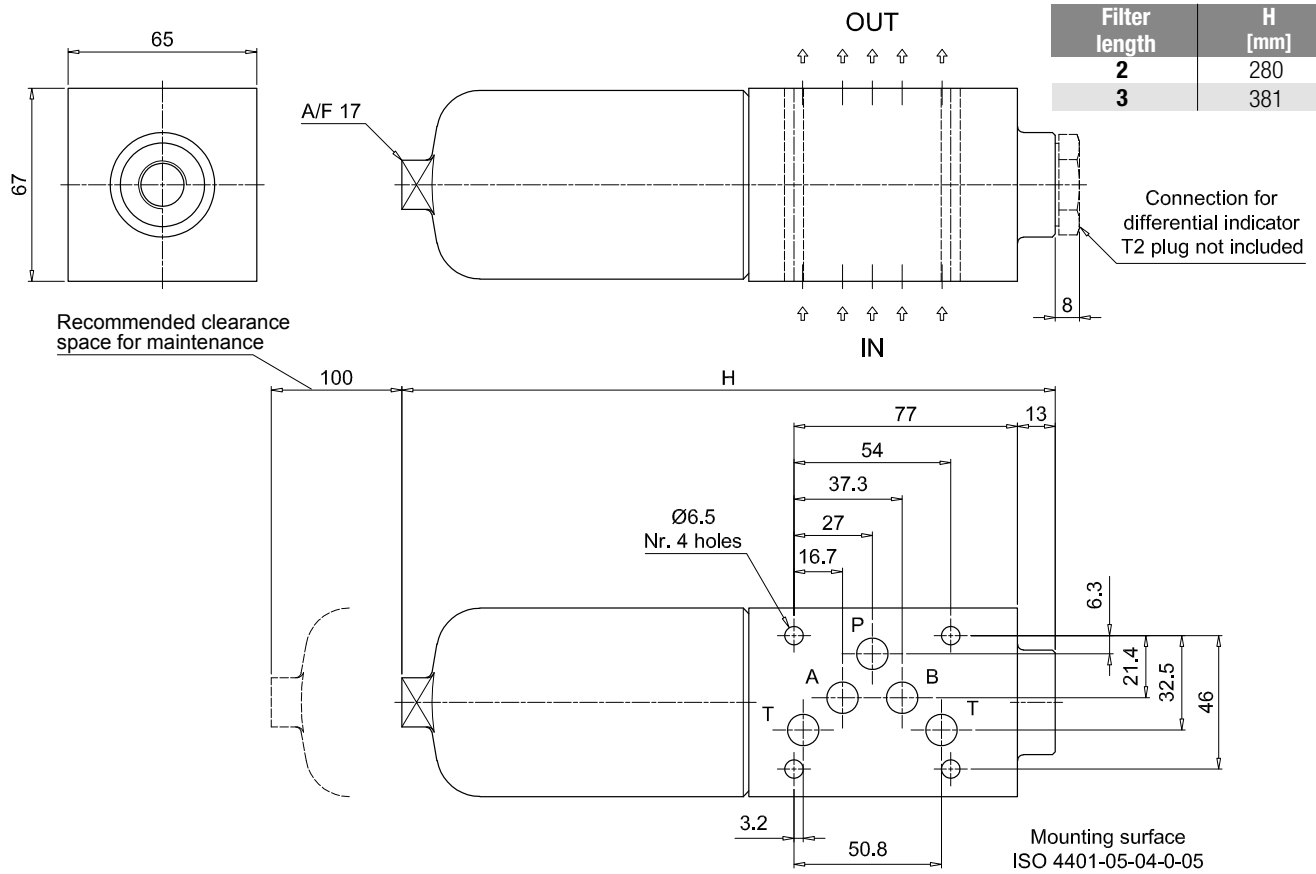


FHM007 Connection G1	
Filter length	**H [mm]**
2	265
3	366

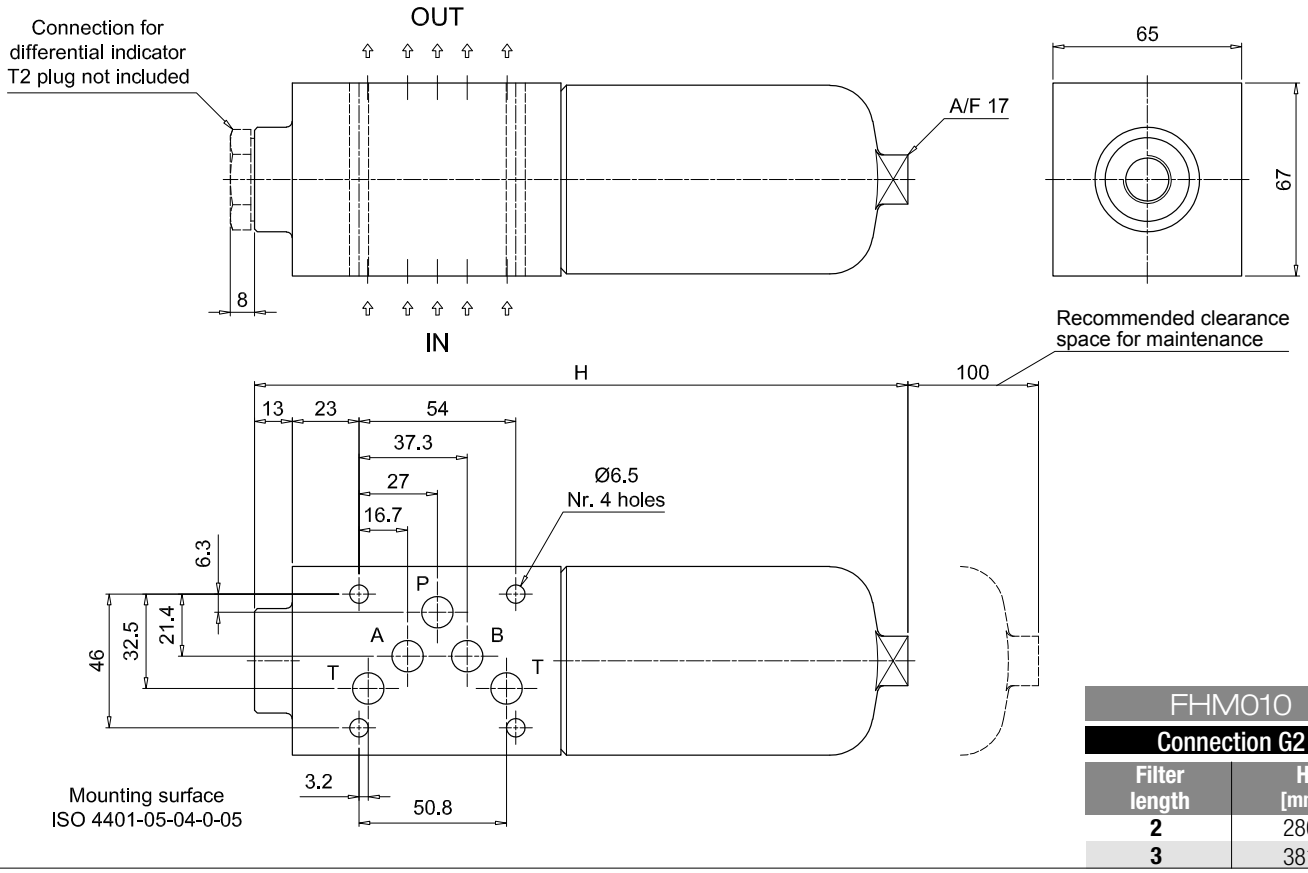


FHM007 Connection G2	
Filter length	**H [mm]**
2	265
3	366

Dimensions



FHM010	
Connection G1	
Filter length	**H [mm]**
2	280
3	381



FHM010	
Connection G2	
Filter length	**H [mm]**
2	280
3	381

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHM135 | 3 | S | A | F1 | A10 | H | P01

Series and size

FHM050 | **FHM065** | **FHM135**

Length	FHM050	FHM065	FHM135
1	•	•	•
2	•	•	•
3	•	•	•
4	•		
5	•		

Valves

S	Without bypass
B	With bypass 6 bar
T	With check valve, without bypass
D	With check valve, with bypass 6 bar

Seals

A	NBR
V	FPM

Connections

F1	Manifold

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp

		Valves S	B	T	D
N	20 bar		•		•
H	210 bar	•		•	

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP135 | 3 | A10 | A | H | P01

Element series and size

HP050 | **HP065** | **HP135**

Element length	HP050	HP065	HP135
1	•	•	•
2	•	•	•
3	•	•	•
4	•		
5	•		

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
H	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

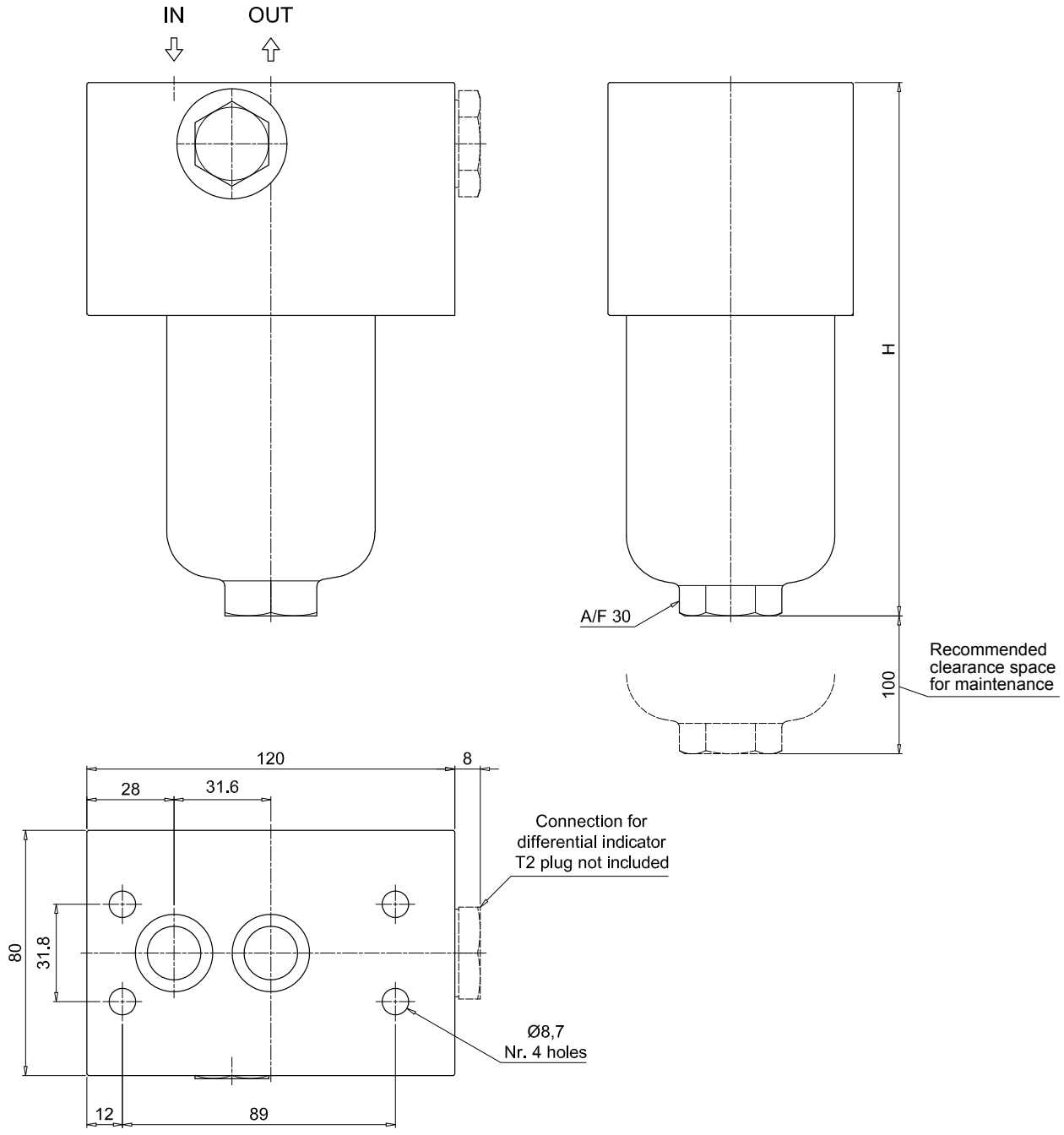
Additional features

		page
T2	Plug	521

Dimensions

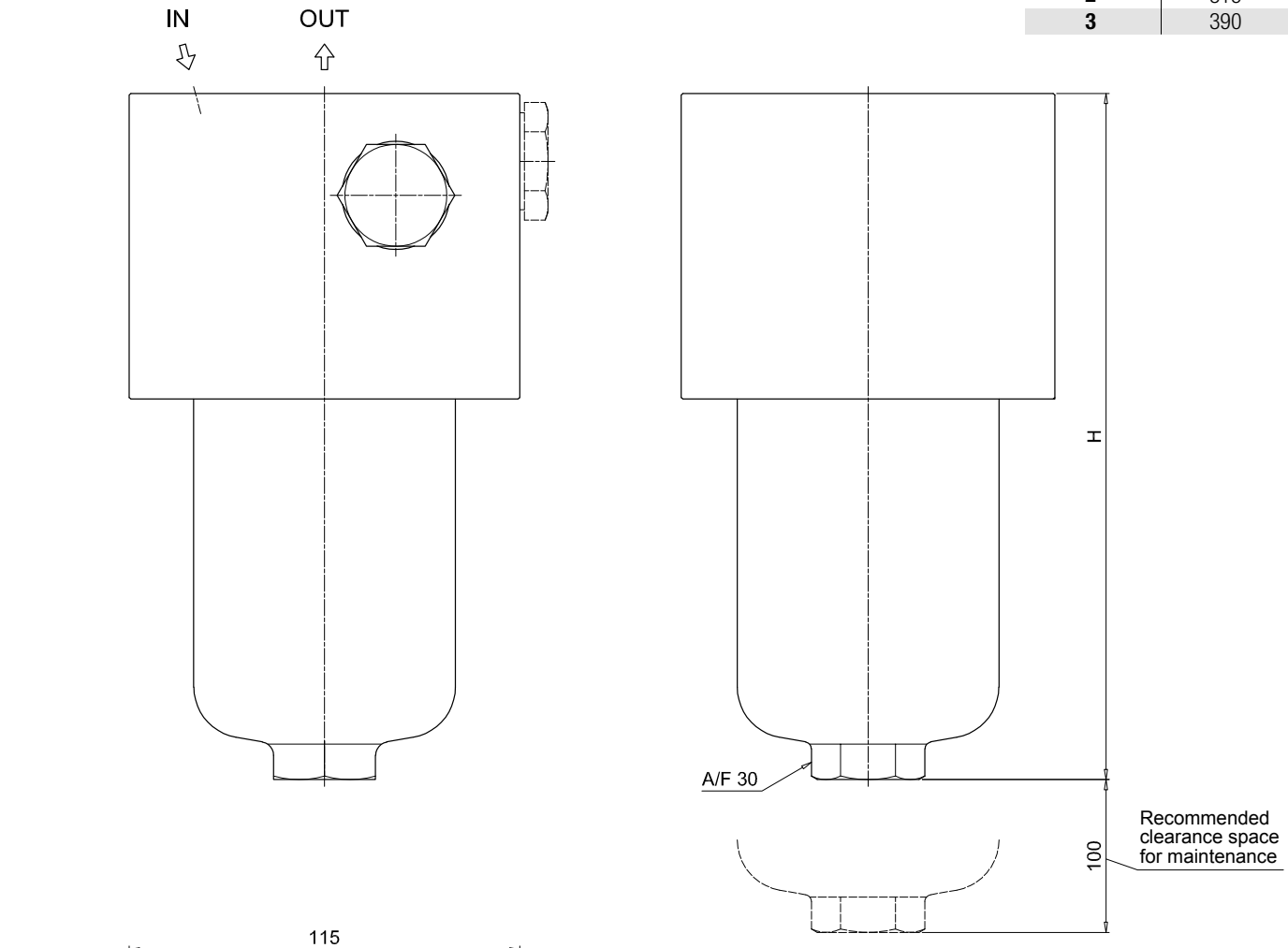
FHM050	
Filter length	**H [mm]**
1	154
2	191
3	233
4	281
5	403

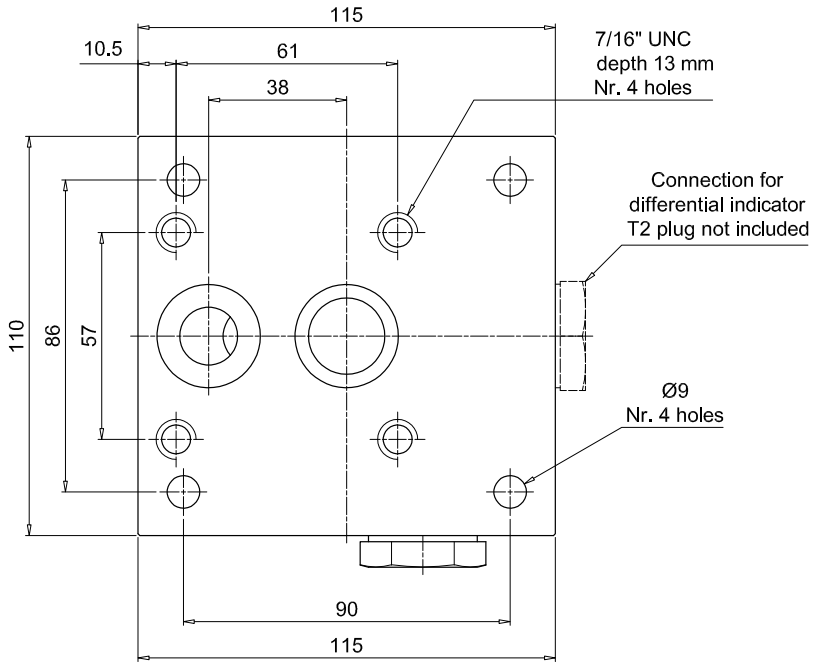
FHM065	
Filter length	**H [mm]**
1	162
2	193
3	295



Dimensions

FHM135	
Filter length	**H [mm]**
1	202
2	315
3	390





FHM FHM320 - FHM500

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHM320 | 4 | D | A | F1 | A06 | N | P01

Series and size

FHM320 | **FHM500**

Length	FHM320	FHM500
1	•	•
2	•	•
3	•	•
4	•	•
5		•

Valves

S	Without bypass
B	With bypass 6 bar
T	With check valve, without bypass
D	With check valve, with bypass 6 bar

Seals

A	NBR
V	FPM

Connections

F1	Manifold

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp	Valves S	B	T	D
N 20 bar		•		•
H 210 bar	•		•	

Execution	Filter length 1	2	3	4	5
P01 MP Filtri standard	•	•	•	•	•
P02 Maintenance from the bottom of the housing				•	•
Pxx Customized					

FILTER ELEMENT

Configuration example: HP320 | 4 | A06 | A | N | P01

Element series and size

HP320 | **HP500**

Element length	HP320	HP500
1	•	•
2	•	•
3	•	•
4	•	•
5		•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals	
A	NBR
V	FPM

Element Δp	
N	20 bar
H	210 bar

Execution	
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

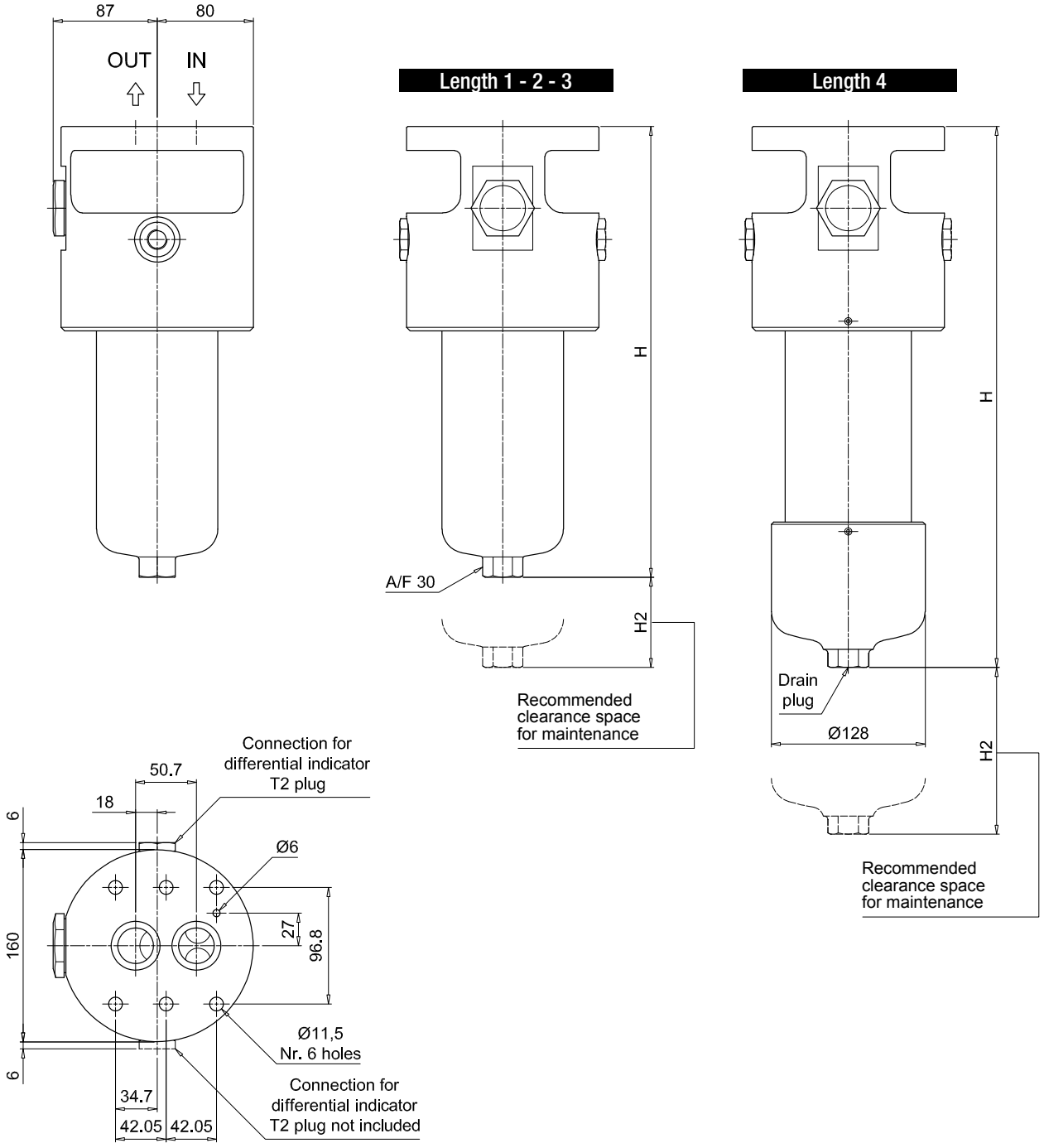
Differential indicators		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features		page
T2	Plug	521

Dimensions

FHM320

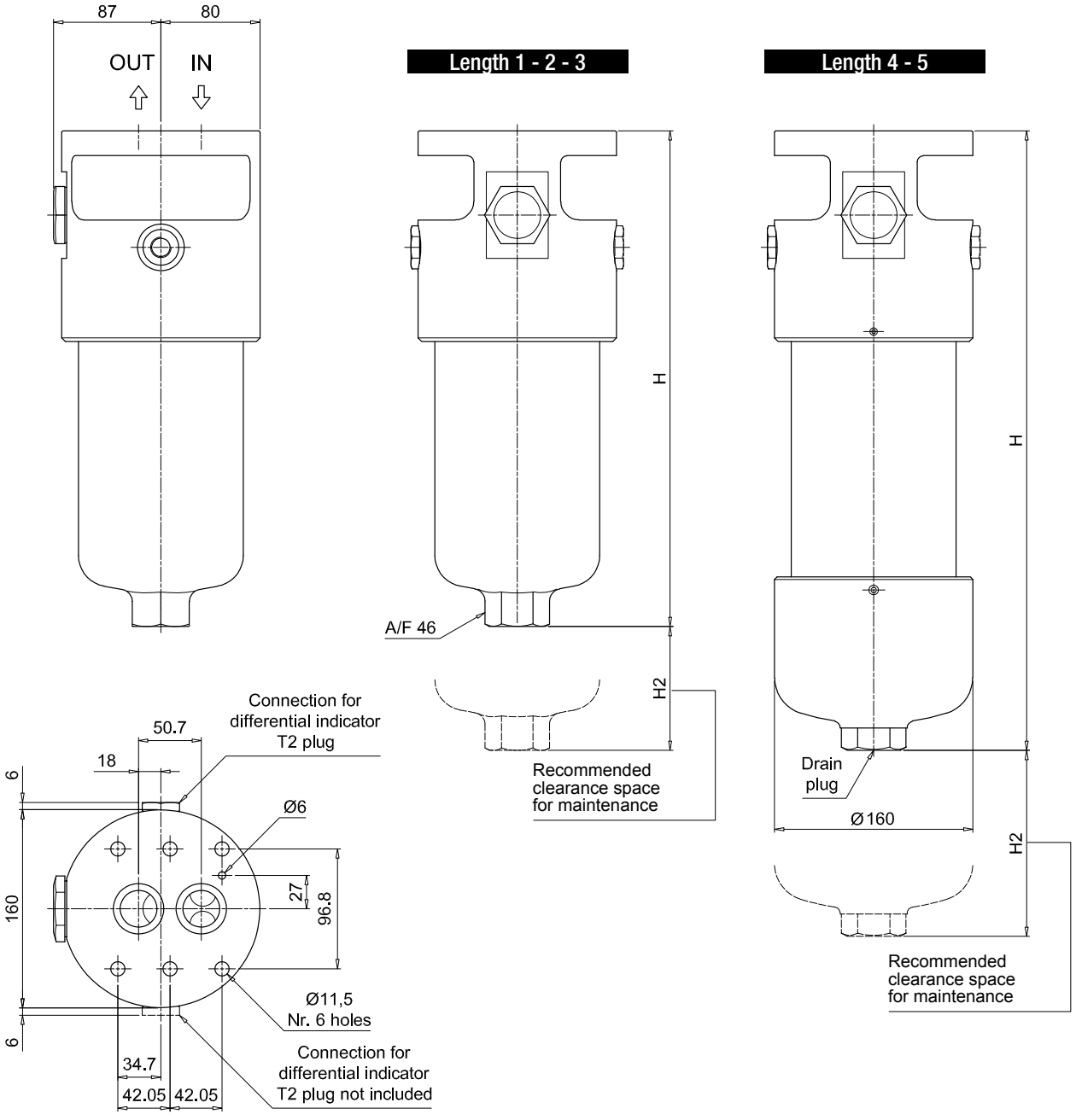
Filter length	H [mm]	H2 [mm] Execution P01	P02
1	293	150	-
2	416	150	-
3	548	150	-
4	702	150	550



Dimensions

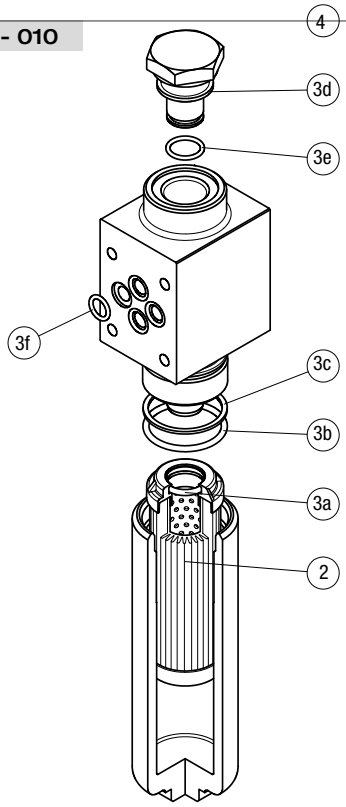
FHM500

Filter length	H [mm]	H2 [mm] Execution P01	P02
1	355	150	-
2	445	150	-
3	521	150	-
4	679	150	480
5	845	150	650



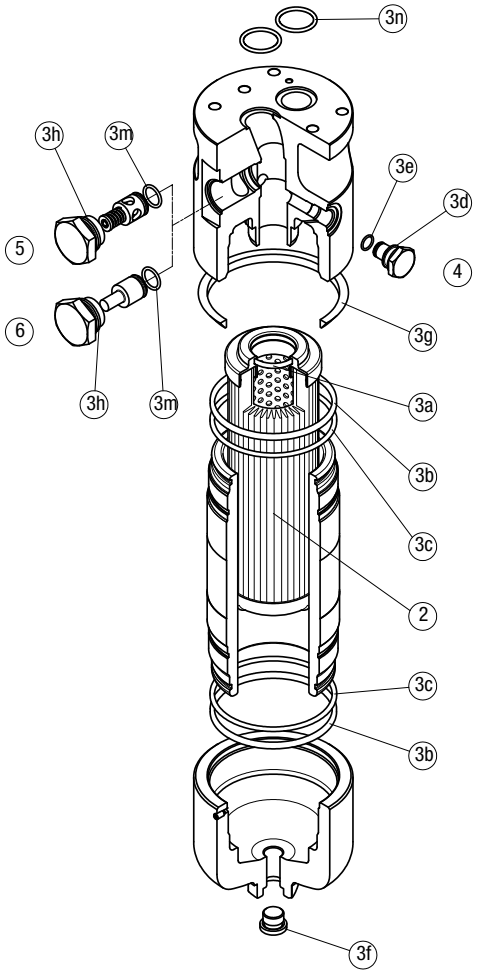
Order number for spare parts

FHM 006 - 007 - 010



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FHM 006	See order table	02050324	02050325	T2H	T2V
FHM 007		02050600	02050601		
FHM 010		02050320	02050321		

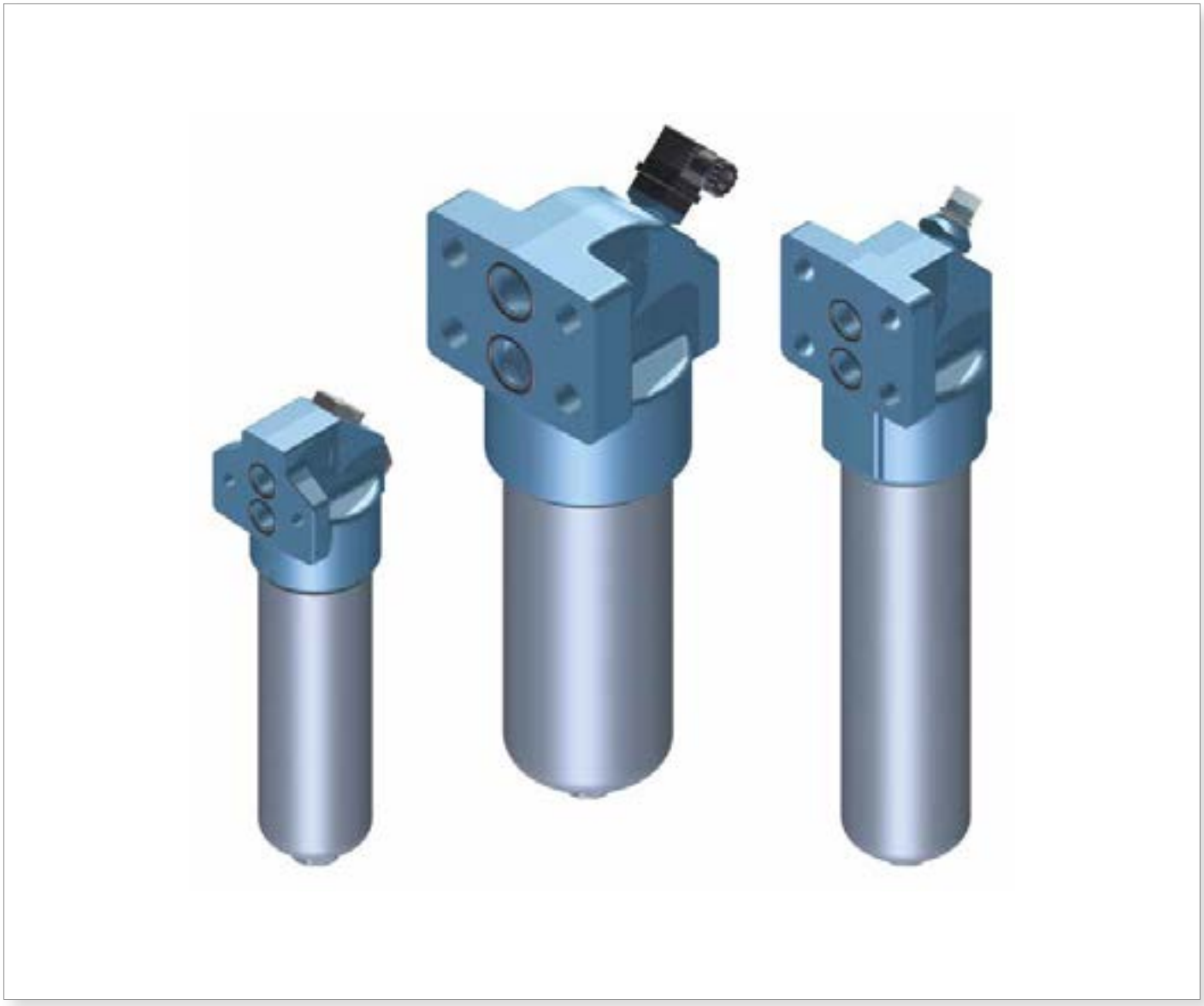
FHM 050 - 065 - 135 - 320 - 500



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3m)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM	Bypass assembly NBR	Bypass assembly FPM	Non-bypass assembly NBR	Non-bypass assembly FPM
FHM 050	See order table	02050410	02050411	T2H	T2V	02001400	02001401	02001402	02001403
FHM 065		02050268	02050279			02001400	02001401	02001402	02001403
FHM 135		02050271	02050282			02001404	02001405	02001406	02001407
FHM 320		02050275	02050286			02001408	02001409	02001410	02001411
FHM 500		02050332	02050333			02001408	02001409	02001410	02001411

FHB series

Maximum pressure up to 320 bar - Flow rate up to 485 l/min



Technical data

High Pressure filters **Maximum pressure up to 320 bar - Flow rate up to 485 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel
- Check valve: Steel

Pressure
- Working pressure: 32 MPa (320 bar)
- Test pressure: 48 MPa (480 bar)
- Burst pressure: 96 MPa (960 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 32 MPa (320 bar)

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N: 20 bar
- Microfibre filter elements - series H: 210 bar (not available for FHB065 - FHB135 - FHB320)
- Microfibre filter elements - series S: 210 bar (only for FHB050)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
Manifold mounting

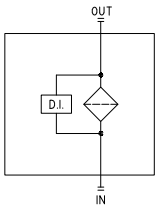
Note
FHB filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

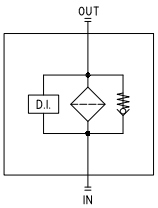
	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
FHB 050		2.61	2.98	3.39	3.86	5.04		0.21	0.30	0.40	0.52	0.81
FHB 065		3.33	3.69	4.90	-	-		0.20	0.27	0.49	-	-
FHB 135		6.61	8.21	9.21	-	-		0.40	0.73	0.94	-	-
FHB 320		12.95	15.08	17.37	26.77	-		0.91	1.63	2.40	3.59	-

Hydraulic symbols

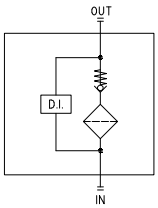
Style **S**



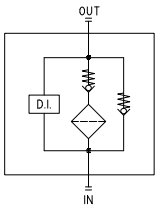
Style **B**



Style **T**



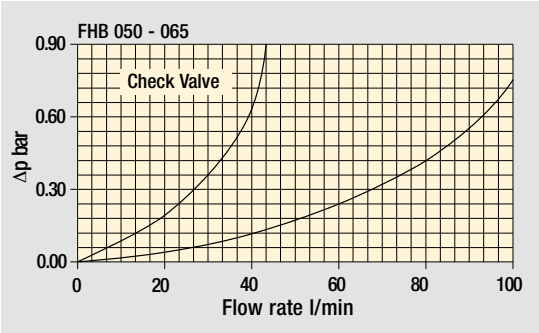
Style **D**

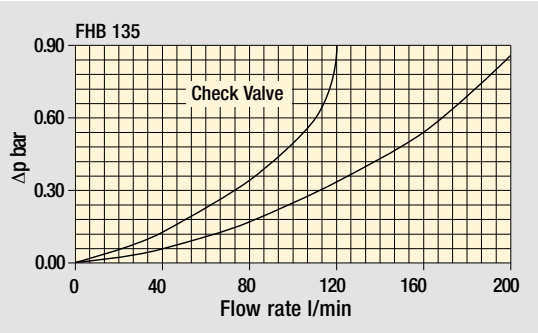


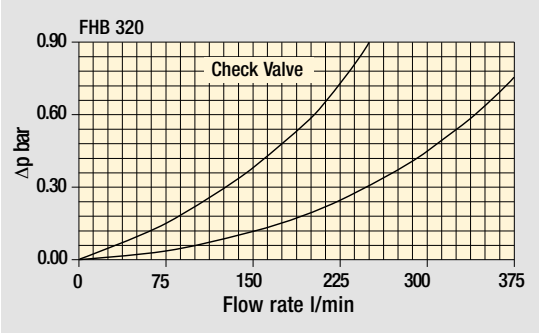
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

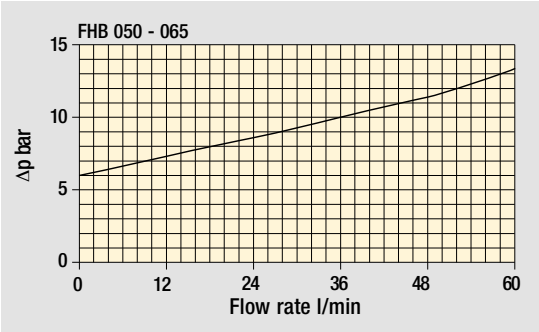
Filter housings Δp pressure drop

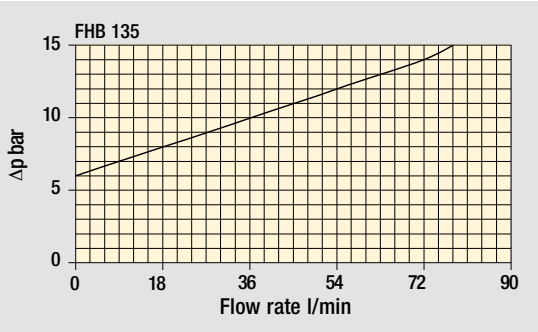


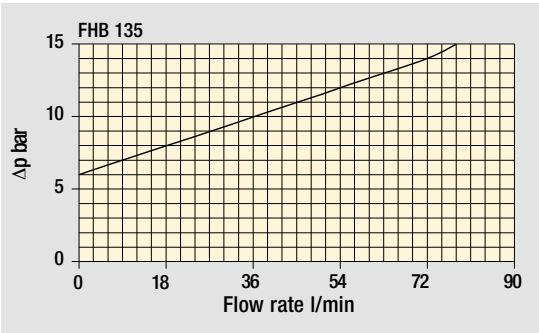




Bypass valve pressure drop







Designation & Ordering code

COMPLETE FILTER

Configuration example: FHB050 | 2 | T | A | F1 | A06 | S | P01

Series and size
FHB050

Length
1 | **2** | **3** | **4** | **5**

Valves
S Without bypass
B With bypass 6 bar
T With check valve, without bypass
D With check valve, with bypass 6 bar

Seals
A NBR
V FPM

Connections
F1 Manifold

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp		Valves S	B	T	D
N	20 bar		•		•
S	210 bar	•		•	

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP050 | 2 | A06 | A | S | P01

Element series and size
HP050

Element length
1 | **2** | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar
S 210 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

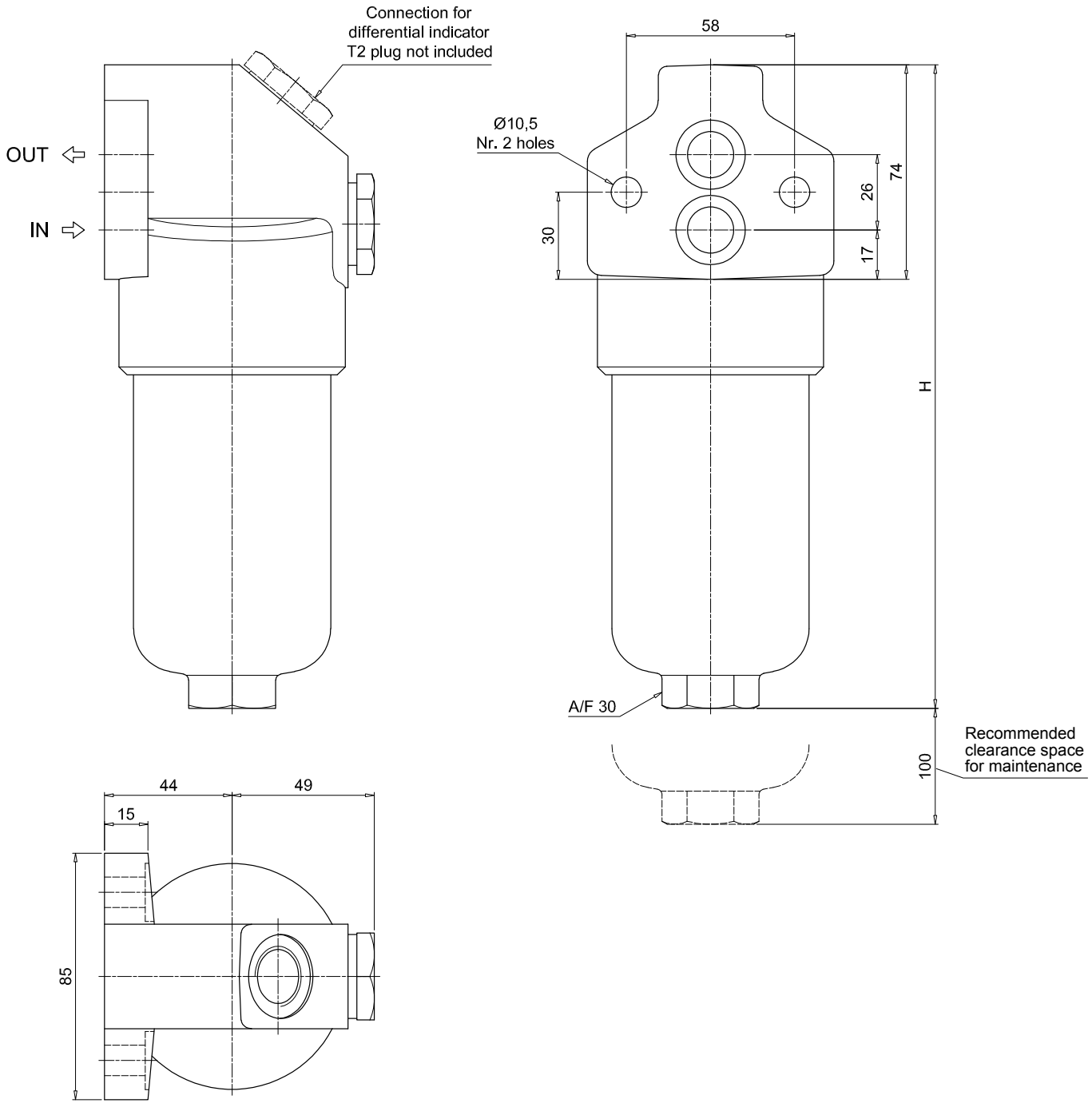
		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

Additional features

		page
T2	Plug	521

Dimensions

FHB050	
Filter length	**H [mm]**
1	185
2	222
3	264
4	312
5	434



Designation & Ordering code

COMPLETE FILTER

Configuration example: FHB320 | 4 | S | A | F1 | A06 | H | P01

Series and size

FHB065 | FHB135 | FHB320

Length	FHB065	FHB135	FHB320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Valves

S	Without bypass
B	With bypass 6 bar
T	With check valve, without bypass
D	With check valve, with bypass 6 bar

Seals

A	NBR
V	FPM

Connections

F1	Manifold

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp	Valves S	B	T	D
N 20 bar		•		•
H 210 bar	•		•	

Execution	1	2	3	4
P01 MP Filtri standard	•	•	•	•
P02 Maintenance from the bottom of the housing				•
Pxx Customized				

FILTER ELEMENT

Configuration example: HP320 | 4 | A06 | A | H | P01

Element series and size

HP065 | HP135 | HP320

Element length	HP065	HP135	HP320
1	•	•	•
2	•	•	•
3	•	•	•
4			•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp

N	20 bar
H	210 bar

Execution

P01	MP Filtri standard
Pxx	Customized

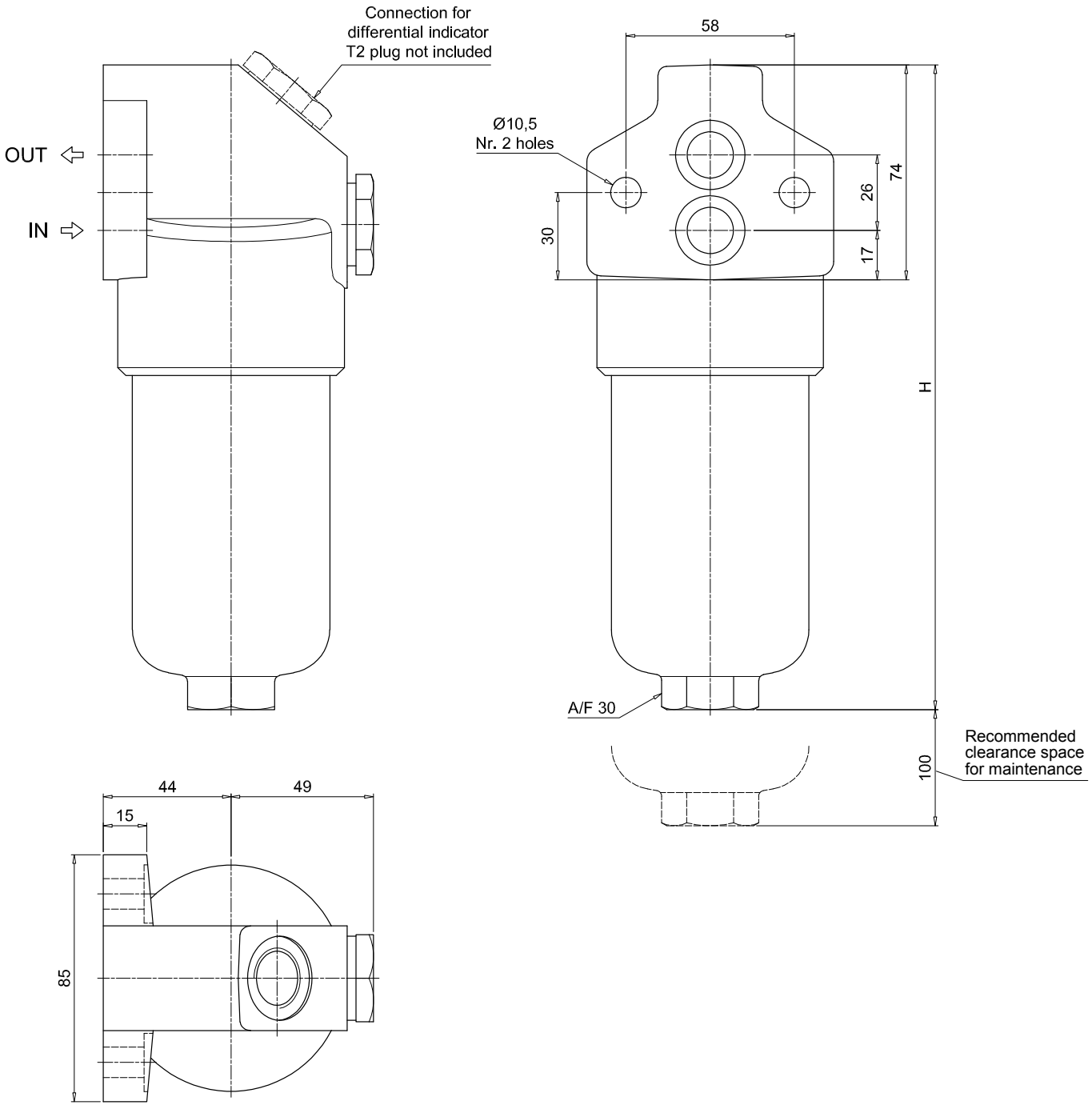
ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

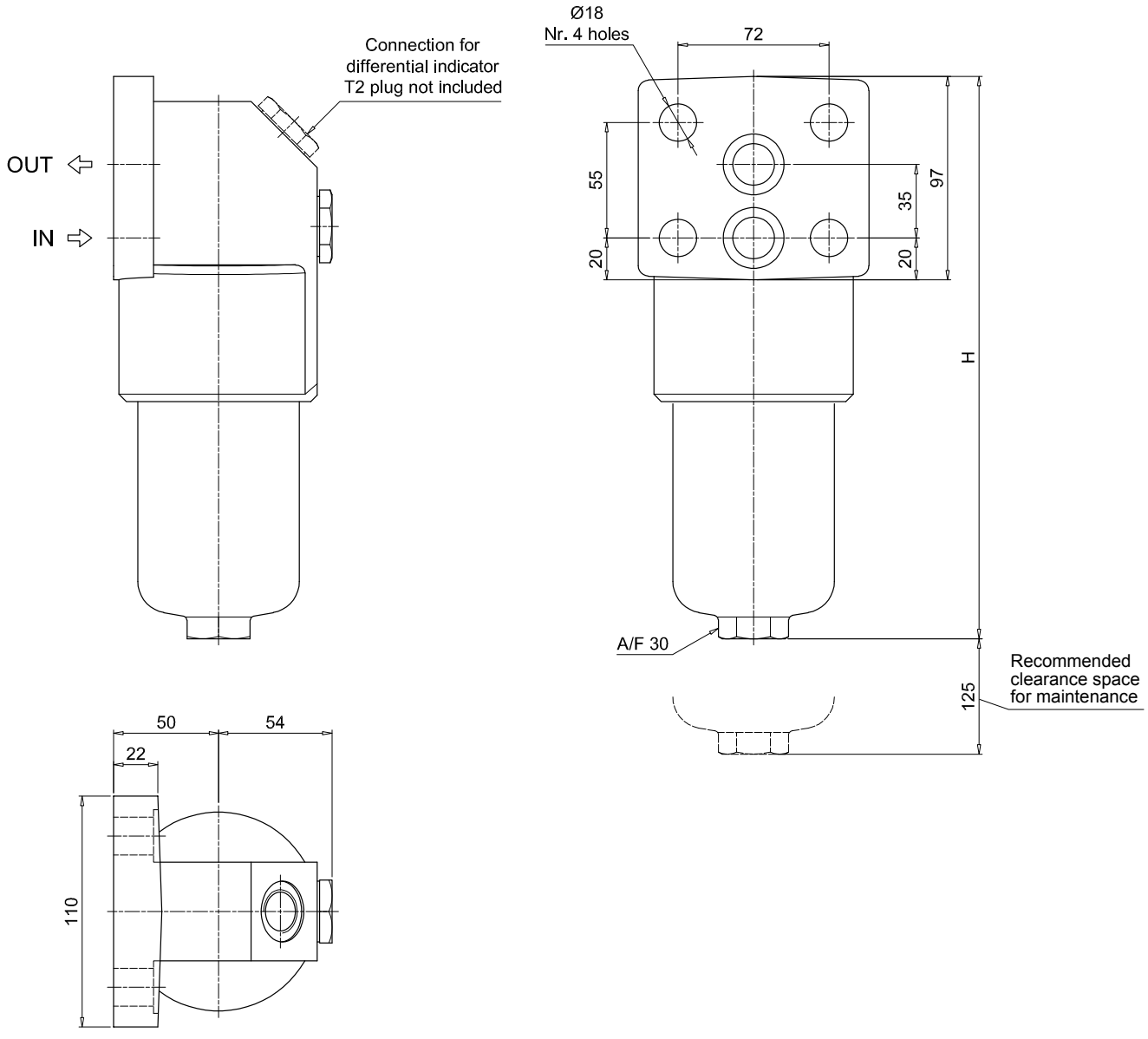
Additional features		page
T2	Plug	521

Dimensions

FHB065	
Filter length	**H [mm]**
1	194
2	225
3	327



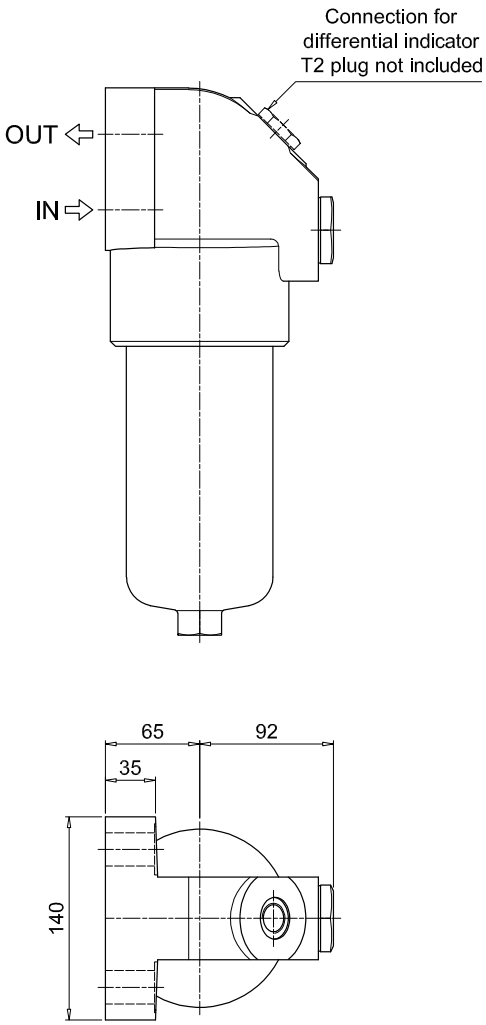
FHB135	
Filter length	**H [mm]**
1	268
2	381
3	456

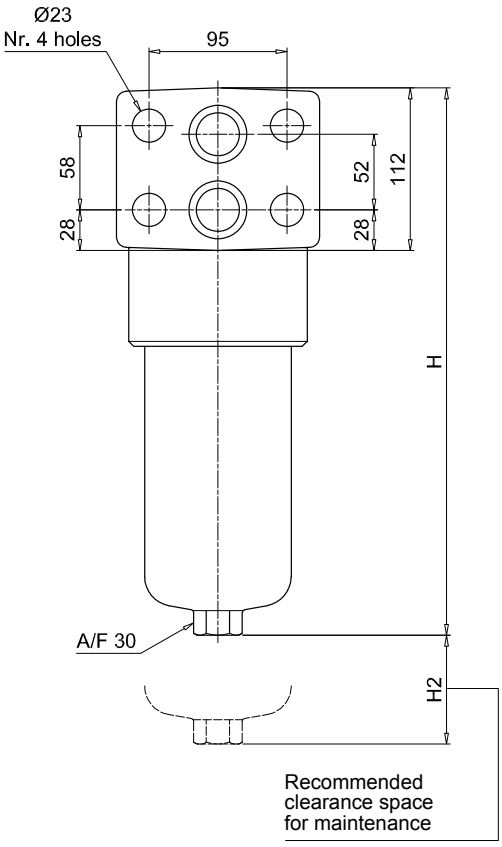


FHB320

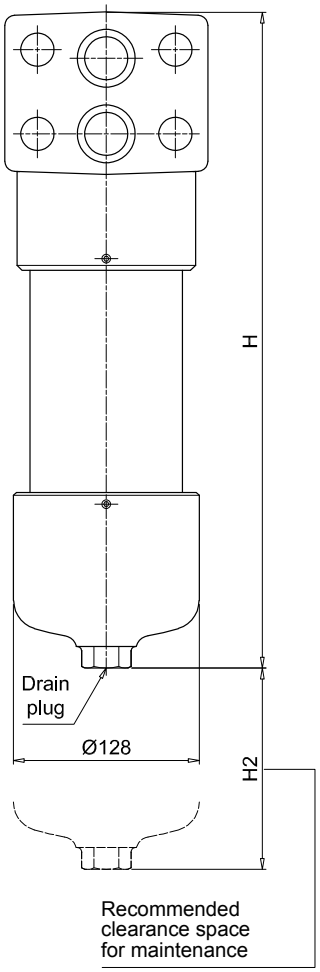
Filter length	H [mm]	H2 [mm] Execution P01	P02
1	301	150	-
2	424	150	-
3	556	150	-
4	709	150	550

Length 1 - 2 - 3



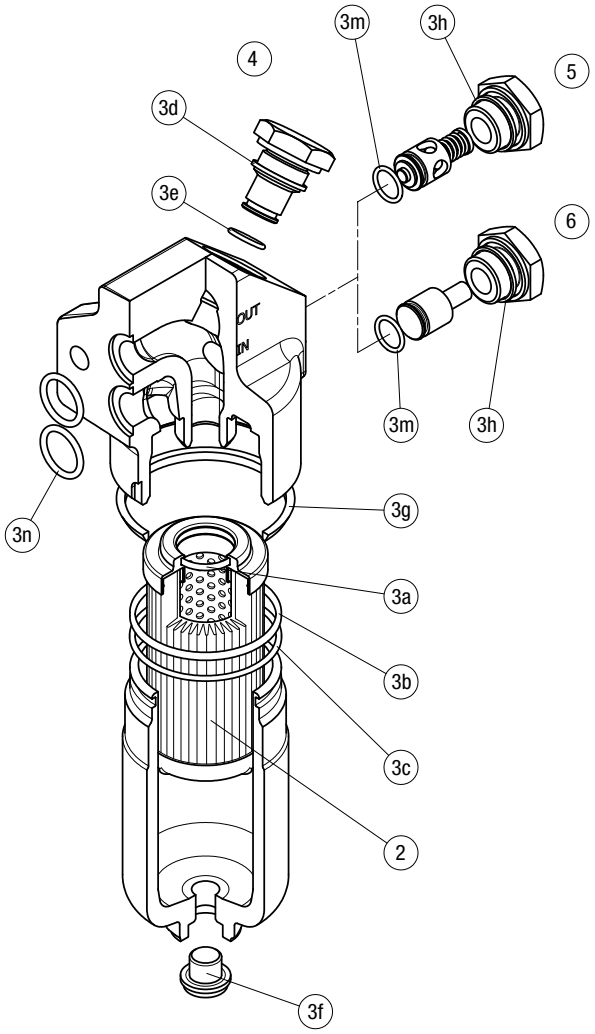


Length 4



Order number for spare parts

FHB 050 - 065 - 135 - 320

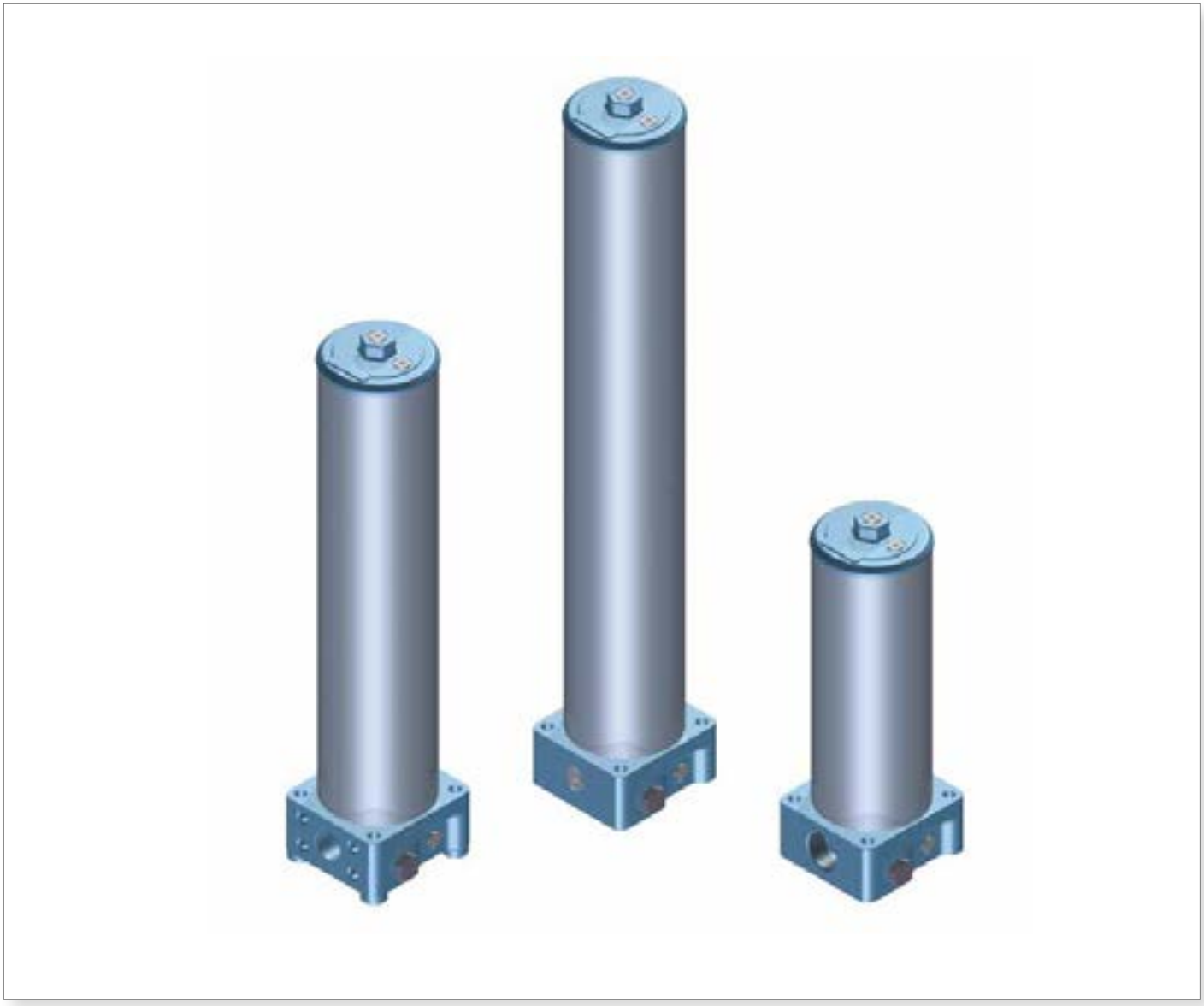


Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3n)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5		Q.ty: 1 pc. 6	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Bypass assembly NBR**	**FPM**	**Non-bypass assembly NBR**	**FPM**
FHB 050	See order table	02050412	02050413	T2H	T2V	02001312	02001385	02001314	02001386
FHB 065		02050266	02050277			02001312	02001385	02001314	02001386
FHB 135		02050270	02050281			02001312	02001385	02001314	02001386
FHB 320		02050273	02050284			02001381	02001382	02001383	02001384

FHF325 series

Maximum pressure up to 350 bar - Flow rate up to 500 l/min

Filter housing according to SAE J2066 for HF4 filter elements



FHF325 GENERAL INFORMATION

Filter housing according to SAE J2066 for HF4 filter elements

Technical data

High Pressure filters **Maximum pressure up to 350 bar - Flow rate up to 500 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Cover: Cast iron (chemical heat treatment)
- Bypass valve: Brass - Steel

Pressure
- Working pressure: 35 MPa (350 bar)
- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Connections
FHF 325: In-line threaded connection
FHF 325: In-line flanged connection
FHF 325: Manifold mounting

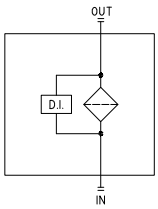
Note
FHF filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

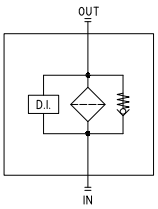
	Weights [kg]				Volumes [dm³]			
	Length	1	2	3	Length	1	2	3
FHF 325		23.90	32.68	41.47		3.50	5.80	8.11

Hydraulic symbols

Style **S**



Style **B**

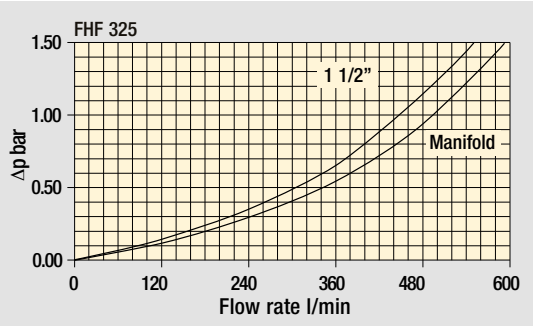


Filter housing according to SAE J2066 for HF4 filter elements

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Pressure drop

Filter housings Δp pressure drop



FHF325

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHF325 | 2 | S | A | H | 7 | A10 | N | P01

Series and size
FHF325

Length
1 | **2** | **3**

Valves
S Without bypass
B With bypass 6 bar

Seals
A NBR
V FPM

Connections
A G1 1/2”
B 1 1/2” NPT
C SAE 24 - 1 7/8” - 12 UN
G 1 1/2” SAE 6000 psi/M
H 1 1/2” SAE 6000 psi/UNC
M Manifold ø1.38”
N Manifold ø1.50”

Connection for differential indicator
7 With two connections plugged on both sides

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**A16**	Inorganic microfiber 16 µm
A06	Inorganic microfiber 6 µm	**A25**	Inorganic microfiber 25 µm
A10	Inorganic microfiber 10 µm	**M25**	Wire mesh 25 µm

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HF325 | 2 | A10 | A | N | P01

Element series and size
HF325

Element length
1 | **2** | **3**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm	**A16**	Inorganic microfiber 16 µm
A06	Inorganic microfiber 6 µm	**A25**	Inorganic microfiber 25 µm
A10	Inorganic microfiber 10 µm	**M25**	Wire mesh 25 µm

Seals
A NBR
V FPM

Element Δp
N 20 bar

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

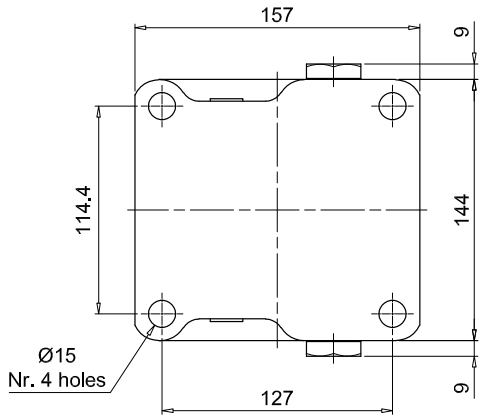
Differential indicators

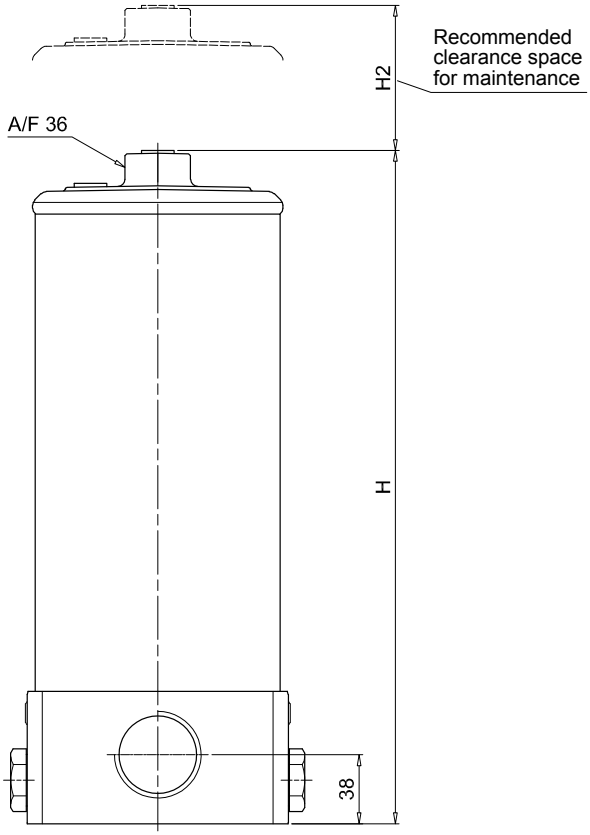
		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

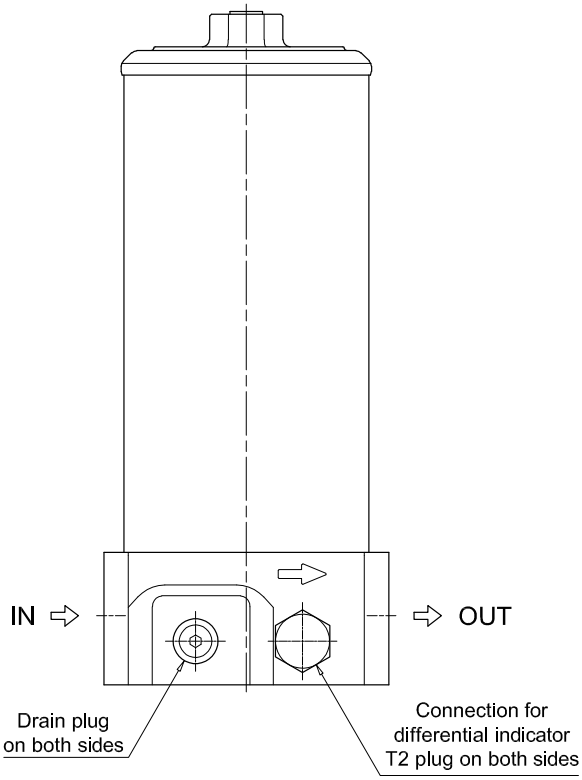
Additional features

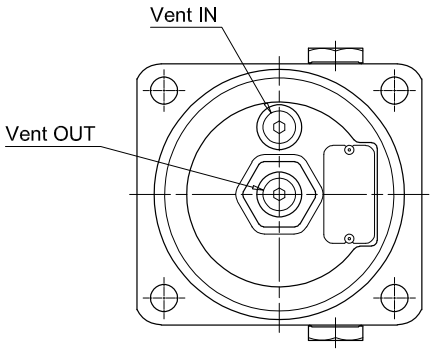
		page
T2	Plug	521

FHF325		
Connection A - B - C		
Filter length	**H1 [mm]**	**H2 [mm]**
1	452	250
2	690	485
3	928	725





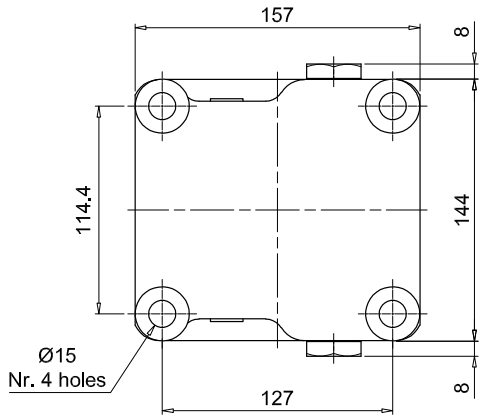


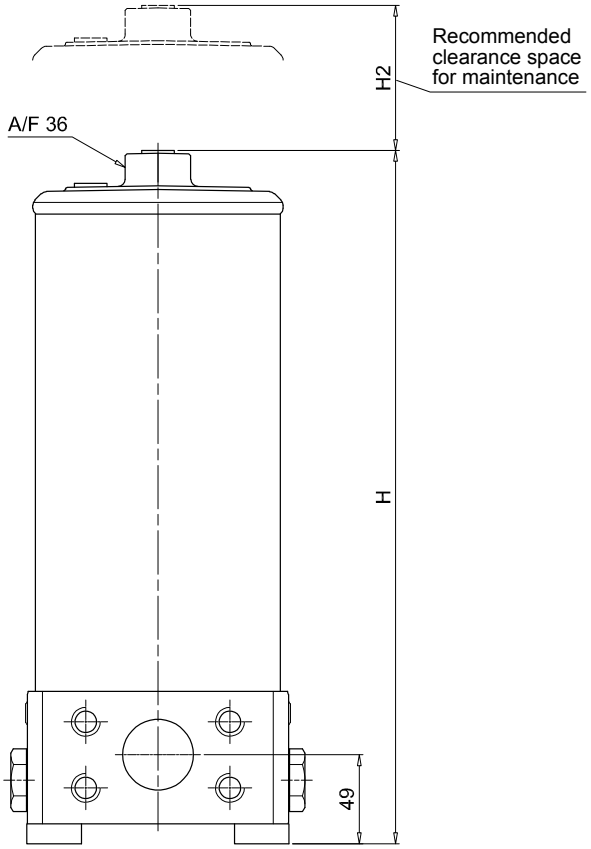


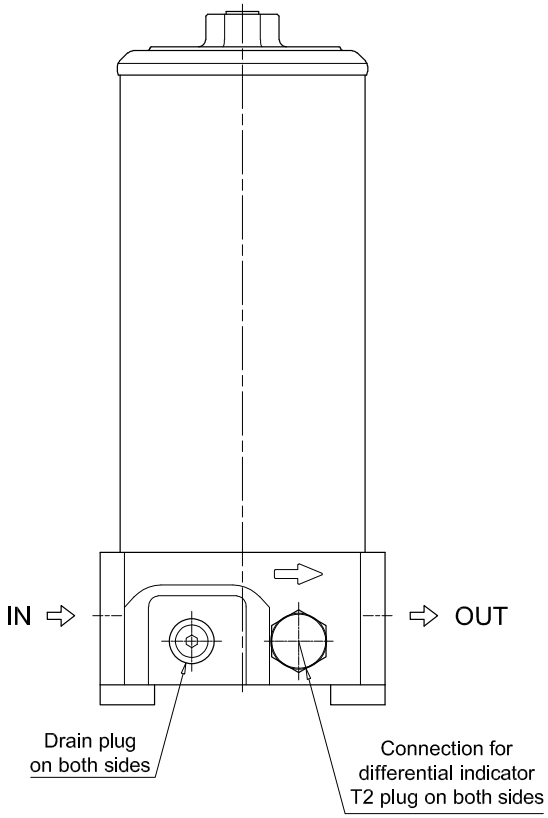
FHF325

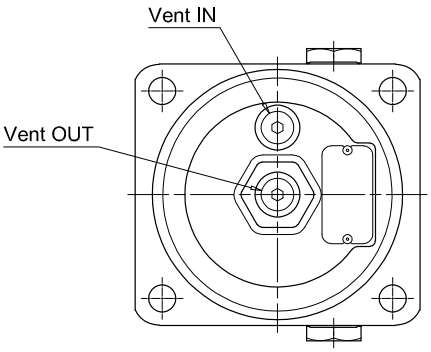
Dimensions

FHF325		
Connection G - H		
Filter length	**H1 [mm]**	**H2 [mm]**
1	463	250
2	701	485
3	939	725

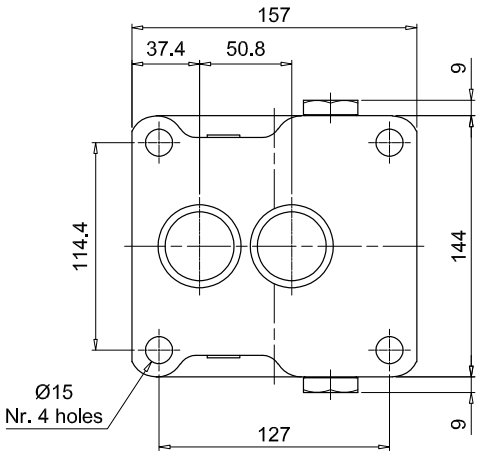


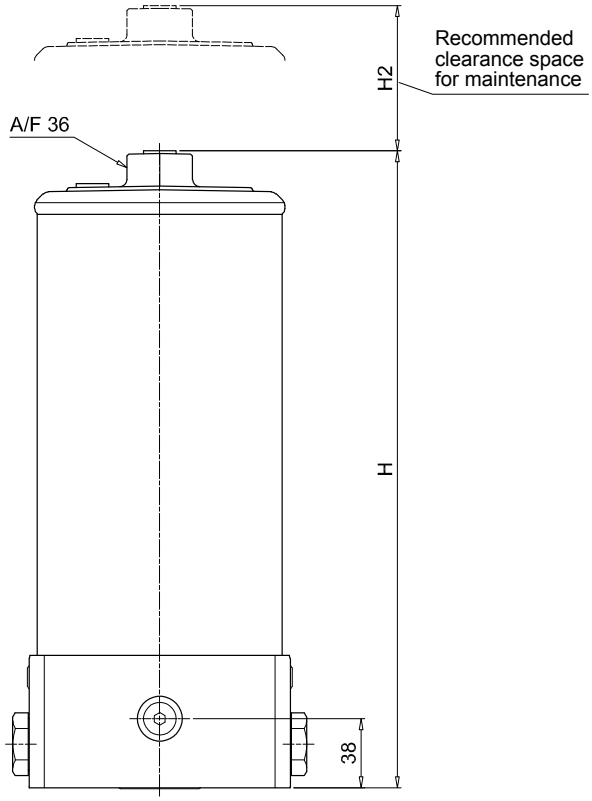


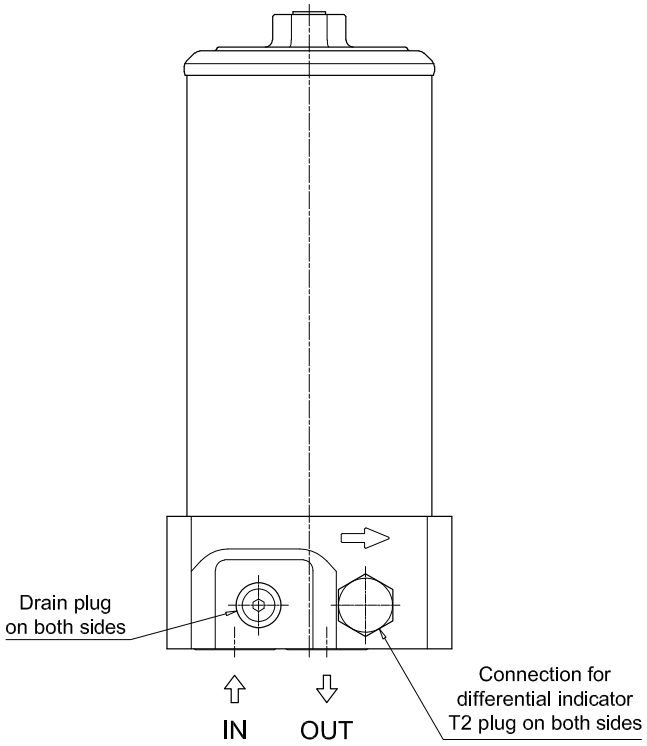


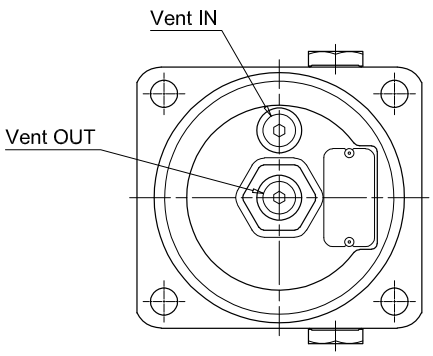


FHF325		
Connection M - N		
Filter length	**H1 [mm]**	**H2 [mm]**
1	452	250
2	690	485
3	928	725









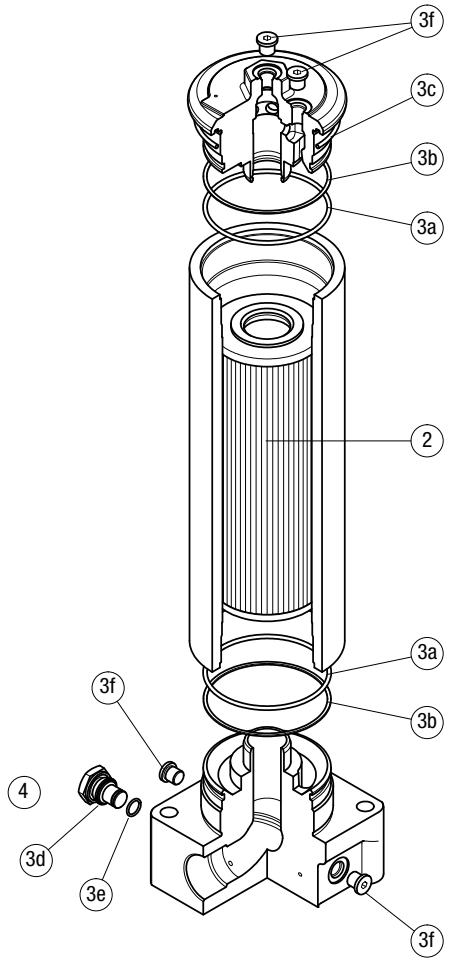
FHF325 SPARE PARTS

Filter housing according to SAE J2066 for HF4 filter elements

Order number for spare parts

FHF 325

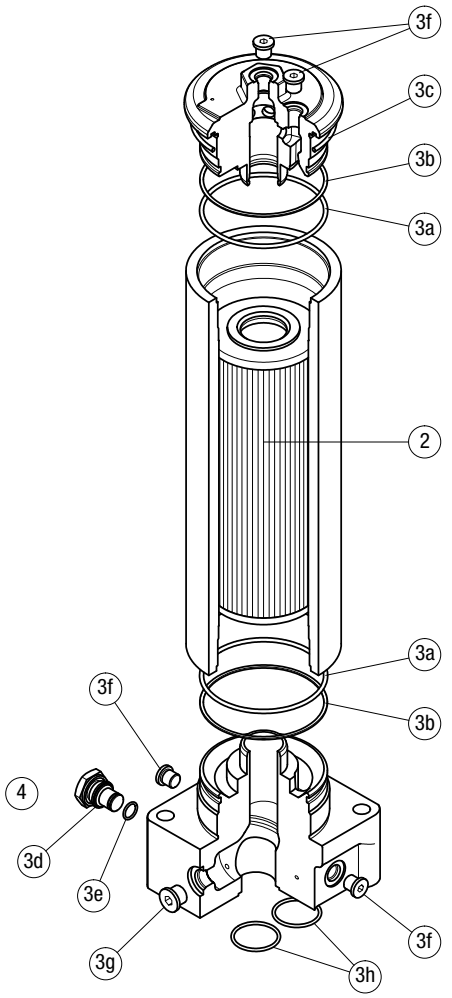
Connections
A - B - C - G - H



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3f)		Q.ty: 2 pc. 4	
Filter series	**Filter element**	**Seal Kit code number NBR**	**Seal Kit code number FPM**	**Indicator connection plug NBR**	**Indicator connection plug FPM**
FHF 325 A-B-C-G-H	See order table	02050588	02050589	T2H	T2V

FHF 325

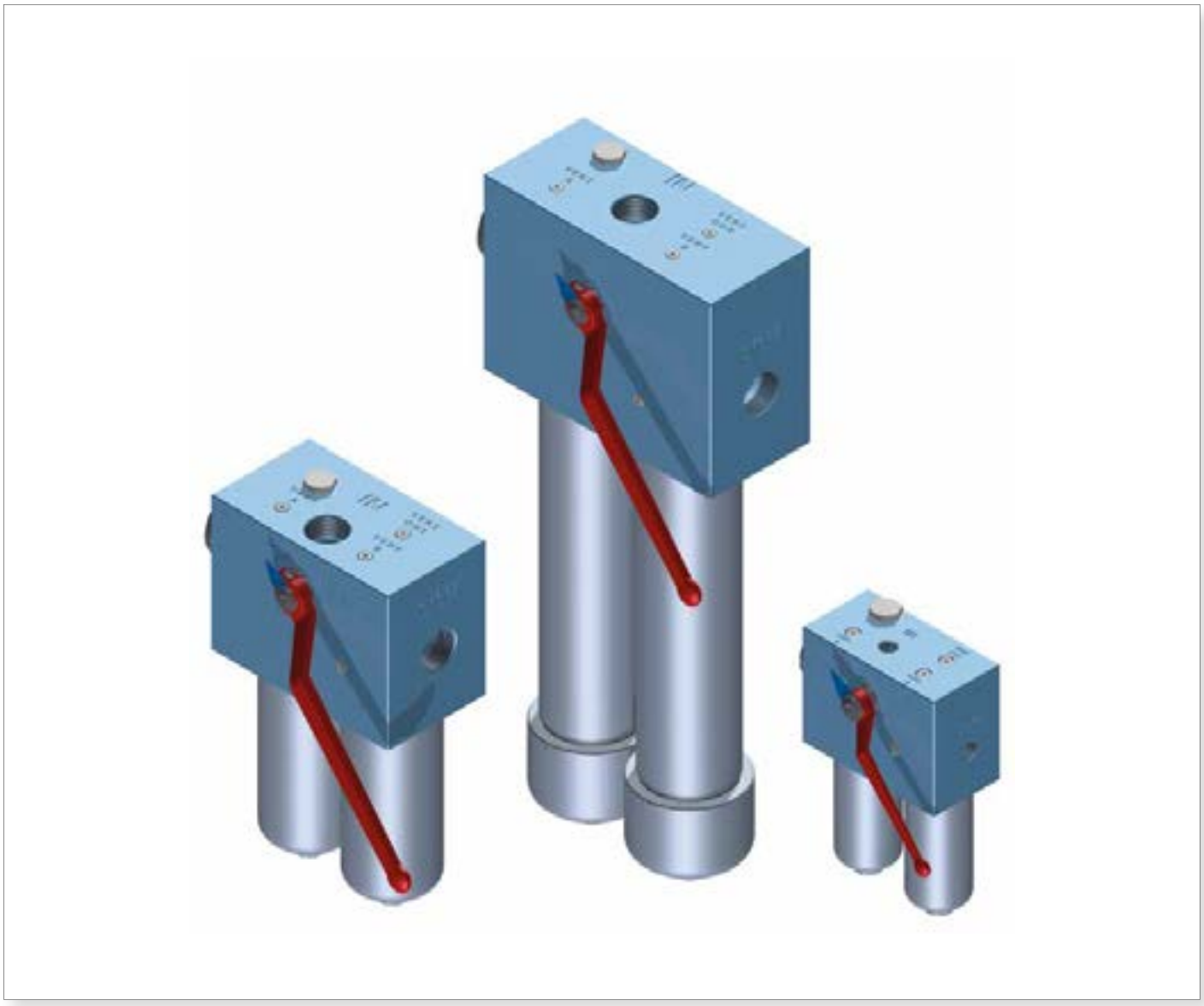
Connections
M - N



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3h)		Q.ty: 2 pc. 4	
Filter series	**Filter element**	**Seal Kit code number NBR**	**Seal Kit code number FPM**	**Indicator connection plug NBR**	**Indicator connection plug FPM**
FHF 325 M-N	See order table	02050590	02050591	T2H	T2V

FHD series

Maximum pressure up to 350 bar - Flow rate up to 345 l/min



Technical data

High Pressure filters **Maximum pressure up to 350 bar - Flow rate up to 345 l/min**

Filter housing materials
- Head: Phosphatized cast iron
- Housing: Phosphatized steel
- Bypass valve: Steel

Bypass valve
- Opening pressure 600 kPa (6 bar)
- Other opening pressures on request.

Seals
- Standard NBR series A
- Optional FPM series V

Temperature
From -25 °C to +110 °C

Pressure
- Working pressure: 35 MPa (350 bar)
- Test pressure: 52.5 MPa (525 bar)
- Burst pressure: 105 MPa (1050 bar)
- Pulse pressure fatigue test: 1 000 000 cycles with pressure from 0 to 35 MPa (350 bar)

Δp element type
- Microfibre filter elements - series R: 20 bar
- Microfibre filter elements - series H: 210 bar (only for FHD 021)
- Microfibre filter elements - series S: 210 bar (not available for FHD 021)
- Wire mesh filter elements - series N: 20 bar
- Fluid flow through the filter element from OUT to IN.

Connections
In-line Inlet/Outlet 90°

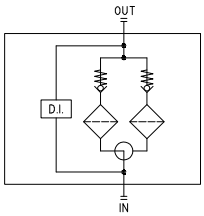
Note
FHD filters are provided for vertical mounting

Weights [kg] and volumes [dm³]

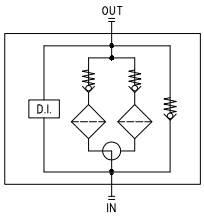
	Weights [kg]						Volumes [dm³]					
	Lenght	1	2	3	4	5	Lenght	1	2	3	4	5
FHD 021		-	6.66	7.15	8.15	-		-	0.06	0.12	0.22	-
FHD 051		13.41	13.78	14.19	14.66	-		0.22	0.31	0.41	0.53	-
FHD 326		36.35	39.48	10.77	-	-		0.88	1.60	2.37	-	-
FHD 333		-	64.48	66.77	69.25	-		-	1.75	2.52	3.35	-

Hydraulic symbols

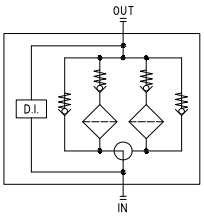
Style **S**



Style **B**
FHD 051



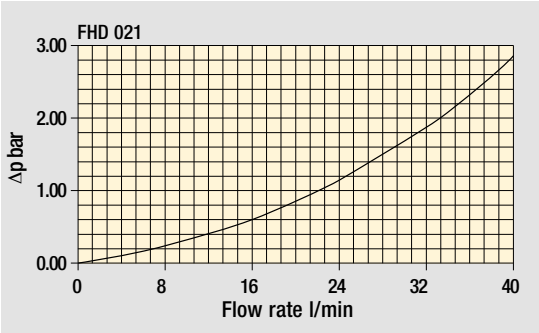
Style **B**
FHD 326 - 333

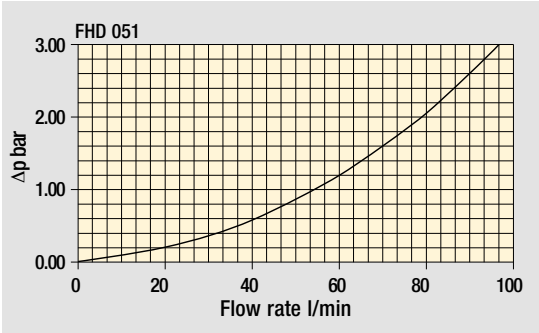


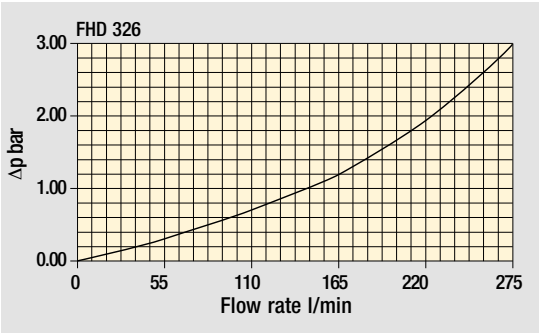
The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

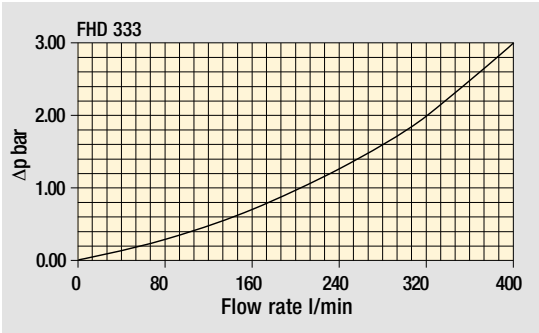
Pressure drop

Filter housings Δp pressure drop

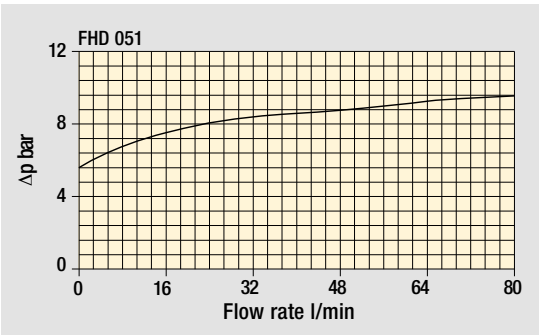


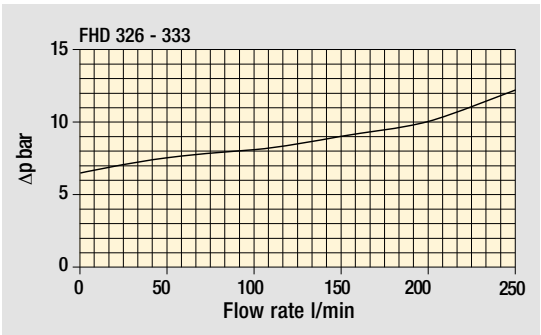






Bypass valve pressure drop





FHD FHD021

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHD021 | 4 | S | A | G1 | A06 | H | P01

Series and size
FHD021

Length
2 | **3** | **4**

Valves
S Without bypass

Seals
A NBR
V FPM

Connections
G1 G1/2”
G2 1/2” NPT
G3 SAE 8 - 3/4” - 16 UNF

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Element Δp		Filtration rating Axx	Filtration rating M25
N	20 bar		•
H	210 bar	•	

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP011 | 4 | A06 | A | H | P01

Element series and size
HP011

Element length
2 | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm	**A16**	Inorganic microfiber	16 µm
A06	Inorganic microfiber	6 µm	**A25**	Inorganic microfiber	25 µm
A10	Inorganic microfiber	10 µm	**M25**	Wire mesh	25 µm

Seals
A NBR
V FPM

Element Δp		Filtration rating Axx	Filtration rating M25
N	20 bar		•
H	210 bar	•	•

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

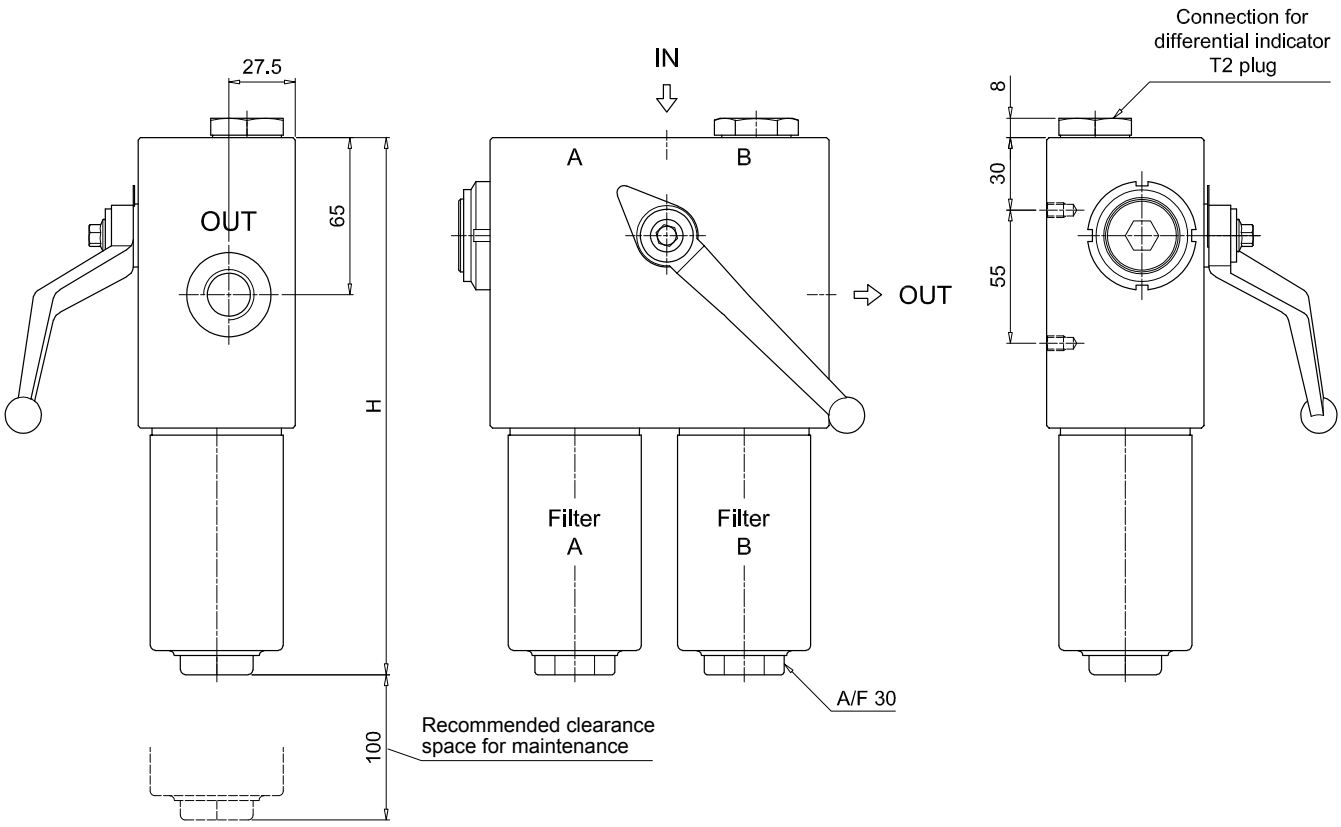
Additional features

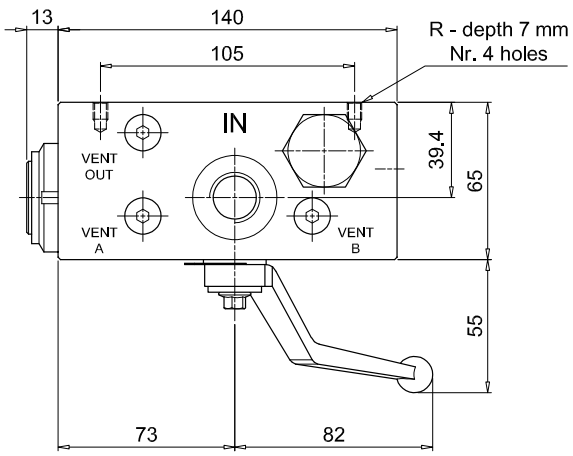
		page
T2	Plug	521

Dimensions

FHD021	
Filter length	**H [mm]**
2	172
3	222
4	272

Connections	R
G1	M6
G2 - G3	1/4" UNC





FHD FHD051 - FHD326 - FHD333

Designation & Ordering code

COMPLETE FILTER

Configuration example: FHD326 | 3 | S | A | G1 | M25 | N | P01

Series and size

FHD051 | **FHD326** | **FHD333**

Length	FHD051	FHD326	FHD333
1		•	
2	•	•	•
3	•	•	•
4	•		•
5	•		

Valves

S	Without bypass
B	With bypass 6 bar

Seals

A	NBR
V	FPM

Connections	FHD051	FHD326	FHD333
G1	G3/4”	G1 1/4”	-
G2	3/4” NPT	1 1/4” NPT	-
G3	G1/2”	SAE 20 - 1 5/8” - 12 UN	-
G4	1/2” NPT	-	-
G5	SAE 8 - 3/4” - 16 UNF	-	-
G6	SAE 12 - 1 1/16” - 12 UN	-	-
F1	-	-	1 1/2” 6000 psi/M
F2	-	-	1 1/2” 6000 psi/UNC

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Element Δp		Filtration rating Axx	Filtration rating M25
N	20 bar		•
R	20 bar	•	•
S	210 bar	•	•

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP320 | 3 | M25 | A | N | P01

Element series and size

	FHD051	FHD326	FHD333
HP050	•		
HP320		•	•

Element length	HP050	HP320
1		•
2	•	•
3	•	•
4	•	•
5	•	

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm
M25	Wire mesh	25 µm

Seals

A	NBR
V	FPM

Element Δp		Filtration rating Axx	Filtration rating M25
N	20 bar		•
R	20 bar	•	•
S	210 bar	•	•

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators		page
DEA	Electrical differential indicator	517
DEM	Electrical differential indicator	517-518
DLA	Electrical / visual differential indicator	518-519
DLE	Electrical / visual differential indicator	519

		page
DTA	Electronic differential indicator	520
DVA	Visual differential indicator	520
DVM	Visual differential indicator	520

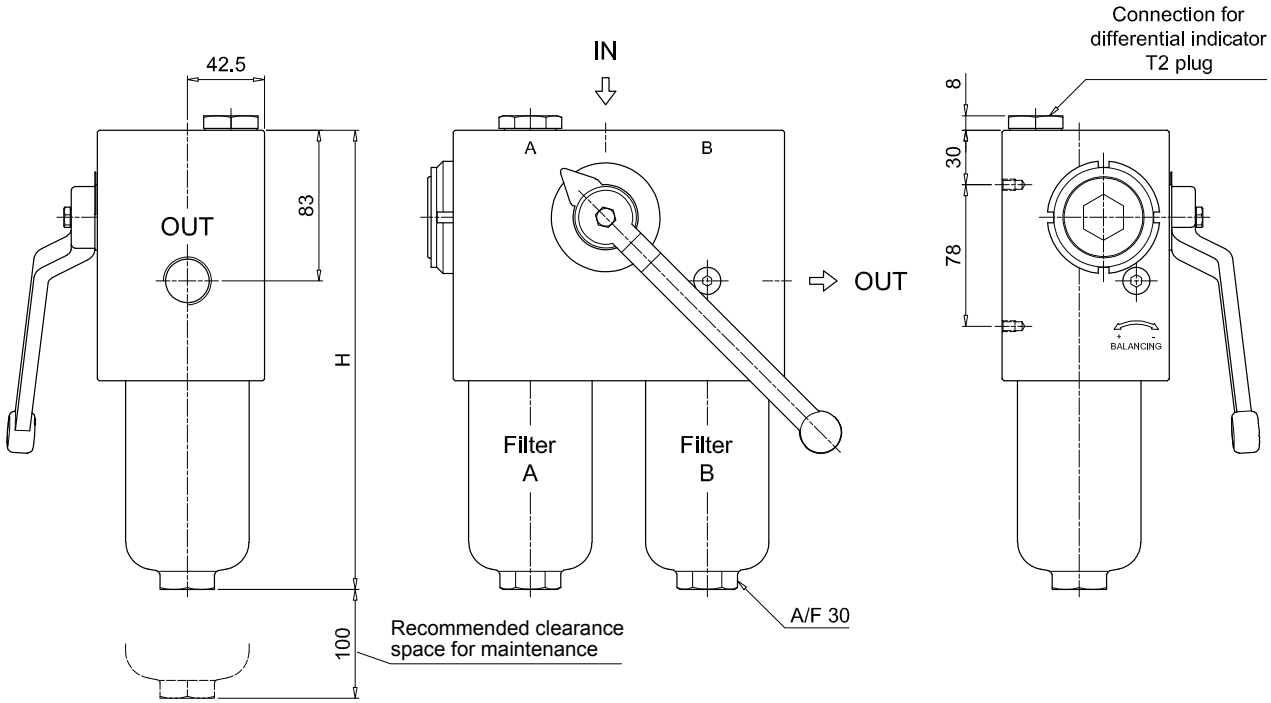
Additional features		page
T2	Plug	521

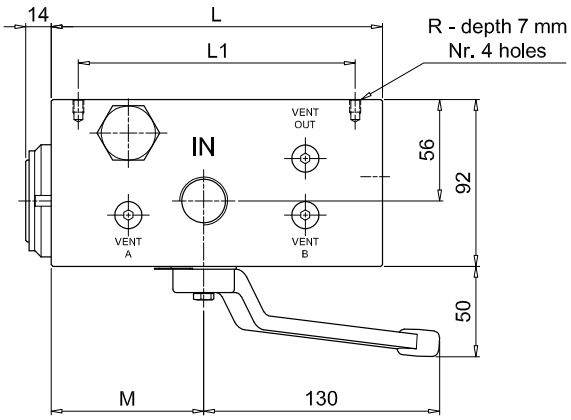
Dimensions

FHD051	
Filter length	**H [mm]**
2	253
3	295
4	343
5	465

Connections	**R**
G1	M6
G2	1/4" UNC
G3	M6
G4-G5-G6	1/4" UNC

Valves	**L [mm]**	**L1 [mm]**	**M [mm]**
S	168	138	84
B	182.5	152.5	98.5

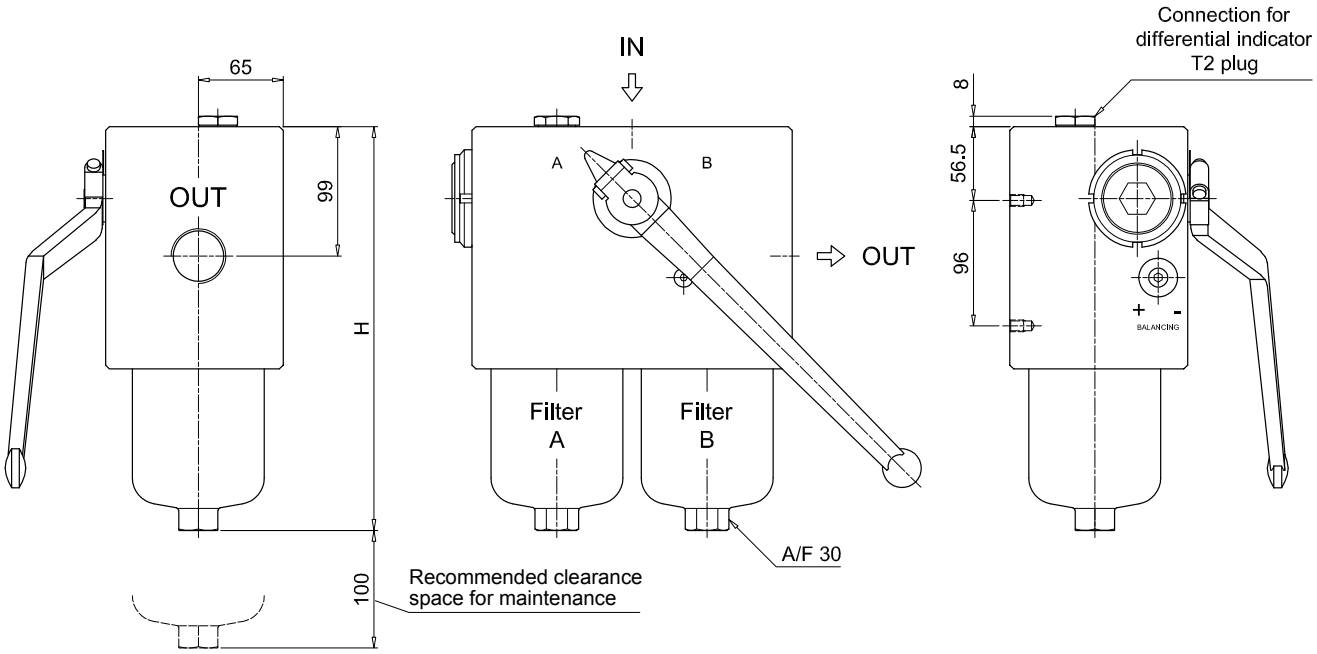


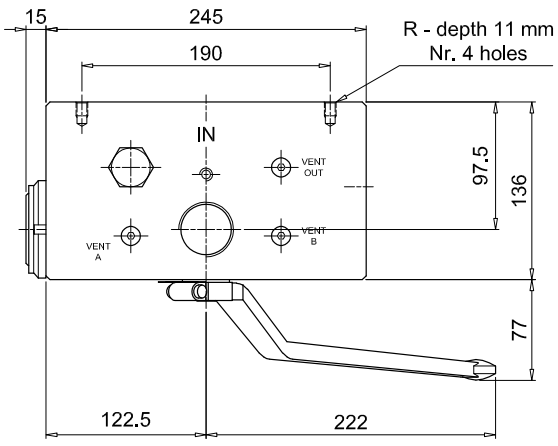


Dimensions

FHD326	
Filter length	**H [mm]**
1	309
2	432
3	564

Connections	**R**
G1	M10
G2 - G3	3/8" UNC

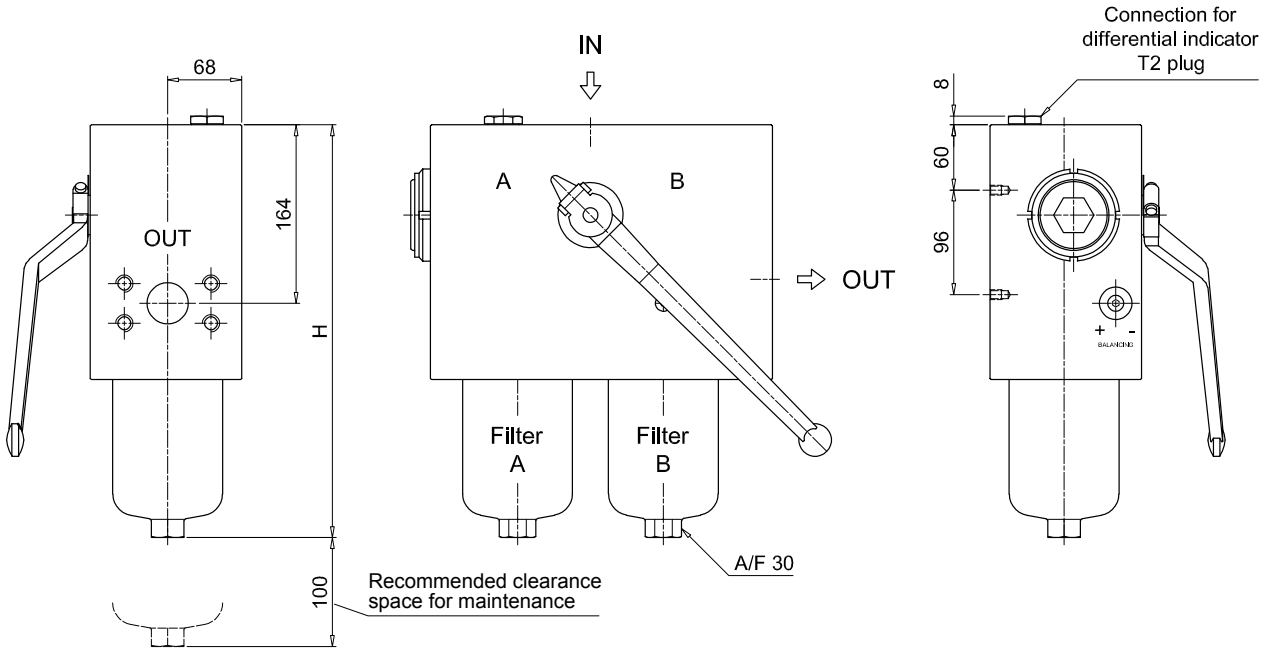


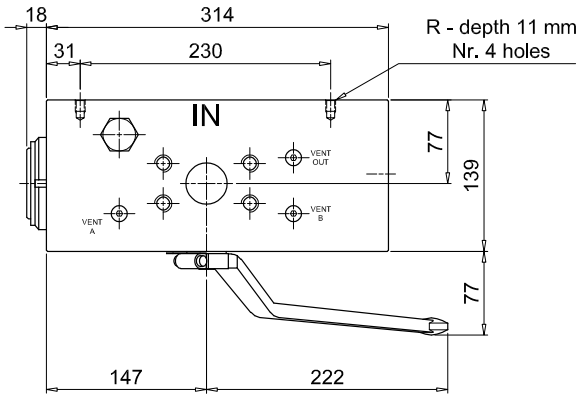


Dimensions

FHD333	
Length 2 - 3	
Filter length	**H [mm]**
2	479
3	612

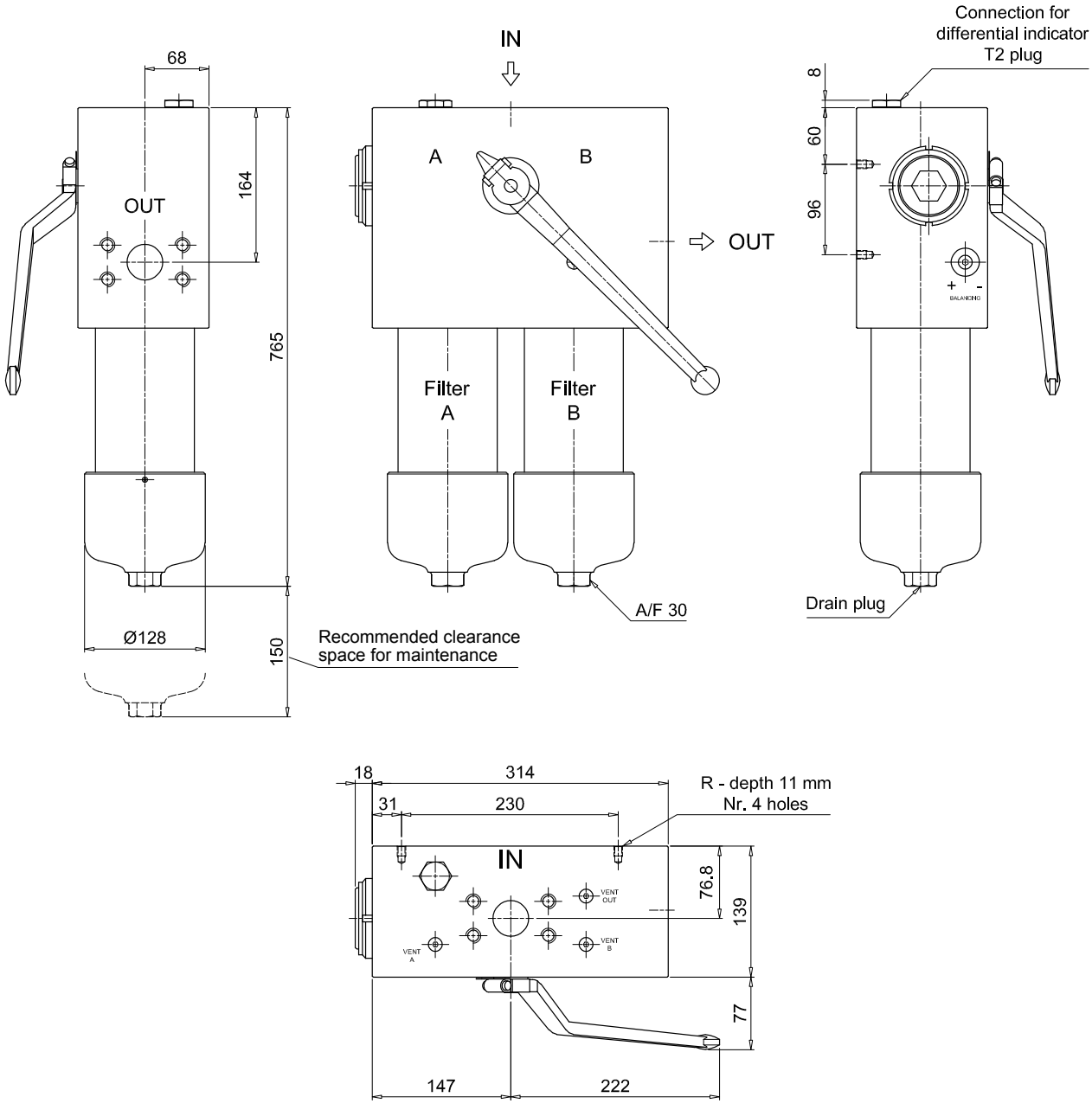
Connections	**R**
F1	M10
F2	3/8" UNC



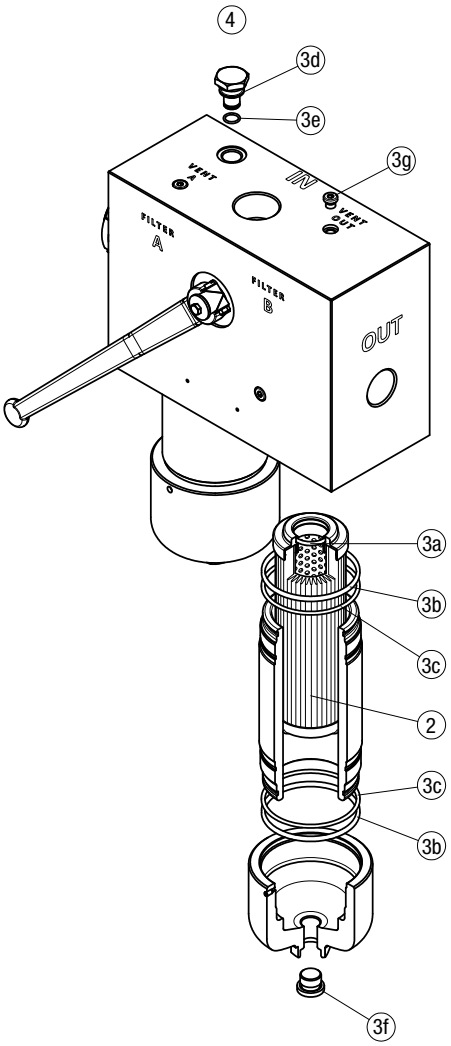


Dimensions

FHD333	
Length 4	
Connections	**R**
F1	M10
F2	3/8" UNC



FHD 021 - 051 - 326 - 333



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FHD 021	See order table	02050511	02050512	T2H	T2V
FHD 051		02050420	02050421		
FHD 326 - 333		02050377	02050378		

Clogging indicators

Differential indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited. This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

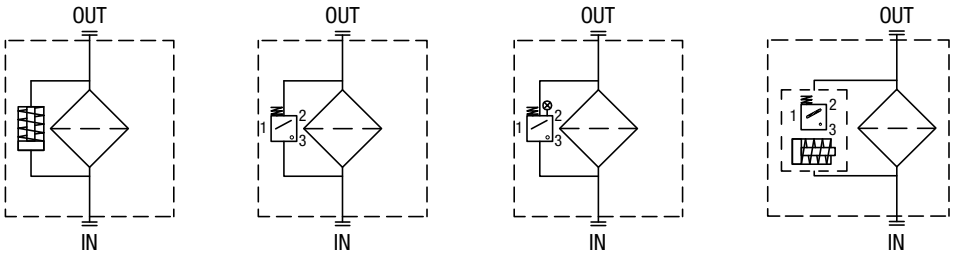
These type of devices can be provided with a visual, electrical or both signals.

The electronic model (only available for differential type indicators) with warning signals (75% of clogging) and alarm (clogging).

Suitable indicator types

DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



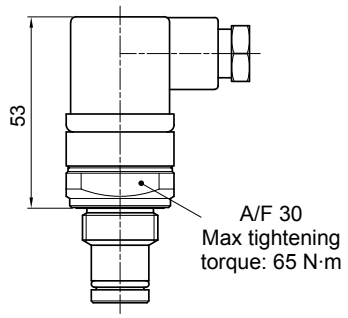
Quick reference guide

	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVM70xP01	DEA70xA50P01 DEM70xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01	DTA70xF70P01

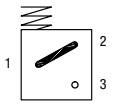
DEA*50

Electrical Differential Indicator

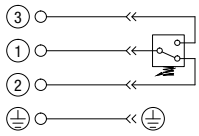
Settings	Ordering code
5 bar ±10%	DE A 50 x A 50 P01
7 bar ±10%	DE A 70 x A 50 P01
9.5 bar ±10%	DE A 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

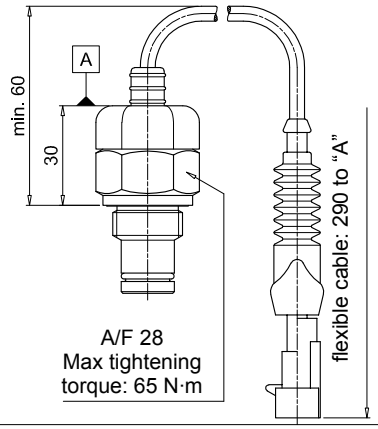
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

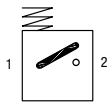
DEM*10

Electrical Differential Indicator

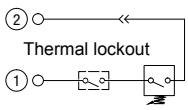
Settings	Ordering code
5 bar ±10%	DE M 50 x x 10 P01
7 bar ±10%	DE M 70 x x 10 P01
9.5 bar ±10%	DE M 95 x x 10 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

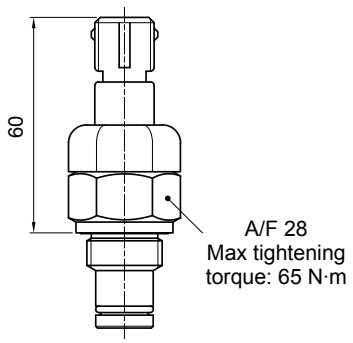
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: AMP Superseal series 1.5
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

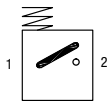
DEM*20

Electrical Differential Indicator

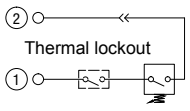
Settings	Ordering code
5 bar ±10%	DE M 50 x x 20 P01
7 bar ±10%	DE M 70 x x 20 P01
9.5 bar ±10%	DE M 95 x x 20 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

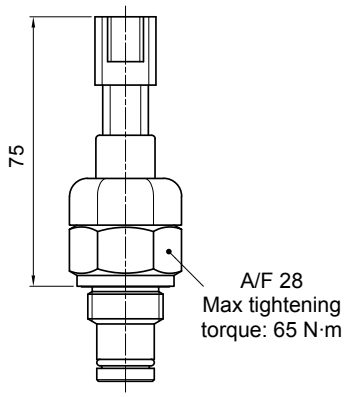
Electrical data
- Electrical connection: AMP Time junior
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option "F")

Dimensions

DEM*30

Electrical Differential Indicator

Settings	Ordering code
5 bar ±10%	DE M 50 x x 30 P01
7 bar ±10%	DE M 70 x x 30 P01
9.5 bar ±10%	DE M 95 x x 30 P01



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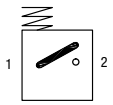
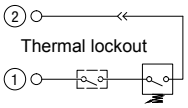


Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

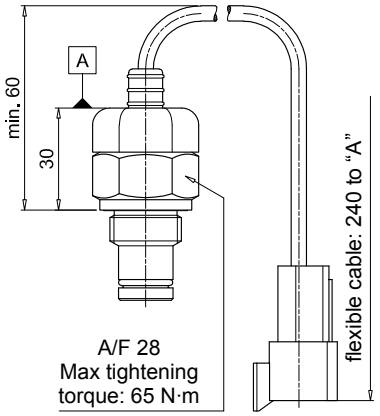
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-2-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: Normally open contacts (NC on request)
- Thermal lockout: Normally open up to 30 °C (option “F”)

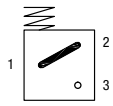
DEM*35

Electrical Differential Indicator

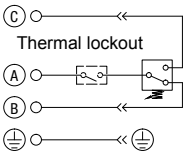
Settings	Ordering code
5 bar ±10%	DE M 50 x x 35 P01
7 bar ±10%	DE M 70 x x 35 P01
9.5 bar ±10%	DE M 95 x x 35 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

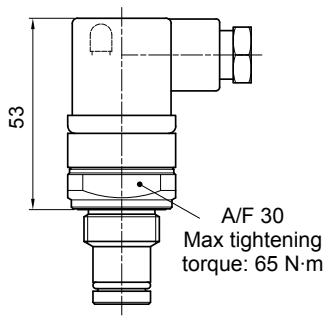
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529

Electrical data
- Electrical connection: Deutsch DT-04-3-P
- Resistive load: 0.2 A / 115 Vdc
- Switching type: SPDT contact
- Thermal lockout: Normally open up to 30 °C (option “F”)

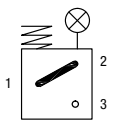
DLA*51 - DLA*52

Electrical/Visual Differential Indicator

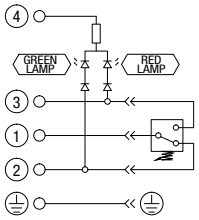
Settings	Ordering code
5 bar ±10%	DL A 50 x A xx P01
7 bar ±10%	DL A 70 x A xx P01
9.5 bar ±10%	DL A 95 x A xx P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

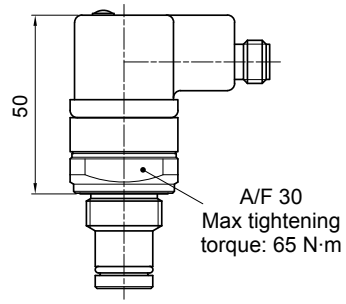
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc

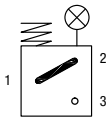
DLA*71

Electrical/Visual Differential Indicator

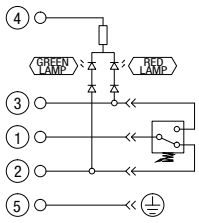
Settings	Ordering code
5 bar ±10%	DL A 50 x A 71 P01
7 bar ±10%	DL A 70 x A 71 P01
9.5 bar ±10%	DL A 95 x A 71 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

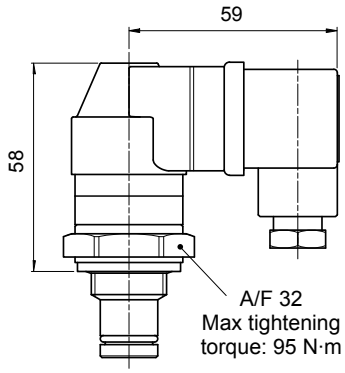
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Lamps 24 Vdc
- Resistive load: 0.4 A / 24 Vdc

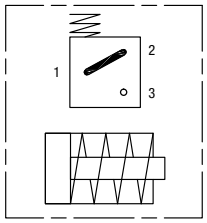
DLE*A50

Electrical/Visual Differential Indicator

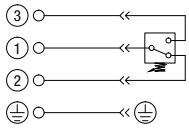
Settings	Ordering code
5 bar ±10%	DL E 50 x A 50 P01
7 bar ±10%	DL E 70 x A 50 P01
9.5 bar ±10%	DL E 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

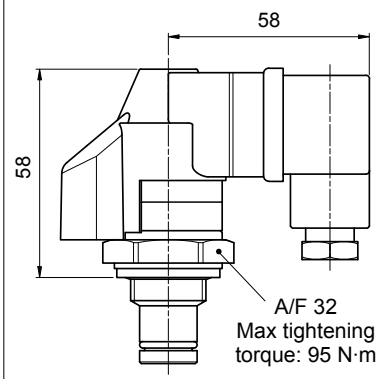
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Available the connector with lamps

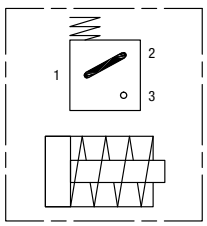
DLE*F50

Electrical/Visual Differential Indicator

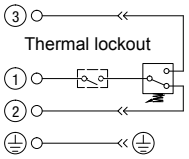
Settings	Ordering code
5 bar ±10%	DL E 50 x F 50 P01
7 bar ±10%	DL E 70 x F 50 P01
9.5 bar ±10%	DL E 95 x F 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

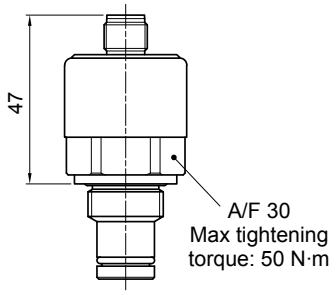
Electrical data
- Electrical connections: EN 175301-803
- Resistive load: 5 A / 250 Vac
- Thermal lockout setting: +30 °C

Dimensions

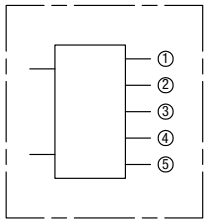
DTA*70

Electronic Differential Indicator

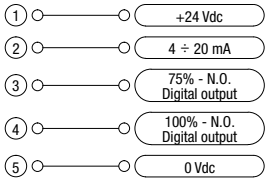
Settings	Ordering code
5 bar ±10%	DT A 50 x x 70 P01
7 bar ±10%	DT A 70 x x 70 P01
9.5 bar ±10%	DT A 95 x x 70 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

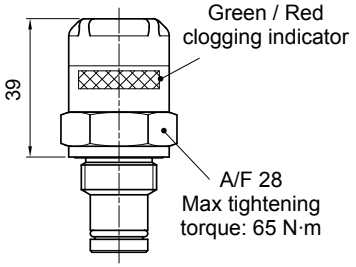
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP67 according to EN 60529

Electrical data
- Electrical connection: IEC 61076-2-101 D (M12)
- Power supply: 24 Vdc
- Analogue output: From 4 to 20 mA
- Thermal lockout: 30 °C (all output signals stalled up to 30 °C)

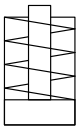
DVA

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV A 50 x P01
7 bar ±10%	DV A 70 x P01
9.5 bar ±10%	DV A 95 x P01



Hydraulic symbol



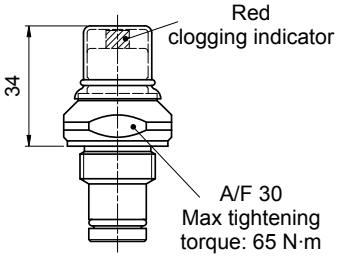
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

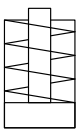
DVM

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV M 50 x P01
7 bar ±10%	DV M 70 x P01
9.5 bar ±10%	DV M 95 x P01



Hydraulic symbol



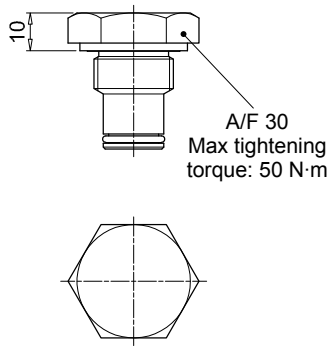
Materials
- Body: Brass
- Internal parts: Brass - Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

T2

Indicator plug

Seal	Ordering code
HNBR	T2 H
FPM	T2 V



Materials

- Body: Phosphatized steel
- Seal: HNBR / FPM

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	M	50	H	F	50	P01
Configuration example 2:	DL	E	70	V	A	71	P01
Configuration example 3:	DT	A	50	H	F	70	P01
Configuration example 4:	DV	M	95	V			P01

Series

- **DE** Electrical differential indicator
- **DL** Electrical/Visual differential indicator
- **DT** Electronic differential indicator
- **DV** Visual differential indicator

Type	DE	DL	DT	DV
A Standard type	•	•	•	**A** With automatic reset
M With wired electrical connection	•			**M** With manual reset
E For high power supply		•		

Pressure setting

- **50** 5 bar
- **70** 7 bar
- **95** 9.5 bar

Seals

- **H** HNBR
- **V** FPM

Thermostat	DEA	DEM	DLA	DLE	DT	DV
A Without	•	•	•	•		
F With thermostat		•		•	•	

Electrical connections	DEA	DEM	DLA	DLE	DT	DV
10 Connection AMP Superseal series 1.5		•				
20 Connection AMP Timer Junior		•				
30 Connection Deutsch DT-04-2-P		•				
35 Connection Deutsch DT-04-3-P		•				
50 Connection EN 175301-803	•			•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc			•			
52 Connection EN 175301-803, transparent base with lamps 110 Vdc			•			
70 Connection IEC 61076-2-101 D (M12)					•	
71 Connection IEC 61076-2-101 D (M12), black base with lamps 24 Vdc			•			

Option

- **P01** MP Filtri standard
- **Pxx** Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	T2	H

Series

- **T2** Indicator plug

Seals

- **H** HNBR
- **V** FPM

Stainless steel high pressure filters are used as process filters to protect individual valves or the entire hydraulic circuit from contamination as per ISO 4406.
11 versions are available with operating pressures ranging from 60 bar up to 1000 bar (14500 psi).

A range of products is available to resolve all filter mounting problems, in the following configurations:
- **FZP In-line pressure filter with threaded mount**
- **FZH In-line pressure filter with threaded mount for higher pressure**
- **FZX In-line pressure filter with threaded mount up to 1000 bar**
- **FZB Manifold side mounting**
- **FZM Manifold top mounting**
- **FZD Duplex pressure filter for continuous operation requirements**

FZ stainless steel filters are specifically designed for applications in the:
- **Process engineering**
- **Water hydraulics**
- **Offshore technology**
- **Marine technology**
- **High pressure hydraulics**
- **Any application in harsh or aggressive environment**

FILTER SIZING

For the proper corrective factor Y see chapter at page 22

Stainless steel high pressure filters

FZP series

Maximum pressure up to 420 bar

Technical data

Stainless steel high pressure filters **Maximum pressure up to 420 bar**

Style
In-Line filter:
- FZP 039 Max. working pressure: 420 bar
- FZP 136 Max. working pressure: 420 bar

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

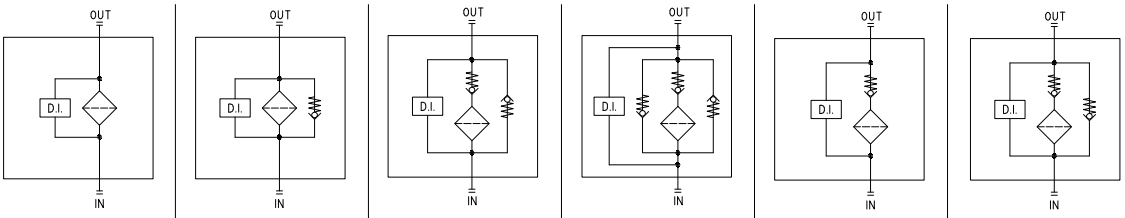
Seals
- Standard NBR
  series A (-25 °C to +110 °C)
- Optional FPM
  series V (-20 °C to +120 °C)
- Optional MFQ
  series F (-50 °C to +120 °C)

Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZP filters are provided
for vertical mounting.

Hydraulic symbols



Filter series	Style S	Style B	Style V	Style Z	Style T	Style D
FZP 039	•	•	•	•		
FZP 136	•	•				

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

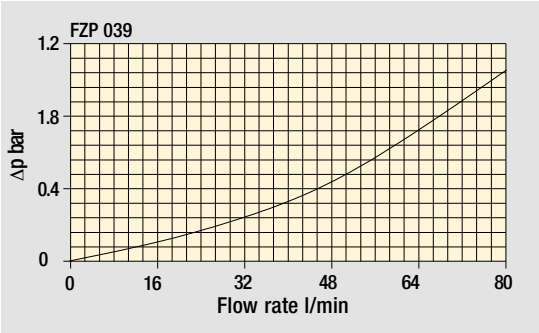
NBR seals series A, compatible with:
Mineral oils, synthetic fluids,
aqueous emulsions and water and glycol.

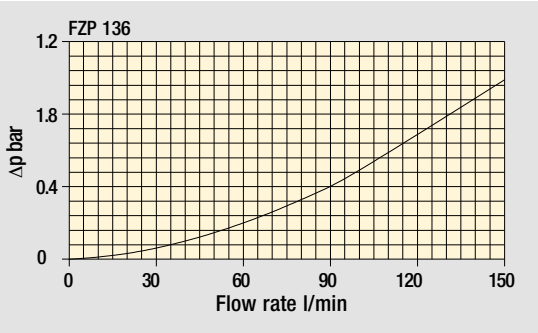
FPM seals series V, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.





Filter housings Δp pressure drop

Designation & Ordering code

COMPLETE FILTER

Configuration example: FZP039 | 2 | B | F | B | 2 | A03 | U | P01

Series and size
FZP039

Length
2 | **3** | **4**

Valves

S	Without bypass
B	With bypass 6 bar
T	With check valve, without bypass
D	With check valve, with bypass 6 bar
V	With reverse flow, without bypass
Z	With reverse flow, with bypass 6 bar

Seals

A	NBR
V	FPM
F	MFQ

Connections

A	G1/2”
B	1/2” NPT
C	SAE 8 - 3/4” - 16 UNF

Connections for differential indicators

1	Without
2	With connection

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm
A06	Inorganic microfiber 6 µm
A10	Inorganic microfiber 10 µm
A16	Inorganic microfiber 16 µm
A25	Inorganic microfiber 25 µm

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•		•		•
H	210 bar	•		•		•	
U	210 bar, stainless steel filter element	•	•	•	•	•	•

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP039 | 2 | A03 | F | U | P01

Element series and size
HP039

Element length
2 | **3** | **4**

Filtration rating (filter media)

A03	Inorganic microfiber 3 µm
A06	Inorganic microfiber 6 µm
A10	Inorganic microfiber 10 µm
A16	Inorganic microfiber 16 µm
A25	Inorganic microfiber 25 µm

Seals

A	NBR
V	FPM
F	MFQ

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•		•		•
H	210 bar	•		•		•	
U	210 bar, stainless steel filter element	•	•	•	•	•	•

Execution

P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators

		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

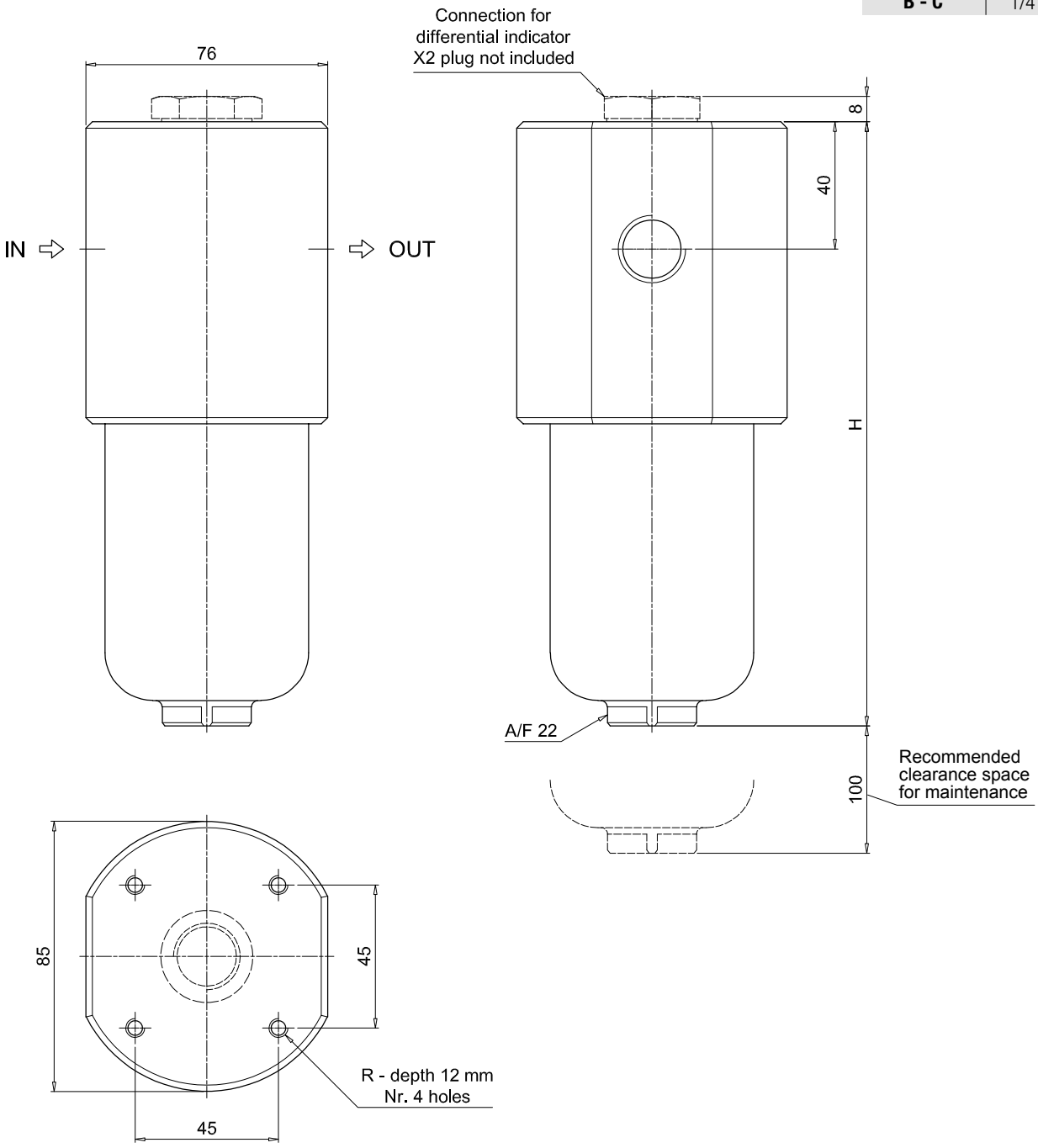
Additional features

		page
X2	Plug	579

Dimensions

FZP039	
Filter length	**H [mm]**
2	179
3	222
4	266

Connections	R
A	M6
B - C	1/4" UNC



Designation & Ordering code

COMPLETE FILTER

Configuration example: FZP136 | 1 | D | A | B | 6 | A03 | N | P01

Series and size
FZP136

Length
1 | **2** | **3**

Valves
S Without bypass
B With bypass 6 bar

Seals
A NBR
V FPM
F MFQ

Connections
A G3/4”
B 3/4” NPT
C SAE 12 - 1 1/16” - 12 UN
D G1”
E 1” NPT
F SAE 16 - 1 5/16” - 12 UN
G G1 1/4”
H 1 1/4” NPT
I SAE 20 - 1 5/8” - 12 UN

Connections for differential indicators
1 Without
6 With two connections on both sides

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Element Δp		Valves S	Valves B
N	20 bar		•
H	210 bar	•	
U	210 bar, stainless steel filter element	•	•

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP135 | 1 | A03 | A | N | P01

Element series and size
HP135

Element length
1 | **2** | **3**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Seals
A NBR
V FPM
F MFQ

Element Δp		Valves S	Valves B
N	20 bar		•
H	210 bar	•	
U	210 bar, stainless steel filter element	•	•

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

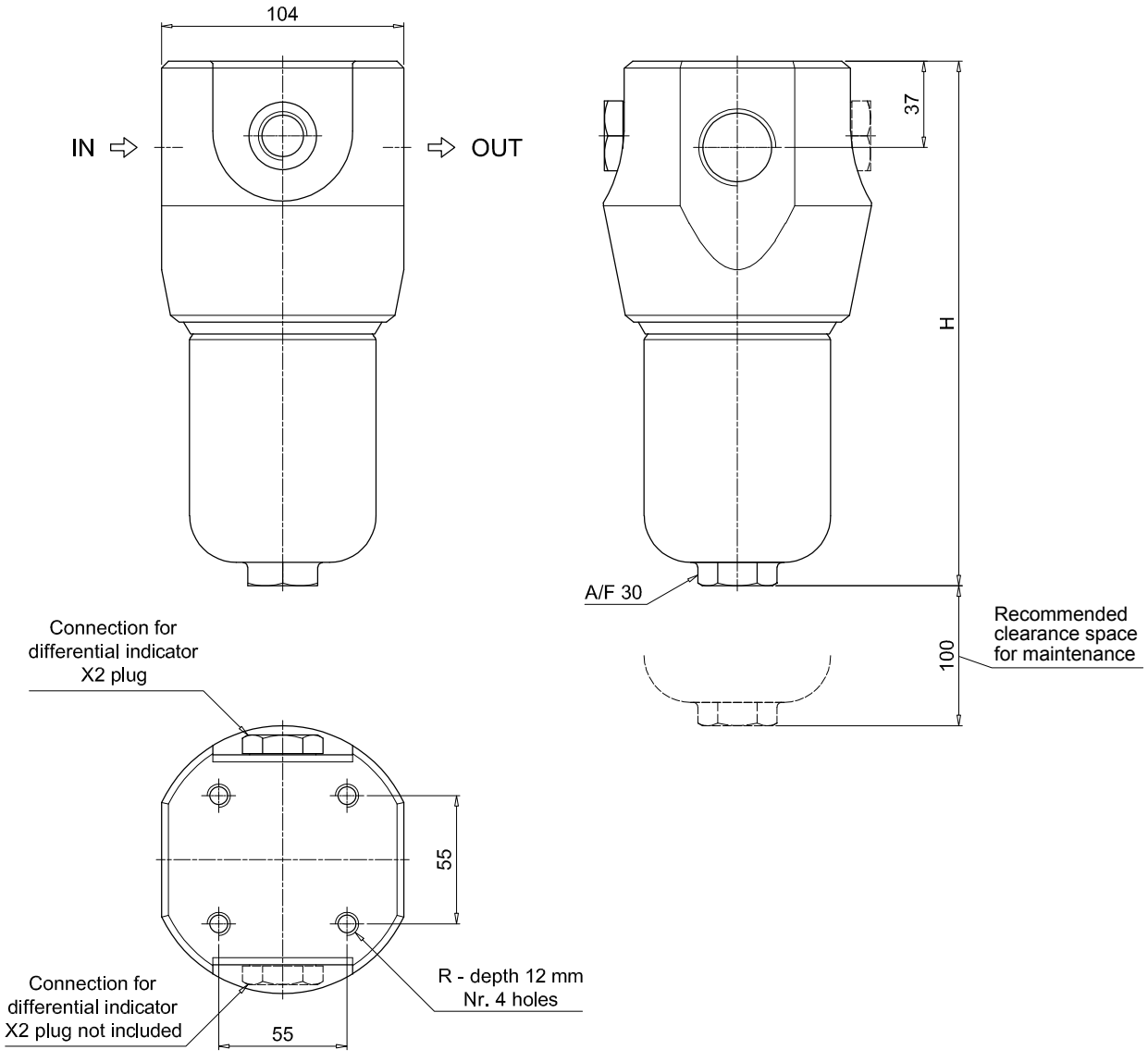
Differential indicators		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

Additional features		page
X2	Plug	579

Dimensions

FZP136	
Filter length	**H [mm]**
1	222
2	335
3	410

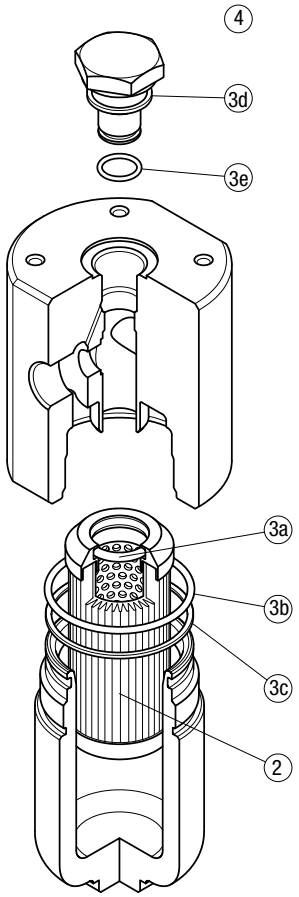
Connections	R
A	M10
B - C	3/8" UNC
D	M10
E - F	3/8" UNC
G	M10
H - I	3/8" UNC



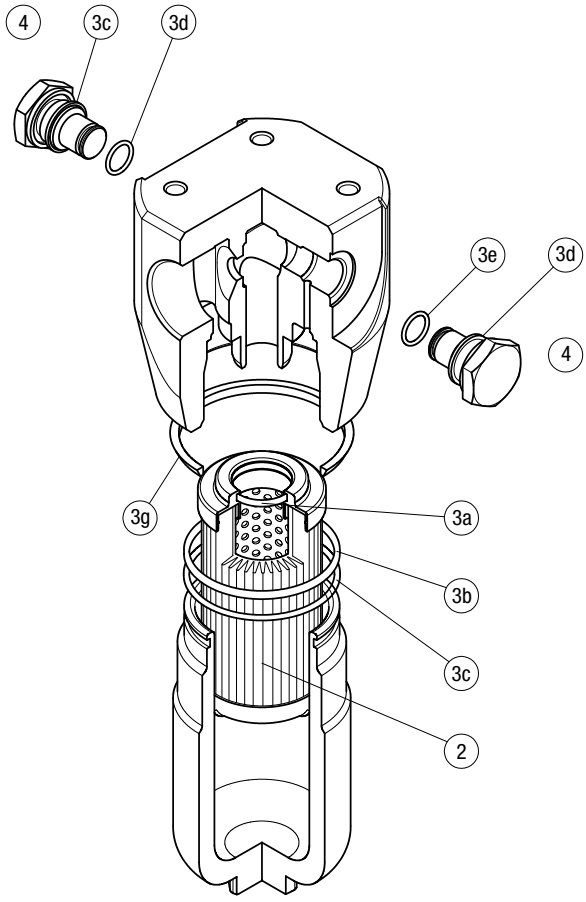
The position of the X2 plug is reversible

Order number for spare parts

FZP 039



FZP 136



Q.ty:

nr. 0 pcs. for version 1 (without indicator port)

nr. 1 pc. for version 2 (with indicator port)

Item:	Q.ty: 1 pc. (2)	Q.ty: 1 pc. (3) (3a ÷ 3g)		Q.ty: 1 pc. (4)	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
FZP 039	See order table	02050299	02050300	X2H	X2V
FZP 136		02050636	02050637		

FZH series

Maximum pressure up to 700 bar

Technical data

Stainless steel high pressure filters **Pressure filters**

Style
In-Line filter:
- FZH 010-011 Max. working pressure: 700 bar
- FZH 039 Max. working pressure: 700 bar

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

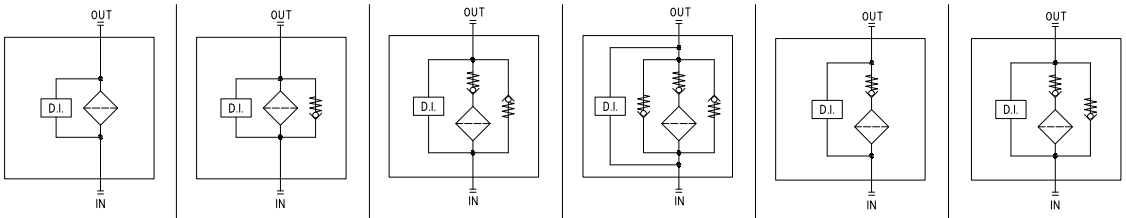
Seals
- Standard NBR
  series A (-25 °C to +110 °C)
- Optional FPM
  series V (-20 °C to +120 °C)
- Optional MFQ
  series F (-50 °C to +120 °C)

Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZH filters are provided
for vertical mounting.

Hydraulic symbols



Filter series	Style S	Style B	Style V	Style Z	Style T	Style D
FZH 010 - 011	•	•	•	•		
FZH 039	•	•	•	•		

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

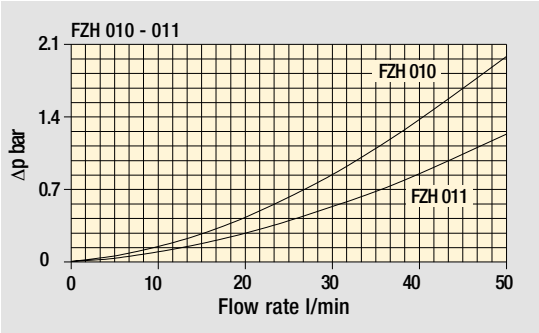
NBR seals series A, compatible with:
Mineral oils, synthetic fluids,
aqueous emulsions and water and glycol.

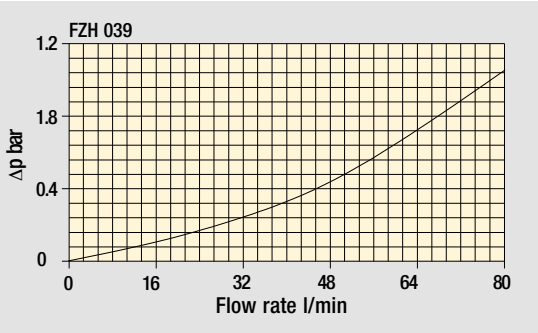
FPM seals series V, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.





Filter housings Δp pressure drop

Designation & Ordering code

COMPLETE FILTER

Configuration example: FZH010 | 2 | B | F | B | 2 | A03 | U | P01

Series and size

FZH010 | **FZH011** | **FZH039**

Length	FZH010	FZH011	FZH039
1	•	•	
2	•	•	•
3	•	•	•
4	•	•	•

Valves		FZH010	FZH011	FZH039
S	Without bypass	•	•	•
B	With bypass 6 bar	•	•	•
T	With check valve, without bypass			•
D	With check valve, with bypass 6 bar			•
V	With reverse flow, without bypass	•	•	•
Z	With reverse flow, with bypass 6 bar	•	•	•

Seals

A	NBR	**V**	FPM	**F**	MFQ

Connections	FZH010 - FZH011	FZH039
A	G1/4”	G1/2”
B	1/4” NPT	1/2” NPT
C	SAE 5 - 1/2” - 20 UNF	SAE 8 - 3/4” - 16 UNF
D	G3/8”	-
E	3/8” NPT	-
F	SAE 6 - 9/16” - 18 UNF	-

Connections for differential indicator

1	Without	**2**	With connection on the top

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•		•		•
H	210 bar	•		•		•	
U	210 bar, stainless steel filter element	•	•	•	•	•	•

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP011 | 2 | A03 | F | U | P01

Element series and size

	FZH010	FZH011	FZH039
HP011	•	•	
HP039			•

Element length	HP010	HP039
1	•	
2	•	•
3	•	•
4	•	•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Seals

A	NBR	**V**	FPM	**F**	MFQ

Element Δp		Valves S	B	T	D	V	Z
N	20 bar		•		•		•
H	210 bar	•		•		•	
U	210 bar, stainless steel filter element	•	•	•	•	•	•

Execution

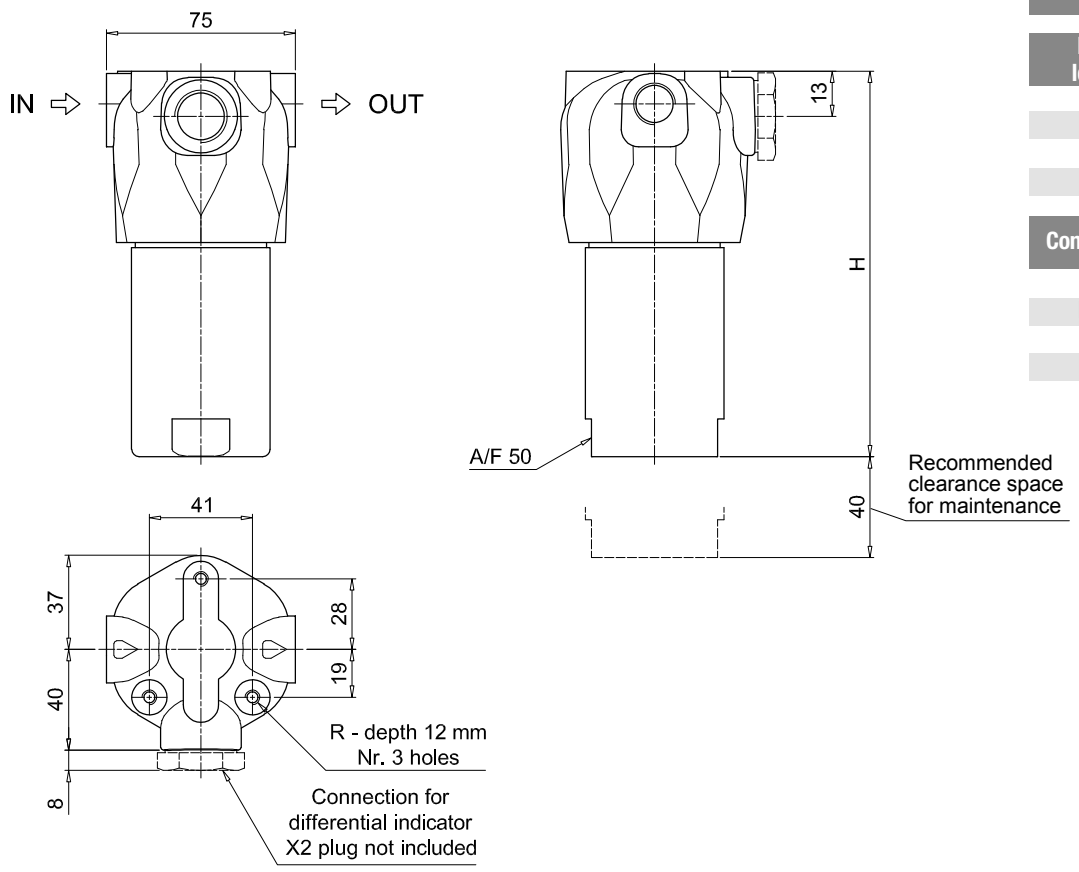
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

Additional features		page
X2	Plug	579

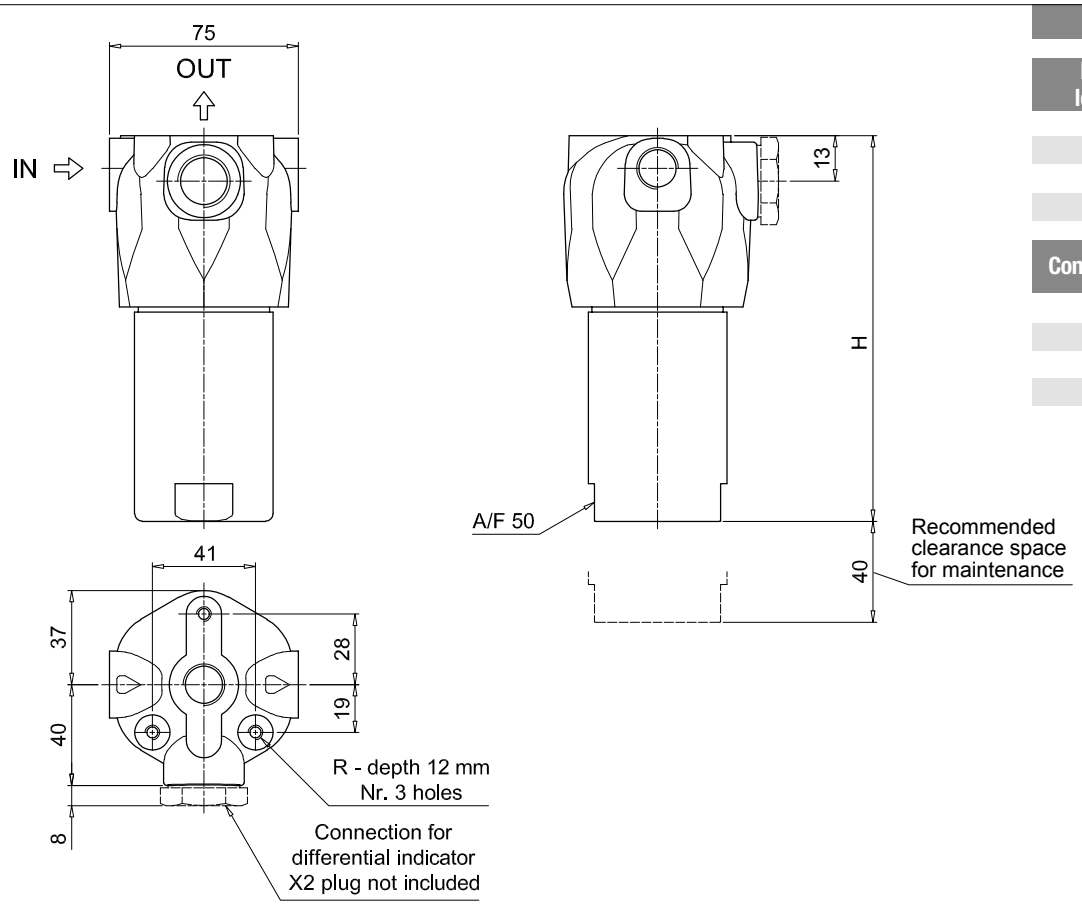
Dimensions



FZH010

Filter length	H [mm]
1	92
2	103
3	153
4	203

Connections	R
A	M6
B - C	1/4" UNC
D	M6
E - F	1/4" UNC



FZH011

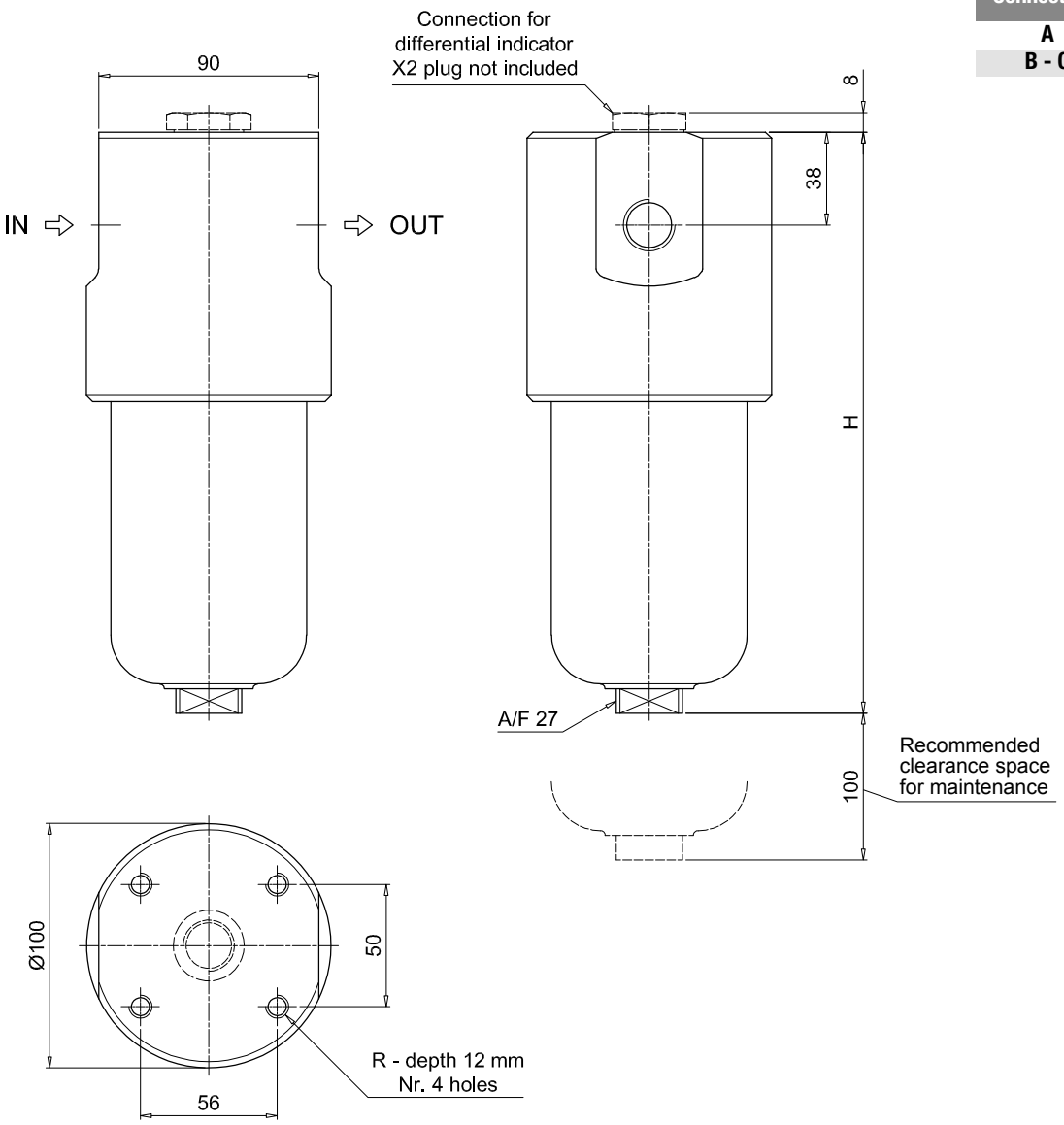
Filter length	H [mm]
1	92
2	103
3	153
4	203

Connections	R
A	M6
B - C	1/4" UNC
D	M6
E - F	1/4" UNC

Dimensions

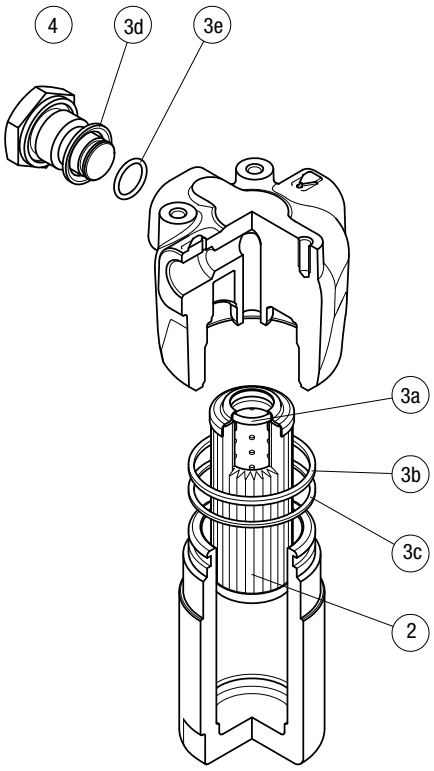
FZH039	
Filter length	**H [mm]**
2	200
3	243
4	287

Connections	R
A	M10
B - C	3/8" UNC

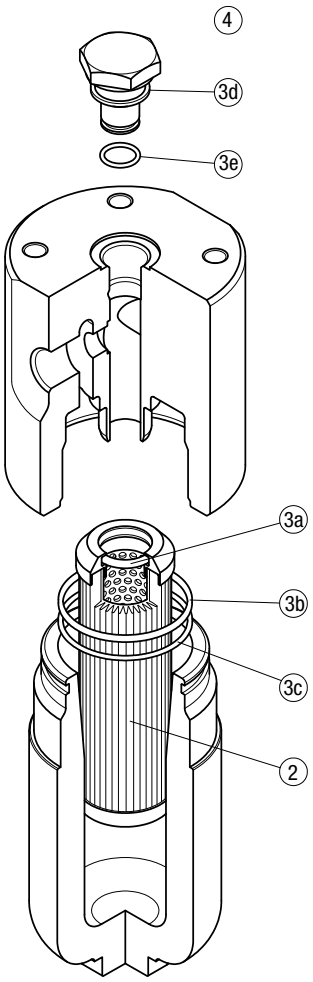


Order number for spare parts

FZH 010 - 011



FZH 039



Q.ty:

nr. 0 pcs. for version 1 (without indicator port)

nr. 1 pc. for version 2 (with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3e)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	FPM	Indicator connection plug NBR	FPM
FZH 010-011	See order table	02050501	02050492	X2H	X2V
FZH 039		02050335	02050336		

FZX series

Maximum pressure up to 1000 bar

Technical data

Stainless steel high pressure filters **Pressure filters**

Style
In-Line filter:
- FZX 011 Max. working pressure: 1000 bar with pressure from 0 to 110 bar [11 MPa]

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

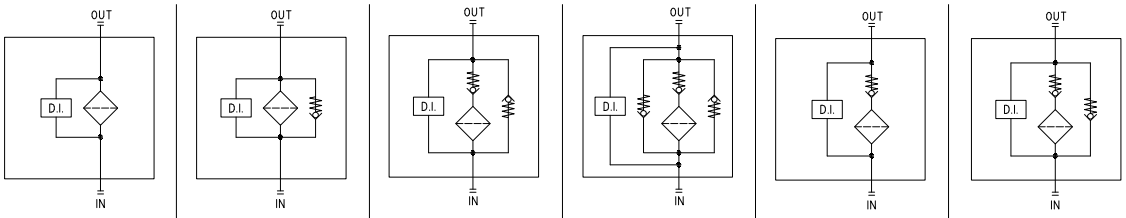
Seals
- Standard NBR series A (-25 °C to +110 °C)
- Optional FPM series V (-20 °C to +120 °C)
- Optional MFQ series F (-50 °C to +120 °C)

Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZX filters are provided for vertical mounting.

Hydraulic symbols



Filter series	Style S	Style B	Style V	Style Z	Style T	Style D
FZX 011	•					

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

NBR seals series A, compatible with:
Mineral oils, synthetic fluids, aqueous emulsions and water and glycol.

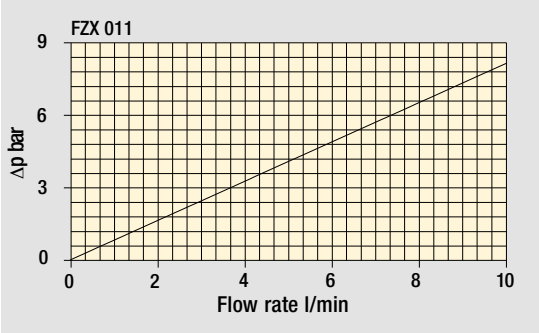
FPM seals series V, compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop



Designation & Ordering code

COMPLETE FILTER

Configuration example: FZX011 | 3 | S | V | B | 1 | A03 | U | P01

Series and size
FZX011

Length
3

Valves
S Without bypass

Seals
A NBR
V FPM
F MFQ

Connections

700 bar
A G1/4”
B 1/4” NPT
G G1/2”
H 1/2” NPT”

Autoclave 20 000 psi
M 9/16” - 18 UNF
L 3/4” - 14 NPS
N 9/16” - 18 UNF
P 3/4” - 14 NPS

Connections for differential indicators
1 Without

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Element Δp
H 210 bar
U 210 bar, stainless steel filter element

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP011 | 3 | A03 | V | U | P01

Element series and size
HP011

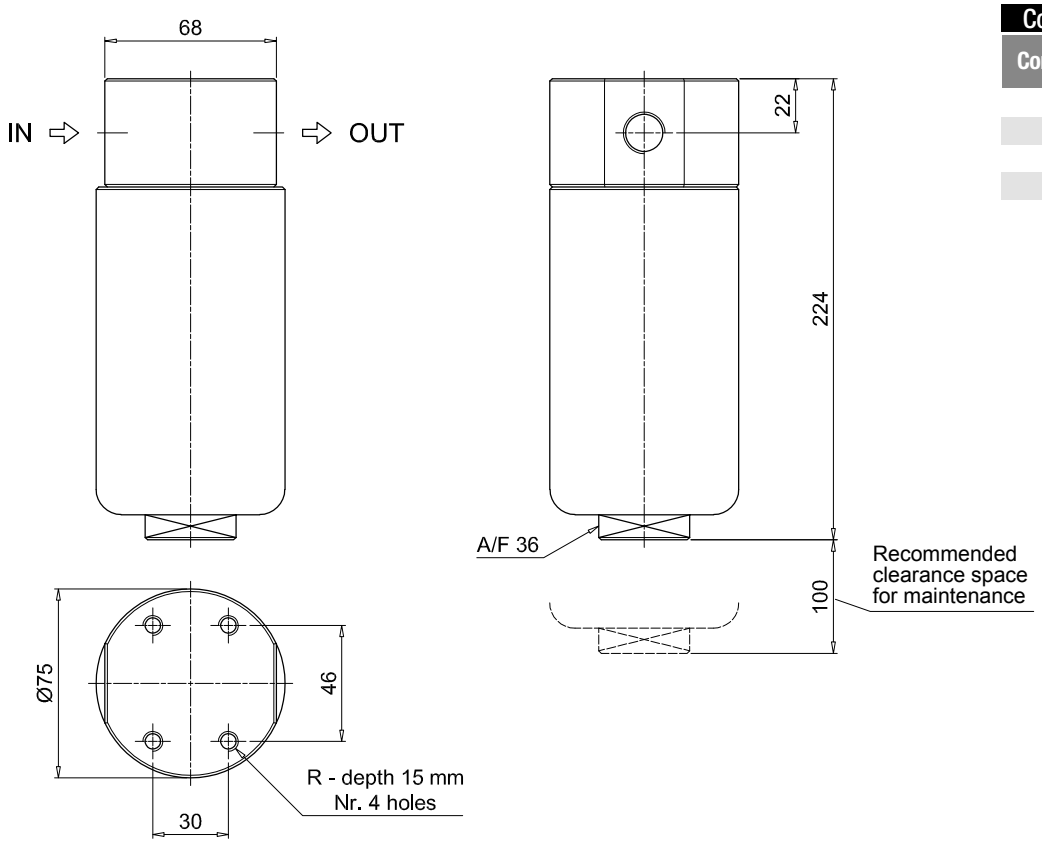
Element length
3

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

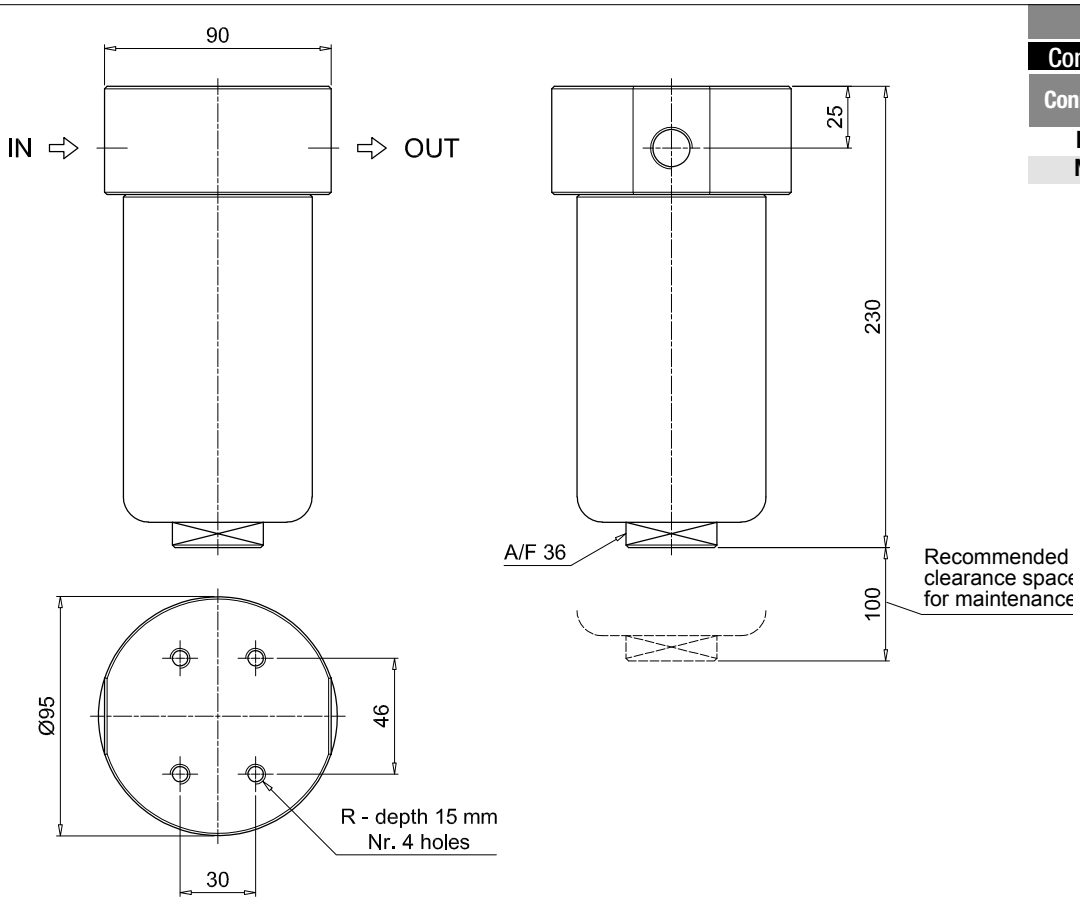
Seals
A NBR
V FPM
F MFQ

Element Δp
H 210 bar
U 210 bar, stainless steel filter element

Execution
P01 MP Filtri standard
Pxx Customized



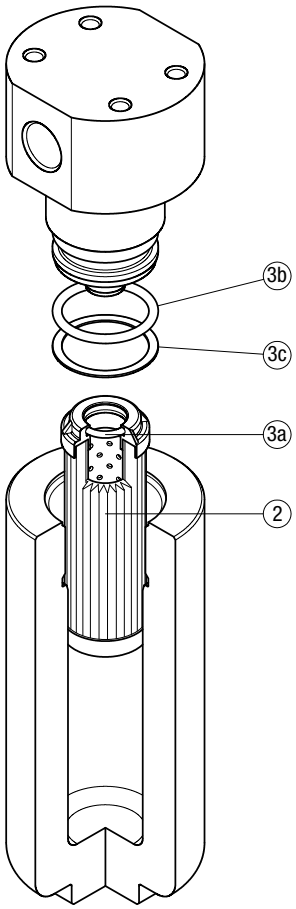
FZX011	
Connection A - B - G - H	
Connections	**R**
A	M8
B	5/16" UNC
G	M8
H	5/16" UNC



FZX011	
Connection M - L - N - P	
Connections	**R**
M - L	M8
N - P	5/16" UNC

Order number for spare parts

FZX 011



Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3c)	
Filter series	Filter element	Seal Kit code number NBR	FPM
FZX 011	See order table	02050643	02050644

FZB series

Maximum pressure up to 320 bar

Technical data

Stainless steel high pressure filters **Pressure filters**

Style
Manifold mounting:
- FZB 039 Max. working pressure: 320 bar

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

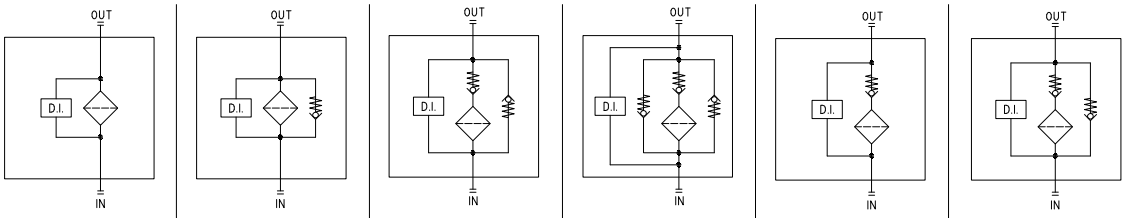
Seals
- Standard NBR
  series A (-25 °C to +110 °C)
- Optional FPM
  series V (-20 °C to +120 °C)
- Optional MFQ
  series F (-50 °C to +120 °C)

Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZB filters are provided for vertical mounting.

Hydraulic symbols



Filter series	Style S	Style B	Style V	Style Z	Style T	Style D
FZB 039	•	•			•	•

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

NBR seals series A, compatible with:
Mineral oils, synthetic fluids, aqueous emulsions and water and glycol.

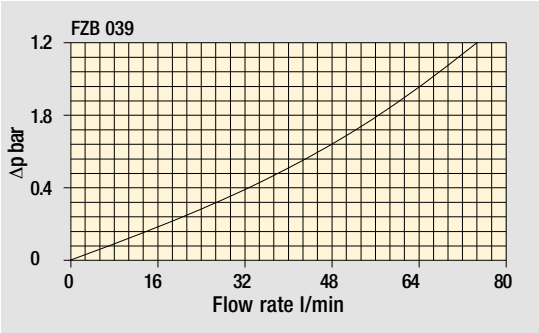
FPM seals series V, compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop



Designation & Ordering code

COMPLETE FILTER

Configuration example: FZB039 | 2 | T | A | F | 2 | A06 | H | P01

Series and size
FZB039

Length
2 | **3** | **4** |

Valves
S Without bypass
B With bypass 6 bar
T With check valve, without bypass
D With check valve, with bypass 6 bar

Seals
A NBR
V FPM
F MFQ

Connections
F Manifold

Connections for differential indicator
1 Without
2 With connection on the top

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Element Δp	Valves S	B	T	D
N 20 bar		•		•
H 210 bar	•		•	
U 210 bar, stainless steel filter element	•	•	•	•

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP039 | 3 | A03 | A | H | P01

Element series and size
HP039

Element length
2 | **3** | **4** |

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Seals
A NBR
V FPM
F MFQ

Element Δp
N 20 bar
H 210 bar
U 210 bar, stainless steel filter element

Execution
P01 MP Filtri standard
Pxx Customized

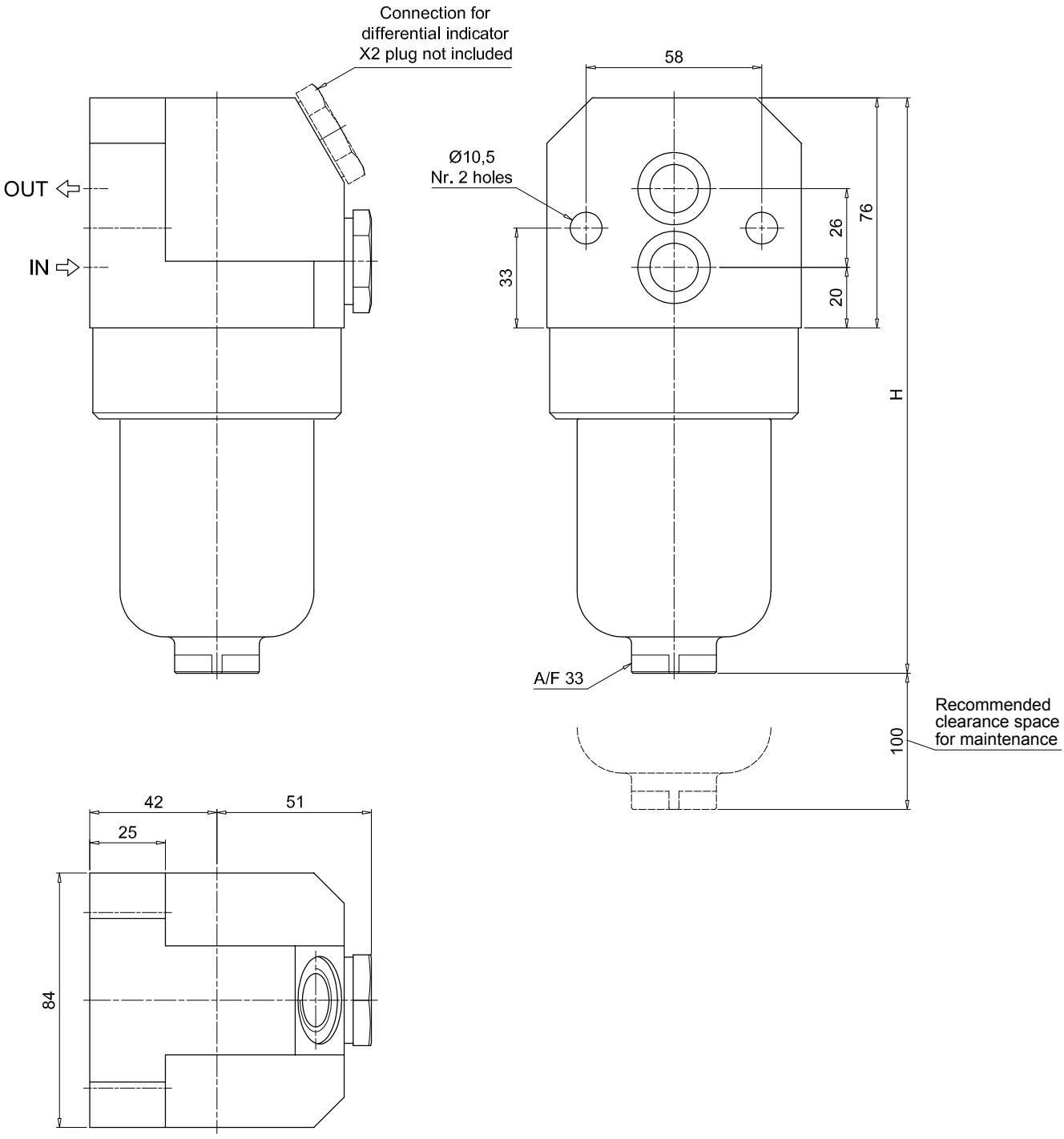
ACCESSORIES

Differential indicators		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

Additional features		page
X2	Plug	579

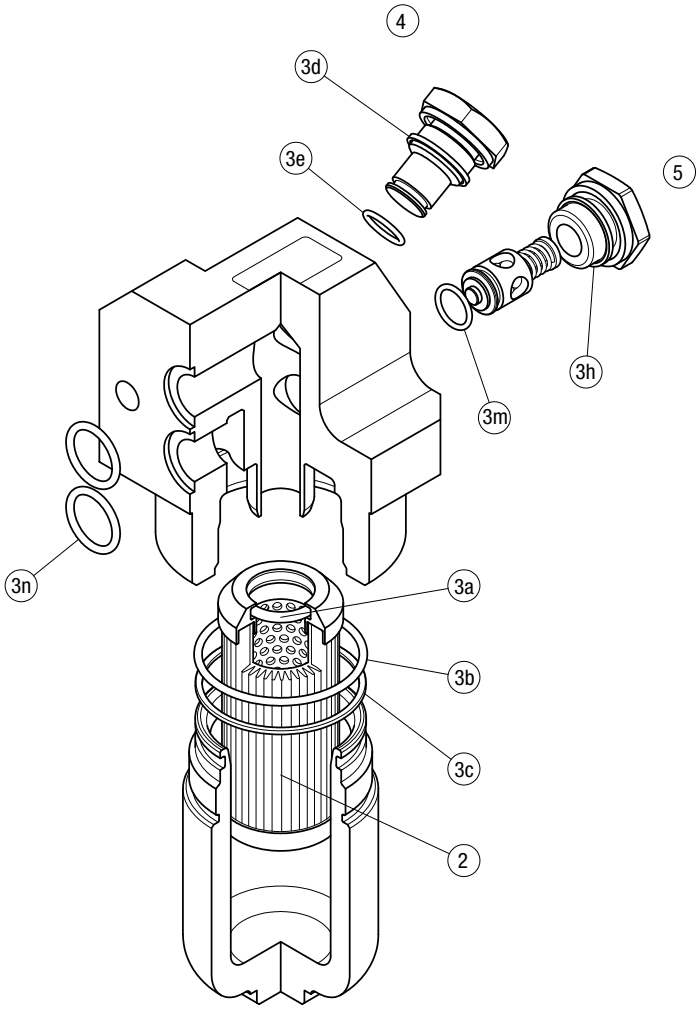
Dimensions

FZB039	
Filter length	**H [mm]**
2	190
3	233
4	277



Order number for spare parts

FZB 039



Q.ty ONLY FOR FZB:

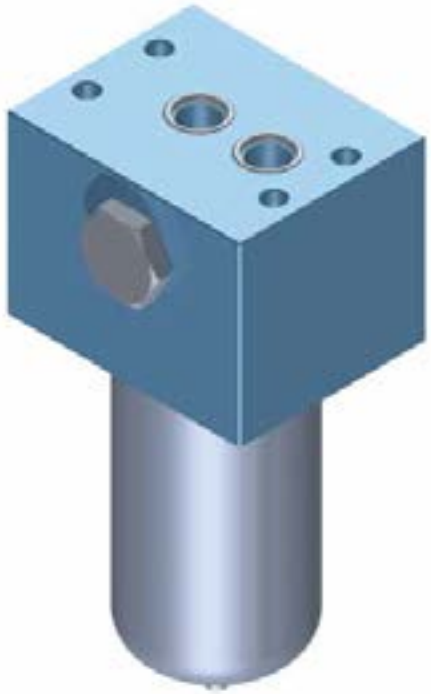
nr. 0 pcs. for version 1
(without indicator port)

nr. 1 pc. for version 2
(with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3n)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Bypass assembly / plug NBR**	**FPM**
FZB 039	See order table	02050647	02050648	X2H	X2V	02001286	02001295

FZM series

Maximum pressure up to 320 bar



Technical data

Stainless steel high pressure filters **Pressure filters**

Style
Manifold mounting:
- FZM 039 Max. working pressure: 320 bar

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

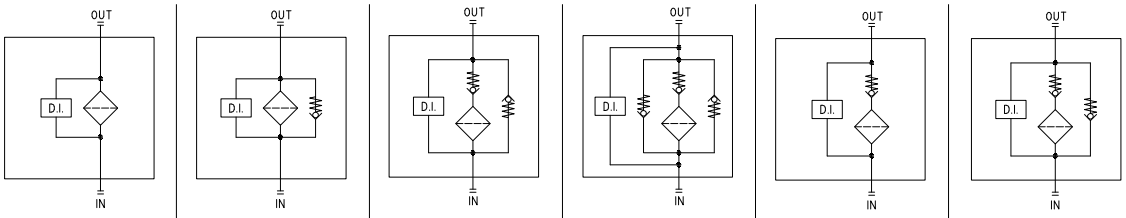
Seals
- Standard NBR
  series A (-25 °C to +110 °C)
- Optional FPM
  series V (-20 °C to +120 °C)
- Optional MFQ
  series F (-50 °C to +120 °C)

Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZM filters are provided
for vertical mounting.

Hydraulic symbols



Filter series	Style S	Style B	Style V	Style Z	Style T	Style D
FZM 039	•	•			•	•

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

NBR seals series A, compatible with:
Mineral oils, synthetic fluids,
aqueous emulsions and water and glycol.

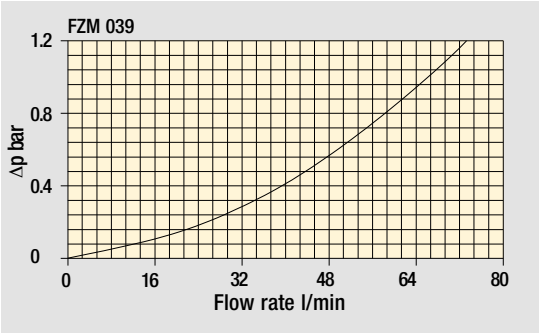
FPM seals series V, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm³ in compliance with ISO 3968.
Δp varies proportionally with density.

Filter housings Δp pressure drop



Designation & Ordering code

COMPLETE FILTER

Configuration example: FZM039 | 2 | S | A | M1 | A10 | H | P01

Series and size
FZM039

Length
2 | **3** | **4**

Valves
S Without bypass
B With bypass 6 bar

Seals
A NBR
V FPM
F MFQ

Connections
M1 Manifold
M2 Manifold, with connection for differential indicator

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Element Δp	Valves S	Valves B
N 20 bar		•
H 210 bar	•	
U 210 bar, stainless steel filter element	•	•

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP039 | 3 | A10 | A | H | P01

Element series and size
HP039

Element length
2 | **3** | **4**

Filtration rating (filter media)
A03 Inorganic microfiber 3 µm
A06 Inorganic microfiber 6 µm
A10 Inorganic microfiber 10 µm
A16 Inorganic microfiber 16 µm
A25 Inorganic microfiber 25 µm

Seals
A NBR
V FPM
F MFQ

Element Δp
N 20 bar
H 210 bar
U 210 bar, stainless steel filter element

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

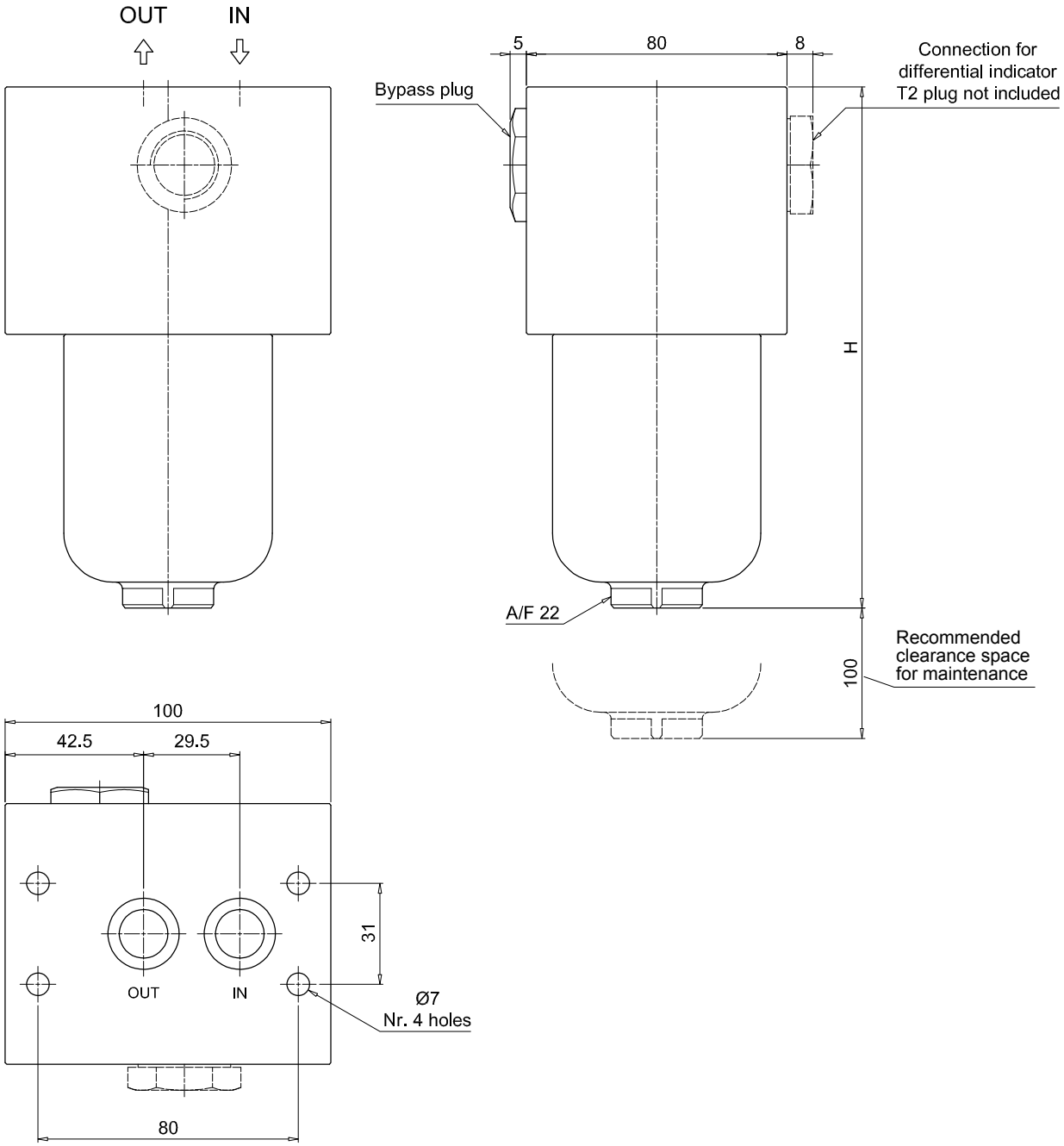
		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

Additional features

		page
X2	Plug	579

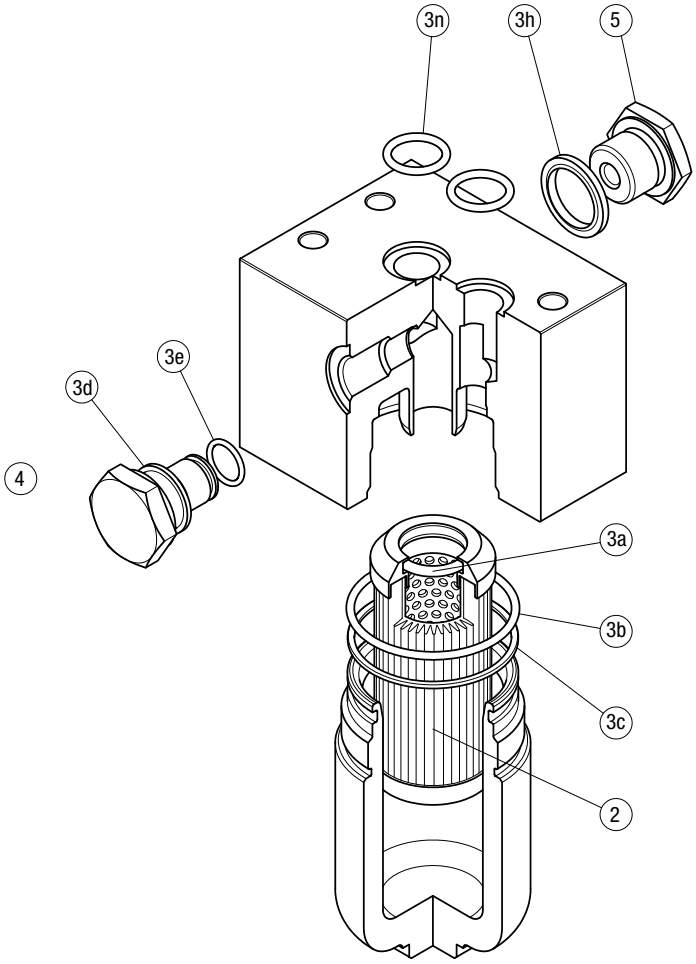
Dimensions

FZM039	
Filter length	**H [mm]**
2	190
3	233
4	277



Order number for spare parts

FZM 039



Q.ty ONLY FOR FZB:

nr. 0 pcs. for version 1
(without indicator port)

nr. 1 pc. for version 2
(with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3n)		Q.ty: 1 pc. 4		Q.ty: 1 pc. 5	
Filter series	**Filter element**	**Seal Kit code number NBR**	**FPM**	**Indicator connection plug NBR**	**FPM**	**Bypass assembly / plug NBR**	**FPM**
FZM 039	See order table	02050651	02050652	X2H	X2V	010029083	010029083

FZD series

Maximum pressure up to 350 bar

Technical data

Stainless steel high pressure filters **Pressure filters**

Style
Duplex pressure filter:
- FZD 010 Max. working pressure: 350 bar
- FZD 021 Max. working pressure: 350 bar
- FZD 051 Max. working pressure: 350 bar

Filter housing materials
- Head: AISI 316L
- Housing: AISI 316L
- Bypass valve: AISI 316L

Δp element type
- Microfibre filter elements - series N-R: 20 bar
- Microfibre filter elements - series H-S: 210 bar
- Stainless Steel Microfibre filter elements - series U: 210 bar
- Fluid flow through the filter element from OUT to IN.

Element series “N - R”:
- End cap: Nylon
- Core tube: Tinned Steel
- External/Internal support: Wire mesh Epox painted
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “H - S”:
- End cap: Tinned Steel
- Core tube: Tinned Steel
- External support: Wire mesh Epox painted
- Internal support: Wire mesh Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

Element series “U”:
- End cap: Stainless Steel
- Core tube: Stainless Steel
- External support: Stainless Steel
- Internal support: Stainless Steel
- Media/Support/Pre-filter: Microfibre/Syntetic

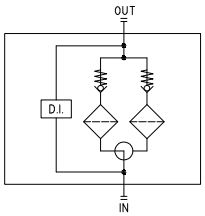
Seals
- Standard NBR
  series A (-25 °C to +110 °C)
- Optional FPM
  series V (-20 °C to +120 °C)
- Optional MFQ
  series F (-50 °C to +120 °C)

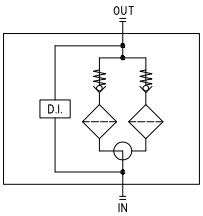
Bypass valve
- Opening pressure 6 bar ±10%

Temperature
From -50 °C to +120 °C

Note
FZD filters are provided
for vertical mounting.

Hydraulic symbols





Filter series	Style S	Style B
FZD 010	•	
FZD 021	•	
FZD 051	•	•

Compatibility to ISO 2943

Housings compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

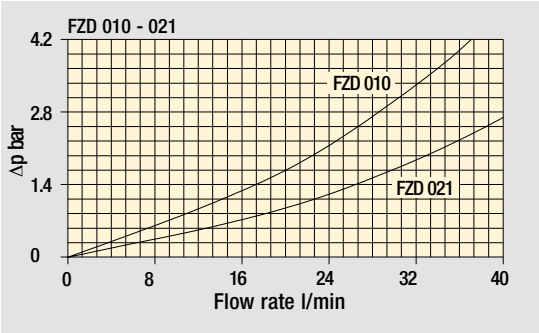
NBR seals series A, compatible with:
Mineral oils, synthetic fluids,
aqueous emulsions and water and glycol.

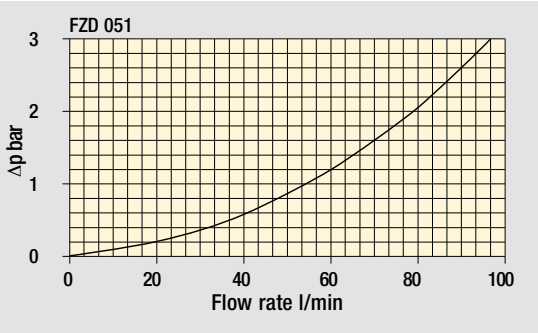
FPM seals series V, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

MFQ seals series F, compatible with:
Mineral oils, synthetic fluids
aqueous emulsions, water and glycol.

Pressure drop

The curves are plotted using mineral oil with density of 0.86 kg/dm^3 in compliance with ISO 3968.
Δp varies proportionally with density.





Filter housings Δp pressure drop

Designation & Ordering code

COMPLETE FILTER

Configuration example: FZD021 | 4 | S | A | G1 | A06 | H | P01

Series and size

FZD010 | **FZD021**

Length	FZD010	FZD021
2	•	•
3		•
4		•

Valves

S	Without bypass

Seals

A	NBR
V	FPM

Connections	FZD010	FZD021
G1	G3/8”	G1/2”
G2	-	1/2” NPT
G3	-	SAE 8 - 3/4” - 16 UNF

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Element Δp

H	210 bar
U	210 bar, stainless steel filter element

Execution

P01	MP Filtri standard
Pxx	Customized

FILTER ELEMENT

Configuration example: HP011 | 4 | A06 | A | H | P01

Element series and size

	FZD010	FZD021
HP010	•	
HP011		•

Element length	HP010	HP011
2	•	•
3		•
4		•

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Seals

A	NBR
V	FPM

Element Δp

H	210 bar
U	210 bar, stainless steel filter element

Execution

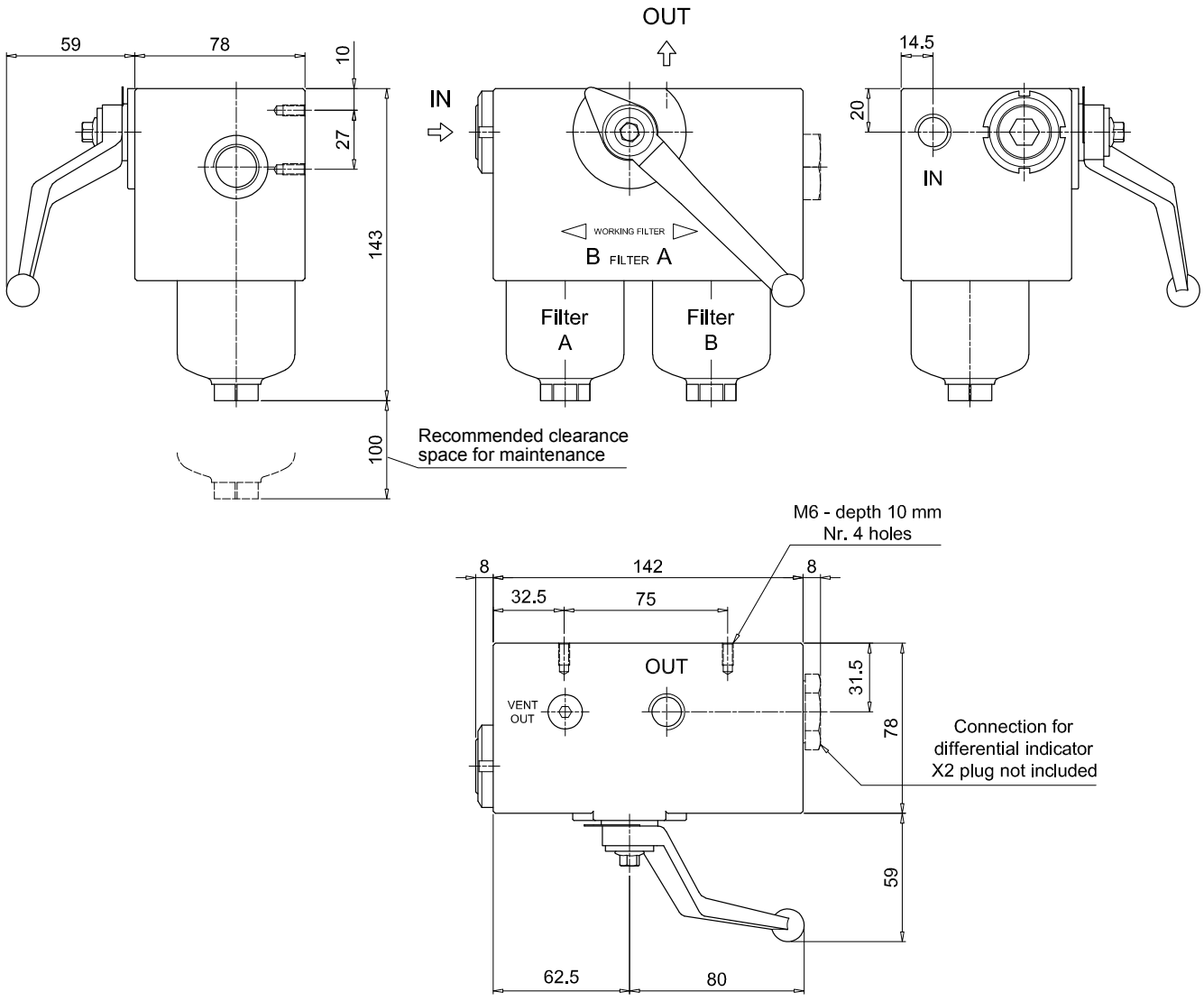
P01	MP Filtri standard
Pxx	Customized

ACCESSORIES

Differential indicators		page
DEX	Electrical differential indicator	578
DLX	Electrical / visual differential indicator	578
DVX	Visual differential indicator	578
DVY	Visual differential indicator	579

Additional features		page
X2	Plug	579

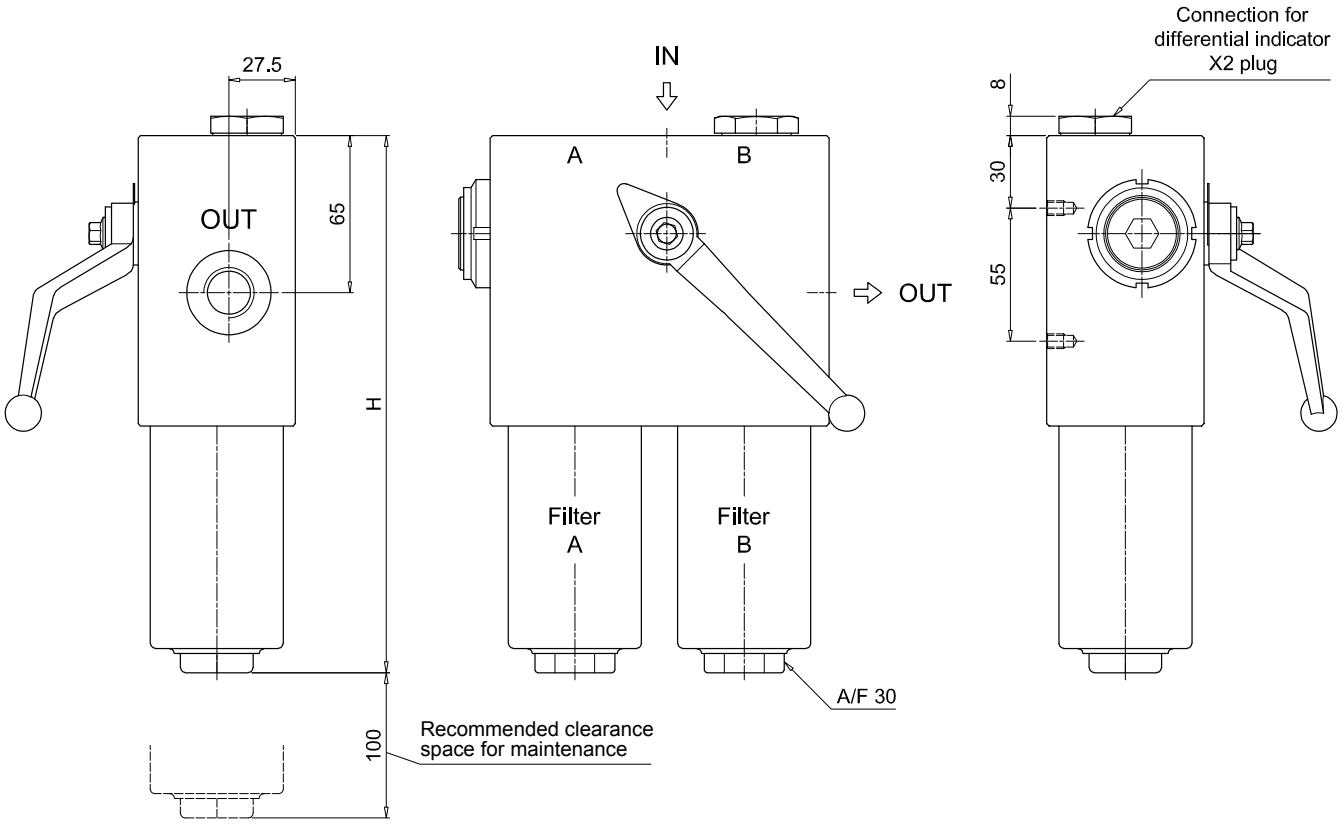
FZD010

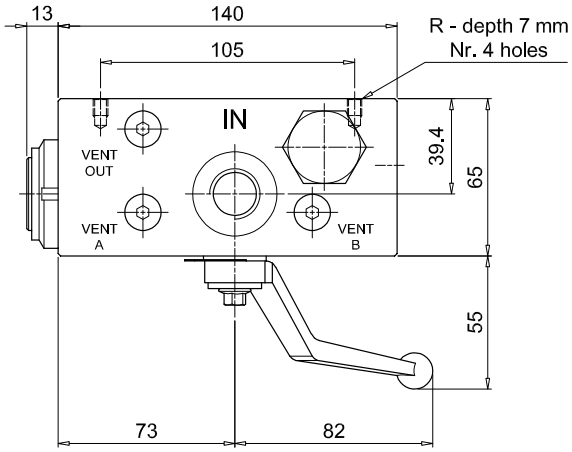

59
78
10
27
143
100
OUT
IN
WORKING FILTER
B FILTER A
Filter A
Filter B
Recommended clearance space for maintenance
14.5
20
IN
M6 - depth 10 mm
Nr. 4 holes
8
142
8
32.5
75
OUT
VENT OUT
31.5
78
Connection for differential indicator
X2 plug not included
59
62.5
80

Dimensions

FZD021	
Filter length	**H [mm]**
2	172
3	222
4	272

Connections	R
G1	M6
G2 - G3	1/4" UNC





Designation & Ordering code

COMPLETE FILTER

Configuration example: FZD051 | 3 | B | A | G3 | A03 | U | P01

Series and size
FZD051

Length
2 | **3** | **4** | **5**

Valves
S Without bypass
B With bypass 6 bar

Seals
A NBR
V FPM

Connections
G1 G3/4”
G2 3/4” NPT
G3 G1/2”
G4 1/2” NPT
G5 SAE 8 - 3/4” - 16 UNF
G6 SAE 12 - 1 1/16” - 12 UN

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Element Δp

		Valves S	Valves B
R	20 bar		•
S	210 bar	•	
U	210 bar, stainless steel filter element	•	•

Execution
P01 MP Filtri standard
Pxx Customized

FILTER ELEMENT

Configuration example: HP050 | 3 | A03 | A | U | P01

Element series and size
HP050

Element length
2 | **3** | **4** | **5**

Filtration rating (filter media)

A03	Inorganic microfiber	3 µm
A06	Inorganic microfiber	6 µm
A10	Inorganic microfiber	10 µm
A16	Inorganic microfiber	16 µm
A25	Inorganic microfiber	25 µm

Seals
A NBR
V FPM

Element Δp
R 20 bar
S 210 bar
U 210 bar, stainless steel filter element

Execution
P01 MP Filtri standard
Pxx Customized

ACCESSORIES

Differential indicators

		page
DEX	Electrical differential indicator	576
DLX	Electrical / visual differential indicator	576
DVX	Visual differential indicator	576
DVY	Visual differential indicator	577

Additional features

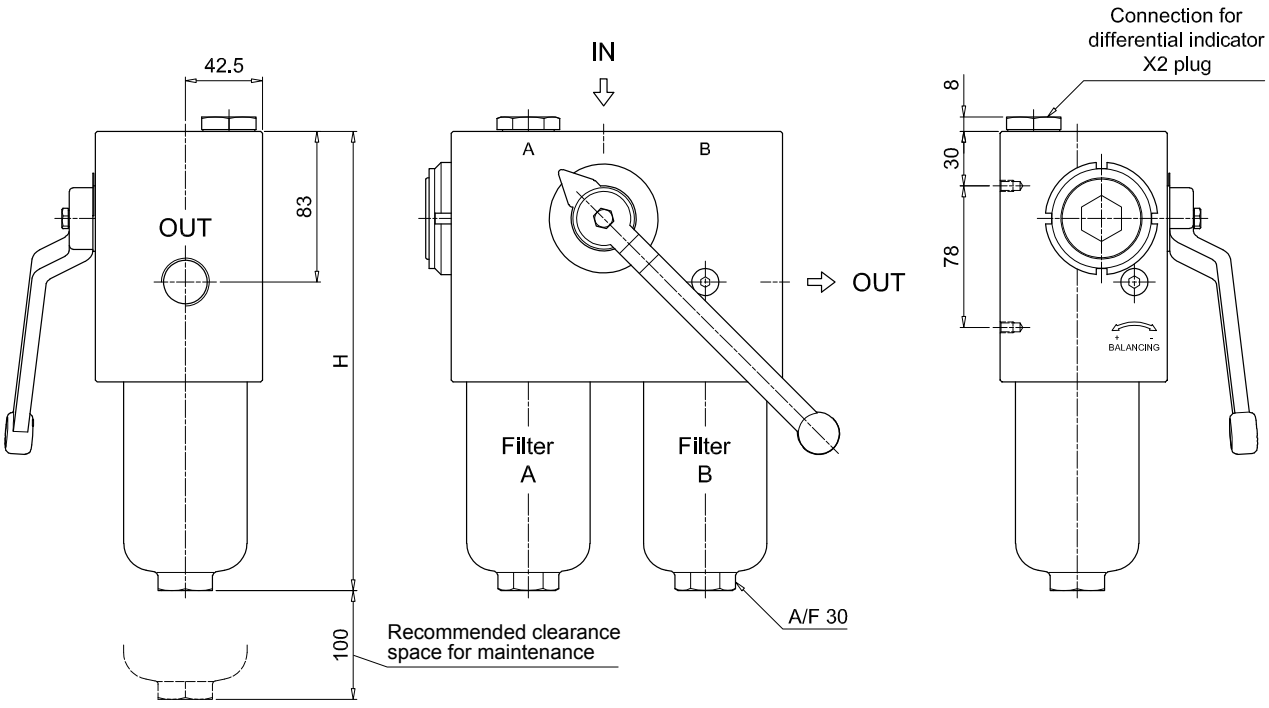
		page
X2	Plug	577

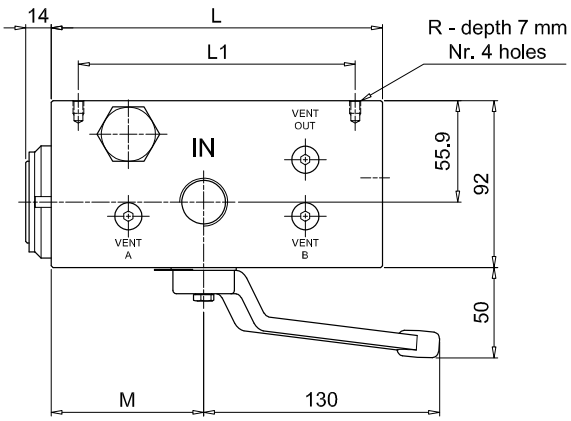
Dimensions

FZD051	
Filter length	**H [mm]**
2	253
3	295
4	343
5	465

Connections	**R**
G1	M6
G2	1/4" UNC
G3	M6
G4-G5-G6	1/4" UNC

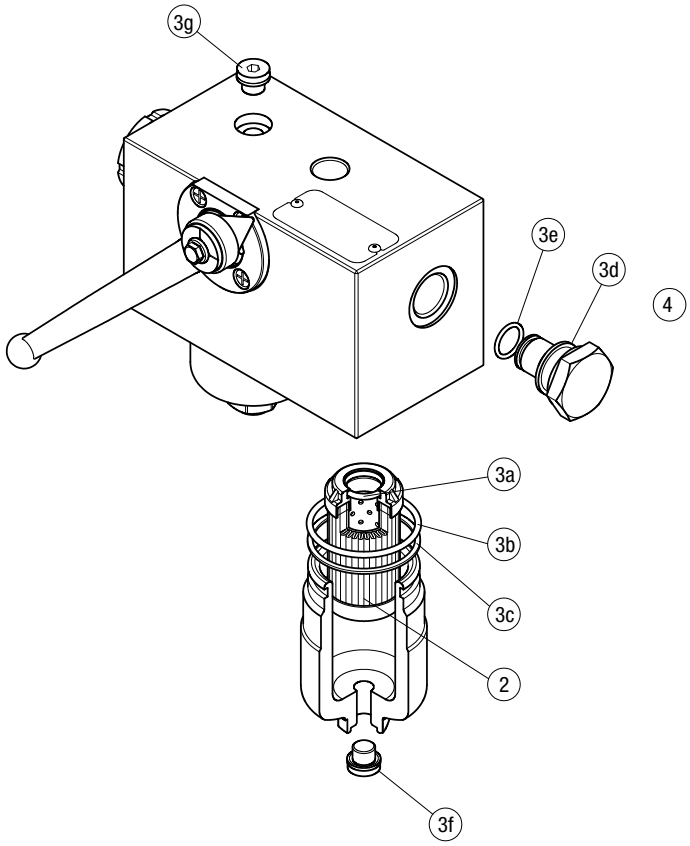
Valves	**L [mm]**	**L1 [mm]**	**M [mm]**
B	168	138	84
S	182.5	152.5	98.5



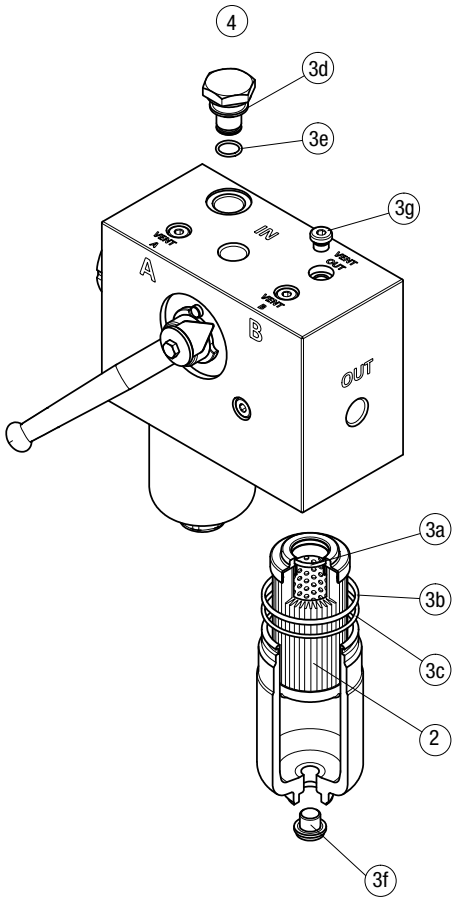


Order number for spare parts

FZD 010



FZD 021 - FZD 051



Q.ty:

nr. 0 pcs. for version 1
(without indicator port)

nr. 1 pc. for version 2
(with indicator port)

Item:	Q.ty: 1 pc. 2	Q.ty: 1 pc. 3 (3a ÷ 3g)		Q.ty: 1 pc. 4	
Filter series	Filter element	Seal Kit code number NBR	Seal Kit code number FPM	Indicator connection plug NBR	Indicator connection plug FPM
FZD 010	See order table	02050613	02050655	X2H	X2V
FZD 021		02050511	02050512		
FZD 051		02050420	02050421		

Clogging indicators

Introduction

Filter elements are efficient only if their Dirt Holding Capacity is fully exploited.
This is achieved by using filter housings equipped with clogging indicators.

These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

MP Filtri can supply indicators of the following designs:

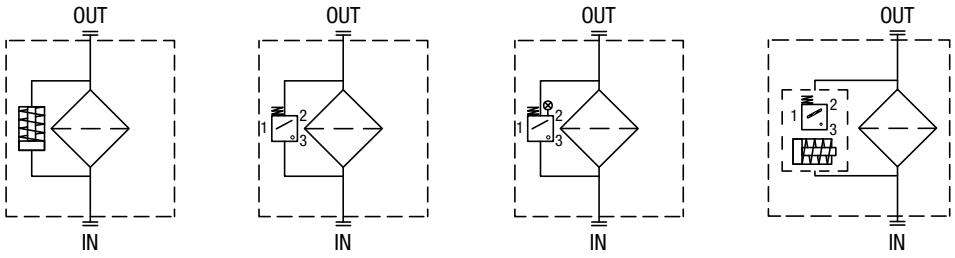
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

These type of devices can be provided with a visual, electrical or both signals.

Suitable indicator types

DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficency of the filter element. They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



Quick reference guide

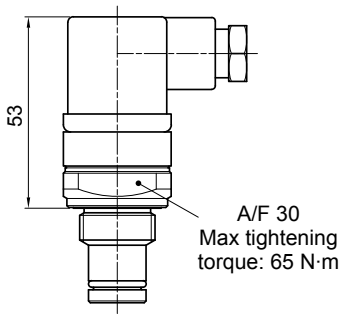
	Filter series	Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01	
Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01	

Dimensions

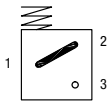
DEX*50

Electrical Differential Indicator

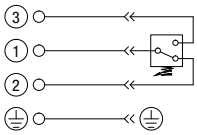
Settings	Ordering code
5 bar ±10%	DE X 50 x A 50 P01
7 bar ±10%	DE X 70 x A 50 P01
9.5 bar ±10%	DE X 95 x A 50 P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Black Nylon
- Contacts: Silver
- Seal: HNBR - FPM

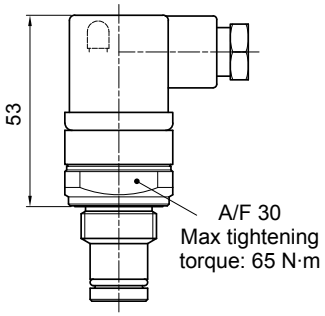
Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

Electrical data
- Electrical connection: EN 175301-803
- Resistive load: 0.2 A / 115 Vdc

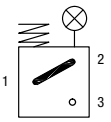
DLX*51 - DLX*52

Electrical/Visual Differential Indicator

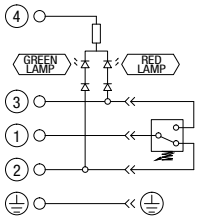
Settings	Ordering code
5 bar ±10%	DL X 50 x A x x P01
7 bar ±10%	DL X 70 x A x x P01
9.5 bar ±10%	DL X 95 x A x x P01



Hydraulic symbol



Electrical symbol



Materials
- Body: AISI 316L
- Base: Transparent Nylon
- Contacts: Silver
- Seal: HNBR - FPM

Technical data
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP66 according to EN 60529 IP69K according to ISO 20653

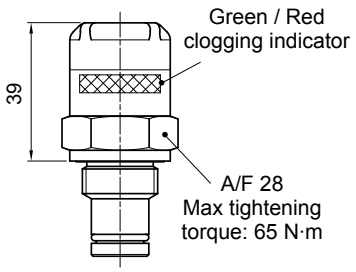
Electrical data

- Electrical connection:	EN 175301-803	
- Type	51	52
- Lamps	24 Vdc	110 Vdc
- Resistive load:	0.8 A / 24 Vdc	0.2 A / 110 Vdc

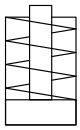
DVX

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV X 50 x P01
7 bar ±10%	DV X 70 x P01
9.5 bar ±10%	DV X 95 x P01



Hydraulic symbol



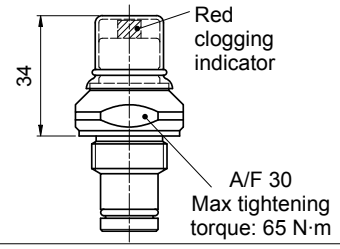
Materials
- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

Technical data
- Reset: Automatic reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

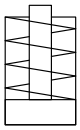
DVY

Visual Differential Indicator

Settings	Ordering code
5 bar ±10%	DV Y 50 x P01
7 bar ±10%	DV Y 70 x P01
9.5 bar ±10%	DV Y 95 x P01



Hydraulic symbol



Materials

- Body: AISI 316L
- Internal parts: AISI 316L - Nylon
- Contacts: Silver
- Seal: HNBR - MFQ

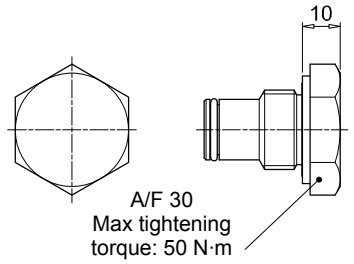
Technical data

- Reset: Manual reset
- Max working pressure: 420 bar
- Proof pressure: 630 bar
- Burst pressure: 1260 bar
- Working temperature: From -25 °C to +110 °C
- Compatibility with fluids: Mineral oil, Synthetic fluids HFA, HFB, HFC according to ISO 2943
- Degree protection: IP65 according to EN 60529

X2

Indicator plug

Seal	Ordering code
HNBR	X2 H
MFQ	X2 F



Materials

- Body: AISI 316L
- Seal: HNBR / MFQ

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATORS

Configuration example 1:	DE	X	12	H	A	50	P01
Configuration example 2:	DL	X	20	V	A	71	P01
Configuration example 3:	DV	Y	70	V			P01

Series

DE Electrical differential indicator
DL Electrical/Visual differential indicator
DV Visual differential indicator

Type	DE	DL	DV
X Standard type	•	•	•
Y Optional type			•

Pressure setting

12 1.2 bar
20 2 bar
50 5 bar
70 7 bar
95 9.5 bar

Seals

H HNBR
F MFQ

Thermostat

A Without

Electrical connections	DE	DL	DV
50 Connection EN 175301-803	•		
51 Connection EN 175301-803, transparent base with lamps 24 Vdc		•	
52 Connection EN 175301-803, transparent base with lamps 110 Vdc		•	

Option

P01 MP Filtri standard
Pxx Customized

DESIGNATION & ORDERING CODE - DIFFERENTIAL INDICATOR PLUG

Configuration example	X2	H

Series

X2 Indicator plug

Seals

H HNBR
F MFQ

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These devices trip when the clogging of the filter element causes an increase in pressure drop across the filter element.

The indicator is set to alarm before the element becomes fully clogged.

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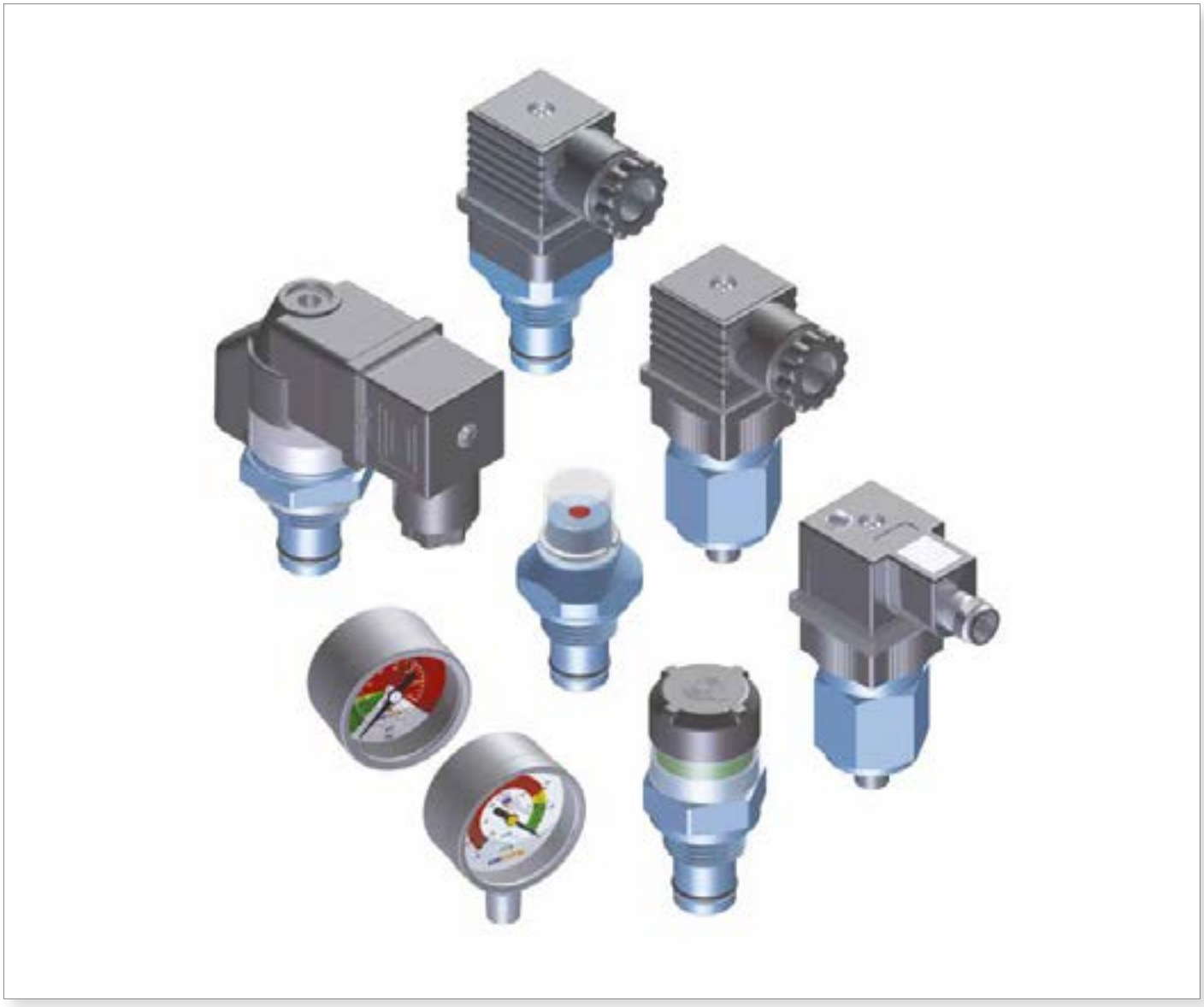
- Vacuum switches and gauges
- Pressure switches and gauges
- Differential pressure indicators

These type of devices can be provided with a visual, electrical or both signals.

Clogging Indicators

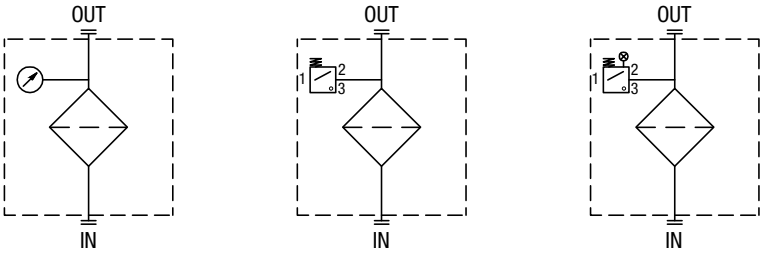
Clogging indicators



Suitable indicator types

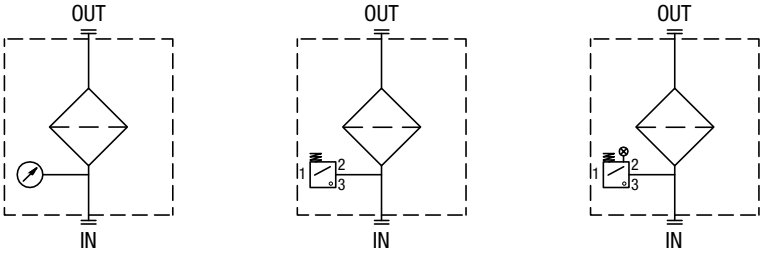
VACUUM INDICATORS

Vacuum indicators are used on the Suction line to check the efficency of the filter element.
They measure the pressure downstream of the filter element.
Standard items are produced with R 1/4" EN 10226 connection.
Available products with R 1/8" EN 10226 to be fitted on MPS series.



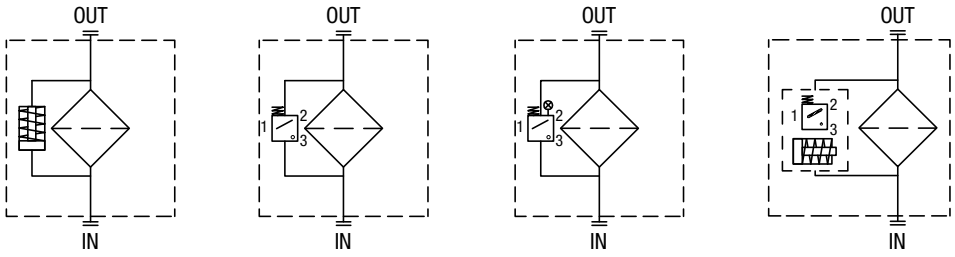
BAROMETRIC INDICATORS

Pressure indicators are used on the Return line to check the efficency of the filter element.
They measure the pressure upstream of the filter element.
Standard items are produced with R 1/8" EN 10226 connection.



DIFFERENTIAL INDICATORS

Differential indicators are used on the Pressure line to check the efficency of the filter element.
They measure the pressure upstream and downstream of the filter element (differential pressure).
Standard items are produced with special connection G 1/2" size.
Also available in Stainless Steel models.



CLOGGING INDICATORS

Filter family	Filter series		Visual indicator	Electrical indicator	Electrical / Visual indicator	Electronic indicator
SUCTION FILTERS	SF2 250 - 350 SF2 500 - 501 - 503 - 504 - 505 SF2 510 - 535 - 540		VVA16P01 VVR16P01	VEA21AA50P01	VLA21AA51P01 VLA21AA52P01 VLA21AA53P01 VLA21AA71P01	
RETURN FILTERS	MPFX-MPTX-MPF-MPT with bypass 1.75 bar MPH with bypass 1.75 bar		BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
	MPFX-MPTX-MPF-MPT with bypass 3 bar MPH with bypass 2.5 bar FRI 255		BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA20HA50P01 BEM20HA41P01	BLA20HA51P01 BLA20HA52P01 BLA20HA53P01 BLA20HA71P01	
	FRI 025 - 040 - 100 - 250 - 630 - 850		DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
RETURN / SUCTION FILTERS	Suction line	MRSX 116 - 165 - 166	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
	Return line	MRSX 116 - 165 - 166 LMP 124	BVA25P01 BVR25P01 BVP20HP01 BVQ20HP01	BEA25HA50P01 BEM25HA41P01 BET25HF10P01 BET25HF30P01 BET25HF50P01	BLA25HA51P01 BLA25HA52P01 BLA25HA53P01 BLA25HA71P01	
SPIN-ON FILTERS	Suction line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350	VVB16P01 VVS16P01	VEB21AA50P01	VLB21AA51P01 VLB21AA52P01 VLB21AA53P01 VLB21AA71P01	
	Return line	MPS 050 - 070 - 100 - 150 MPS 200 - 250 - 300 - 350 MST 050 - 070 - 100 - 150	BVA14P01 BVR14P01 BVP20HP01 BVQ20HP01	BEA15HA50P01 BEM15HA41P01	BLA15HA51P01 BLA15HA52P01 BLA15HA53P01 BLA15HA71P01	
	In-line	MPS 051 - 071 - 101 - 151 MPS 301 - 351 MSH 050 - 070 - 100 - 150	DVA12xP01 DVM12xP01	DEA12xA50P01 DEM12xAxxP01	DLA12xA51P01 DLA12xA52P01 DLA12xA71P01 DLE12xA50P01 DLE12xF50P01	
LOW & MEDIUM PRESSURE FILTERS	With bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 902 - 903 - 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA20xP01 DVM20xP01	DEA20xA50P01 DEM20xAxxP01	DLA20xA51P01 DLA20xA52P01 DLA20xA71P01 DLE20xA50P01 DLE20xF50P01	DTA20xF70P01
	Without bypass valve	LMP 110 - 112 - 116 - 118 - 119 LMP 120 - 122 - 123 LMP 210 - 211 - LDP LMP 400 - 401 - 430 - 431 LMP 902 - 903 - 952 - 953 - 954 LMD 211 - 400 - 401 - 431 - 951 - LDD	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
HIGH PRESSURE FILTERS	With bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA50xP01 DVM50xP01	DEA50xA50P01 DEM50xAxxP01	DLA50xA51P01 DLA50xA52P01 DLA50xA71P01 DLE50xA50P01 DLE50xF50P01	DTA50xF70P01
	Without bypass valve	FMP 039 - 065 - 135 - 320 FHP 010 - 011 - 065 - 135 - 320 - 500 FMM 050 - FHA 051 FHM 006 - 007 - 010 - 050 - 065 - 135 - 320 - 500 FHB 050 - 135 - 320 FHF 325 FHD 021 - 051 - 326 - 333	DVA70xP01 DVM70xP01	DEA70xA50P01 DEM70xAxxP01	DLA70xA51P01 DLA70xA52P01 DLA70xA71P01 DLE70xA50P01 DLE70xF50P01	DTA70xF70P01
STAINLESS STEEL HIGH PRESSURE FILTERS	With bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZX 011 FZB 039 FZM 039 FZD 051	DVX50xP01 DVY50xP01	DEX50xA50P01	DLX50xA51P01 DLX50xA52P01	
	Without bypass valve	FZH 010 - 011 - 039 FZP 039 - 136 FZB 039 FZM 039 FZD 010 - 021 - 051	DVX70xP01 DVY70xP01	DEX70xA50P01	DLX70xA51P01 DLX70xA52P01	

NOTES

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Rev. 10-2017

WORLDWIDE NETWORK

HEADQUARTERS

MP Filtri S.p.A.
Via 1° Maggio, 3
20060 Pessano con Bornago
Milano - Italy

BRANCH OFFICES

MP Filtri U.K. Ltd.
Bourton Industrial Park
Bourton on the Water
GL54-2HQ Gloucestershire

MP Filtri Canada Inc.
8831 Keele Street
Concord, Ontario
L4K 2N1 - Canada

MP Filtri Germany GmbH
Hans-Wilhelmi-Straße
DE-66386 St. Ingbert

ITALFILTRI LLC
Russian Federation
Yurievsky Pereulok 13 a, Building 1
111020 Moscow - Russia

MP Filtri France SAS
Parc d'activités des Chanteraines
8 rue du Commandant d'Estienne d'Orves
Immeuble D3
92390 Villeneuve la Garenne

MP Filtri (Shanghai) Co., Ltd.
1280 Lianxi Road, Bld 8 - 2nd Floor
Shanghai - Pudong
201204 China

MP Filtri U.S.A. Inc.
2055 Quaker Pointe
PA 18951 Drive Quakertown

MP Filtri India Pvt. Ltd.
Plot-7F, Raj Pinnacle,
Beside RMZ Centennial
Brookefield Road, Whitefield
560048 Bangalore

PASSION TO PERFORM

mpfiltri.com

Rev. 10-2017